Course Code: CNE 413.

Course Name: Wireless LAN.

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	**Lab.:**	2	**Total**	5
Pre-Requisite	ــــــ						

Academic standards	**NARS 2010**
Bylaw Approval	٢٠٠١
Course Coordinator	**Dr Sara Ahmed** ساره احمد سليمان
Course Specification Approval	**Department Council**
Course Specification Approval Date	٢٠/٨/٢٠٢٥

2. Course Overview:

Introduction to Wireless LLAN using radio frequency (RF) technology, wideband radio frequency Technique. Direct Sequence Spread Spectrum Technology Frequency hopping. Infrared Technology, Blue tooth technology. IEEE802.11a standards for Wireless LANs, how wireless LANS Work, typical wireless server-based networks, Clients, and Access Points. Multiple access Points and roaming wireless LAN directional antennas, Throughput, Voice Over IP and Video services over WLAN and WLAN Licensing issues for narrow band spread spectrum.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Understand fundamentals of Wireless LANs and RF technology.
a.2 Explain wideband RF techniques in wireless networking.
a.3 Describe DSSS and frequency hopping technologies.
a.4 Understand infrared and Bluetooth technologies.
a.5 Explain IEEE 802.11a standards for wireless LANs.
a.6 Describe operational principles of wireless LANs (clients and access points).

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Analyze the impact of wideband RF on network performance.
b.2.Compare DSSS and frequency hopping advantages and disadvantages.
b.3.Evaluate use cases for infrared and Bluetooth technologies.
b.4.Analyze effects of multiple access points and roaming on performance.
b.5.Assess the impact of directional antennas on throughput.
b.6.Evaluate challenges of VoIP and video services over WLAN.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Identify key components of a wireless network.
c.2. Configure wireless devices according to IEEE 802.11a standards.
c.3. Implement basic configurations for wireless LANs.
c.4. Configure roaming capabilities in a wireless network.
c.5. Implement directional antennas for enhanced performance.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1 Communicate effectively regarding VoIP solutions and WLAN performance.
d.2 Discuss WLAN licensing issues related to narrowband spread spectrum technology.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications	a1, a2, a3, a4, a5, a6
A6	The current and underlying technologies that support computer processing and inter-computer communication	a1, a2, a3, a4, a5, a6
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems	b1, b2, b3, b4, b5, b6
B11	Perform comparisons between (algorithms, methods, techniques…etc.)	b1, b2, b3, b4, b5, b6
B17	Identify a range of solutions and critically evaluate and justify proposed design solutions	b1, b2, b3, b4, b5, b6
C1:	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations	c1, c2, c3, c4, c5
C**14**	Specify, design, and implement computer-based systems	c1, c2, c3, c4, c5
D**5**	Communicate effectively by oral, written and visual means	d1
D**8**	Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning	d2

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week-1	Introduction to Wireless LAN and RF Technology	4	2	-	2	a1, c1
Week-2	Wideband Radio Frequency Techniques	4	2	-	2	a2, b1
Week-3	Direct Sequence Spread Spectrum (DSSS) and Frequency Hopping Techniques part I	4	2	-	2	a3, b2
Week-4	Direct Sequence Spread Spectrum (DSSS) and Frequency Hopping Techniques part II	4	2	-	2	a3, b2
Week-5	Infrared Technology	4	2	-	2	a4, b1
Week-6	Bluetooth Technology	4	2	-	2	a4, b1
Week-7	IEEE 802.11a Standards for Wireless LANs	4	2	-	2	a5, c2
Week-8	Midterm Exam					
Week-9	How Wireless LANs Work	4	2	-	2	a6, c3
Week-10	Multiple Access Points and Roaming in Wireless LANs	4	2	-	2	a4, c4
Week-11	Directional Antennas and Throughput	4	2	-	2	b5, c5
Week-12	Voice Over IP (VoIP) and Video Services over WLAN	4	2	-	2	b6, d1
Week-13	WLAN Licensing Issues for Narrowband Spread Spectrum	4	2	-	2	d2
Week-14	LAB AND ORAL EXAM					

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	5	5%
2	Quiz 2 written (Semester work)	11	10	10%
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10%
6	Final Oral Exam	14	5	5%
7	Assignments / Project	Every Week	10	10%
8	Field training	___	0	0
9	Other (Mention)	___	0	0

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Stallings, W. (2001). Wireless Communications and Networks (1st Edition).
	Other References	_____
	Electronic Sources (Links must be added)	_____
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**DR Sara Ahmed**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 427

Course Name: Virtual Reality

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	Elective				Academic level at which the course is taught		Level 4	
Term/ Academic year	Oct.		2025/2026		Credit Hours:		3	
Contact Hours	Lecture:	3	Tutorial:		Lab.:	2	Total	5
Pre-Requisite								

Academic standards	NARS 2010
Bylaw Approval	2001
Course Coordinator	Dr Mona Mohamed
Course Specification Approval	Department Council
Course Specification Approval Date	20/8/2025

2. Course Overview:

An overview of Management Information Systems (MIS), objective of management information systems (MIS), management information systems (MIS) and CBIS family. Stand-alone management information systems. A management information system model. Management information systems in a total CBIS environment. Database management system, the management dimension, the managerial activities, and the management control. Management information characteristics: The management dimension in processing, functional applications of management information systems (MIS) The production subsystem, the marketing subsystem, the finance subsystem, the personnel subsystem, the relationship of the MIS to other CBIS

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Demonstrate an understanding of the fundamental concepts, technologies, and components of virtual reality systems.

a.2 Explain the geometry, physics, and perception of virtual worlds, as well as the principles of light and optics and their application to virtual reality displays.

a.3 Analyze the challenges and opportunities of motion in real and virtual worlds, including velocities, acceleration, and collision detection, as well as tracking systems and their application to virtual reality.

a.4 Identify different interaction techniques and audio systems in virtual reality and how they impact the design and evaluation of virtual reality systems and experiences.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Analyze and evaluate the design and implementation of virtual reality systems.

b2. Develop strategies for solving problems related to virtual reality, including geometric modeling, tracking, and interaction.

b3. Critically evaluate research and development in the field of virtual reality, including its impact on society and human behavior.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Develop practical skills in the design and implementation of virtual reality systems, including visual rendering, motion simulation and tracking, interaction techniques, and audio rendering and naturalization.

c2. Apply evaluation methods to assess the effectiveness and usability of virtual reality systems and experiences and develop recommendations for improvement.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Develop effective communication skills, including oral and written communication of technical concepts related to virtual reality.

d2. Develop collaborative skills by working in teams on virtual reality projects.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1,a2,a3,a4**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a4**
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	**Not coverd**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline	**b1,b2,b3**
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	**b2**
B12	Perform classifications of (data, results, methods, techniques, algorithms. etc.).	**b3**
C8	Handle a mass of diverse data, assess risk and draw conclusions.	**c1,c2**
C14	Specify, design, and implement computer-based systems.	**c1**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction: Virtual Reality in a Nutshell	5	3	-	2	a1
Week-2	Requirements Engineering and Storyboarding: - Example: Ship Simulator Design - Summary and Pondering Points	5	3	-	2	a2, b2, c1
Week-3	Object and Scene Modeling: - Object Modeling - Scene Construction - Object Placement - Multiple Frames of Reference	5	3	-	2	a2, b2, c1
Week-4	Putting It All Together: -Example Continued: Ship Simulator, Level 2 Design. - Summary and Pondering Points.	5	3	-	2	a1, b3, c1, c2
Week5	Performance Estimation and System Tuning: - Tuning with LOD Models - Presence/Special Effects - Using Images and Textures.	5	3	-	2	a1, b3, c1, c2
Week-6	Creating the Virtual Reality: - Output Display. - The Human Visual System	5	3	-	2	a1, b3, c1,c2,d1
Week-7	Human Depth Perception and Stereoscopy	5	3	-	2	a1, b3, c1,c2,d1
Week-8	Midterm Exam					
Week-9	Visual Display Systems - Human Aural System - Aural Display Systems - Haptics	5	3	-	2	a3, b1,b2, b3, c1,c2 ,d1, d2
Week-10	- Stimulation of Other Modalities I - Summary and Pondering Points.	5	3	-	2	a3, b1,b2, b3, c1,c2 ,d1, d2
Week-11	Sensors and Input Processing: - Trackers - Event Generators - Sensor Errors and Calibration	5	3	-	2	a3, b3, c1,c2 ,d1, d2
Week-12	3D Multimodal Interaction Design.	5	3	-	2	a4, b1, b2, b3, c1,c2,d1
Week-13	Interfaces	5	3	-	2	a4, b1, b2, b3, c1,c2,d1
Week-14	LAB AND ORAL EXAM					

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√		√	√					

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**10**	**10 %**
2	Quiz 2 written (Semester work)	**9**	**10**	**10 %**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10 %**
6	Final Oral Exam	**-**	**0**	**0**
7	Assignments / Project	**weekly**	**10**	**10 %**
8	Field training	**-**	**0**	**0**
9	Other (Mention)	**-**	**0**	**0**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	1. Understanding Virtual Reality: Interface, Application, and Design" by William R Sherman and Alan B Craig.
	Other References	**None**
	Electronic Sources (Links must be added)	**None**
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr Mona Mohamed	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 429

Course Name: Computer Graphic (2)

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		**Level 4**	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	2	**Total**	5
Pre-Requisite	CSC 323						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

3-D concepts, projections: parallel and perspective. 3 D object representations: polygon surfaces plan equations, polygon meshes, curved lines and surfaces. Solid object representations: sweep representation, constructive Solid geometric, objects, 3 D geometric and modeling transformations: translation, rotation, scaling, and reflections. Shears, compositions, and transformations. 3 D applications: color models, applications in computer aided drafting, design, and manufacturing

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:
a1.Understanding the concepts related to basics of computer graphics, 3D object representations, geometric transformations, clipping techniques and visualization.
a2. Demonstrate the understanding of graphics and imaging systems and different hardware and software used for this field

b. Intellectual skills:

On successful completion of the courses, students should be able to:
b1. Design appropriate algorithm, tools and application dealing with representing 3D objects.

b2. Distinguish the appropriate computer drawing algorithms according to their functions.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Employ the mathematical foundations, algorithms, programming skills, tools and techniques to
implement the computer graphics topics such as geometrical transformations, illumination models, removal of hidden surfaces and rendering
c2. Apply fundamental principles and concepts within information visualization and scientific visualization.
c3. Design the 3D object using any programming languages environments.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Work cooperatively in a team or individually to accomplish a common goal in designing objects and engage in a life-long self-learning.

d2. Demonstrate problem-solving abilities by applying critical thinking to identify, evaluate, and resolve challenges in 3-D modeling and application .

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	Text	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	a1
A11	Requirements, practical constraints, and computer-based systems.	a1,a2
B6	Evaluate the results of tests to investigate the functionality of computer systems.	b1,b2
B19	Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.	b2
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	c1,c2
C12	Prepare and present seminars to a professional standard.	c2
C14	Specify, design, and implement computer-based systems.	c3
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	d1,d2
D3	Show the use of information-retrieval.	d2

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to Computer Graphics	5	3	0	2	a1,a2
Week-2	Introduction Programming Environments	5	3	0	2	a1, a2, b1,b2,c1
Week-3	Mathematical Concepts and Algorithms	5	3	0	2	a1, a2, b2,c1,c3
Week-4	Geometric Objects and Transformations	5	3	0	2	a1, a2, b1,b2, c1, c2
Week5	Viewing	5	3	0	2	a1, a2,b1, b2, c1, d1
Week-6	Lighting and Shading	5	3	0	2	a1, a2b1,b2, c1, c2
Week-7	Discrete Techniques	5	3	0	2	a1, a2,b1,b2, c1
Week-8	Midterm Exam.					
Week-9	Implement program to draw and display 3D objects	5	3	0	2	a1, a2, b1,c1, c2,d1
Week-10	Plement program For 3D Geometric transformations	5	3	0	2	a1, a2, b1,b2, c1, c2, d1
Week-11	Implement program to Viewing and shading the 3D object	5	3	0	2	a1, a2, b1,b2, c1, c2, d1
Week-12	Implement the Discrete Techniques	5	3	0	2	a1, a2, b1,b2, c1, c2, d1,d2
Week-13	3Dapplications:color models, applications in computer aided drafting, design, and manufacturing	5	3	0	2	a1, a2, b1,b2, c1, c2, d1,d2
Week-14	Lab Examination	5	3	0	2	

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√		√						

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**4**	**15**	**15%**
2	Quiz 2 written (Semester work)		**0**	
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15&16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10 %**
6	Final Oral Exam		**0**	
7	Assignments / Project	**weekly**	**15**	**15 %**
8	Field training		**0**	
9	Other (Mention)		**0**	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	• " Peter Shirley and Steve Marschner, Fundamentals of Computer Graphics, CRC Press.
	Other References	• " Edward Angel and Dave Shreiner, Interactive Computer Graphics A Top-Down Approach OpenGL, Sixth Edition, Addison-Wesley
	Electronic Sources (Links must be added)	•http://www.cs.cornell.edu/%E2%88%BCsrm/fcg3/.We
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name		**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 430

Course Name: Data Warehouses

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Oct.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	**Lab.:**	2	**Total**	5
Pre-Requisite							

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	**Dr Mona Mohamed**
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

This Course provides the students with definition of data warehousing, data marts and data warehouse, data warehouse process, data in a data warehouse, the technical skills required to plan, implement and maintain client/server Database Management a tools such data warehousing using modern Microsoft SQL server. Data warehousing concepts, Design of a data warehousing system and implement a database designed with a star schema in SQL server, Gathering data from primary data source, transforming it and placing it in a SQL server staging database, Creating a club using OLAP services, Analyzing a cube of data using existing client applications, Query cubes using MDX, Build Custom OLAP clients using ADO MD OLE DB for OLAP and DSO, query warehouse data using MS English query, Maintain a SQL server data warehouse

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Understand the core principles of Data Warehousing, including the evolution of Decision Support Systems (DSS).

a.2 Describe Data Warehouse design and structure, with a focus on granularity, dimensional design, and architecture.

a.3 Explain the ELT processes and tools, as well as the role of OLAP tools and Aggregates in data analysis.

a.4 Differentiate between Enterprise Data Warehouses and Data Marts, and recognize their roles in supporting Data Mining and organizational decision-making.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. granularity and dimensional modeling.

b2. Apply analytical techniques using OLAP tools and Aggregates for effective data analysis and reporting.

b3. Assess and address architectural issues in Data Warehousing, including scalability and performance challenges.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Design and implement robust Data Warehouse solutions, utilizing dimensional modeling techniques to enhance data organization and accessibility.

c2. Show xecute ELT (Extraction, Transformation, Load) processes effectively, using a variety of tools to ensure efficient data integration and preparation.

c3. Utilize OLAP tools for data analysis and reporting, enabling users to derive actionable insights from complex datasets.

c4. Conduct performance tuning and optimization of Data Warehouse systems, addressing issues related to scalability and responsiveness.

c5. Perform thorough testing and validation of Data Warehouse implementations, ensuring data accuracy and reliability for decision-making purposes

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Develop and deploy the database management system to solve some real-world Problems.

d2. Implement SQL to query data in database management systems

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1,a2,a3,a4**
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a2**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a3,a4**
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	**Not covered**
B3	Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.	**b1,b3**
B4	Analyze, propose and evaluate alternative computer systems and processes taking into account limitations, and quality constraints.	**b2,b3**
B10	Define traditional and nontraditional problems, set goals towards solving them, and. observes results.	**b2,b3**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c1,c2**
C4	Apply computing information retrieval skills in computing community environment and industry.	**c2,c3**
C6	Design, implement, maintain, and manage software systems.	**c1,c4**
C8	Handle a mass of diverse data, assess risk and draw conclusions.	**c3,c4,c5**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c1,c2,c3**
D3	Show the use of information-retrieval.	**d2**
D5	Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.	**d1,d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to Data warehousing (Concepts, Operational and informational systems, Decision support systems and Applications of data warehouse)	5	3	-	2	a1, b1
Week-2	Data warehouse architecture(Source systems,Process flow, Extract & load process & load manager Clean & transform data & warehouse manager)	5	3	-	2	a2, b2
Week-3	Data warehouse architecture(Query manager,Detailed & Summarized information,Backup and archive process,Data staging area & presentation servers).	5	3	-	2	a2, b2, c1,c2, d2
Week-4	Data Warehouse Design(ER modeling vs. Dimensional modeling,Online Analytical	5	3	-	2	a2,a3, b2, c1, d2
	Processing (OLAP),ROLAP,MOLAP &HOLAP.					
Week5	Data Warehouse Design(Database schema and Dimensional Modeling, Facts, Dimensions, Fact & Dimension Tables, Star, Snowflake & Starlike schemas).	5	3	-	2	a2,a3,a4 b2,b3, c1, d2
Week-6	Case Study: Data Warehouse for a Grocery Store.	5	3	-	2	c1, c2,c3,c4 d1, d2
Week-7	Revision.	5	3	-	2	Revision
Week-8	Midterm Exam					

Week-9	Advanced dimensional modeling concepts (Surrogate keys-Slowly changing dimensions-Rapidly changing dimensions-Conformed dimensionsFactless fact tables-MinidimensionsOutriggers-Role-playing dimensions)	5	3	-	2	a1, a2, b2, b3, c2,c5, d2
Week-10	Multi-dimensional databases (MDDBs)	5	3	-	2	a1, a2, b2, b3, c2,c4,c5, d2
Week-11	Performance enhancing techniques(Partitioning-AggregationMaterialization of views-Bitmap indexes Parallel processing)	5	3	-	2	a1, a2, b2, b3, c2,c5 d2
Week-12	Data Marts(Architecture-Design-Cost)	5	3	-	2	a1, a2, b2, b4, c1,c5, d2
Week-13	Metadata and Data Warehouse Project Management	5	3	-	2	a1, a2, b1, b2, b4,b5,c1, c2,c4,c5, d2
Week-14	LAB AND ORAL EXAM					

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√	√	√		√	√					

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	10	10 %
2	Quiz 2 written (Semester work)	9	10	10 %
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10 %
6	Final Oral Exam	-	0	0
7	Assignments / Project	weekly	10	10 %
8	Field training	-	0	0
9	Other (Mention)	-	0	0

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	The Data Warehouse Toolkit: The Definitive Guide to Dimensional Modeling" by Ralph Kimball and Margy Ross.
	Other References	• Reema Thareja, Data warehousing. Oxford University Press, USA. ISBN: • 0195699610. • John Wang,. Encyclopedia of Data Warehousing and Mining. Idea Group.
	Electronic Sources (Links must be added)	None
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr Mona Mohamed	**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 433

Course Name: Software Quality Assurance

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	Elective			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Oct.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	**Lab.:**	2	**Total**	5
Pre-Requisite	CSC 320						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	**Dr Sara Ahmed Soliman**
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Main tasks/roles/responsibilities of Software Quality Assurance (SQA), Objectives of SOA, evaluation of SQA effectiveness, specifications of SA, SQA build-in as part of the systems development life cycles, SQA Quality reviewers. Software Configuration Management: baseline management, Software documentation, Configuration identification practices, essentials and reviews steps, and customization of SQA steps. SQA ISO 9000 Standards and inspection. G43Statistical charts. Case study: launching corporate SQA programs.

3- Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Understand the fundamental roles and responsibilities of SQA.

a.2 Comprehend the objectives and benefits of SQA within an organization.

a.3 Evaluate the effectiveness of SQA through various metrics and tools.
a.4 Gain knowledge on SQA specifications and standards.
a.5 Learn the ISO 9000 standards and key aspects of software configuration management

b. Intellectual skills:

On successful completion of the courses, students should be able to:
b1. Analyze the roles of SQA in enhancing software reliability.
b2. Apply critical thinking to evaluate SQA processes in SDLC.
b3. Customize SQA steps to align with project requirements.
b4. Interpret statistical data in quality assurance.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:
c1. Implement effective configuration management practices.
c2. Use statistical tools to analyze quality metrics.
c3. Develop skills to apply SQA methodologies in real-world scenarios

d. General and transferable skills:

On successful completion of the courses, students should be able to:
d.1.Communicate effectively within teams on SQA specifications.
d.2.Demonstrate organization and documentation skills.
d.3.Collaborate in problem-solving using case study-based learning.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A4	Criteria and specifications appropriate to specific problems, and plan strategies for their solution.	**a4**
A5	The extent to which a computer-based system meets the criteria defined for its current use and future development.	**a2,a3**
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	**a3,a5**
A10	Current developments in computing and information research.	**a5**
A11	Requirements, practical constraints, and computer-based systems.	**a1,a2,a4**
B8	Familiar with the professional, legal, moral, and ethical issues relevant to the computing industry.	**b2,b3**
B10	Define traditional and nontraditional problems, set goals towards solving them, and. observes results.	**b1,b2,b3**
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	**b4**
B13	Identify attributes, components, relationships, patterns, main ideas, and errors.	**b1,b4**
C3	Deploy the equipment and tools used for the construction, maintenance, and documentation of computer applications.	**c1,c2**
C6	Design, implement, maintain, and manage software systems.	**c3**
C7	Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.	**c1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d1,d3**
D7	Show the use of general computing facilities.	**d1**
D8	Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.	**d3**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to SQA: Roles and Responsibilities	5	3	-	2	a1,a2,b1
Week-2	Objectives and Importance of Software Quality Assurance (SQA)	5	3	-	2	a2,a3
Week-3	Evaluating the Effectiveness of SQA	5	3	-	2	a3,b2,c1
Week-4	Software Assurance (SA) Specifications	5	3	-	2	a3,a4,b2,d1
Week5	Integrating SQA into SDLC (Systems Development Life Cycle)	5	3	-	2	a4,b2,c2
Week-6	SQA Quality Reviewers and Processes	5	3	-	2	a4, a5, b3
Week-7	Software Configuration Management (SCM): Baseline Management	5	3	-	2	a4,a5, b3
Week-8	Midterm Exam					
Week-9	Documentation and Configuration Identification Practices	5	3	-	2	a4,a5, b2,d2
Week-10	Essentials of SQA Review Steps and Customization	5	3	-	2	b3,c1,c3
Week-11	SQA Standards: ISO 9000 and Inspections	5	3	-	2	a5,b4
Week-12	Statistical Analysis in SQA: G43 Statistical Charts	5	3	-	2	c2,c3,d3
Week-13	Case Study: Launching a Corporate SQA Program	5	3	-	2	b4,c3,d3
Week-14	LAB AND ORAL EXAM	5	3	-	2	

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	10	10 %
2	Quiz 2 written (Semester work)	9	10	10 %
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10 %
6	Final Oral Exam	-	0	0
7	Assignments / Project	weekly	10	10 %
8	Field training	-	0	0
9	Other (Mention)	-	0	0

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**"Quality Software Management: Systems Thinking"** by Gerald M. Weinberg (1991)
	Other References	**Software Engineering: A Practitioner's Approach"** by Roger S. Pressman **"Handbook of Software Quality Assurance"** by G. Gordon Schulmeyer and James I. McManus
	Electronic Sources (Links must be added)	**None**
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Sara Ahmed Soliman**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CNE 414

Course Name: Intelligent Networks

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	2	**Total**	5
Pre-Requisite							

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	**Prof. Dr. Yossria Abo E Naga**
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

This course introduces intelligent Networks and their corresponding intelligent services. Topics include Definitions and Origins of IN, IN Conceptual Model, IN Architecture, IN Protocols, IN procedures, practical Implementation, Video conferencing, Voiceover Frame Relay and ATM networks, ISDN and DSL TP. networks, and IN services.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Understand the origins and concepts of Intelligent Networks (IN).
a.2 Comprehend the IN Conceptual Model
a.3 Explain the IN architecture and its components
a.4 Understand IN protocols and their functions

a.5 Apply IN procedures in service management and implementation
a.6 Implement video conferencing services in IN
a.7 Implement voice services over Frame Relay and ATM networks
a.8 Compare ISDN and DSL technologies in the context of IN
a.9 Analyze and evaluate IN services like prepaid services and toll-free numbers

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1.Design and implement a simple IN service.
b.2.Apply IN protocols to real-world scenarios
b.3.Critically evaluate the efficiency and scalability of IN services

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Work effectively in a team to implement IN solutions.
c.2. Troubleshoot and monitor IN services

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1 Communicate technical solutions effectively
d.2 Demonstrate continuous learning and adaptability in networking

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	Text	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	a1, a2, a3, a4, a5, a6, a7, a8, a9
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	a5, a6
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	a4, a5
A5	The extent to which a computer-based system meets the criteria defined for its current use and future development.	a6, a7
A6	The current and underlying technologies that support computer processing and inter computer communication.	a6, a7

A7	**Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.**	**a8, a9**
A11	**Requirements, practical constraints, and computer-based systems.**	**a5**
A15	**Interpreting and analyzing data qualitatively and/or quantitatively.**	**a8, a9**
A18	**The fundamental topics in Computer Science, including hardware and software architectures, software engineering principles and methodologies, operating systems, compilers, parallel and distributed computing, systems, and software tools.**	**a1, a4**
B1	**Analyze computing problems and provide solutions related to the design and construction of computing systems.**	**b1,b2**
B5	**Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.**	**b3**
B12	**Perform classifications of (data, results, methods, techniques, algorithms. etc.).**	**b2**
C1	**Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.**	**c1**
C2	**Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.**	**c1, c2**
C14	**Specify, design, and implement computer-based systems.**	**c1**
D1	**Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.**	**d1d**
D2	**Demonstrate skills in group working, team management, time management and organizational skills.**	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to Intelligent Networks	5	3	-	2	a1
Week-2	IN Conceptual Model	5	3	-	2	a2
Week-3	IN Architecture	5	3	-	2	a3, b1,
Week-4	IN Protocols (INAP, CCS7, TCAP)	5	3	-	2	a4, b2
Week5	IN Procedures and Practical Implementation	5	3	-	2	a5, b1, c2
Week-6	Video Conferencing over Intelligent Networks	5	3	-	2	a6, b3
Week-7	Voice over Frame Relay and ATM Networks (VoFR, VoATM)	5	3	-	2	a7, b2, c2
Week-8	**Mid term**					
Week-9	Intelligent Network Services (Prepaid, Toll-Free, etc.)	5	3	-	2	a9, b3
Week-10	Service Creation and Management in IN	5	3	-	2	a5, c1
Week-11	Case Studies on IN Services (Prepaid, Toll-Free Numbers, etc.)	5	3	-	2	a9, c1
Week-12	Network Troubleshooting and Monitoring	5	3	-	2	c2
Week-13	Communication and Technical Reporting	5	3	-	2	d1
Week-14	**LAB AND ORAL EXAM**					

6- Teaching and Learning and Assessment methods:

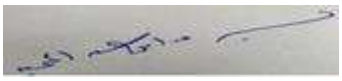
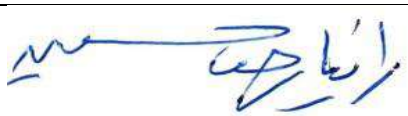
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**10**	**10%**
2	Quiz 2 written (Semester work)	**10**	**10**	**10%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**15**	**15%**
6	Final Oral Exam	**-**	**0**	**0**
7	Assignments / Project	**6, 12**	**5**	**5%**
8	Field training	**-**	**0**	**0**
9	Other (Mention)	**-**	**0**	**0**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Tanenbaum, Andrew S., & Wetherall, David J. Computer Networks, 3rd Edition. Pearson.1996
	Other References	None
	Electronic Sources (Links must be added)	None
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Prof. Dr. Yossria Abo E Naga**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CNE 420

Course Name: Network operating systems

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**				**Academic level at which the course is taught**	Level 4	
Term/ Academic year	**Choose an item.**		2025/2026		**Credit Hours:**	3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	-	**Lab.:** 2	**Total**	5
Pre-Requisite	CNE 411						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	**Dr. Sarah Ahmed Soliman**						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Roles of Network Operating Systems (NOS), NOS for peer-to-peer networks, and NOS for server-based networks. Roles of hardware and software, specialized servers: network/application/mail/and management, designing network layout, standard network topologies, administration and management of networks, multitasking, client/server computing architecture, installing Windows NT NOS server, Server naming information, server responsibilities, configuring the network adapters cards, TCPAP installation, network services sharing printing implementing network database applications. Managing and adding other network services such as proxy and terminal. firewall, nail, SQL, and management. Case Studies: Installing Windows NT server, NT server setup. Sharing Tiles and applications, printing processes, network maintenance and troubleshooting

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Define concepts, principles and theories relating to windows server system administration. a.2 Identify the current and underlying technologies that support domain controller communication.
a.3 Define requirements, practical constraints of administration of windows server-based system.
a.4 Recall economic sides of modern organizations when design and administrate windows based network.
a.5 Describe the principles of Active directory of windows server operating system.
a.6 Recognize a detailed knowledge of the tools and techniques involved in windows-based networking services.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Realize the concepts, principles, theories, and practices behind windows-based system.
b2. Explain the steps to design a group policy object.
b3. Analyze, assess, and modify the performance of Server Virtualization with Hyper-V.
b4. Evaluate and analyze requirements for windows server installation and design a suitable system.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Operate a windows-based system, recognizing its capabilities and limitations.
c2. Troubleshoot a windows-based network problem.
c3. Implement an effective strategic plan to meet the networking and internetworking requirements of an organization.
c4. Communicate effectively with system administrators in terms of identification of network types, operating systems, and data storage areas.
c5. Evaluate the technical performance of windows-based network.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Demonstrate skills in group working, team management, time management and organizational skills.
d2. Show the use of windows-based system administrative tools.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	Text	

A1	**Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.**	**a1, a3, a4**
A6	**The current and underlying technologies that support computer processing and inter computer communication.**	**a2, a6**
A11	**Requirements, practical constraints, and computer-based systems.**	**a3**
A13	**Using of high-level programming languages.**	**a1**
A14	**Demonstrating basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics**	**a3**
A19	**Selecting advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.**	**a5,a6**
B2	**Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.**	**b1**
B11	**Perform comparisons between (algorithms, methods, techniques...etc.).**	**b3, b4**
B15	**Restrict solution methodologies upon their results.**	**b1, b2**
B17	**Identify a range of solutions and critically evaluate and justify proposed design solutions.**	**b4**
C1	**Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.**	**c1,c2**
C13	**Prepare technical reports, and a dissertation, to a professional standard; use IT skills and display mature computer literacy.**	**c5**
C15	**Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.**	**c1,c5**
C17	**Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.**	**c1,c2c**
C18	**Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning.**	**c3,c4**
D2	**Demonstrate skills in group working, team management, time management and organizational skills.**	**d1,d2**
D7	**Show the use of general computing facilities.**	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Deploying and Managing Windows Server	5	3	-	2	a1, a3, b1, b4, b3
Week-2	Introduction to Active Directory Domain Services	5	3	-	2	a2, a3,a4, b3, b4, c1, c2
Week-3	Managing Active Directory Domain Services Objects	5	3	-	2	a5,a6,b1,b2, c1, c2
Week-4	Automating Active Directory Domain Services Administration	5	3	-	2	a5,a6,b1,b2, c1, c2
Week5	Implementing IPv4 / IPv6	5	3	-	2	a5,a6,b1,b2, b5, c1, c2
Week-6	Implementing DHCP / DNS	5	3	-	2	a5,a6,b1,b2, b5, c1, c2, c4
Week-7	Implementing Local Storage	5	3	-	2	a3, a6, b3, c4, c5
Week-8	Midterm Exam					
Week-9	Implementing File and Print Services	5	3	-	2	a3, a6, b3, c4, c5
Week-10	Implementing Group Policy	5	3	-	2	a5, a6, b2, c3, c5, d1,d2
Week-11	Securing Windows Servers Using Group Policy Object	5	3	-	2	a5, a6, b2, c3, c5, d1,d2
Week-12	Implementing Server Virtualization with Hyper-V	5	3	-	2	a5, a6, b2,b3, b4, c3, c5, d1,d2

6- Teaching and Learning and Assessment methods:

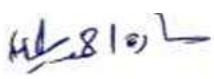
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**10**	**10%**
2	Quiz 2 written (Semester work)	**10**	**10**	**10%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**15**	**15%**
6	Final Oral Exam	**-**	**0**	**0**
7	Assignments / Project	**6, 12**	**5**	**5%**
8	Field training	**-**	**0**	**0**
9	Other (Mention)	**-**	**0**	**0**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Windows 2000 Server Administrator's Guide by Tom Shinder, 2000.
	Other References	None
	Electronic Sources (Links must be added)	None
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Sarah Ahmed Soliman**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CNE 424

Course Name: Switching and Routing Technology

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	2	**Total**	5
Pre-Requisite							

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	**Dr. Mona Mohamed**
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

This course introduces the underlying concepts widely used in switching and routing protocols. Topics included here are routing protocol components and algorithms. In addition, the roles of routing protocol are briefly contrasted with the roles of routed or network protocols. Discussed with emphasis on TCP/IP, IP, IEEE 802 and other standard layering protocols, Detailed topics include: -definition of routing, routing components, path determination, switching. routing algorithm, design goals for switching and routing, algorithm types, static versus dynamic, single path versus multi path, flat versus hierarchical, intra domain versus inter domain, link state distance vector, routing matrices, and network protocols. versus.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Understand the fundamental concepts of routing and switching protocols.
a.2. Describe the roles and structures of TCP/IP and IEEE 802 protocols.
a.3. Differentiate between various routing components and path determination techniques.
a.4. Explain different algorithm types (static, dynamic, single path, multipath). a.5. Recognize different routing domains and protocol types (link state, distance vector).

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1 Analyze the structure of standard protocols and their impact.
b.2 Compare static and dynamic routing algorithms.
b.3 Evaluate the performance of different switching techniques.
b.4 Analyze hierarchical and inter-domain routing scenarios.
b.5 Optimize routing matrices for network efficiency.
b.6 Synthesize solutions from case studies of routing scenarios.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Configure routing protocols and network configurations.
c.2. Implement switching techniques in real-world scenarios.
c.3. Design hierarchical routing systems.
c.4. Troubleshoot issues in routing and switching implementations.
c.5. Apply optimization techniques to routing algorithms.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1 Collaborate in team-based networking projects.
d.2 Present findings and solutions related to routing and switching problems effectively.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	Text	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	a1, a3, a4
A11	Requirements, practical constraints, and computer-based systems.	a3
A16	The principles and techniques of several application areas informed by the research directions of the subject, such as artificial intelligence, natural language processing, data mining, databases, and computer graphics.	a1,a3
A18	The fundamental topics in Computer Science, including hardware and software architectures, software engineering principles and methodologies, operating systems, compilers, parallel and distributed computing, systems, and software tools.	a4,a5
A19	Selecting advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.	a5
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	b1
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	b3, b4
B13	Identify attributes, components, relationships, patterns, main ideas, and errors.	b1,b3
B16	Establish criteria and verify solutions.	b6
B17	Identify a range of solutions and critically evaluate and justify proposed design solutions.	b4
B19	Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.	b5,b6
C6	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	c1,c2
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	c2,cc3
C13	Prepare technical reports, and a dissertation, to a professional standard; use IT skills and display mature computer literacy.	c5

C14	**Specify, design, and implement computer-based systems.**	**c3**
C18	**Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning.**	**c5**
D4	**Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.**	**d1**
D7	**Show the use of general computing facilities.**	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**ILOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to Switching and Routing Protocols	5	3	-	2	**a1, a2,d1**
Week-2	TCP/IP and IEEE 802 Layering Protocols	5	3	-	2	a2,b1,c1
Week-3	Path Determination and Routing Components	5	3	-	2	a2, a3, b2
Week-4	Switching Techniques and Network Performance	5	3	-	2	a3, b3, c2
Week-5	Static vs. Dynamic Routing Algorithms	5	3	-	2	a4, b2, c1
Week-6	Single Path vs. Multipath Routing Algorithms	5	3	-	2	a4, b3, c2
Week-7	Flat vs. Hierarchical Routing	5	3	-	2	a4, b4, c3
Week-8	**Midterm Exam.**					
Week-9	Intra-Domain vs. Inter-Domain Routing	5	3	-	2	a5, b4, c3,d1
Week-10	Link State Protocols	5	3	-	2	a5, b4, c3, d1
Week-11	Distance Vector Protocols	5	3	-	2	a5, b3, c4
Week-12	Routing Matrices and Optimization	5	3	-	2	b5, c5, d2
Week-13	Network Protocols and Their Application	5	3	-	2	a3, b5, c3
Week-14	Practical Exam / Final Revision					

6- Teaching and Learning and Assessment methods:

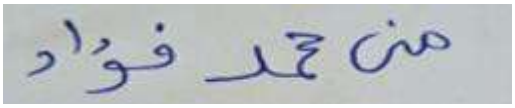
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√									

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**10**	**10%**
2	Quiz 2 written (Semester work)	**10**	**10**	**10%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**15%**
6	Final Oral Exam	**-**	**0**	**0**
7	Assignments / Project	**6, 12**	**10**	**10%**
8	Field training	**-**	**0**	**0**
9	Other (Mention)	**-**	**0**	**0**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Behrouz A. Forouzan, "Data Communications and Networking with TCP/IP Protocol Suite", 1st edition McGraw-Hill, 2001
	Other References	Jim Kurose, Keith Ross, "Computer Networking: A Top-Down Approach", 1st Edition, Pearson, 2000
	Electronic Sources (Links must be added)	None
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Mona Mohamed**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CNE 425

Course Name: Integrated Service Digital Networks

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**				**Academic level at which the course is taught**	Level 4	
Term/ Academic year	**Choose an item.**		2025/2026		**Credit Hours:**	3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	-	**Lab.:** 2	**Total**	5
Pre-Requisite	CSC 322						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	**Prof. Dr. Yossria Abo E Naga**
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Broad-band versus Wideband ISDN networks, How to setup and use the ISDN network and circuits, the ISDN basics and standards the ISDN basic and primary rate interfaces, The ISDN: services, switches, addresses, and identifiers, and channels: Definition and history of ISDN, The benefits of ISDN for data intensive applications, Comparing Wide Area Network service transmission rates, Iowa ISDN works, ISDN deployment a status updates, ISDN data networking applications, Planning and installing ISDN Service, ISDN and power of packet switching. ISDN frame relay and ATM services. ISDN voice data TV and computer terminals.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Understand the fundamentals and history of ISDN.

a2. Compare and contrast broadband and wideband ISDN networks.

a3. Set up and configure ISDN network circuits.
a4. Identify ISDN services, switches, addresses, and identifiers.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Explain the ISDN standards and basic and primary rate interfaces.
b2. Analyze the benefits of ISDN for data-intensive applications.
b3. Discuss the current status and trends in ISDN deployment.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Evaluate Wide Area Network (WAN) service transmission rates.
c2. Implement ISDN data networking applications effectively.
c3. Plan and install ISDN services in various environments.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Explore ISDN's capabilities in packet switching, frame relay, and ATM services.
d2. Integrate ISDN for voice, data, TV, and computer terminal applications.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	Text	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	a1, a2, a3, a4
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	a1, a2
A6	The current and underlying technologies that support computer processing and inter computer communication.	a1, a2
A11	Requirements, practical constraints, and computer-based systems.	a3

B6	Evaluate the results of tests to investigate the functionality of computer systems.	b2
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	b1, b3
B19	Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.	b3
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	c1
C6	Design, implement, maintain, and manage software systems.	c2, c3
C14	Specify, design, and implement computer-based systems.	c2
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	d1, d2
D3	Show the use of information-retrieval.	d2

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs.*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to ISDN	5	3	0	2	all
Week-2	Broadband vs. Wideband ISDN	5	3	0	2	all
Week-3	ISDN Basics and Standards	5	3	0	2	all
Week-4	ISDN Interfaces ISDN Services ISDN Channels	5	3	0	2	all
Week5	Benefits of ISDN for Data-Intensive Applications	5	3	0	2	all
Week-6	Comparing WAN Service Transmission Rates	5	3	0	2	all
Week-7	Understanding How ISDN Works	5	3	0	2	all
Week-8	Midterm Exam.					
Week-9	ISDN Deployment Status Updates	5	3	0	2	all
Week-10	ISDN Data Networking Applications	5	3	0	2	all
Week-11	Planning and Installing ISDN Service	5	3	0	2	all
Week-12	ISDN and the Power of Packet Switching	5	3	0	2	all
Week-13	ISDN Frame Relay and ATM Services	5	3	0	2	all
Week-14	ISDN for Voice, Data, TV, and Computer Terminals	5	3	0	2	all

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√	√	√		√	√					

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	10	10%
2	Quiz 2 written (Semester work)	10	10	10%
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10%
6	Final Oral Exam	-	0	0
7	Assignments / Project	6, 12	10	10%
8	Field training	-	0	0
9	Other (Mention)	-	0	0

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	"ISDN: A Comprehensive Guide" by S. K. Sinha "Integrated Services Digital Network" by William C. Lindsey.
	Other References	None
	Electronic Sources (Links must be added)	ITU-T website for ISDN standards and recommendations Tutorials and webinars on ISDN technology and applications
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Prof. Dr. Yossria Abo E Naga**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 411

Course Name: Information Engineering

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**				**Academic level at which the course is taught**	**Level 4**	
Term/ Academic year	**Oct.**		2025/2026		**Credit Hours:**	**3**	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	-	**Lab.:**	**2**	**Total**	**5**
Pre-Requisite	**INF 211**						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Introduction to information engineering. The CASE tools. The stages of information engineering, information strategy planning (ISP), an overview of information strategy planning, the objective of information strategy planning. information gathering techniques, classes of information. Formulate information needs and performance measures, potential impact of information technology. Define the primary information architecture. Complete the function decomposition. Analyze function dependencies. Map function to organization. Build the entity relationship diagram. Map entity types to information needs. Record usage of entity types by business function, business area analysis (BAA), business system designs (BSD): technical design (TD), construction, transition, and production.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Define information engineering and describe its importance in developing effective information systems.

a2. Identify different CASE tools and their applications in the information engineering process.

a3. Describe the stages of information engineering and their significance in the system development life cycle.

a4. Understand the objectives of information strategy planning and formulate effective ISP processes for organizations

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Articulate information needs and develop performance measures for assessing information system effectiveness.

b2. Analyze the potential impacts of information technology on business processes and organizational effectiveness.

b3. Complete function decomposition and analyze function dependencies within a business context.

b4. Map functions to organizational structures to enhance operational efficiency.

b5. Map entity types to specific information needs and record their usage by business functions.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Conduct business area analysis and understand the key components of business system design.

c2. Develop a primary information architecture that aligns with organizational objectives.

c3. Illustrate technological choices for a GIS project for a given organization.

c4. Use integrated analysis of geospatial and attribute data.

c5. Build entity relationship diagrams to model data requirements effectively.

c6. Create and interpret entity relationship diagrams to model data relationships effectively.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Perform business area analysis to identify key business functions and their information requirements.

d2. apply best practices in business system design, including technical design, construction, transition, and production phases.

d3. Link entity types to specific information needs and document their usage by various business functions.

d4. Evaluate the potential impacts of information technology on business processes and decision-making.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a3, a4**
A12	Essential mathematics relevant to computer science.	**a4**
A13	Using of high-level programming languages.	**a2**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b1**
B4	Analyze, propose and evaluate alternative computer systems and processes taking into account limitations, and quality constraints.	**b2**
B10	Define traditional and nontraditional problems, set goals towards solving them, and. observes results.	**b3**
B15	Restrict solution methodologies upon their results.	**b5**
B17	Identify a range of solutions and critically evaluate and justify proposed design solutions.	**b4**
C4	Apply computing information retrieval skills in computing community environment and industry.	**c1**
C5	Develop a range of fundamental research skills, using online resources, technical repositories and library-based material	**c2**
C8	Handle a mass of diverse data, assess risk and draw conclusions.	**c4**

C11	Perform independent information acquisition and management, using scientific literature and Web sources.	**c3**
C13	Prepare technical reports, and a dissertation, to a professional standard; use IT skills and display mature computer literacy.	**c6**
C15	Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.	**c5, c6**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D3	Show the use of information-retrieval.	**d3**
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	**d2, d4**
D7	Show the use of general computing facilities.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs.*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to Information Engineering	5	**3**	**0**	**2**	all
Week-2	CASE Tools	5	**3**	**0**	**2**	all
Week-3	Stages of Information Engineering	5	**3**	**0**	**2**	all
Week-4	Information Strategy Planning (ISP)	5	**3**	**0**	**2**	all
Week5	Information Gathering Techniques	5	**3**	**0**	**2**	all
Week-6	Formulating Information Needs and Performance Measures	5	**3**	**0**	**2**	all
Week-7	Revision	5	**3**	**0**	**2**	all
Week-8	**Midterm Exam.**					
Week-9	Impact of Information Technology	5	**3**	**0**	**2**	all
Week-10	Defining Primary Information Architecture	5	**3**	**0**	**2**	all
Week-11	Function Decomposition	5	**3**	**0**	**2**	all
Week-12	Mapping Functions to Organization	5	**3**	**0**	**2**	all
Week-13	Building Entity Relationship Diagrams (ERD)	5	**3**	**0**	**2**	all
Week-14	Mapping Entity Types to Information Needs	5	**3**	**0**	**2**	all

6- Teaching and Learning and Assessment methods:

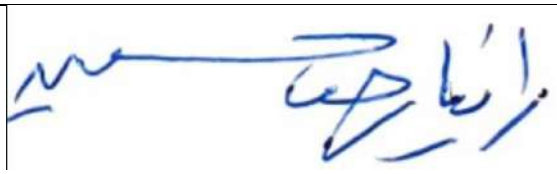
Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√	√	√	√	√	√	√	√	√			

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	5	5%
2	Quiz 2 written (Semester work)	10	5	5%
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10%
6	Final Oral Exam	-	0	0%
7	Assignments / Project	Weekly	20	20 %
8	Field training	-	0	0%
9	Other (Mention)	-	0	0%

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Peter A. Burrough, Rachael A. McDonnell, Christopher D. Lloyd, " Principles of Geographical Information Systems ", Oxford University Press.
	Other References	
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name		**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 420

Course Name: Information security and confidentiality

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**				**Academic level at which the course is taught**	**Level 4**	
Term/ Academic year	Choose an item.		2025/2026		**Credit Hours:**	3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	-	**Lab.:** 2	**Total**	5
Pre-Requisite	**BSC 311**						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator							
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Overview of characteristics of computer-based systems, points of security, and methods of defense. Basic encryption and decryption: Different types of ciphers, characteristics of good ciphers, crypt analysis. Secure encryption systems: Hard problems & complexity. Properties of arithmetic public key systems, signal-key systems, and the data encryption standard (DES) enhance cryptographic security. Security involving programs: Information accesses problems, viruses and worms, control against attack, operating system control, and administrative control. Design of secure operating systems: Models of security, penetration of operating systems, and examples of security in general purpose operating systems. Database security: reliability and integrity, sensitive data. The inference problem, multilevel data security. Personal computer security: Security. measures, protection for files, copy protection. Computer network security and communication security.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1.Describe the basic concepts for Computer-Based Systems and security system.
a2.Explain characteristics that make computer systems vulnerable.

a3.Describe key security principles and common defense techniques.

a4.Explain symmetric/asymmetric encryption techniques and how to evaluate the security of ciphers.

a5. Discuss techniques for securing systems and applications from software threats.

a6. Explain how to secure database information and prevent unauthorized data disclosure.
a7. Summarize methods for securing network traffic and digital communications.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Analyze, compare, and contrast characteristics that impact computer security.

b2.Evaluate different security principles and techniques based on effectiveness and appropriateness for scenarios.

b3. Compare and contrast symmetric and asymmetric encryption algorithms. Analyze strengths and weaknesses of specific ciphers.

b4. Critically examine mathematical problems used in public key cryptography and how they enhance security

b5. Integrate confidentiality, integrity, and access control concepts to secure database applications and prevent inference.

b6.Analyze cryptographic algorithms and ciphers to identify weaknesses that attackers could exploit.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1.Apply techniques for cryptoanalysis to assess the strength of encryption methods.
c2.Discuss hard problems and complexity in cryptographic security.
c3Assess properties of public key systems (e.g., RSA) and symmetric key systems (e.g., DES) to enhance data security.

c4. Develop strategies to control attacks through operating system controls and administrative measures.

c5.Assess reliability and integrity issues related to sensitive data in databases.

c6. Conduct risk assessments to identify vulnerabilities in computer systems and propose mitigation strategies.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Work collaboratively in interdisciplinary teams to design secure systems that integrate various components of computer-based systems.

d2. Effectively communicate technical concepts related to computer systems, encryption, and security.

d3.Adapt to new tools and technologies as they emerge in computer science and information security.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	Text	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	a1, a2, a3, a4, a5, a6, a7
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	a1
A4	Criteria and specifications appropriate to specific problems, and plan strategies for their solution.	a2, a3, a4, a5, a6
A6	The current and underlying technologies that support computer processing and inter-computer	a1, a2, a5, a6, a7

	communication.	
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	**a3, a5**
A9	Professional, moral, and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.	**a3, a5**
A12	Essential mathematics relevant to computer science.	**a4**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1, b3, b5, b6**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b1, b2, b4**
B6	Evaluate the results of tests to investigate the functionality of computer systems.	**b4, b6**
B10	Define traditional and nontraditional problems, set goals towards solving them, and. observes results	**b5**
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	**b1, b3**
B14	Summarize the proposed solutions and their results	**b2**

C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1, c4**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c1, c3**
C3	Deploy the equipment and tools used for the construction, maintenance, and documentation of computer applications.	**c1, c3**
C10	Communicate effectively by oral, written, and visual means.	**c4**
C13	Prepare technical reports, and a dissertation, to a professional standard; use IT skills and display mature computer literacy.	**c4**
C15	Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.	**c2, c3, c5, c6**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills	**d1**
D7	Show the use of general computing facilities.	**d3**

5- Course Schedule:

INF 420- Information security and confidentiality

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to Computer-Based Systems	5	3	**0**	**2**	a1, a2
Week-2	Fundamentals of Encryption and Decryption	5	3	**0**	**2**	a3, a4,a5,b1,b2
Week-3	Secure Encryption Systems	5	3	**0**	**2**	a3, a4,a5,b1,b2,c1
Week-4	Secure Encryption Systems	5	3	**0**	**2**	a3, a4,a5,b1,b2,c1
Week5	Program Security	5	3	**0**	**2**	a5,b4,c1,c2,c3
Week-6	Program Security	5	3	**0**	**2**	a5,b4,c1,c2,c3
Week-7	Secure Operating Systems Design	5	3	**0**	**2**	a5,b4,c1,c2,c4,d1,d2
Week-8	Midterm Exam					
Week-9	Database Security	5	3	**0**	**2**	a6,b5,c5,d1,d2,d3
Week-10	Personal Computer Security	5	3	**0**	**2**	a7,b5,b6,c3,c4,c5,c6,d1,d2,d3
Week-11	Personal Computer Security	5	3	**0**	**2**	a7,b5,b6,c3,c4,c5,c6,d1,d2,d3
Week-12	Network and Communication Security	5	3	**0**	**2**	a7,b5,b6,c3,c4,c5,c6,d1,d2,d3
Week-13	Practical Applications and Case Studies	5	3	**0**	**2**	a7,b5,b6,c3,c4,c5,c6,d1,d2,d3
Week-14	Practical Exam	5	3	**0**	**2**	

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√	√	√	√	√			√	√	√		

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**4**	**5**	**5%**
2	Quiz 2 written (Semester work)	**8**	**5**	**5%**
3	Midterm exam	**7**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam	**-**	**0**	**0%**
7	Assignments / Project	**Weekly**	**20**	**20%**
8	Field training	**-**	**0**	**0%**
9	Other (Mention)	**-**	**0**	**0%**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Computer Security Fundamentals, William Chuck Easttom, 5th Edition (2023).
	Other References	Understanding Cryptography: A Textbook for Students and Practitioners, Christof Paar, Jan Pelzl, and Bart Preneel.
	Electronic Sources (Links must be added)	• IEEE Transactions on Information Forensics and Security-IEEE Xplore • ACM Transactions on Information and System Security (TISSEC)- ACM Digital Library.
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name		**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 428

Course Name: Electronic Commerce

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	2	**Total**	5
Pre-Requisite	INF 211						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Introduction to electronic commerce. Access to electronic commerce services. the roots of Ecommerce, the Internet, the ISP business model, and case studies. Market models and electronic financial markets. Digital storefronts. digital storefronts on the web. search engines for E-commerce, the web as an advertising and marketing channel, how can customers play an active part in the production and design processes? Internet dynamics, customers are targeted differently, interactive web interfaces and intelligent agents evolve to serve needs, integration of E-commerce services, and studies. Secure digital payments: the origin and development of cases, micro-transactions, and case studies.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Define and discuss major concepts, tools, techniques, and methods of electronic commerce, with a focus on the web.

a2. Demonstrate recognition of key factors that influence the e-commerce market.

a3. Describe the relationship between visual communication and e-commerce.

a4. Demonstrate an understanding of business principles related to e-commerce.

a5. Discuss and demonstrate an understanding of the major technologies (Data Mining- KDD) and applications at use in e-commerce.

a6. Understand how payment systems work on the Internet

a7. Discuss and demonstrate an understanding of the major database management systems (Data warehouse) at use in e-commerce.

a8. Describe, compare, and contrast competing technologies and applications.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Describe the different capabilities of the Internet and how each one can be used to redesign retail practices. The technology revolution has provided retailers with tremendous opportunities for increasing the efficiency and effectiveness of doing business. The class will introduce the student to the many ways in which basic retailing functions can be enhanced through effective use of information technology and the Internet.

b2. Describe how the Internet works, what it can and cannot do well, retail site security, etc.

b3. Understand the social impact of e-commerce retailing

b4. Understand basic e-commerce definitions and terminology

b5. Be aware of the Internet history and the physical components making up the Internet

b6. Describe the basic technological components required for implementing e-commerce and egovernment initiatives

b7. Create a simple website that includes dynamically generated web pages and simple forms for capturing data

b8. Understand and have been exposed to basic usability strategies and web site evaluation metrics.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Learn the fundamental technologies behind Java-based e-commerce Web applications.

c2. Apply your retail business and Internet skills by developing a personal e-commerce business.

c3. Plan, design, and prototype a significant e-commerce web project.

c4. practice good design, based on the Sun e-commerce Application Blueprint

c5. build an e-commerce application with Java Web-based technology

c6. partition an application to separate the concerns of presentation, logic, and data

c7. Completely decouple the presentation layer with JSP templates.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Examine the aspects of E-commerce. Topics include internet development, EDS, security, network connectivity and privacy. Basic business practices using electronic commerce will also be covered.

d2. Describe tools, skills, business concepts, and social issues that surround the emergence of electronic commerce.

d3. Develop an understanding of the current practices and opportunities in EDI, electronic publishing, electronic shopping, electronic distribution, and electronic collaboration and database issues.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1, a3, a5, a6**
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a2, a3, a4, a6, a8**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a1, a5, a7, a8**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1, b2, b7**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b1, b4, b5, b8**
B3	Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.	**b3, b6, b7, b8**
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1, c5**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c1, c2, c3, c4, c5, c6, c7**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1, d2, d3**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d1, d2, d3**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Overview of Electronic Commerce	5	3	0	2	a1, a2, b1, c1, d1
Week-2	E-Marketplaces: Structures, Mechanisms, Economics, and Impacts Launching a Successful Online Business and EC Projects	5	3	0	2	a3, b2, c2, d2
Week-3	Amazon.com, Kazaa, and Types of e-Commerce	5	3	0	2	a1, b1, b3, c1, c3, d3
Week-4	Building E-commerce Applications and Infrastructure	5	3	0	2	a2, b2, c1, d1
Week5	Building an e-Commerce website	5	3	0	2	a1, a2, b1, b2, c1, c2, d1
Week-6	Retailing in Electronic Commerce: Products and Services Consumer Behavior, Market Research, and Advertisement	5	3	0	2	a1, b2, c1, d3
Week-7	B2B E-Commerce: Selling and Buying in Private E-Markets	5	3	0	2	a1, a2, b3, c1, d2
Week-8	Midterm Exam.					
Week-9	Mobile Computing and Commerce and Pervasive Computing	5	3	0	2	a1, b1, b3, c2, d3
Week-10	Security and Encryption in web development and commerce	5	3	0	2	a2, b2, b3, c2, c3, d2
Week-11	Electronic Payment Systems	5	3	0	2	a2, a3, b3, c2, c3, d2
Week-12	Dynamic Trading: E-Auctions, Bartering, and Negotiations	5	3	0	2	a1, a3, b1, b3, c2, c3, d1, d3
Week-13	Social Networks and Industry Disruption in the Web 2.0 Environment	5	3	0	2	a1, a2, a6, b1, b4, c1, c5, d2
Week-14	Lab Examination	5	3	0	2	

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√	√	√		√						

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**4**	**10**	**10 %**
2	Quiz 2 written (Semester work)	**10**	**10**	**10 %**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10 %**
6	Final Oral Exam		**0**	
7	Assignments / Project	**12**	**10**	**10 %**
8	Field training		**0**	
9	Other (Mention)		**0**	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**"Digital Marketing for Dummies" by Ryan Deiss and Russ Henneberry**
	Other References	**"E-Commerce: Business, Technology, and Society" by Kenneth C. Laudon and Carol Guercio Traver**
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name		**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 431

Course Name: Data Mining

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**2**	**Tutorial:** -	**Lab.:**	2	**Total**	4
Pre-Requisite							

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

This course will include an overview of the basic concepts of data mining, Association-Rule Mining. Low-Support/High Correlation, Query Flocks. Searching the Web. Web Mining. Clustering, Matching Sequences, and Mining Event Sequences.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Define Modeling and design of data mining.

a.2 Describe data warehouse.

a.3 Describe the principles and techniques of data mining.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Evaluate alternative data mining technique considering limitations, and quality constraints.
b2. Perform comparisons between different types of data mining.
b3. Select the suitable tools, methods, and techniques for pattern mining, establishing criteria, and verify solutions.
b4. Identify a range of classification methods and critically evaluate and justify proposed design solutions.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Justify methodological for a data mining project for a given data type.
c2. Apply the principles of effective data mining to text, graph, and web.
c3. Analyze and documenting the feasibility of various data mining methods and comparing solution options.
c4. Maintaining existing data mining method.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Show the use of information-retrieval using data mining.
d2. Exhibit appropriate numeracy skills in understanding and presenting data involving a quantitative dimension.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1, a3**
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a1**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a2, a3**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1, b4**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b2, b3**

B3	Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.	**b1, b3, b4**
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1**
C3	Deploy the equipment and tools used for the construction, maintenance, and documentation of computer applications.	**c2,c3, c4**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to data mining	4	2	-	2	a1,b1,b2
Week-2	Data warehouse	4	2	-	2	a2,b3
Week-3	Data preprocessing	4	2	-	2	a3,b3,c1,c2
Week-4	Online analytical processing	4	2	-	2	a3,b3,c3,d2
Week5	Pattern mining; concepts and methods	4	2	-	2	a3,b3,c2,d1
Week-6	Classifications; basic concepts.	4	2	-	2	a3,b4,c4
Week-7	Advanced methods for classification	4	2	-	2	a3,b4,c4,d1,d2
Week-8	Midterm Exam.					
Week-9	Cluster analysis	4	2	-	2	a3,b3,c1,c4
Week-10	Advanced methods for Cluster analysis	4	2	-	2	a3,b3,c1,c4,d1,d2
Week-11	Outlier detection	4	2	-	2	b3,b4,c4,d2
Week-12	Mining data stream.	4	2	-	2	b3,b4,c2,c4,d2
Week-13	Mining text, graph, and web data.	4	2	-	2	c2,c3,c4,d1,d2
Week-14	LAB AND ORAL EXAM	4	2	-	2	

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√				√		√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**10**	**10 %**
2	Quiz 2 written (Semester work)	**11**	**0**	**10 %**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10 %**
6	Final Oral Exam		**0**	
7	Assignments / Project	**9**	**10**	**10 %**
8	Field training		**0**	
9	Other (Mention)		**0**	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**Jiawei Han, Jian Pei, Hanghang Tong, " Data Mining: Concepts and Techniques ", 1st edition, Morgan Kaufmann.**
	Other References	
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name		**Dr. Rania Ragab Hussien**
Signature		

Course Code: CNE 421

Course Name: Managing, Operating, and Repairing Networks

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Oct.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	2	**Total**	5
Pre-Requisite	**CNE 411**						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Understanding networks, hardware platform for services and workstations, software platform for NS and clients, typical platform: Windows NT and Novell NetWare, network connection devices, backups and other safety, disaster planning for networks. Network preventive and corrective maintenance, adding network services such as printers, CD ROMS. Modems, routers, wireless networks, and firewall for security. Troubleshooting hardware and software problems: network management and SNMP protocols, locating problems in servers and Workstations, repairing common types of problems. Case Studies: Repairing NT based network: hardware, software, applications, and Network Infrastructure.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Understanding of network infrastructure, including types, protocols, and architecture.
a.2. Explain data flow across networks and the significance of networking protocols (TCP/IP, UDP).
a.3. Identify and configure hardware platforms for services and workstations, particularly **Windows NT** and **Novell NetWare**.
a.4. Understand the role of operating systems in managing network resources.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Use various hardware platforms and their interactions across multiple services and applications.
b.2. Configuring software platforms that support network services and client interactions.
b.3. Demonstrate the ability to configure and manage a wide range of network connection devices and services.
b.4. Utilize tools (like SNMP) for monitoring and managing network performance.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Execute maintenance strategies including backup and disaster recovery planning to ensure business continuity.
c.2. Perform preventive and corrective maintenance on network systems, ensuring reliability and performance.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Develop a comprehensive approach to network security, ensuring multiple layers of protection against threats.
d.2. Acquire advanced troubleshooting skills applicable to a wide range of network environments and situations.
d.3. Apply theoretical knowledge to practical scenarios, addressing real-world networking challenges effectively.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a1**
A6	The current and underlying technologies that support computer processing and inter-computer communication.	**a1**
A11	Requirements, practical constraints, and computer-based systems.	**a1**
B6	Evaluate the results of tests to investigate the functionality of computer systems.	**b2,b3**
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	**b2,b3**
B12	Perform classifications of (data, results, methods, techniques, algorithms. etc.).	**b2,b3**
B19	Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.	**b2,b3**
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1,c2**
C11	Perform independent information acquisition and management, using scientific literature and Web sources.	**c1,c2**
C14	Specify, design, and implement computer-based systems.	**c1,c2**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d2**
D3	Show the use of information-retrieval.	**d3**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Understanding Networks	5	3	0	2	a1
Week-2	Hardware Platforms for Services and Workstations	5	3	0	2	b2
Week-3	Software Platforms for Network Services (NS) and Clients	5	3	0	2	b2
Week-4	Network Connection Devices	5	3	0	2	b3
Week5	Backups and Disaster Recovery Planning	5	3	0	2	c1
Week-6	Network Preventive and Corrective Maintenance	5	3	0	2	c2
Week-7	Adding Network Services	5	3	0	2	d1
Week-8	Midterm Exam.					
Week-9	Modems, Routers, Wireless Networks, and Firewalls for Security	5	3	0	2	d2
Week-10	Troubleshooting Hardware and Software Problems	5	3	0	2	d2,d3
Week-11	Network Management and SNMP Protocols	5	3	0	2	d2,d3
Week-12	Locating and Repairing Problems in Servers and Workstations	5	3	0	2	d2,d3
Week-13	Case Studies: Repairing NT-Based Networks	5	3	0	2	d3
Week-14	Lab Examination	5	3	0	2	

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√	√	√	√					

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	10	10%
2	Quiz 2 written (Semester work)	9	10	10%
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10%
6	Final Oral Exam	-	0	
7	Assignments / Project	weekly	10	10%
8	Field training	-	0	
9	Other (Mention)	-	0	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**"Computer Networking: A Top-Down Approach"** by James Kurose and Keith Ross, 2000
	Other References	NONE
	Electronic Sources (Links must be added)	NONE
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name		**Dr. Rania Ragab Hussien**
Signature		

Course Code: CNE 422

Course Name: Network Security

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Oct.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	**Lab.:**	2	**Total**	5
Pre-Requisite							
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator							
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Understand the Applications of Networks in today S Business Organizations and the Importance of its Security, Identify Network Security threats, identify known Information Network Security techniques, protect Information Network using cryptography, Firewalls, Vulnerability assessment tools, intrusion detection systems, logging and auditing tools, access rights and password crackers, and secured Virtual private networks. and Establishing an Information Network Security Policy sand procedures.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Explain the critical role of network security in modern business organizations and its impact on

operations, compliance, and reputation.
a2. Identify and analyze various types of network security threats, including their potential impact
and attack vectors.
a3. Understand the fundamental applications of networks in enhancing business operations and
communication.
a4. Recognize the critical importance of network security and the implications of security breaches.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Configure firewalls, intrusion detection/prevention systems, and other network security appliances to protect organizational assets.

b2. Conduct security audits and risk assessments to evaluate the effectiveness of implemented security measures and identify areas for improvement.

b3. Demonstrate proficiency in using various security tools for logging, auditing, and monitoring network activities.

Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Evaluate appropriate network security techniques to protect against identified threats.

c2. Apply cryptographic principles and tools to secure data in transit and at rest within a network environment.
c3. Utilize vulnerability assessment tools to identify weaknesses in network infrastructure and applications, and propose remediation strategies.
c4. Implement secure remote access solutions, including Virtual Private Networks (VPNs).

General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Design and enforce effective access control policies, including password management and multi-factor authentication.
d2. Develop comprehensive information network security policies and procedures aligned with business objectives and regulatory requirements.
d3. Create and execute incident response plans to effectively manage and mitigate security breaches.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1,a2,a3,a4**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a1,a2,a3,a4**
A6	The current and underlying technologies that support computer processing and inter-computer communication.	**a3**
A11	Requirements, practical constraints, and computer-based systems.	**a1,a4**
B6	Evaluate the results of tests to investigate the functionality of computer systems.	**b2,b3**
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	**b1,b2**
B19	Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.	**b1,b2**
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1,c4**

C11	Perform independent information acquisition and management, using scientific literature and Web sources.	**c3**
C12	Prepare and present seminars to a professional standard.	**c1,c2**
C14	Specify, design, and implement computer-based systems.	**c1,c2,c4**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d2,d3**
D3	Show the use of information-retrieval.	**d1,d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs.*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to Networking in Business	5	3	0	2	all
Week-2	Importance of Network Security	5	3	0	2	all
Week-3	Identifying Network Security Threats	5	3	0	2	all
Week-4	Information Network Security Techniques	5	3	0	2	all
Week5	Protecting Information Networks	5	3	0	2	all
Week-6	Vulnerability Assessment Tools	5	3	0	2	all
Week-7	Intrusion Detection Systems (IDS)	5	3	0	2	all
Week-8	Midterm Exam.					
Week-9	Logging and Auditing Tools	5	3	0	2	all
Week-10	Access Rights and Password Security	5	3	0	2	all
Week-11	Secured Virtual Private Networks (VPNs)	5	3	0	2	all
Week-12	Establishing an Information Network Security Policy	5	3	0	2	all
Week-13	Establishing an Information Network Security Policy	5	3	0	2	all
Week-14	Lab Examination	5	3	0	2	

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√	√	√	√	√	√	√	√	√		

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	10	10 %
2	Quiz 2 written (Semester work)	9	10	10 %
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10%
6	Final Oral Exam	-	0	
7	Assignments / Project	weekly	10	10 %
8	Field training	-	0	
9	Other (Mention)	-	0	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**"Computer Networking: A Top-Down Approach" by James Kurose and Keith Ross,2000**
	Other References	• "Network Security Essentials: Applications and Standards" by William Stallings • "Network Security: Private Communication in a Public World" by Charlie Kaufman, Radia Perlman, and Mike Speciner • "The Web Application Hacker's Handbook" by Dafydd Stuttard and Marcus Pinto
	Electronic Sources (Links must be added)	None
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name		**Dr. Rania Ragab Hussien**
Signature		

Course Code: CNE 423

Course Name: Satellite Communication Networks

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Oct.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	**Lab.:**	2	**Total**	5
Pre-Requisite	**BSC 311**						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Principles of satellite communications, orbit considerations, frequency consideration, free space lose, antenna gain, atmospheric distortion, noise and rain, block diagram of satellite systems, modulation techniques (analog FM and SSB), access methods (FDMA, TDMA. CDMA), space segments, power supply systems for satellites, orbit control, telemetry and telecom and earth segment, earth station antenna, VSAT systems, applications of satellite communications systems, KU-Band and C-Band systems, Voice and Video systems, planning and design of satellite.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Understand the fundamental principles of satellite communications and their applications in modern technology.

a2. Understand the significance of antenna gain and its role in improving signal quality.
a3. Understand the components and functionalities of satellite systems, including space and earth segments.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Analyze and evaluate different satellite orbits and their implications for communication effectiveness.
b2. Calculate free space loss and assess its impact on satellite communication links.
b3. Analyze the effects of environmental factors on satellite signal transmission and reception.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Evaluate modulation techniques and access methods employed in satellite communications.
c2. Design and interpret block diagrams for satellite communication systems.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Explore the applications of Ku-band and C-band systems in voice and video communication.
d2. Apply principles of planning and designing satellite communication systems.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1,a2,a3**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a1,a2,a3**
A11	Requirements, practical constraints, and computer-based systems.	**a1,a2,a3**
B6	Evaluate the results of tests to investigate the functionality of computer systems.	**b1,b2,b3**
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	**b1,b2,b3**
B19	Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.	**b1,b2,b3**
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1,c2**

C14	Specify, design, and implement computer-based systems.	**c1,c2**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1,d2**
D3	Show the use of information-retrieval.	**d1,d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs.*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to Satellite communications	5	3	0	2	all
Week-2	Orbit Considerations	5	3	0	2	all
Week-3	Frequency Considerations	5	3	0	2	all
Week-4	Free Space Loss, Antenna Gain	5	3	0	2	all
Week5	Atmospheric Distortion Noise and Rain	5	3	0	2	all
Week-6	Block Diagram of Satellite Systems Modulation Techniques	5	3	0	2	all
Week-7	Access Methods Space Segments	5	3	0	2	all
Week-8	Midterm Exam.					
Week-9	Power Supply Systems for Satellites Orbit Control	5	3	0	2	all
Week-10	Telemetry and Telecommand	5	3	0	2	all
Week-11	Earth Segment VSAT Systems	5	3	0	2	all
Week-12	Applications of Satellite Communications Systems Ku-Band and C-Band Systems	5	3	0	2	all
Week-13	Voice and Video Systems	5	3	0	2	all
Week-14	Planning and Design of Satellite Systems	5	3	0	2	

6- Teaching and Learning and Assessment methods:

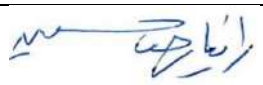
Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√	√	√		√	√	√				

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**10**	**10%**
2	Quiz 2 written (Semester work)	**9**	**10**	**10%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam		**0**	
7	Assignments / Project	**weekly**	**10**	**10%**
8	Field training		**0**	
9	Other (Mention)		**0**	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**"Satellite Communications" by Dennis Roddy**
	Other References	**• "Satellite Communications Systems Engineering" by Wilbur L. Pritchard et al.** **• "Fundamentals of Satellite Communications" by M. Richharias**
	Electronic Sources (Links must be added)	NASA and ESA websites for satellite missions
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name		**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 425

Course Name: Distributed Accounts

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	2	**Total**	5
Pre-Requisite	None						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Introduction to parallel and distributed architectures. Models of computation: SISD, SIMD, MISD, and MIMD Computers. Shared memory SIMD computers. Interconnection network SIMD Computers: Linear array. Two-dimensional array. Tree. Connections, perfect shuffle connection, cube connection. Analyzing algorithms. Some parallel computer algorithms: selection, merging, sorting, and searching. Parallel programming languages. parallel compilers. Parallel operating systems.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Describe the fundamental concepts of parallel and distributed architectures.

a2. Compare and contrast SISD, SIMD, MISD, and MIMD computing models.

a3. Explain the architecture and operational principles of shared memory SIMD computers.
a4. Explain how parallel compilers work and assess their impact on the performance of parallel programs.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Describe the design and challenges of shared memory SIMD computers, including synchronization and communication issues.

b2. Analyze different interconnection network topologies (linear arrays, two-dimensional arrays, trees, perfect shuffle connections, and cube connections) and their impact on performance.

b3. Analyze the efficiency and performance of parallel algorithms.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Implement and evaluate parallel algorithms for selection, merging, sorting, and searching.

c2. Implement parallel algorithms for selection, merging, sorting, and searching.

c3. Demonstrate proficiency in parallel programming languages and apply them to develop parallel applications.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Evaluate the performance and effectiveness of these parallel algorithms.

d2. Describe the features and functions of parallel operating systems, including how they manage processes and resources in a parallel environment.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A4	Criteria and specifications appropriate to specific problems, and plan strategies for their solution.	**a1,a2**
A5	The extent to which a computer-based system meets the criteria defined for its current use and future development.	**a4**
A6	The current and underlying technologies that support computer processing and inter-computer communication.	**a3**

A19	Selecting advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.	**a2,a4**
B3	Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.	**b1**
B5	Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.	**b1,b2**
B15	Restrict solution methodologies upon their results.	**b1, b3**
C7	Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.	**c1,c3**
C11	Perform independent information acquisition and management, using scientific literature and Web sources.	**c2**
C14	Specify, design, and implement computer-based systems.	**c1,c2**
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry,	**d1, d2**

	or the academic community.	
D7	Show the use of general computing facilities.	**d1**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to Parallel and Distributed Architectures	5	3	0	2	a1
Week-2	Models of Computation	5	3	0	2	a2, a3
Week-3	Shared Memory SIMD Computers	5	3	0	2	b1
Week-4	Interconnection Networks in SIMD Computers	5	3	0	2	b2
Week5	Analyzing Algorithms	5	3	0	2	b3,c1
Week-6	Parallel Computer Algorithms	5	3	0	2	c2,d1
Week-7	Parallel Programming Languages	5	3	0	2	c3
Week-8	Midterm Exam.					
Week-9	Parallel Programming Languages	5	3	0	2	c3
Week-10	Parallel compilers	5	3	0	2	a4
Week-11	Parallel compilers	5	3	0	2	a4
Week-12	Parallel Operating Systems	5	3	0	2	d2
Week-13	Parallel Operating Systems	5	3	0	2	d2
Week-14	LAB EXAM	5	3	0	2	

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√	√	√		√						

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	6	10	10%
2	Quiz 2 written (Semester work)	13	10	10%
3	Midterm exam	7	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10%
6	Final Oral Exam		0	
7	Assignments / Project	weekly	10	10%
8	Field training		0	
9	Other (Mention)		0	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	The main (essential) reference	• "Parallel Computer Architecture: A Hardware/Software Approach" by David Culler and Jaswinder Pal Singh.
	Other References	• Introduction to Parallel Computing" by Ananth Grama, Anshul Gupta, George Karypis, and Vipin Kumar. • "Parallel Programming in C with MPI and OpenMP" by Michael J. Quinn.
	Electronic Sources (Links must be added)	None

	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name		**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 410

Course Name: Database Management System (2)

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Oct.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	2	**Total**	5
Pre-Requisite	**INF 311**						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

An overview of database management, what are a database system, operational data, data independence, relational systems, and others. Architecture of a database system: The three levels of architecture, the external level, the conceptual level, the internal level, mappings, the database administrator, the database management system. The internal level: Database accesses, page sets, and files, indexing. Hashing, pointer chains, comparison techniques. An overview of DB2: Relational databases, the SQL language, major system components. Relational algebra: A syntax for relational algebra, traditional set operations, special relational operations. Relational calculus: Tuple oriented relational calculus, relational calculus vs. relational algebra, domain-oriented relational calculus, query-by-examples. Data definition: Base tables, indexing. Data Manipulation: Simple queries, and join queries, built-in functions, advanced features, update operations. The system catalog: Querying the catalog, updating the catalog. View: View definition. DML operations and view. Logical data independence, advantages of views. Embedded SQL: Operations not

involving cursors, operations involving cursors, a comprehensive example, and dynamic SQL Database environment: Recovery and concurrence security and integrity, database product family.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Define concepts, principles of database and database management system.

a2. Describe conceptual modelling and database design.

a3. Describe tools, practices and methodologies used in entity relationship (ER) and enhanced entity relationship (EER) data modelling, and evaluation of database systems.

a4. Discuss principals of generating tests which investigate the functionality of database management systems.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Explain concurrency control technique.

b2. Express Database recovery technique and security.

b3. Restrict methodologies of data mining upon their results.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Implement comprehensive computing knowledge and skills to build simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.

c2. Implement database recovery technique and security.

c3. Design, implement, maintain, and manage a DBMS

c4. Use data warehouse to handle mass of diverse data.

c5. Use appropriate programming languages, web-based systems and tools to build a solid DBMS.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Show the use of information retrieval in database system.

d2. Demonstrate appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension of database.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a2**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems	**a3**
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	**a4**
B13	Identify attributes, components, relationships, patterns, main ideas, and errors	**b3**
B14	Summarize the proposed solutions and their results.	**b2**
B15	Restrict solution methodologies upon their results.	**b1**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c1**
C4	Apply computing information retrieval skills in computing community environment and industry.	**c4**
C6	Design, implement, maintain, and manage software systems.	**c3**
C8	Handle a mass of diverse data, assess risk and draw conclusions.	**c4**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c5, c2**
D3	Show the use of information-retrieval.	**d1**
D5	Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs.*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction, Concepts and Definitions.	5	3	0	2	a1,a2, b1, c1,d1
Week-2	Normalization Techniques.	5	3	0	2	a3, b2, c2, d2
Week-3	Data Mining, Data warehouse, and Relational algebra.	5	3	0	2	a1, b1, b3, c1, c3, d3
Week-4	Conceptual modelling and database design.	5	3	0	2	a2, b2, c1, d1
Week5	Entity relationship (ER) and Enhanced Entity Relationship (ERR) data modelling.	5	3	0	2	a1, a2, b1, b2, c1, c2, d1
Week-6	Database programming techniques.	5	3	0	2	a1, b2, c1, d3
Week-7	Transaction processing; concepts and theory.	5	3	0	2	a1, a2, b3, c1, d2
Week-8	Midterm Exam.					
Week-9	Concurrency Control technique.	5	3	0	2	a1, b1, b3, c2, d3
Week-10	Database recovery technique and security.	5	3	0	2	a2, b2, b3, c2, c3, d2
Week-11	Distributed database and client server architecture.	5	3	0	2	a2, a3, b3, c2, c3, d2
Week-12	Enhanced database models; multimedia database.	5	3	0	2	a1, a3, b1, b3, c2, c3, d1, d3

6- Teaching and Learning and Assessment methods:

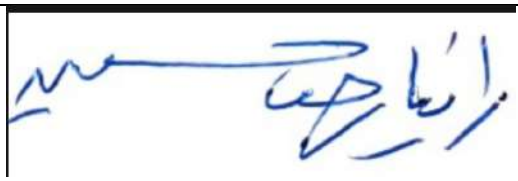
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√	√	√	√	√	√	√	√				

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	5	5%
2	Quiz 2 written (Semester work)	10	5	5%
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10%
6	Final Oral Exam	-	0	0
7	Assignments / Project	Weekly	20	20%
8	Field training	-	0	0
9	Other (Mention)	-	0	0

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Advanced Database Systems for Integration of Media and Web-Based Data" by Ahmed K. Elmagarmid and Marek Rusinkiewicz.
	Other References	
	Electronic Sources (Links must be added)	Operational Database Management Systems: • http://www.odbms.org/
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name		**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 422

Course Name: Distributed database system

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**				**Academic level at which the course is taught**	**Level 4**	
Term/ Academic year	Choose an item.		2025/2026		**Credit Hours:**	3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	-	**Lab.:** 2	**Total**	5
Pre-Requisite							

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Levels of distribution transparency. Distributed database design. Mapping user's transactions to distributed level. Optimization of accesses strategies. The management of distributed transactions. Distributed concurrence control, recovery in distributed database. Distributed database administration. Commercial systems. The SDD system.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

INF 422- Distributed database system

On successful completion of the courses, students should be able to:

a1. Understand the levels of distribution transparency and how they influence the design and implementation of distributed databases.

a2. Describe the principles of distributed database design, including mapping users' transactions to distributed levels and optimizing access strategies.

a3. Explain the management of distributed transactions, covering key concepts such as distributed concurrency control, recovery mechanisms, and database administration.

a4. Identify commercial systems used in distributed databases, and discuss the architecture and functionality of the SDD system.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Analyze and evaluate levels of distribution transparency to identify the most suitable approach for optimizing distributed database performance.

b2. Develop strategies for mapping user transactions to appropriate distributed levels, ensuring efficient data access and management.

b3. Critically assess various methods of distributed concurrency control and transaction management, proposing solutions to potential issues in recovery and administration.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Design and implement distributed database systems, applying appropriate levels of distribution transparency and optimizing access strategies for efficient performance.

c2. Manage distributed transactions effectively, ensuring reliable concurrency control, data recovery, and system administration across distributed environments

c3. Utilize commercial distributed database systems and tools, including proficiency in working with the SDD system, to solve real-world distributed data management challenges.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Collaborate effectively in teams to design and manage distributed database systems, promoting clear communication and coordination in distributed environments.

d2. Demonstrate problem-solving abilities by applying critical thinking to identify, evaluate, and resolve challenges in distributed database design, transaction management, and system recovery.

d3. Adapt to new commercial systems and technologies in distributed database management, showcasing flexibility and a willingness to learn and integrate new tools into practice.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A2	Modeling and design of computer-based systems bearing in mind the trade-offs..	a1, a2
A4	Criteria and specifications appropriate to specific problems, and plan strategies for their solution.	a2, a3
A8	Management and economics principles relevant to computing and information disciplines.	a4
A19	The current and underlying technologies that support computer processing and inter-computer communication.	a3, a4
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	b1, b3
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline..	b2
B15	Restrict solution methodologies upon their results.	b2, b3
C4	Apply computing information retrieval skills in computing community environment and industry.	c1
C8	Handle a mass of diverse data, assess risk and draw conclusions.	c2
C14	Specify, design, and implement computer-based systems.	c1, c3
D3	Show the use of information-retrieval.	d1, d2
D6	Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.	d1, d2
D8	Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.	d3

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs.*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to Distributed Systems and Databases	5	**3**	**0**	**2**	a1, a2, b1, c1, d1
Week-2	Levels of Distribution Transparency	5	3	0	2	a3, b2, c2, d2
Week-3	Distributed Database Design I: Fundamental Concepts	5	3	0	2	a1, b1, b3, c1, c3, d3
Week-4	Distributed Database Design II: Allocation and Replication	5	3	0	2	a2, b2, c1, d1
Week5	Mapping User Transactions to Distributed Levels	5	3	0	2	a1, a2, b1, b2, c1, c2, d1
Week-6	Optimization of Access Strategies I: Query Processing	5	3	0	2	a1, b2, c1, d3
Week-7	Optimization of Access Strategies II: Cost-Based Optimization	5	3	0	2	a1, a2, b3, c1, d2
Week-8	Midterm Exam.					
Week-9	Distributed Transactions I: Introduction and Management	5	3	0	2	a1, b1, b3, c2, d3
Week-10	Distributed Transactions II: Two-Phase Commit and Coordination	5	3	0	2	a2, b2, b3, c2, c3, d2
Week-11	Distributed Concurrency Control Recovery in Distributed Databases	5	3	0	2	a2, a3, b3, c2, c3, d2
Week-12	Distributed Database Administration Commercial Distributed Database Systems	5	3	0	2	a1, a3, b1, b3, c2, c3, d1, d3
Week-13	SDD System and Future Trends in Distributed Databases	5	3	0	2	a1, a2, a6, b1, b4, c1, c5, d2
Week-14	Lab Examination	5	3	0	2	

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√	√	√	√	√	√	√	√				

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**5**	**5%**
2	Quiz 2 written (Semester work)	**10**	**5**	**5%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam	**-**	**0**	**0%**
7	Assignments / Project	**Weekly**	**20**	**20%**
8	Field training	**-**	**0**	**0%**
9	Other (Mention)	**-**	**0**	**0%**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	M. Tamer Özsu and Patrick Valduriez, Principles of Distributed Database Systems, 1st Edition, Springer, 1999.
	Other References	• Distributed Databases: Principles and Systems" by Stefano Ceri and Giuseppe Pelagatti 1st Edition, 1984 • Andrew S. Tanenbaum and Maarten Van Steen, Distributed Systems: Principles and Paradigms, 1st Edition, Pearson. • Hector Garcia-Molina, Jeffrey D. Ullman, and Jennifer Widom, Database Systems: The Complete Book, 1st Edition, Pearson.
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name		**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 425

Course Name: Geographical Information Systems

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		**Level 4**	
Term/ Academic year	**Oct.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	2	**Total**	5
Pre-Requisite	**INF 211**						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Relevant GIS technologies, evaluation of GIS technology. GIS applications, representation of geographic data, and relationships of graphic and non-graphic data. Data: data types, data collection, postcode-based data, data from surveys, customer lists, data from remote sensing. the data collection, transformation, data input, vector digitizing, verification, and attribute data input. raster dan input, data input transformation. Graphic dela storage, data quality plans metric features, topographic features, cadastral features, Parcel identification, and area boundary features. Components of GIS: hardware, software, configurations, and data communications. GIS design philosophy: CHS implementation methodologies, hypermedia, and GIS. towards a socioeconomic GIS.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Define GIS concepts and fundamentals of geospatial data topology.
a2. Describe GIS applications and Geospatial Data Structure.
a3. Describe the core of Spatial Analysis functions.
a4. Define GIS and Geospatial data classification.
a5. Describe the types of Spatial Modeling for both vector and raster data.
a6. Describe the types and alternatives of GIS architectures, and their differences in terms of their implications for the organizational support needed.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Explain the concepts, principles, and practices behind GIS.
b2. Express data classification using reasoned arguments for presentation of GIS.
b3. Express comparisons between spatial Models.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Apply GIS skills in computing community environment and industry.
c2. Use a mass of geospatial data.
c3. Illustrate technological choices for an GIS project for a given organization.
c4. Use integrated analysis of geospatial and attribute data.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Show the use of information-retrieval.
d2. Show the use of general GIS facilities

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1, a4,**
A4	Criteria and specifications appropriate to specific problems, and plan strategies for their solution.	**a2, a6**
A12	Essential mathematics relevant to computer science.	**a5**
A13	Using of high-level programming languages.	**a2**
A17	Showing a critical understanding of the principles of artificial intelligence, image, and pattern recognition.	**a2, a3**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline	**b1, b2, b3**
B5	Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.	**b1, b2, b3**
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	**b1, b3**
C4	Apply computing information retrieval skills in computing community environment and industry	**C1,c2**
C8	Handle a mass of diverse data, assess risk and draw conclusions.	**c1, c2, c4**
C11	Perform independent information acquisition and management, using scientific literature and Web sources	**c2, c4**
C18	Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning.	**c1, c3**
D3	Show the use of information-retrieval.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs.*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to GIS.	5	**3**	**0**	**2**	all
Week-2	GIS applications.	5	**3**	**0**	**2**	all
Week-3	Geospatial Data Structure	5	**3**	**0**	**2**	all
Week-4	Fundamentals of the Geospatial Data Topology	5	**3**	**0**	**2**	all
Week5	Geospatial data classification	5	**3**	**0**	**2**	all
Week-6	Visualization and Query of Geospatial data	5	**3**	**0**	**2**	all
Week-7	Revision	5	**3**	**0**	**2**	all
Week-8	**Midterm Exam.**					
Week-9	Spatial Analysis functions	5	**3**	**0**	**2**	all
Week-10	Integrated Analysis of Geospatial and Attribute Data	5	**3**	**0**	**2**	all
Week-11	Spatial Modeling for Vector data	5	**3**	**0**	**2**	all
Week-12	Spatial Modeling for Raster data	5	**3**	**0**	**2**	all
Week-13	GIS Pilot Case Study	5	**3**	**0**	**2**	all
Week-14	Lab exam	5	**3**	**0**	**2**	

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√	√	√	√	√	√	√	√				

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**5**	**5%**
2	Quiz 2 written (Semester work)	**11**	**5**	**5%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam	**-**	**0**	**0%**
7	Assignments / Project	**Weekly**	**20**	**20%**
8	Field training	**-**	**0**	**0%**
9	Other (Mention)	**-**	**0**	**0%**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Peter A. Burrough, Rachael A. McDonnell, Christopher D. Lloyd, " Principles of Geographical Information Systems ", Oxford University Press.
	Other References	
	Electronic Sources (Links must be added)	http://www.esri.com/what-is-gis
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name		**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 426

Course Name: Office Automation Systems

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		**Level 4**	
Term/ Academic year	Choose an item.		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	2	**Total**	5
Pre-Requisite	**INF 211**						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Fundamental concepts, objective of office automation system (OAS), definition of office automation system, impetus for the automated office, planning for automated office, implementing the automated office-word processing, data storage in the automated office. Computer-based communication systems, electronic mail in automated office. voice mail, telephone, facsimile, Tele-conferencing, personal computing. Micrographics. Communications networks in the automated office, problems of automating the office. The relationship of the automated office to other CBIS. People in the automating office.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Define office automation and its objectives.
a.2 Identify the key drivers and benefits of office automation.
a.3 Understand the relationship between OAS and other computer-based information systems.
a.4 Recognize the impact of automation on organizational culture and employee roles.
a.5 Identify potential challenges and resistance to change.
a.6 Understand the role of communication networks in the automated office.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Explain the concept of the automated office.

b2. Evaluate different office automation technologies and select appropriate solutions.

b3. Discover the use of micrographics for document management.

b4. Compare between OAS and other computer-based information systems.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Develop a comprehensive office automation plan.

c2. Use data storage techniques for efficient information management.

c3. Apply micrographics for document storage and retrieval.

c4. Employ electronic mail, voice mail, and teleconferencing for remote collaboration.

c5. Develop strategies to mitigate resistance and foster user adoption.

c6. Implement network technologies to connect devices and share resources.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Show the use of information-retrieval.

d2. Manage an appropriate mix of tools and aids in preparing and presenting reports.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	a1
A6	The current and underlying technologies that support computer processing and inter-computer communication.	a4, a5, a6
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	a1, a3
A13	Using of high-level programming languages.	**a3**
A16	The principles and techniques of several application areas informed by the research directions of the subject, such as artificial intelligence, natural language processing, data mining, databases, and computer graphics.	a2
A18	The fundamental topics in Computer Science, including hardware and software architectures, software engineering principles and methodologies, operating systems, compilers, parallel and distributed computing, systems, and software tools.	a3, a6
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	b1, b2
B13	Identify attributes, components, relationships, patterns, main ideas, and errors	b3, b4
B14	Summarize the proposed solutions and their results.	b2, b4
B15	Restrict solution methodologies upon their results.	b2
C5	Develop a range of fundamental research skills, using online resources, technical repositories and library-based material	c5
C8	Handle a mass of diverse data, assess risk and draw conclusions	c2
C13	Prepare technical reports, and a dissertation, to a professional standard; use IT skills and display mature computer literacy.	c5
C14	Specify, design, and implement computer-based systems.	c1, c6

C16	Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.	c2, c4
D3	Show the use of information-retrieval.	d1
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	d2

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week - 1	Introduction to Office Automation Systems	5	3	-	2	a1,b1
Week-2	Benefits and limitations of OAS	5	3	-	2	a2
Week-3	Planning for an Automated Office	5	3	-	2	a4,a5,b2,c1
Week-4	Planning for an Automated Office	5	3	-	2	a4,a5,b2,c1
Week5	Organizational and human factors	5	3	-	2	a4,a5,b2
Week-6	Data storage techniques: file management, databases	5	3	-	2	c2,c4,d1
Week-7	Data storage techniques: file management, databases	5	3	-	2	c2,c4,d1
Week-8	Midterm Exam					
Week-9	Computer-Based Communication Systems	5	3	-	2	a6,c4,c5,d2
Week-10	Micrographics and Imaging Systems	5	3	-	2	b3,c3,d1
Week-11	Communication Networks in the Automated Office	5	3	-	2	a6,c4,c6,d2
Week-12	Problems and Challenges of Office Automation	5	3	-	2	a5,c5
Week-13	The Automated Office and Other CBIS	5	3	-	2	a3,b4,d1,d2
Week-14	LAB AND ORAL EXAM	5	3	-	2	

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√	√	√	√				√				

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**5**	**5%**
2	Quiz 2 written (Semester work)	**10**	**5**	**5%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam	**-**	**0**	**0%**
7	Assignments / Project	**Weekly**	**20**	**20%**
8	Field training	**-**	**0**	**0%**
9	Other (Mention)	**-**	**0**	**0%**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Kenniston W. Lord, Office Automation Systems Handbook, CRC Press.
	Other References	
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name		**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 427

Course Name: Management Information Systems

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		**Level 4**	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	2	**Total**	5
Pre-Requisite	INF 211						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

An overview of Management Information Systems (MIS), objective of management information systems (MIS), management information systems (MIS) and CBIS family. Stand-alone management information systems. A management information system model. Management information systems in a total CBIS environment. Database management system, the management dimension, the managerial activities, and the management control. Management information characteristics: The management dimension in processing, functional applications of management information systems (MIS) The production subsystem, the marketing subsystem, the finance subsystem, the personnel subsystem, the relationship of the MIS to other CBIS

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Define MIS and the important organizational resources within it.

a2. Identify the components of a Management Information System model and its relationship to other CBIS subsystems, including production, marketing, finance, and personnel.

a3. Understand the characteristics of management information, particularly how it supports managerial activities, decision-making, and control processes across different functional areas.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

1. Analyze the objectives and components of Management Information Systems (MIS) and their integration within a Computer-Based Information System (CBIS) environment.

b2.Critically assess the effectiveness of stand-alone and integrated MIS models in supporting managerial activities and decision-making processes across various functional areas such as production, marketing, finance, and personnel.

b3. Apply problem-solving skills to identify and resolve issues related to the management and control of information systems, using database management systems and MIS characteristics to improve organizational performance.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Develop management information systems (MIS) models that align with organizational objectives and integrate with existing Computer-Based Information Systems (CBIS).

c2.Utilize database management systems to effectively manage, store, and retrieve organizational data, ensuring accurate support for managerial decision-making and control.

c3. Apply MIS tools and techniques to design, evaluate, and improve functional subsystems such as production, marketing, finance, and personnel within a total CBIS environment.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Communicate effectively complex ideas and solutions related to Management Information Systems (MIS) and their impact on organizational functions, both orally and in writing.

d2. Work collaboratively in teams to design and implement MIS solutions that integrate with various functional areas, promoting efficient decision-making and problem-solving.

d3. Demonstrate the ability to manage time and resources efficiently, especially when working on MIS-related projects, ensuring timely completion and adherence to organizational objectives.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1, a2, a3**
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a2, a3**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a2, a3**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1, b3**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b1, b2**
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c2**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d2,d3**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to MIS and CBIS	5	3	0	2	a1, a2
Week-2	Objectives of MIS and the CBIS Family	5	3	0	2	a1, a2, b1
Week-3	Stand-alone Management Information Systems	5	3	0	2	a1, b1, b2,
Week-4	MIS Models	5	3	0	2	a2, b2, c1
Week5	MIS in a Total CBIS Environment	5	3	0	2	a2, b1, c1
Week-6	Database Management Systems	5	3	0	2	a3, b3, c2
Week-7	The Management Dimension in MIS	5	3	0	2	a3,b2
Week-8	Midterm Exam.					
Week-9	Functional Applications of MIS: The Production Subsystem	5	3	0	2	b2, c3,d1
Week-10	Functional Applications of MIS: The Marketing Subsystem	5	3	0	2	a3, b3, c2, c3, d2
Week-11	Functional Applications of MIS: The Finance Subsystem	5	3	0	2	b3, c2, c3, d2
Week-12	Functional Applications of MIS: The Personnel Subsystem	5	3	0	2	b3, c2, c3, d2,d3
Week-13	Relationship of MIS to Other CBIS Subsystems	5	3	0	2	C 3,d2
Week-14	Lab Examination	5	3	0	2	

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√	√	√			√					

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	15	15 %
2	Quiz 2 written (Semester work)		0	
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10 %
6	Final Oral Exam		0	
7	Assignments / Project	10	15	15 %
8	Field training		0	
9	Other (Mention)		0	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**"E-Commerce: Business, Technology, and Society" by Kenneth C. Laudon and Carol Guercio Traver**
	Other References	**Kenneth Laudon and Jane Laudon , Management Information,Systems: Managing the Digital Firm, 3rd Edition, Pearson.**
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name		**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 432

Course Name: Project Management

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**				**Academic level at which the course is taught**	Level 4	
Term/ Academic year	**Choose an item.**		2025/2026		**Credit Hours:**	3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	-	**Lab.:** 2	**Total**	5
Pre-Requisite	INF 211						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Fundamentals of project management. Project life cycle as defined by the Global. PM processfrom selection and initiation, through planning, implementation, and control to termination and close out. Principles and techniques of project management in realistic situations that interweave technical, economic, and human resources issues. Case studies and practical exercises are included.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Understand the fundamental concepts and terminology of project management.

a.2. Explain the phases of the project life cycle and their significance in managing

projects.
a.3. Analyze project selection methods and their impact on organizational strategy.
a.4. Evaluate the effectiveness of different planning and monitoring techniques in project
a.1. management.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1 Apply project management tools to real-world scenarios.
b.2 Demonstrate the ability to manage human resources and team dynamics in a project setting.
b.3 Assess financial management principles in project budgeting and control.
b.4 Analyze case studies to identify best practices and lessons learned in project management.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Solve practical problems encountered in project management.
c.2. Collaborate effectively in group settings to execute project tasks.
c.3. Present findings and project outcomes clearly and professionally.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1 Recognize the ethical implications of project management decisions.
d.2 Develop a critical understanding of the impact of project management on society and the environment.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1, a2, a3, a4**
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a2, a3, a4**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1, b4**

B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b1, b2, b3**
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c2, c3**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to Project Management	5	3	-	2	a1
Week-2	Project Life Cycle	5	3	-	2	a2
Week-3	Project Selection and Initiation	5	3	-	2	a3
Week-4	**Project Planning**	5	3	-	2	a4
Week5	Implementation Strategies	5	3	-	2	b1
Week-6	Monitoring and Control	5	3	-	2	b2
Week-7	Human Resource Management in Projects	5	3	-	2	b2
Week-8	Midterm Exam.					
Week-9	Financial Management in Projects	5	3	-	2	b4
Week-10	Quality Management in Projects	5	3	-	2	c1
Week-11	Project Closure and Evaluation	5	3	-	2	c2
Week-12	Case Studies in Project Management	5	3	-	2	c3
Week-13	Practical Exercises and Group Projects	5	3	-	2	d1, d2
Week-14	Practical Exam / Final Revision	5	3	-	2	

6- Teaching and Learning and Assessment methods:

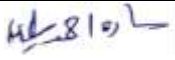
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√		√	√				√				

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	15	15 %
2	Quiz 2 written (Semester work)		0	
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10 %
6	Final Oral Exam		0	
7	Assignments / Project	12	15	15 %
8	Field training		0	
9	Other (Mention)		0	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**"Project Management for the Unofficial Project Manager" by Kory Kogon, Suzette Blakemore, and James Wood.**
	Other References	**• "Fundamentals of Project Management" by Joseph Heagney. • "A Guide to the Project Management Body of Knowledge (PMBOK® Guide)" by Project Management Institute.**
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Sara Ahmed Soliman	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 428

Course Name: Internet and Intranet Programming

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**				**Academic level at which the course is taught**	**Level 4**	
Term/ Academic year	**Choose an item.**		2025/2026		**Credit Hours:**	3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	-	**Lab.:** 2	**Total**	5
Pre-Requisite	None						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	**Dr/Sarah Ahmed Soliman**						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Learn how to build HTML and JAVA SCRIPT pages. An understanding of HTML. and java script, tags will be given as well as the usage of web editors. The usage of graphic utility will be also given to help customizing stand still images, what the internet is all about, what is services and tools are available on the network and how to use either Netscape Navigator or Microsoft Internet Explorer to access and search the World Wide Web, E-mail and news group, The topics is: Have an idea about the concepts of the internet and Intranet, Have a basic idea about Internet tools, Know about Web Surfing Concepts, Define Web Sites- URLs and all the web Terminology, Know how to mark favorite web sites for later visits. Use Netscape Navigator. Use Microsoft Internet Explorer, Setup send and receive Internet mail & news using both Netscape and Internet explorer, know how to search the Interior with search tips methods and sites. Be able to understand the basic HTML and java script tags, know how to embed images in HTMI. and JavaScript pages. Know how to incorporate pages with frames. The usage of Netscape Golf Web Page editor. The usage of Microsoft front page Web page Editor, The usage of paint Shop Pro Graphic Utility.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Understand the basic concepts of HTML and JavaScript.
a.2. Recognize different web editors and their functionalities.
a.3. Identify graphic utilities for image customization.

a.4. Describe Internet and Intranet concepts and available services..

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1 Analyze and compare different web browsers and editors.

b.2 Apply search techniques to find information online.

b.3 Evaluate the use of images and frames in web pages.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Create and customize web pages using HTML and JavaScript.

c.2. Use web editors to design and develop web content.

c.3. Set up email and participate in newsgroups.

c.4. Embed images and use frames effectively in web design.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1 Work collaboratively on web development projects.

d.2 Present and share web pages created using learned skills

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a2**
A4	Criteria and specifications appropriate to specific problems, and plan strategies for their solution.	**a1**
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	**a1**
A9	Professional, moral, and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.	**a3,a4**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	b1
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b2**
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	**b1,b3**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c1**
C6	Design, implement, maintain, and manage software systems.	**c2**

C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c3**
C11	Perform independent information acquisition and management, using scientific literature and Web sources.	**C4**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d1**
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to HTML and JavaScript	5	3	0	2	a1,a2,a3,a4,c1
Week-2	Understanding HTML Tags	5	3	0	2	a1,a2,a3,a4,c1
Week-3	Introduction to JavaScript	5	3	0	2	a1,a2,a3,a4
Week-4	Web Editors and Their Usage	5	3	0	2	a1,a2,a3,a4
Week5	Graphic Utilities for Customization	5	3	0	2	a1,a2,a3,a4,c1,c4
Week-6	Concepts of the Internet and Intranet	5	3	0	2	a1,a2,a3,a4
Week-7	Web Browsing Concepts	5	3	0	2	b1,b2,b3
Week-8	Midterm Exam.					
Week-9	Email and News Groups	5	3	0	2	b1,b2,b3
Week-10	Searching the Internet	5	3	0	2	b1,b2,b3
Week-11	HTML Image Embedding	5	3	0	2	b1,b2,b3,c1,c2,c3,c4
Week-12	Incorporating Frames in Web Pages	5	3	0	2	b1,b2,b3, c1,c2,c3,c4
Week-13	Final Project: Building a Web Page	5	3	0	2	c1,c2,c3,c4, d1,d2
Week-14	Final Revision					

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√				√									

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**4**	**15**	**15%**
2	Quiz 2 written (Semester work)		**0**	**0**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15&16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10 %**
6	Final Oral Exam		**0**	**0**
7	Assignments / Project	**weekly**	**15**	**15 %**
8	Field training		**0**	**0**
9	Other (Mention)		**0**	**0**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	• Terry Felke-Morris "Web Development & Design Foundations with HTML5" 10th edition, 2021
	Other References	• JavaScript from Beginner to Professional" by David Chappell, 2021.
	Electronic Sources (Links must be added)	W3Schools Online Web Tutorials Learn to Code - for Free | Codecademy
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr/Sarah Ahmed Soliman**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 434

Course Name: Microprocessor- Based Systems

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		**Level 4**	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	2	**Total**	5
Pre-Requisite	BSC 215						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator							
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Introduction to microprocessor, microprocessor architecture: the MPU, memory, input/output. bus structure. comparison of typical microprocessors, complete microprocessor instruction sets, microprocessor system bus. The 8086 microprocessors: clock circuitry address bus. data bus, and control bus connections, reset, interrupts, direct memory access, microprocessor testing and logic analyzer. Memory interface: Memory devices, timing consideration, address decoding, static and dynamic memory systems, interrupt processed I/O, microprocessor-based communication, direct memory access. Application examples.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Understand the fundamental concepts of microprocessors and their architecture.
a2. Describe the components and operation of a microprocessor system.
a3. Compare and contrast different types of microprocessors and their instruction sets.
a4. Understand direct memory access (DMA) and its applications.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Analyze the architecture and functionality of the 8086 microprocessors.

b2. Explain memory interfacing and timing considerations.

b3. Interface memory and I/O devices with microprocessors.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Explore interrupt processing and I/O communication.

c2. Conduct basic testing and debugging of microprocessor systems using logic analyzers.

c3. Develop microprocessor-based communication systems

c4. Design and implement microprocessor-based systems

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Apply microprocessor concepts to real-world applications and projects.

d2. Implement interrupt driven I/O and direct memory access in microprocessor systems

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	Text	
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	a1
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	a2,a4
A10	Current developments in computing and information research.	a3,a4
A19	Selecting advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.	a1,a3
B5	Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.	b1
B6	Evaluate the results of tests to investigate the functionality of computer systems.	b2,b3
B18	Solve computer science problems with pressing commercial or industrial constraints.	b3
C2	Communicate effectively by oral, written, and visual means.	c1,c3
C3	Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.	c2
C10	Demonstrate skills in group working, team management, time management and organizational skills.	c3

C17	Show the use of general computing facilities.	**c4**
D2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**d1**
D7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			**ILOs Covered by Course**
			Lec.	**Tut.**	**Lab.**	
Week -1	Introduction to Microprocessors	5	3	0	2	ALL
Week-2	Microprocessor Architecture	5	3	0	2	ALL
Week-3	Comparison of Typical Microprocessors	5	3	0	2	ALL
Week-4	Microprocessor Instruction Sets	5	3	0	2	ALL
Week5	Microprocessor System Bus	5	3	0	2	ALL
Week-6	The 8086 Microprocessor	5	3	0	2	ALL
Week-7	Microprocessor Testing and Logic Analyzers	5	3	0	2	ALL
Week-8	Midterm Exam.					
Week-9	Memory Interface	5	3	0	2	ALL
Week-10	Microprocessor-Based Communication	5	3	0	2	ALL
Week-11	Direct Memory Access (DMA)	5	3	0	2	ALL
Week-12	Direct Memory Access (DMA)	5	3	0	2	ALL
Week-13	Application Examples	5	3	0	2	ALL
Week-14	Lab exam	5	3	0	2	

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√	√	√		√						

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**4**	**15**	**15%**
2	Quiz 2 written (Semester work)		**0**	**0**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15&16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10 %**
6	Final Oral Exam		**0**	**0**
7	Assignments / Project	**weekly**	**15**	**15 %**
8	Field training		**0**	**0**
9	Other (Mention)		**0**	**0**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	• "Microprocessor Architecture, Programming, and Applications with the 8085" by Ramesh S. Gaonkar
	Other References	"Microprocessors and Microcontrollers: Architecture, Programming, and Interfacing" by N. Senthil Kumar
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name		**Dr. Rania Ragab Hussien**
Signature		

Course Code: CNE 410.

Course Name: Local Area Networks (LANs).

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**				**Academic level at which the course is taught**	Level 4	
Term/ Academic year	**Choose an item.**		2025/2026		**Credit Hours:**	3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**		**Lab.:** 1	**Total**	4
Pre-Requisite							

Academic standards	**NARS 2010**
Bylaw Approval	٢٠٠١
Course Coordinator	**Dr. Rania Ragab Hussien**
Course Specification Approval	**Department Council**
Course Specification Approval Date	٢٠/٨/٢٠٢٥

2. Course Overview:

LAN Basis concepts characteristics, LAN Protocol and Open Systems Interconnection layers, LAN media Access methods, LAN transmission techniques, LAN standard topologies, LAN devices, Active/Passive Hubs and stackable hubs, Bridges, Routers. Gateways Repeal and Half Repeaters, Ethernet LAN technology. Case studies: Building peer to peer a Server based LAN using NT network operating System.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Understand fundamental LAN concepts and characteristics.

a.2 Describe LAN protocols and OSI layer mapping.

a.3 Explain LAN media access methods (e.g., CSMA/CD).

a.4 Understand LAN transmission techniques (broadcast, multicast).

a.5 Differentiate between LAN topologies (bus, star, ring).

a.6 Identify and explain LAN devices (hubs, routers, repeaters, etc.).

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1.Analyze the role of OSI layers in LAN protocols.
b.2.Evaluate the performance of Ethernet LAN technology.
b.3.Analyze the differences between peer-to-peer and server-based LANs.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1 Identify and describe LAN types for organizational use.
c.2 Apply CSMA/CD in Ethernet LAN configurations.
c.3 Implement LAN transmission techniques.
c.4 Design and implement LAN topologies based on use cases.
c.5 Configure LAN devices (hubs, routers, bridges).
c.6 Configure Ethernet technology in LANs for optimal performance

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1 Demonstrating skills in group working, team management, time management and organizational skills in configuration of network devices.
d.2 Show the use of information-retrieval in the field of computer network.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications	a1, a2, a3, a4
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems	a5, a6
A6	The current and underlying technologies that support computer processing and inter-computer communication	a1, a2, a3
A11	Requirements, practical constraints, and computer-based systems	a4, a5, a6
B1	B1: Analyze computing problems and provide solutions related to the design and construction of computing systems	b1, b2, b3
B11	B11: Perform comparisons between (algorithms, methods, techniques…etc.)	b2, b3
C1	C1: Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations	c1, c2, c3
C14	Specify, design, and implement computer-based systems	c4, c5, c6
D2	Demonstrate skills in group working, team management, time management and organizational skills	d1

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	LAN Basics and Characteristics	4	3	-	1	a1, c1
Week-2	LAN Protocols and OSI Layers	4	3	-	1	a2, b1
Week-3	LAN Media Access Methods	4	3	-	1	a3, c2
Week-4	LAN Transmission Techniques	4	3	-	1	a4, c3
Week5	LAN Standard Topologies	4	3	-	1	a5, c4
Week-6	LAN Devices: Hubs, Bridges, Routers, Gateways, Repeaters	4	3	-	1	a6, c5
Week-7	LAN Devices: Routers, Gateways,	4	3	-	1	a6, c5
Week-8	Midterm Exam					
Week-9	Ethernet LAN Technology	4	3	-	1	b2, c6
Week-10	Building a Peer-to-Peer network	4	3	-	1	b3, d1, d2
Week-11	Build Server-Based LAN (NT Network OS)	4	3	-	1	b3, d1, d2
Week-12	Active/Passive Hubs and Stackable Hubs I	4	3	-	1	b3,c1, c2, d1, d2
Week-13	Active/Passive Hubs and Stackable Hubs II	4	3	-	1	b3,c1, c2, d1, d2
Week-14	LAB AND ORAL EXAM					

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√		√	√			√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**5**	**5%**
2	Quiz 2 written (Semester work)	**11**	**10**	**10%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**15**	**15%**
6	Final Oral Exam	___	**0**	**0**
7	Assignments / Project	**Every Week**	**10**	**10%**
8	Field training	___	**0**	**0**
9	Other (Mention)	___	**0**	**0**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Jim Kurose, Keith Ross, "Computer Networking: A Top-Down Approach", 8 Edition, Pearson, 2021
	Other References	• E. Angel, "Interactive Computer Graphics: A Top-Down Approach With OpenGL", 3rd Edn, Pearson, 2003. • Mason Woo, Jackie Neider, & Tom Davis, "OpenGL Programming Guide: The Official Guide to Learning OpenGL, Version 1.1", Addison-Wesley, 1997. • "CCNA-200-301-Official-Cert-Guide - volume 1 and 2", WENDELL ODOM, 2020, ISBN-10: 0-13-579273-8, Published by: Cisco Press
	Electronic Sources (Links must be added)	https://www.networkcomputing.com
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Rania Ragab Hussien**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CNE 411.

Course Name: Networks communications protocol.

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**				**Academic level at which the course is taught**	Level 4	
Term/ Academic year	**Choose an item.**		2025/2026		**Credit Hours:**	3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**		**Lab.:** 2	**Total**	5
Pre-Requisite	CSC 322						

Academic standards	**NARS 2010**
Bylaw Approval	٢٠٠١
Course Coordinator	Dr. Shaimaa Abdallah
Course Specification Approval	**Department Council**
Course Specification Approval Date	٢٠/٨/٢٠٢٥

2. Course Overview:

Circuit, Message, and Packet Switching networks, Packet structure and functions, the main functions of communication protocols, protocols in layered structure, network media and services, packet switching. frame relay and ATM. Common protocols: TCP/IP, Net BEUL, X.25, IPX/SPX, and OSI protocol suite, implementing and removing protocols, computer interconnections devices. Case Studies: X.25 Permanent. and Switched Virtual Circuits using the Egyptian packet Switching Network(EGYPTNET).

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Understand different network switching mechanisms (circuit, message, packet).
a2. Comprehend the structure and functions of packets.
a3. Explain the main functions of communication protocols.
a4. Understand network media and services.
a5. Explain key networking protocols (TCP/IP, NetBEUI, X.25, IPX/SPX, OSI).
a6. Understand Frame Relay and ATM networks.
a7. Appreciate case studies like X.25 and EGYPTNET.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1 Compare and contrast switching techniques.
b.2 Design network architectures implementing switching techniques.
b.3 Critically analyze communication protocols.
b.4 Solve network design and troubleshooting problems.
b.5 Analyze real-world network case studies.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1 Configure network devices (routers, switches).
c.2 Implement and remove protocols in network devices.
c.3 Monitor and troubleshoot networks.
c.4 Manage layered protocol structures.
c.5 Analyze different communication protocol implementations.
c.6 Configure Frame Relay and ATM networks.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1 Communicate technical information clearly.
d.2 Collaborate effectively in network design and troubleshooting teams.
d.3 Monitor and manage protocol configurations in real-world environments.
d.4 Apply critical thinking to decision-making in networking contexts.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications	a1, a2, a3, a4, a5, a6, a7
A6	The current and underlying technologies that support computer processing and inter-computer communication	a1, a3, a5, a6
A11	Requirements, practical constraints, and computer-based systems	a4, a5, a7
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems	b1, b2, b3, b4, b5
B11	Perform comparisons between (algorithms, methods, techniques…etc.)	b1, b2, b3
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations	c1, c2, c3, c4, c5, c6
C14	Specify, design, and implement computer-based systems	c1, c2, c3, c6
D1	Demonstrate the ability to make use of a range of learning resources	d1, d4
D2	Demonstrate skills in group working, team management, time management and organizational skills	d2, d3

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to Switching Networks - Circuit Switching	5	3	-	2	a1, a6, b1
Week-2	Message Switching: Packet Switching:	5	3	-	2	a1, a6, b1
Week-3	Packet Structure and Functions Components of a Packet: Packet Functions:	5	3	-	2	a2, b2, c3
Week-4	Communication Protocols - Main Functions - Layered Protocol Architectures:	5	3	-	2	a3, a5, b3, c4, c5
Week5	Network Media and Services	5	3	-	2	a4, a7, b4
Week-6	Packet Switching Techniques 1. Frame Relay	5	3	-	2	a6, c3, c6
Week-7	Asynchronous Transfer Mode (ATM)	5	3	-	2	a6, c3, c6
Week-8	Mid term					
Week-9	Common Communication Protocols TCP/IP (Transmission Control Protocol/Internet Protocol)	5	3	-	2	a5, b3, c5
Week-10	NetBEUI (NetBIOS Extended User Interface): X.25 Protocol	5	3	-	2	a5, b3, c5
Week-11	Protocol Implementation and Management	5	3	-	2	c1, c2, d1, d2, d3
Week-12	Case Studies:X.25 Permanent and Switched Virtual Circuits:	5	3	-	2	a6, a7, b5, c3, d4
Week-13	EGYPTNET (Egyptian Packet Switching Network):	5	3	-	2	a6, a7, b5, c3, d4
Week-14	LAB AND ORAL EXAM					

6- Teaching and Learning and Assessment methods:

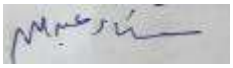
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√				√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	10	10%
2	Quiz 2 written (Semester work)	11	10	10%
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10%
6	Final Oral Exam	_____	0	0
7	Assignments / Project	Every Week	10	10%
8	Field training		0	0
9	Other (Mention)		0	0

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Jim Kurose, Keith Ross, "Computer Networking: A Top-Down Approach", 1st Edition, Pearson, 2000
	Other References	_____
	Electronic Sources (Links must be added)	_____
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Shaimaa Abdallah	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CNE 412.

Course Name: Wide Area Network Technology.

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**4**	**Tutorial:**	**Lab.:**	2	**Total**	6
Pre-Requisite	CSC 322						

Academic standards	**NARS 2010**
Bylaw Approval	٢٠٠١
Course Coordinator	Dr. Mona Mohamed Fouad منى محمد فؤاد
Course Specification Approval	**Department Council**
Course Specification Approval Date	٢٠/٨/٢٠٢٥

2. Course Overview:

Physical and Logical connections to point and multipoint lines, interfaces, modems, multiplexers, and protocols. Circuit switching, message switching, packet switching networks. WAN virtual circuits (permanent and switched). WAN dial up services, WAN devices: switches, routers, gateways, access servers, modems, CSU/DSU, multiplexers, terminals, servers' workstations, and client- servers computing. Data- communications applications: file transfers, mail, and terminal emulation, network filing Systems, and remote job entry. ISO-OSI layered structure, X.25 networks operations and services.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Understand the differences between point-to-point and multipoint connections.
a.2 Understand the functions of modems and multiplexers in WAN communication.
a.3 Describe the role of key WAN communication protocols (e.g., TCP/IP, Frame Relay, PPP).
a.4 Compare circuit switching, message switching, and packet switching networks.
a.5 Explain the role of Permanent Virtual Circuits (PVCs) and Switched Virtual Circuits (SVCs) in WANs.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Analyze scenarios to apply Time-Division and Frequency-Division Multiplexing.
b2. Evaluate the efficiency of packet switching in real-world applications.
b3. Assess the differences between PSTN-based and ISDN-based dial-up services.
b4. Select appropriate WAN devices based on network requirements.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Configure physical and logical connections in networking devices.
c2. Set up a basic TDM multiplexer in a network.
c3. Implement and troubleshoot WAN communication protocols.
c4. Configure and manage PVCs and SVCs in WAN devices.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Communicate effectively when troubleshooting WAN dial-up service issues and in setting up WAN devices.
d2. Document network setups and data communication solutions clearly for technical reporting.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications	a1, a2, a3, a4, a5
A6	The current and underlying technologies that support computer processing and inter-computer communication	a1, a2, a3, a4, a5
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems	b1, b2, b3, b4
B11	Perform comparisons between (algorithms, methods, techniques…etc.)	b1, b2, b3, b4
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations	c1, c2, c3, c4
C14	Specify, design, and implement computer-based systems	c1, c2, c3, c4
D5	Communicate effectively by oral, written and visual means	d1
D6	Demonstrate effective information-retrieval skills	d2

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week No.	Topic	Total Hours	Contact hrs (Lec.)	Contact hrs (Tut.)	Contact hrs (Lab.)	ILOs Covered by Course
Week-1	Physical and Logical Connections	5	3	-	2	a1, c1
Week-2	Modems and Multiplexers	5	3	-	2	a2, b1, c2
Week-3	Communication Protocols	5	3	-	2	a3, c3
Week-4	Switching Networks (Circuit, Message, Packet Switching)	5	3	-	2	a4, b2
Week-5	Permanent Virtual Circuits (PVCs)	5	3	-	2	a5, c4
Week-6	Switched Virtual Circuits (SVCs)	5	3	-	2	a5, c4
Week-7	WAN Dial-up Services					
Week-8	Midterm Exam					
Week-9	WAN Devices	5	3	-	2	b4, d2
Week-10	CSU/DSU (Channel Service Unit/Data Service Unit)	5	3	-	2	b4, d2
Week-11	Data Communication Applications	5	3	-	2	b4, d3
Week-12	ISO-OSI Layered Structure	5	3	-	2	b4
Week-13	X.25 Network Operations and Services	5	3	-	2	a4, c4
Week-14	LAB AND ORAL EXAM					

6- Teaching and Learning and Assessment methods:

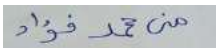
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	5	5%
2	Quiz 2 written (Semester work)	10	5	5%
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	15	15%
6	Final Oral Exam	14	5	5%
7	Assignments / Project	All Week	10	10%
8	Field training	0	0	0
9	Other (Mention)	0	0	0

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Stallings, W. (1991). Data and computer communications (3rd ed.). Pearson.
	Other References	Kurose, J. F., & Ross, K. W. (2000). Computer networking: A top-down approach (1st ed.). Pearson.
	Electronic Sources (Links must be added)	_____
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Mona Mohamed Fouad**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: BSC 110

Course Name: Mathematics I

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**		**Level 1**
Term/ Academic year	**Choose an item.**		2025/2026		**Credit Hours:**		3
Contact Hours	**Lecture:**	**3**	**Tutorial:**	2	**Lab.:**	--	**Total** 5
Pre-Requisite	**None**						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	Dr. Mohamed Abozeid						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Pre-calculus review. Real-valued function. The continuity and differentiability of a real function. Techniques of differentiation. Derivatives of the trigonometric functions. Implicit differentiation. Linear approximations and differentials. Applications of the derivatives. Extrem of functions, optimization problems, velocity, and acceleration. Integrals. Indefinite integrals, change of variables, definite integrals, the fundamental theorem of calculus, numerical integration. Applications of definite integrals: Areas, solids of revolution, arc, length, and surfaces of revolution, work, moments, and centers of mass. Transcendental functions: Derivatives of inverse function, natural logarithm function, exponential functions, inverse trigonometric functions, hyperbolic and inverse hyperbolic functions.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Understand the essentials of Algebra and function.

a.2. Recognize concepts of transcendental functions.

a.3. Knowledge of Limits and Continuity.

a.4. Demonstrate basic Knowledge derivatives and derivatives applications.

a.5. Show critical understanding of inverse and hyperbolic inverse trigonometric functions.
a.6. Know and understand basic concepts of Integrals.

b. Intellectual skills:

On successful completion of the courses, students should be able to:
b.1.Use the appropriate methods for solving the different types of problems.
b.2.Analyze mathematical systems and proofs
b.3.Determine the domain and the range of functions

c. Professional and practical skills:

On successful completion of the courses, students should be able to:
c.1. Employ gained skills in mathematics to create algorithms.
c2. Test the appropriate methods for evaluating differentiations and integrations.

d. General and transferable skills:

On successful completion of the courses, students should be able to:
d.1.Work effectively with other.
d.2.Demonstrate ability to think critically.
d.3.Present enormous confidence to the students in the computer and the results they give.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes.

Program ILOs		Course ILOs
Code	**Text**	
A14	Demonstrating basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics.	a1,a2,a3,a4,a5,a6
A12	Essential mathematics relevant to computer science.	
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	b1,b2,b3
B12	Perform classifications of (data, results, methods, techniques, algorithms. etc.).	
C11	Perform independent information acquisition and management, using scientific literature and Web sources.	c1,c2
C15	Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.	
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	d1,d2,d3
D2	Demonstrate skills in group working, team management, time management and organizational skills.	
D3	Show the use of information-retrieval.	

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week 1	Properties of inequalities and properties of absolute values	5	3	2	0	a1,b3,c1,d1
Week 2	Intervals and distance formula.	5	3	2	0	a1,b3,c1,d1
Week 3	Transcendental functions	5	3	2	0	a2,b1,c1,d1
Week 4	Exponential and Trigonometric Logarithms functions	5	3	2	0	a2,b1,c1,d1
Week 5	Limits	5	3	2	0	a3,b1,c1,d2
Week 6	Continuity	5	3	2	0	a3,b1,c1,d2
Week 7	Rivision	5	3	2	0	a1,a2,a3,b1,b2,c1,d2
Week 8	Midterm Exam					
Week 9	Derivatives	5	3	2	0	a4,b2,c2,d2
Week 10	Continuity	5	3	2	0	a4,a5,b2,c2,d2
Week 11	Derivatives, Higher Derivatives, Derivative of the Trigonometric.	5	3	2	0	a4,b2,c2,d2
Week 12	Applications of the Derivative	5	3	2	0	a4,a5,b2,c2,d2
Week 13	Inverse and hyperbolic inverse trigonometric functions	5	3	2	0	a4,b2,c2,d2
Week 14	Integral and integrals applications	5	3	2	0	a6,b2,c2,d3

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√			√	√	√		√	√	√			√	√

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**4**	**10**	**10%**
2	Quiz 2 written (Semester work)	**10**	**10**	**10%**
3	Midterm exam	**7**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**40**	**40 %**
5	Final Practical Exam	**--**	**0**	**0%**
6	Final Oral Exam	**--**	**0**	**0%**
7	Assignments / Project	**Weekly**	**10**	**10%**
8	Field training	**--**	**0**	**0%**
9	Other (Mention)	**--**	**0**	**0%**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**James Stewart, "Calculus", 8th Edition, 2015.**
	Other References	**H. Anton, I. Bivens and S. Davis, *"Calculus"*, 10th Edition, 2012.**
	Electronic Sources (Links must be added)	**https://pdfcoffee.com/calculus-8th-pdf-free.html chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://3lihanda m69.wordpress.com/wp-content/uploads/2018/10/calculus-10th-edition-anton.pdf**
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Mohamed Abozeid**	**Dr. Rania Ragab Hussien**
Signature		

Higher Technological Institute (HTI)-10th of Ramadan City
Computer Science Department

Course Specification

Course Code BSC 112

Course Name: Introduction to Computer Graphics

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		Level 1	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		2	
Contact Hours	**Lecture:**	**2**	**Tutorial:** -	**Lab.:**		**Total**	4
Pre-Requisite							

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	**Dr. Rania Ragab Hussien**
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Principles of preparing electronic drawings Methods of drawing by computer Types of drawing Packages- AUTOCAD and its uses-- ORCAD and its uses -- Design and drawing of printed circuits by computers various exercises.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Define the fundamental concepts of the Computer Graphics systems.

a.2. Illustrate the principles of mathematics for computer graphics.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1.Develop basic drawing problem using famous graphics systems
b.2.Design and implement using graphical representation
b.3.Handle implementation problems

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1- Suggest the most moderate distribution to model a specific real problem.

c2- Create physical model using differential equations. c3- Show mathematical thinking for students to be self-independent in problem solving

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1- Deal with standard 3d drawing tools
d2- Writing a simple code for some elementary examples.
d3- Deal the graphical packages.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1, a2**
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	**a2**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1,b2,b3**
B8	Familiar with the professional, legal, moral, and ethical issues relevant to the computing industry.	**b3**
B9	Evaluate research papers in a range of knowledge areas	**b1,b2**
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c2,c3**
C7	Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.	**c1,c2,c3**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1,d2,d3**
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	**d1,d2,d3**
D7	Show the use of general computing facilities.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to computer language, flowcharts. Some examples.	4	2	-	2	a1,b2
Week-2	Basics of forms and controls. Working with forms. Working with properties of form. Creating Buttons. Working with properties of Buttons.	4	2	-	2	a1,a2,b1
Week-3	Displaying data with the Message Box. Displaying data with print statement. Inserting data with control (text box). Inserting data with Input Box.	4	2	-	2	a1,a2,c1
Week-4	Creating Applications with Multiple Forms. Displaying forms in a programming. Switching among forms.	4	2	-	2	b1,c1,c2
Week5	Variables: Integer, long, single, double, and string variables. Input / Output statements: Input Box. Message Box.	4	2	-	2	a2, b2,b3, c1
Week-6	Joint Probability Distribution of Two Random Variables	4	2	-	2	b2, c1
Week-7	Loops: For Next loop	4	2	-	2	b3, c1,c2
Week-8	Midterm Exam.					
Week-9	The while wend loop. The do while loop	4	2	-	2	b3, d2
Week-10	Decisions: The if statement. The if – else statement. The select statemen	4	2	-	2	b3,c2, d2
Week-11	Matrices: Inserting an array. Inserting Matrices. How to print arrays. How to print matrices. Some examples on arrays and matrices.	4	2	-	2	b3,c2, d1,d2
Week-12	How to print matrices. Some examples on arrays and matrices	4	2	-	2	c2,c3,d1, d2,d3
Week-13	Methods: What do methods do? Calling a method. Some examples on methods.	4	2	-	2	c2,c3,d1, d2,d3
Week-14	Lab exam	4	2	-	2	b3, d2

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√		√		√			√				

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**3**	**10**	**10%**
2	Quiz 2 written (Semester work)	**10**	**10**	**10%**
3	Midterm exam	**7**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam		**0**	
7	Assignments / Project	**weekly**	**10**	**10%**
8	Field training		**0**	
9	Other (Mention)		**0**	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	1. Visual Basic 6. Desktop Applications, Study Guide.
	Other References	1. Mastering, Visual Basic.
	Electronic Sources (Links must be added)	1. Help on Visual Studio 6.0
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Rania Ragab Hussien**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: BSC 114

Course Name: English Language (1)

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**		LEVEL 1	
Term/ Academic year	**Oct.**		2025/2026		**Credit Hours:**		1	
Contact Hours	**Lecture:**	**2**	**Tutorial:**	-	**Lab.:**	-	**Total**	2
Pre-Requisite								

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Mai M. Abouzaid
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

This course enables learners to develop the ability to communicate clearly, accurately and effectively, using a wide range of vocabulary, and the correct grammatical rules, in addition to spelling and punctuation rules to develop their personal style and their awareness of using English language. Learners are also encouraged to read widely, both for their own knowledge and to further their masterfulness of the ways in which English can be used.

3- Intended Learning Outcomes (ILOs)

a. Knowledge and understanding:

On successful completion of the course, students should be able to:

a.1. Motivate student to have a mix of skills in English Language.
a.2. Understand spoken English at a conversational pace on familiar topics.
a.3. Write clear and concise paragraphs and short essays.

b. Intellectual skills:

On successful completion of the course, students should be able to:

b.1. Analyze a variety of texts, including news articles, emails, and short stories.
b.2. Express ideas with fluency and confidence in speaking and writing English.
b.3. Clarify concepts giving examples.

c. Professional and practical skills:

On successful completion of the course, students should be able to:

c.1. Prepare presentations and speeches with confidence.
c.2. Generate ideas using English language correctly.
c.3. Develop content and post it online.

d. General and transferable skills:

On successful completion of the course, students should be able to:

d.1. Communicate and participate professionally.
d.2. Exhibit awareness of team-work dynamics
d.3. Show ability to work effectively on multi-disciplinary systems and integration of different fields of knowledge.
d.4. Demonstrate 21st century skills.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a2**
A4	Criteria and specifications appropriate to specific problems, and plan strategies for their solution.	**a3**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b2**
B5	Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.	**b3**
C10	Communicate effectively by oral, written, and visual means.	**c1**
C11	Perform independent information acquisition and management, using scientific literature and Web sources.	**c2**
C12	Prepare and present seminars to a professional standard.	**c3**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d2**
D6	Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.	**d3**
D7	Show the use of general computing facilities.	**d4**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Unit 1: Please call me Chuck	2	2	-	-	a1.a3.b3
Week-2	Unit 2: How do you spend your day?	2	2	-	-	a1.a3.c2
Week-3	Unit 3: How must is it ? spending habits , shopping and prices clothing and personal item , colors and materials	2	2	-	-	a1.b2.c2
Week-4	Unit 4: Do you like jazz? Music movies , TV programs entertainers , invitations and excuses ,dates and times	2	2	-	-	a3.b3.d4
Week5	Unit 5: Tell me about your family. families and family life	2	2	-	-	a3.b3.d2
Week-6	Unit 6: How often do you exercise? sports and exercise	2	2	-	-	a1.a3.b2.c2.d2
Week-7	Unite 7: We had a great time. Free time & weekend activities	2	2	-	-	a1.a3.b2.c2.
Week-8	Midterm Exam.					
Week-9	Unit 8: How do you like the neighborhood ?-stores and places in a city , neighbors , houses and apartments	2	2	-	-	c1.c2.d4
Week-10	Supplementary Material and Quiz	2	2	-	-	c2.c3.d2.d4
Week-11	Supplementary Material and Quiz	2	2	-	-	a1.a3.b2.c2.d4
Week-12	Presentations	2	2	-	-	c1.c2.d1.d4
Week-13	Revision	2	2	-	-	a1.a2.b1.b2.d4
Week-14	Revision and Quiz	2	2	-	-	a1.a2.b1.b2.d4

6- Teaching and Learning and Assessment methods:

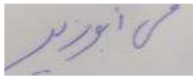
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√		√				√	√			√					√

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**14**	**10**	**10 %**
2	Quiz 2 written (Semester work)	**-**	**-**	**-**
3	Midterm exam	**7**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**40**	**40 %**
5	Final Practical Exam	**-**	**-**	**-**
6	Final Oral Exam	**-**	**-**	**-**
7	Assignments / Project	**-**	**-**	**-**
8	Field training	**-**	**-**	**-**
9	Other (Mention) “Class work for lecture “	**Weekly**	**20**	**20%**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Available Presentation (handed to students' part by part). "English 1"; HTI; Available Hard copy.
	Other References	• Interchange 3rd edition, Cambridge University Press, 2019. • Interchange Workbook 3rd edition, Cambridge University Press, 2019. • English Grammar in Use. Cambridge University Press, 2020. • English Vocabulary in Use. Cambridge University Press, 2021.
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Mai M. Abouzaid	**Dr. Rania Ragab Hussien**
Signature		

Course Code: BSC 123

Course Name: English Language (2)

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		LEVEL 1	
Term/ Academic year	**Oct.**		2025/2026	**Credit Hours:**		1	
Contact Hours	**Lecture:**	**2**	**Tutorial:** -	**Lab.:**	-	**Total**	2
Pre-Requisite	BSC 114						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Mai M. Abouzaid
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

This course enables learners to develop the ability to communicate clearly, accurately and effectively, using a wide range of vocabulary, and the correct grammatical rules, in addition to spelling and punctuation rules to develop their personal style and their awareness of using English language. Learners are also encouraged to read widely, both for their own knowledge and to further their masterfulness of the ways in which English can be used.

3- Intended Learning Outcomes (ILOs)

a. Knowledge and understanding:

On successful completion of the course, students should be able to:

a.1. Motivate student to have a mix of skills in English Language.

a.2. Understand spoken English at a conversational pace on familiar topics.

a.3. Participate in conversations and discussions on a range of everyday topics.
a.4. Write clear and concise paragraphs and short essays.

b. Intellectual skills:

On successful completion of the course, students should be able to:

b.1. Analyze a variety of texts, including news articles, emails, and short stories.
b.2. Express ideas with fluency and confidence in speaking and writing English.
b.3. Clarify concepts giving examples.

c. Professional and practical skills:

On successful completion of the course, students should be able to:

c.1. Prepare presentations and speeches with confidence.
c.2. Generate ideas using English language correctly.
c.3. Develop content and post it online.

d. General and transferable skills:

On successful completion of the course, students should be able to:

d.1. Communicate and participate professionally.
d.2. Exhibit awareness of team-work dynamics
d.3. Show ability to work effectively on multi-disciplinary systems and integration of different fields of knowledge.
d.4. Demonstrate 21st century skills.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a2**
A9	Professional, moral, and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.	**a3**
A10	Current developments in computing and information research.	**a4**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b2**
B4	Analyze, propose and evaluate alternative computer systems and processes taking into account limitations, and quality constraints.	**b1.b3**
C10	Communicate effectively by oral, written, and visual means.	**c3**
C15	Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.	**c1.c2**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d2**
D6	Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.	**d3**
D7	Show the use of general computing facilities.	**d4**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Unit 1: A time to remember	2	2	-	-	a1.a3.b3
Week-2	Unit 2: Caught in the Rush	2	2	-	-	a1.a3.c3
Week-3	Unit 3: Time for a change !	2	2	-	-	a1.b2.c3
Week-4	Unit 4: I've never heard of that !	2	2	-	-	a3.b3.d3
Week5	Unit 5: Going places	2	2	-	-	a3.b3.d3
Week-6	Unit 6: Sure. No problem !	2	2	-	-	a1.a3.b2.c3.d3
Week-7	Unit 7: What's this for ?	2	2	-	-	a1.a3.b2.c2.
Week-8	Midterm Exam.					
Week-9	Unit 8: Let's celebrate!	2	2	-	-	c1.c2.d3
Week-10	Supplementary Material and Quiz	2	2	-	-	c2.c3.d2.d3
Week-11	Supplementary Material and Quiz	2	2	-	-	a1.a3.b2.c2.d4
Week-12	Presentations	2	2	-	-	c1.c3d2.d3
Week-13	Revision	2	2	-	-	a1.a2.a4.b1.b3.d3
Week-14	Revision and Quiz	2	2	-	-	a1.a2.a4.b1.b3.d3

6- Teaching and Learning and Assessment methods:

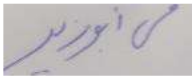
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√		√				√	√			√					√

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**14**	**10**	**10 %**
2	Quiz 2 written (Semester work)	**-**	**-**	**-**
3	Midterm exam	**7**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**40**	**40 %**
5	Final Practical Exam	**-**	**-**	**-**
6	Final Oral Exam	**-**	**-**	**-**
7	Assignments / Project	**-**	**-**	**-**
8	Field training	**-**	**-**	**-**
9	Other (Mention) “Class work for lecture “	**Weekly**	**20**	**20%**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Presentation (handed to students part by part).
	Other References	• Interchange 2nd edition, Cambridge University Press, 2019 • Interchange Workbook 2nd edition, Cambridge University Press, 2019 • English Grammar in Use. Cambridge University Press, 2020 • English Vocabulary in Use. Cambridge University Press, 2021
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Mai M. Abouzaid	**Dr. Rania Ragab Hussien**
Signature		

اسم المقرر: مقرر ثقافي (ا)

كود المقرر: HUM 110

القسم القائم بتدريس المقرر	علوم حاسب

1- معلومات أساسية :

نوع المقرر	اجباري			الفرقة الدراسية / المستوى الدراسي الذي يقدم فيه المقرر		الاولي	
العام الأكاديمي الفصل الدراسي	2026/2025		أكتوبر	عدد الساعات المعتمدة		1	
ساعات الإتصال:	المحاضرة:	2	التمارين:	المعامل:		إجمالي	
المتطلب السابق:							

المعايير الأكاديمية	NARS 2018
تاريخ الموافقة على اللائحة	2001
منسق المقرر	د/ محمد أبو زيد
تاريخ اعتماد توصيف المقرر	2025/8/20
جهة مناقشة واعتماد توصيف المقرر	مجلس/ القسم

2. الوصف العام للمقرر:

كيفية قراءة الأشخاص، القيادة، نظريات القيادة، الصفات التي يجب أن تكون في القائد، المهارات الأساسية التي يجب أن تتوفر في القائد، هرم الإدارة"

3. مخرجات التعلم المستهدفه:

أ- المعرفه والفهم:

أ.1 يعرف الطالب حقيقة النفس الإنسانية
أ.2 يفهم الطالب الفرق بين العقل الواعي واللاواعي
أ.3 يعرف الطالب أسباب النجاح والفشل

ب - المهارات الذهنيه:

ب.1 يحلل الطالب المشكلات ويقترح الحلول
ب.2 يميز الطالب بين الثوابت والمتغيرات في القيم والأفكار
ب.3 أ يميز الطالب بين التفكير الإيجابي والتفكير السلبي

ج - المهارات المهنية:

ج.1 يقدر الطالب على بناء تحالفات عمل.
ج.2 يمتلك الطالب مهارة بناء فرق عمل وادارته.
ج.3 يكتسب مهارة حل المشكلات والتعامل مع الآخرين.

د- المهارات العامه:

د1 أن يكون الطالب قادرا على العمل بروح الفريق
د2 أن يكون الطالب قادرا على التواصل والاقناع الشفوي والمكتوب
د3 أن يكون الطالب قادرا على إدارة الوقت بشكل جيد

4. مساهمه المقرر فى اهداف التعلم المستهدفه من البرنامج:

اتساق مخرجات التعلم المستهدفة مع مخرجات البرنامج

مخرجات البرنامج / المعايير الأكاديمية المتبناة (التي يحققها المقرر تبعا للمصفوفة في توصيف البرنامج)		مخرجات التعلم المستهدفة
الكود	النص	
ا1	الحقائق والمفاهيم والمبادئ والنظريات الأساسية المتعلقة بالحوسبة والمعلومات وتطبيقات الكمبيوتر بما يتناسب مع برنامج الدراسة.	أ.1
ا3	الأدوات والممارسات والمنهجيات المستخدمة في تحديد وتصميم وتنفيذ وتقييم أنظمة البرمجيات الحاسوبية.	أ.2
ا9	القضايا المهنية والأخلاقية والقيمية المتعلقة باستغلال تكنولوجيا الكمبيوتر، والاسترشاد بالممارسات المهنية والأخلاقية والقانونية المناسبة ذات الصلة بصناعة الحوسبة والمعلومات.	أ.3
ب1	تحليل مشاكل الحوسبة وتقديم الحلول المتعلقة بتصميم وبناء أنظمة الحوسبة.	ب.1
ب3	تحليل مشاكل الحوسبة وتقديم الحلول المتعلقة بتصميم وبناء أنظمة الحوسبة.	ب.2
ب8	التعرف على القضايا المهنية والقانونية والأخلاقية ذات الصلة بصناعة الحوسبة.	ب.3
ج1	تشغيل معدات الحوسبة، والتعرف على خصائصها المنطقية والفيزيائية، وقدراتها، وحدودها.	ج.1
ج2	تنفيذ المعرفة والمهارات الحاسوبية الشاملة في المشاريع وفي نشر أجهزة الكمبيوتر لحل المشاكل العملية.	ج.2
ج6	تصميم وتنفيذ وصيانة وإدارة أنظمة البرمجيات.	ج.3
د1	إظهار القدرة على الاستفادة من مجموعة متنوعة من مصادر التعلم وإدارة التعلم الخاص بك.	د.1
د2	إظهار مهارات العمل الجماعي وإدارة الفريق وإدارة الوقت والمهارات التنظيمية.	د.2
د6	الكشف عن مهارات الاتصال، ومهارات التحدث والعرض أمام الجمهور، والتفويض، ومهارات الكتابة، والإلقاء الشفهي، والاستخدام الفعال لمختلف وسائل الإعلام لمجموعة متنوعة من الجماهير.	د.3

5. محتوى المقرر:

رقم الإسبوع	الموضوع	مجموع الساعات	ساعات الإتصال			مخرجات التعلم المستهدفة المغطاة بواسطة المقرر
			محاضرة	حصص تمارين	معمل	
الإسبوع-1	**أنا وذاتي وقدراتي**	2	2	---	---	**أ.1، ب. 1**
الإسبوع-2	**قوانين العقل الباطن**	2	2	---	---	أ.1، أ.2
الإسبوع-3	النجاح والفشل	2	2	---	---	**أ.3، ب. 3**
الإسبوع-4	التفكير السلبي	2	2	---	---	**أ.3، ج. 1**
الإسبوع-5	أهمية الكلمة	2	2	---	---	ب.1، ب.2
الإسبوع-6	**القيادة**	2	2	---	---	ب.2، ب.3، د.1
الإسبوع-7	العقل الواعي واللا واعي	2	2	---	---	ب.3، ج.1،ج.3
الإسبوع-8	**إمتحان نصف الفصل**					
الإسبوع-9	مثلث الإبداع	2	2	---	---	**أ.3، ج. 1**
الإسبوع-10	أدبيات الحوار	2	2	---	---	ب.1، ب.2،د.2
الإسبوع-11	العلاقات الناجحة	2	2	---	---	ب.2، ب.3، د.1
الإسبوع-12	اهتماماتك	2	2	---	---	ب.3، ج.1،ج.2
الإسبوع-13	العادات السبع للنجاح	2	2	---	---	**أ.3، ج.1. د1**
الإسبوع-14	**امتحان نهاية الفصل الدراسي.**			---	---	

6. طرق التعليم و التعلم للمقرر:

استراتيجيات التعلم بمساعدة ت كنولوجيا المعلومات				التدريس الغير مباشر									التدريس المباشر	
الذكاء الإصطناعي في التعليم	التعلم الالكتروني	الافتراضية المعامل	النمذجة أو المحاكاة برامج	التعلم بالإكتشاف	التعلم الذاتى	الميدانية الزيارات	الميداني التدريب	والمناقشة الحوار	الأبحاث /التقارير كتابة	حل المشكلات	الحالة دراسة استراتيجية	الجماعية المشروعات على القائم التعلم	العصف الذهنى	العملية والتجارب التمارين	المحاضرات
				√	√	√		√	√	√	√	√	√		√

7. طرق تقييم الطلاب:

م	طرق التقييم *	توقيت التقييم المتوقع (رقم الأسبوع الدراسي)	درجات التقييم	النسبة المئوية من إجمالي درجة المقرر
1	امتحان 1 تحريري (أعمال سنة)	15	15	%15
2	امتحان 2 تحريري (أعمال سنة)	-	0	0
3	امتحان منتصف الفصل الدراسي	8	30	% 30
4	امتحان نهائي تحريري	15 و 16	40	% 40
5	امتحان نهائي عملي			
6	امتحان نهائي شفوي			
7	تكليفات / مشروع	10	15	15%
8	تدريب ميداني			
9	أخرى (تذكر)			

8. مصادر التعلم و التسهيلات المادية:

مصادر التعلم (الكتب والمراجع العلمية وغيرها) *	المرجع الأساسي للمقرر (لابد من كتابة البيانات كاملة وفقا لطريقة توثيق علمي)	• الثقافة والمعرفة البشرية ميشيل توماسيلو عالم المعرفة عدد 328 الثقافة العربية وعصر المعلومات نبيل علي عالم المعرفة عدد 265
	المراجع الأخرى	• **كتاب : الثقافة العربية وعصر المعلومات** • **كتاب : حوار الثقافات** **كتاب : نظرية الثقافة**
	المصادر الالكترونية (لابد من إضافة الروابط)	https://www.unesco.org/ar/culture http://www.moc.gov.eg/ar/home/
	المنصة التعليمية (لابد من إضافة الرابط)	Microdoft Teams
التجهيزات التعليمية المساندة للتعليم والتعلم *	الأجهزة	
	المستلزمات	
	أخرى (تذكر)	

	منسق المقرر	منسق البرنامج
الإسم	Dr. Mohamed Abozeid	د/ رانيا رجب
التوقيع	M. A. Shaalan	

Course Code: BSC 113

Course Name: Electronics (1)

Department participating in delivery of the course	Computer Science

1. Basic Information

Course Type	**Compulsory**			**Academic level at which the course is taught**		**Level 1**	
Term/ Academic year	**Oct.**		2025/2026	**Credit Hours:**		4	
Contact Hours	**Lecture:**	**3**	**Tutorial:** 3	**Lab.:**	-	**Total**	6
Pre-Requisite							

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	**Dr/Sarah Ahmed Soliman**
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Circuit variables, Circuit elements, Ohm's law, and Kerchief's laws. Techniques of circuit analysis. Natural & step responses of RL, RC, and RLC circuits. Sinusoidal steady state analysis. Semiconductor properties. PN Junction diode. BJT, FET and MOSFET devices and circuits.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Understand the essential mathematics relevant to electrical and electronic science.

a.2. Demonstrate basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics for electrical and electronic field.

a.3. Interpret and analyzing data qualitatively and/or quantitatively for electrical and electronic science.

a.4. Understand the fundamental topics in Computer Science, including hardware and methodologies for electrical and electronic science.

a.5. Select advanced topics to provide a deeper understanding of some aspects of electrical and electronic science, such as hardware systems design.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Perform comparisons between (methods, techniques...etc) in electrical and electronic science.

b.2. Perform classifications of (data, results, methods, techniques, algorithms. etc.) in electrical and electronic science.

b.3. Summarize the proposed solutions and their results.

b.4. Restrict solution methodologies upon their results.

b.5. Establish criteria and verify solutions.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Perform independent information acquisition and management, using scientific literature and Web sources.

c.2. Specify, design, and implement electronic circuits.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.

d.2. Demonstrate skills in group working, team management, time management and organizational skills.

d.3. Show the use of information retrieval.

d.4. Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry or the academic community.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A12	Essential mathematics relevant to computer science.	a1
A14	Demonstrating basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics.	a2
A15	Interpreting and analyzing data qualitatively and/or quantitatively.	a3
A18	The fundamental topics in Computer Science, including hardware and software architectures, software engineering principles and methodologies, operating systems, compilers, parallel and distributed computing, systems, and software tools.	a4
A19	Selecting advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.	a5
B11	Perform comparisons between algorithms, methods, techniques, etc.	b1
B12	Perform classifications of (data, results, methods, techniques, algorithms, etc.).	b2
B14	Summarize the proposed solutions and their results.	b3

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Basic concepts	6	3	3	-	a1, a2, a3, b2
Week-2	Basic laws (ohm's law , KCL and KVL).	6	3	3	-	a1, a2, a3, a4, b1, b2, b3, b4, b5, c2
Week-3	Electrical circuit analysis method and Circuit theorem I.	6	3	3	-	a1, a2, a3, a4, b1, b2, b3, b4, b5
Week-4	Electrical circuit analysis method and Circuit theorem II.	6	3	3	-	a1, a2, a3, a4, b1, b2, b3, b4, b5
Week5	Inductors, Capacitors and Transient circuits.	6	3	3	-	a1, a2, a3, a4, a5, b1, b2, b3, b4, b5, c2
Week-6	Sinusoidal steady state analysis.	6	3	3	-	a1, a2, a3, a4, b1, b2, b3, b4, b5,c2
Week-7	Midterm Revision and reminder	6	3	3	-	a1, a2, a3, a4, a5, b1, b2, b3, b4,c5
Week-8	Midterm Exam.					
Week-9	Semiconductors and diode	6	3	3	-	a2, a3, a4, a5, b1, b2, b3, b4, b5,c2
Week-10	Diode models and it's applications	6	3	3	-	a3, a4, a5, b1, b2, b3, b4, b5, c2
Week-11	BJT	6	3	3	-	a1, a2, a3, a4,b1, b2, b3, b4, b5, c2
Week-12	FET	6	3	3	-	a1, a2, a3, a4,b1, b2, b3, b4, b5, c2
Week-13	OPAMP	6	3	3	-	a1, a2, a3, a4,b1, b2, b3, b4, b5, c2
Week-14	Revision and Mini project	6	3	3	-	a3, a4, a5,b1, b2, b3, b4, b5 c1, c2

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√									

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**weekly**	**15**	**15 %**
2	Quiz 2 written (Semester work)	**weekly**	**15**	**15 %**
3	Midterm exam	**7**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**40**	**40 %**
5	Final Practical Exam		**0**	
6	Final Oral Exam		**0**	
7	Assignments / Project		**0**	
8	Field training		**0**	
9	Other (Mention)		**0**	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Alexander, Charles K. and Sadiku, Matthew, "Fundamentals of Electric Circuits" 7 th edition. (2020)
	Other References	• THEORY : APPLICATION TO ELECTRIC CIRCUITS . 2024 • ROBERTBOYLESTAD,LOUIS NASHELSKY,"ELECTRONIC DEVICES AND CIRCUIT THEORY," Prentice Hall, 7th edition.
	Electronic Sources (Links must be added)	Journal of computational electronics in Springer
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr/Sarah Ahmed Soliman**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: BSC 122

Course Name: Electronics-2

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**	**Level 1**	
Term/ Academic year	**Oct.**		2025/2026		**Credit Hours:**	4	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	3	**Lab.:** -	**Total**	6
Pre-Requisite	**BSC 113**						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	**Dr/Sarah Ahmed Soliman**						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

BJT circuits. Amplifiers FET circuits. Amplifier and oscillators. Frequency response. Filters. Regulated power supplies. OP-AMP introduction to digital circuits theory. Linear OP-AMP circuits.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Understand the essential mathematics relevant to electronic science.

a.2. Demonstrate basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics for transistors and OPAMP.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Perform comparison between (methods, techniques, circuits,..etc) of different transistor types and OPAMP applications.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Design and implement electronic circuits.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.

d.2. Demonstrate skills in group working, team management, time management and organizational skills.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	Text	
A12	Essential mathematics relevant to computer science.	a1
A14	Demonstrating basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics.	a2
B11	Perform comparisons between algorithms, methods, techniques, etc.	b1
C6	Design, implement, maintain, and manage software systems.	c1
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	d1
D2	Demonstrate skills in group working, team management, time management and organizational skills.	d2
A12	Essential mathematics relevant to computer science.	a1

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction	6	3	3	-	a1, a2
Week-2	Review on Diode and some of its applications	6	3	3	-	a1, a2
Week-3	Basics of BJT and characteristics curves	6	3	3	-	a1, a2, b1, c1, d1
Week-4	DC biasing of BJT	6	3	3	-	a1, a2, b1, c1, d1
Week5	AC analysis of BJT part I	6	3	3	-	a1, a2, b1, c1, d1
Week-6	AC analysis of BJT part II	6	3	3	-	a1, a2, b1, c1, d1
Week-7	Revision on midterm	6	3	3	-	a1, a2, b1, c1, d1
Week-8	Midterm					
Week-9	Basics of Field Effect Transistors (FET)	6	3	3	-	a1, a2, b1, c1, d1
Week-10	DC biasing of FET circuits	6	3	3	-	a1, a2, b1, c1, d1
Week-11	AC analysis of FET	6	3	3	-	a1, a2, b1, c1, d1
Week-12	OPAMP and its applications	6	3	3	-	a1, a2, b1, c1, d1
Week-13	MESFET, HBT, HEMT	6	3	3	-	a1, a2, b1, c1, d1
Week-14	Mini project and revision and oral	6	3	3	-	a1, a2, b1, c1, d1, d2

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√			√					

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	**10**	**10%**
2	Quiz 2 written (Semester work)		**0**	**0**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**40**	**40 %**
5	Final Practical Exam		**0**	**0**
6	Final Oral Exam		**0**	**0**
7	Assignments / Project	weekly	**20**	**20%**
8	Field training		**0**	**0**
9	Other (Mention)		**0**	**0**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	ROBERT BOYLESTAD, LOUIS NASHELSKY," ELECTRONIC DEVICES AND CIRCUIT THEORY," Prentice Hall, 11th edition. 2018
	Other References	Thomas L. Floyed, "Principles of electric circuits: Conventional Current Version, 10th edition 2021.
	Electronic Sources (Links must be added)	Journal of computational electronics in Springer
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr/Sarah Ahmed Soliman**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: BSC 124

Course Name: PHYSICS

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**	**Level 1**	
Term/ Academic year	**Oct.**		2025/2026		**Credit Hours:**	2	
Contact Hours	**Lecture:**	**2**	**Tutorial:**	2	**Lab.:** -	**Total**	4
Pre-Requisite							

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	**Dr. Mohamed Abozeid**
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Units and Dimension, Electric charges. Electric fields. Electric potential. Capacitors. Electric current. Resistors, Basic circuits. Magnetic fields. Faraday's laws. Magnetic circuits.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Explain the units and dimensions
a.2. Define the electric force and electric field of several electric charges.
a.3. Explain the capacitance of different shape of capacitors.
a.4. Explain the Electric Current Ohm's law, electric power in electric circuit.
a.5. Define Electromotive force, calculate the current in electric circuit using energy method, Kirchhoff method, potential loop rule applications.
a.6. Explain Magnetic field, Lorentz force, circular motion of charge in uniform magnetic field.
a.7. Define the Hall effect, the magnetic force affected on wire carrying electric current, applications.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1.Solve problems in the previous field

b.2.Analyze the fundamentals of physics with the law of nature and explain it.

b.3. Correlate between the laws from different fields.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1.Apply the vector analysis to estimate the electric field and force of charges

c.2.Demonstrate skills of applications of Magnitism.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1.Working in a team group.

d.2.Can perform and explain the gained knowledge orally.

d.3.Solving problems related to electromagnetism

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A5	The extent to which a computer-based system meets the criteria defined for its current use and future development.	**a5**
A9	Professional, moral, and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.	**a6, a7**
A11	Requirements, practical constraints, and computer-based systems.	**a4, a5**
A13	Using of high-level programming languages.	**a4**
A16	The principles and techniques of several application areas informed by the research directions of the subject, such as artificial intelligence, natural language processing, data mining, databases, and computer graphics.	**a2, a3**
A17	Showing a critical understanding of the principles of artificial intelligence, image, and pattern recognition.	**a6, a7**
A19	Selecting advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.	**a3, a5**
B10	Define traditional and nontraditional problems, set goals towards solving them, and observe results.	**b1**
B11	Perform comparisons between algorithms, methods, techniques, etc.	**b2**
B17	Identify a range of solutions and critically evaluate and justify proposed design solutions.	**b3**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction – Units and Dimension in physics	4	2	2		a1, a2,a3
Week-2	Characteristics of electric charge - electric force – electric filed	4	2	2		a2,a3, b1,c3
Week-3	Electric field due to dipole, charged ring,equatorial line	4	2	2		a2, a4, b2, c1,d3
Week-4	Gauss's law and electric flux – Apply the Gauss law on spherical symmetry	4	2	2		a4, a5, b5, c1, c2, d1
Week5	Apply the Gauss law on cylindrical, spherical, planner symmetry, applications	4	2	2		a4, b3,c3,d3
Week-6	The electric potential, equipotential surface	4	2	2		a4, a5, b4, b5 c2, c3,
Week-7	calculating the potential due to point and group of point charges	4	2	2		a4, a5, b4, b5 c2, c3,
Week-8	Midterm Exam.					
Week-9	Capacitors and Capacitance and Calculating	4	2	2		a4, b3,c3,d3
Week-10	Dynamic electricity, Electric current, current density - electric resistivity Ohm's law, electric power in electric circuit	4	2	2		a4, a5, b2, b4, c1, c2
Week-11	Electromotive force, calculate the current in electric circuit using energy method, Kirchhoff method, potential loop rule applications	4	2	2		a2, a4, b2, c1,d3
Week-12	Magnetic field, Lorentz force, circular motion of charge in uniform magnetic field	4	2	2		a4, a5,b3, b2,
Week-13	Hall effect, the magnetic force affected on wire carrying electric current, applications- Final lab	4	2	2		a4, b3,c3,d3
Week-14	LAB AND ORAL EXAM					

6- Teaching and Learning and Assessment methods:

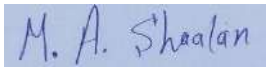
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**15**	**15 %**
2	Quiz 2 written (Semester work)	**0**	**0**	**0**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**40**	**40 %**
5	Final Practical Exam		**0**	
6	Final Oral Exam		**0**	
7	Assignments / Project	**Weekly**	**15**	**15%**
8	Field training		**0**	
9	Other (Mention)		**0**	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	1.I. Lyublinskaya et al., College Physics for AP Courses OpenStax. XanEdu Publishing Inc, 2022.
	Other References	• Raymond A. Serway, Chris Vuille, J. Hughes. College Physics Global Edition, 11th ed. Cengage Learning, 2018. • M. Morris Mano, Digital Logic and Computer Design, Prentice-Hall, Inc. of India - 2000. • J. Raymond A. Serway, John W. Jewett, Physics for Scientists and Engineers with Modern Physics, 9th ed. Boston, MA 02210 USA: Physical Sciences: Mary Finch, Physics and Astronomy: Charlie Hartford, 2014 • Raymond A. Serway, Chris Vuille, J. Hughes. College Physics Global Edition, 11th ed. Cengage Learning, 2018.4. • D. Halliday, R. Resnick, and J. Walker, Fundamentals of Physics, 12th ed. Wiley, 2022.
	Electronic Sources (Links must be added)	• http://hyperphysics.phy-astr.gsu.edu/hbase/index.html • https://www.physicsclassroom.com/
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Mohamed Abozeid**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 110

Course Name: Introduction to Computers & Applications

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**	Level one	
Term/ Academic year	**Oct.**		2025/2026		**Credit Hours:**	3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	-	**Lab.:** 3	**Total**	6
Pre-Requisite	----------						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. RANIA RAGAB HUSSIEN
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Computer definition, different computer types, digital computer, analog computer, general-purpose computer, special purpose computer, and hybrid computer. Computer organization, computer hardware, input/output units, storage media, computer memory types, arithmetic, and logical unit (ALL), computer software, computer programming. computers and networking, software development systems, Information management, database management systems and applications, operating systems. Computer Security. Computer issues and Health. Introduction to programming languages, General form of Basic program: Expressions: arithmetic expression. Simple data types: Real, integer, Boolean, character sub range, and enumerated Data type, input and output statements. Conditional control structures: Compound statements, Boolean expressions, statements, case statements. Repetition statements. Computer applications.

3-Intended Learning Outcomes (ILOs)

a. Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Define Computer system and its components.
a2. Define the Difference between Computer Hardware and Software.
a3. Define how different types are represented inside digital computers.
a4. Differentiate between input & output devices and their usage.
a5. Recognize the fundamental concepts of computer science.
a6. Understand the structure and functions of file systems in operating systems.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Recognize the computer components.
b2. Identify the role of different types of software, and operating systems.
b3. Solve the trouble shouting.
b4. Recognize the basics of programming.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Practice manipulating and dealing with computer components
c2. Practice efficient usage of the computer, windows, and internet
c3. Carry out and apply the knowledge in the computer science application.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Apply concepts to practical problems and scenarios in computing.
d2. Apply file system knowledge to real-world computing problems and scenarios.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a2**
A5	The extent to which a computer-based system meets the criteria defined for its current use and future development.	**a3**
A6	The current and underlying technologies that support computer processing and inter-computer communication.	**a4**
A9	Professional, moral, and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.	**a5**
A10	Current developments in computing and information research.	**a6**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b1**
B3	Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.	**b2**
B8	Familiar with the professional, legal, moral, and ethical issues relevant to the computing industry.	**b3**
B9	Evaluate research papers in a range of knowledge areas	**b4**
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1**
C3	Deploy the equipment and tools used for the construction, maintenance, and documentation of computer applications.	**c2**
C5	Develop a range of fundamental research skills, using online resources, technical repositories and library-based material	**c3**
D3	Show the use of information-retrieval.	**d1**
D7	Show the use of general computing facilities.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs.*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Computers as a Tool for an Information Age Historical Background	6	3	-	3	a1
Week-2	Classification of Computers	6	3	-	3	a2
Week-3	Introduction and Overview of a computer system: hardware, software	6	3	-	3	a2, a3, a4
Week-4	Classification of computers - Computer Software/Hardware - Categories of software	6	3	-	3	a2, a3, a4
Week5	Operating systems (OS): Understand the role of the operating system in a computer system.	6	3	-	3	a3, a6, b1, b2
Week-6	Introduction to the Basic Components of Computer: Networking, Internet, Intranet	6	3	-	3	a5, b1, b2
Week-7	**Revision**					
Week-8	**Midterm Exam.**					
Week-9	Numerical Systems: Decimal, Binary, Octal, and Hexadecimal systems	6	3	-	3	a5, b1, b2
Week-10	Numerical Systems	6	3	-	3	a5, b1, b2
Week-11	Boolean Logic and Gates	6	3	-	3	a5, b1, b2
Week-12	Programming and languages	6	3	-	3	b1, b2, b4, c1, c2, c3, d1, d2
Week-13	Flow Charts	6	3	-	3	b1, b2, b4, c1, c2, c3, d1, d2
Week-14	Revision and lab exam	6	3	-	3	----------

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brainstorming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√					√	√		√						

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**4**	**5**	**5%**
2	Quiz 2 written (Semester work)	**10**	**5**	**5%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam	**-**	**0**	
7	Assignments / Project	**All weeks**	**20**	**20%**
8	Field training	**-**	**0**	
9	Other (Mention)	**-**	**0**	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	• Introduction to Computing Systems: From Bits & Gates to C & Beyond (3rd Edition) by Yale N. Patt and Sanjay J. Patel (2020).
	Other References	• Computer Science Illuminated (7th Edition) by Nell Dale and John Lewis (2020). • Computer Science: An Interdisciplinary Approach by Robert Sedgewick and Kevin Wayne (2016).
	Electronic Sources (Links must be added)	• IEEE transactions on computers and software.
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Rania Ragab Hussien**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 121

Course Name: Structured Programming

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**	Level One	
Term/ Academic year	**Feb.**		2025/2026		**Credit Hours:**	4	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	-	**Lab.:** 3	**Total**	6
Pre-Requisite	CSC 110						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Sara Ahmed Soliman
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Structured program development, problem solving, decision structures, repetition structures, top-down and stepwise refinement. Subprograms: Procedures function. Structured data type: one-dimension arrays, two-dimension arrays. Sets. Records. Files: Text files, random handling files. Dynamic data structures (pointers). Recursion: Recursive functions, towers of Hanoi.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Model and design of computer-based systems bearing in mind the trade-offs

a.2. Generate tests which investigate the functionality of computer programs and computer systems and evaluating their results.

a.3. Use of high-level programming languages.
a.4. Interpret and analyzing data qualitatively and/or quantitatively.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Analyze computing problems and provide solutions related to the design and construction of computing systems
b.2. Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.
b.3. Evaluate the results of tests to investigate the functionality of computer systems.
b.4. Perform classifications of (data, results, methods, techniques, algorithms. etc.).

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1 Apply computing information retrieval skills in computing community environment and industry.
c.2 Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.
c.3 Design, implement, maintain, and manage software systems.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Show the use of information-retrieval.
d.2. Sow the use of general computing facilities

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a1**
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	**a2**
A13	Using of high-level programming languages.	**a3**
A15	The principles and techniques of several application areas informed by the research directions of the subject, such as artificial intelligence, natural language processing, data mining, databases, and computer graphics.	**a4**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1**
B5	Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.	**b2**
B6	Evaluate the results of tests to investigate the functionality of computer systems.	**b3**
B12	Perform classifications of (data, results, methods, techniques, algorithms. etc.).	**b4**
C4	Apply computing information retrieval skills in computing community environment and industry..	**c1**
C6	Design, implement, maintain, and manage software systems.	**c2**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c3**
D3	Show the use of information-retrieval.	**d1**
D7	Show the use of general computing facilities.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction	6	3		3	a2, a7
Week-2	Structured program development and problem solving	6	3		3	a13,a15
Week-3	Decision structures and repetition structures	6	3		3	c4,c6
Week-4	Subprograms	6	3		3	a13, c6,c9
Week5	Structured data type: one dimension array	6	3		3	a13, a15, c6, b1,b5
Week-6	Structured data type: two dimensions array	6	3		3	a13,a15, c6, b1,b5
Week-7	Sets and records	6	3		3	a13, a15, c6, b1,b5,b6,b12
Week-8	Midterm Exam.					
Week-9	Files: text files	6	3		3	a13 , b6,b12,c9
Week-10	Files: random handling files	6	3		3	a13, b6 ,b12,c9
Week-11	Dynamic data structures (pointers)	6	3		3	a13, b6, b12, d3
Week-12	Recursion: recursive functions	6	3		3	a13, b6, b12, d3
Week-13	Recursion: towers of Hanoi	6	3		3	a13, d7, d3
Week-14	Revision and lab exam	6	3		3	----------

6- Teaching and Learning and Assessment methods:

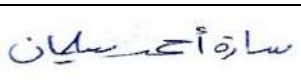
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**10**	**10 %**
2	Quiz 2 written (Semester work)	**11**	**10**	**10 %**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10 %**
6	Final Oral Exam	**0**	**0**	**0**
7	Assignments / Project	**weekly**	**10**	**10 %**
8	Field training	**0**	**0**	**0**
9	Other (Mention)	**0**	**0**	**0**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	"Introduction to Programming with C++" by Daniel Liang (3rd Edition, 2020)
	Other References	Liberty, Jesse. C++ in One Hour a Day. 9th ed., Sams Publishing, 2019.
	Electronic Sources (Links must be added)	welcome - Learning C++ (manning.com)
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Sara Ahmed Soliman	**Dr. Rania Ragab Hussien**
Signature		

اسم المقرر: تربية رياضية (1)

كود المقرر: PHE 110

القسم القائم بتدريس المقرر	علوم الحاسب

1- معلومات أساسية :

نوع المقرر	اجباري			الفرقة الدراسية / المستوى الدراسي الذي يقدم فيه المقرر		الفرقة/المستوي الاول		
العام الأكاديمي الفصل الدراسي	2026/2025		أكتوبر	عدد الساعات المعتمدة		1		
ساعات الإتصال:	المحاضرة:	1	التمارين:	1	المعامل:	-	إجمالي	2
المتطلب السابق:								

المعايير الأكاديمية	NARS 2018
تاريخ الموافقة على اللائحة	2001
منسق المقرر	د. محمد ابو زيد
تاريخ اعتماد توصيف المقرر	2025/8/20
جهة مناقشة واعتماد توصيف المقرر	مجلس القسم

2. الوصف العام للمقرر:

المقرر يحتوى علي قوانين الحركة . الميكانيكا الحيوية : انواع الروافع، قواعد الدفع، الاجهاد العضلى، التربية البدنية والمجهود البدنى، نظم إنتاج الطاقة والمشروبات الرياضية، والظروف البيئية وتأثيرها على الأنشطة الرياضية.

3. مخرجات التعلم المستهدفه:

أ- المعرفه والفهم:

أ.1 توظيف معارف ومهارات التربية الرياضية للتعامل مع إصابا

أ.2 التعرف علي اهم الاصابات التى يتعرض لها اللاعبون والافراد العاديين واهم طرق العلاج

أ.3 التعرف على اهم اسباب الانحرافات القوامية وتجنب حدوثها

ب - المهارات الذهنيه:

ب.1 شرح مفاهيم التربية والهندسة الرياضية ونظرياتها

ب.2 تنمية المعارف والمعلومات حول حقيقة ونطاق الاصابات الرياضية

ج - المهارات المهنية:

ج.1 توظيف المعارف والمهارات التى حصل عليها فى مجال العمل

ج.2 تنمية المعرفه بانواع العضلات والانقباض العضلي

د- المهارات العامه:

د1زيادة معرفة الطالب بالاجهزة الرياضية الحديثة واستخداماتها

4. مساهمه المقرر فى اهداف التعلم المستهدفه من البرنامج:

اتساق مخرجات التعلم المستهدفة مع مخرجات البرنامج

مخرجات التعلم المستهدفة	مخرجات البرنامج / المعايير الأكاديمية المتبناة (التي يحققها المقرر تبعا للمصفوفة في توصيف البرنامج)	
	النص	الكود
أ.1	المعايير والمواصفات المناسبة للمشكلات المحددة، وتخطيط الاستراتيجيات اللازمة لحلها.	A4
أ.2	تفسير وتحليل البيانات سواءً بشكل نوعي أو كمي.	A15
أ.3	المبادئ والتقنيات في مجالات تطبيقية مثل الذكاء الاصطناعي، ومعالجة البيانات	A16
ج.2	وضع معايير والتحقق من الحلول	B16
ب.2	إجراء تصنيفات (بيانات، نتائج، طرق...)	B12
ب.1	تحديد السمات والمكونات والعلاقات والأنماط... إلخ	B13
ج.1	تقييم الأنظمة من حيث السمات العامة للجودة والمقايضات	C15
د1	إظهار القدرة على الاستفادة من مصادر التعلم وإدارة التعلم الذاتي	D1

5. محتوى المقرر:

رقم الإسبوع	الموضوع	مجموع الساعات	ساعات الإتصال			مخرجات التعلم المستهدفة المغطاة بواسطة المقرر
			محاضرة	حصص تمارين	عملى	
الإسبوع-1	**جسم الانسان (عظمى – عضلى – مفصلى – عصبى) وما هو تأثير ممارسات المشاركة الرياضية + نشاط رياضى**	2	1		1	أ.1 ، ب.1 ، ج.2
الإسبوع-2	**تعريف الاصابة- اسبابها –اعراضها – الاسعافات الاولية ومبادئها+ نشاط رياضي**	2	1		1	أ.1 ، أ.2 ، ب.2
الإسبوع-3	**اهداف واعراض الاسعافات الاولية والوسائل المستخدمه فى الاسعافات الاولية + نشاط رياضى**	2	1		1	أ.1 ، ب.2
الإسبوع-4	**اصابات الجلد (الجروح – الحروق – كدمات الجلد) + نشاط رياضى**	2	1		1	أ.1 ، ب.2
الإسبوع-5	**اصابات العضلات (الاجهاد العضلى – التقلص العضلى – التمزق العضلى) + نشاط رياضى**	2	1		1	أ.2 ، ب.2 ، ج.2
الإسبوع-6	**مراجعه عامه + تدريب على التقيم العملى**	2	1		1	ج.1 ، د.1
الإسبوع-7	مراجعة	2	1		1	أ.1 و أ.2 و أ.3 و ب.1 و ب.2 و ب.3
الإسبوع-8	**إمتحان نصف الفصل**					
الإسبوع-9	**مراجعه عامه + مناقشه ابحاث**	2	1		1	ج.1 ، د.1
الإسبوع-10	**اصابات الجهاز العصبى (الاغماء- الصدمه – كدمات الاعصاب –النزيف) + تقيم الجزءالعملى**	2	1		1	أ.2 ، ب.2
الإسبوع-11	**ماهى القوام – تعريفه – مبادئ المحافظة على القوام + مناقشه الابحاث و التقارير**	2	1		1	أ.3 ، ب.1
الإسبوع-12	**الانحرافات القوامية (انواعها – اسبابها**	2	1		1	أ.3
الإسبوع-13	**مراجعه عامه**	2	1		1	أ.1 و أ.2 و أ.3 و ب.1 و ب.2 و ب.3
الإسبوع-14	**عملي إختبارات الفصل الدراسي النهائية**					

6. طرق التعليم و التعلم للمقرر:

استراتيجيات التعلم بمساعدة ت كنولوجيا المعلومات				التدريس الغير مباشر								التدريس المباشر	
الذكاء الإصطناعي في التعليم	التعلم الالكتروني	الافتراضية المعامل	النمذجة أو المحاكاة برامج	التعلم بالإكتشاف	التعلم الذاتى	الميدانية الزيارات	الميداني التدريب	والمناقشة الحوار	الأبحاث /التقارير كتابة	حل المشكلات	الحالة دراسة استراتيجية	الجماعية المشروعات على القائم التعلم	المعمل الذهنى	العملية والتجارب التمارين	المحاضرات
	√				√			√	√				√	√	√

7. طرق تقييم الطلاب:

م	طرق التقييم *	توقيت التقييم المتوقع (رقم الأسبوع الدراسي)	درجات التقييم	النسبة المئوية من إجمالي درجة المقرر
1	بحث تقييمي للشق العملي	4	20	%20
2	امتحان منتصف الفصل الدراسي	8	20	% 20
3	امتحان نهائي تحريري	15-16	30	%30
4	امتحان نهائي عملي	14	30	%30

8. مصادر التعلم و التسهيلات المادية:

مصادر التعلم (الكتب والمراجع العلمية وغيرها) *	المرجع الأساسي للمقرر (لابد من كتابة البيانات كاملة وفقا لطريقة توثيق علمي)	الرياضية التربية في مدخل
	المراجع الأخرى	ابو العلاعبد الفتاح : الرياضه و انقاص الوزن ، دار الفكر العربي 2023 الهام شلبي : بانورما الصحه العامه للريا ضيين القاهرة 2022
	المصادر الالكترونية (لابد من إضافة الروابط)	
	المنصة التعليمية (لابد من إضافة الرابط)	EKB - Microsoft office
التجهيزات التعليمية المساندة للتعليم والتعلم *	1	والجيم مجهزة محاضرات قاعة
	2	والفرعية المركزية المكتبات
	3	).محمول كمبيوتر وجهاز (شو (داتا التعليمية الوسائل
	4	للطلاب متابعة وكشوف المقرر لتدريس مُذكرة

	منسق المقرر	منسق البرنامج
الإسم	د. محمد ابو زيد	د. رانيا رجب حسين
التوقيع	M. A. Shaalan	

Course Code: BSC 120

Course Name: Mathematics 2

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**		Level 1
Term/ Academic year	**Choose an item.**		2025/2026		**Credit Hours:**		3
Contact Hours	**Lecture:**	**3**	**Tutorial:**	2	**Lab.:**		**Total** 5
Pre-Requisite	BSC 110						

Academic standards	**NARS 2010**
Bylaw Approval	٢٠٠١
Course Coordinator	Dr. Mohamed Abozeid M. A. Shaalan
Course Specification Approval	**Department Council**
Course Specification Approval Date	٢٠/٨/٢٠٢٥

2. Course Overview:

Plane geometry: line, circle, conic section equation, space geometry: line, plane, sphere, cone, cylinder quadratic equation. Advanced calculus: calculus of a several variables. gradient and multiple integration: vector algebra, vector function and derivatives. motion in space, vector fields, line and surface integrals, green's theorem divergence theorem and stock's theorem.

3-Intended Learning Outcomes (ILOs)

a. Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1- Understand application of the conic sections.

a2- Know lines, planes and surfaces.

a3- Identify partial derivatives

a4- Know double and triple integrations.

a5- Understand of line integral and green theorem.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1- Investigate about creative thinking in some engineering curves.
b2- Performing the double and triple integrations.
b3- Solve problems related to computer science.
b4- Apply different techniques to solve partial derivatives.
b5- Use multiple integral to find the area and the volume.

c. **Professional and practical skills:**

On successful completion of the courses, students should be able to:

c.1. Demonstrate skills regarding of think mathematically.
c.2. Apply the Propositional logic in computer science, artificial intelligence, and mathematics.

d. **General and transferable skills:**

On successful completion of the courses, students should be able to:

d1- Work effectively with other.
d2- Demonstrate ability to think critically.
d3- Illustrate and model the problems and their applications.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	Text	
A12	Essential mathematics relevant to computer science.	a3, a4, a5
A14	Core of analysis, algebra, applied mathematics and statistics.	a1, a2, a3, a4, a5
B1	Analyze computing problems and provide solutions.	b3, b4, b5
B11	Perform comparisons between algorithms/methods.	b2, b4
B12	Perform classifications of data, results, methods.	b1, b4
C1	Operate computing equipment and recognize properties.	c1
C6	Design, implement, maintain, and manage software systems.	c2
C9	Use programming languages, tools, and methodologies.	b3, c2
D1	Manage one's own learning resources.	d2

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	conic sections	5	3	2		a1, a2, b1
Week-2	Lines(parametric form and symmetric form for the equation of lines)	5	3	2		a1, a3, b2
Week-3	Planes	5	3	2		a3, a2, b3,c1
Week-4	surfaces	5	3	2		a1, a3, b2,c1
Week5	Partial derivatives	5				a2, b2, d1,c1
Week-6	Applications on partial derivatives	5	3	2		a4, b3, d2,c2
Week-7	Revision	5				
Week-8	Midterm Exam.					
Week-9	Multible integral, double integrations	5	3	2		a2, b4, d2,c1
Week-10	Reverse the order of integrations, its applications	5	3	2		a4, b2, d3,c2
Week-11	Triple integration and its applications	5	3	2		a5, b4, d3,c2
Week-12	Jacobian in polar, spherical and cylindrical	5	3	2		a3, b4, d2,c1
Week-13	Vector calculus, line integral	5	3	2		a5, b5, d2,c1
Week-14	Applications (gauss theorem and stock theorem).	5	3	2		a5, b5, d3,c2

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√				√	√		√	√					

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**10**	**10%**
2	Quiz 2 written (Semester work)	**10**	**10**	**10%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**40**	**40 %**
5	Final Practical Exam	___	___	___
6	Final Oral Exam	___	**0**	**0**
7	Assignments / Project	**Every Week**	**10**	**10%**
8	Field training	___	**0**	**0**
9	Other (Mention)	___	**0**	**0**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	"Calculus: Early Transcendentals" (9th Edition) by James Stewart (2021)
	Other References	H. Anton, I. Bivens and S. Davis, “Calculus”, 10th Edition, 2012. - Hughes-Hallett, Gleason, McCallum and et al., "Calculus: Single and Multivariable", 5th Edition, 2008.
	Electronic Sources (Links must be added)	https://www.sciencedirect.com/topics/mathematics/calculus
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Mohamed Abozeid	**Dr. Rania Ragab Hussien**
Signature	M. A. Shaalan	

Course Code: FTR 130

Course Name: Field Training (1)

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		LEVEL 1	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		5	
Contact Hours	**Lecture:**	**18**	**Tutorial:**		**Lab.:**	**Total**	18
Pre-Requisite							

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Shaimaa Abdallah Ibraheem
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Each Student must attend a supervised training program of 10 weeks in a relevant field to gain practical experience in a real engineering environment. At the end of the training period, the student must submit a written report for evaluation.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1.Describe the current and underlying technologies in the labor market that support computer processing and inter-computer communication.

a.2. Recognize professional, moral and ethical issues involved in the computer technology labor market and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.

a.3. List of the requirements, practical constraints and computer-based systems.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1.Analyze computing problems and provide solutions related to the design and construction of computing systems.

b.2. Identify criteria to measure and interpret the appropriateness of a computer system for its

current deployment and future evolution.

b.3. Identify attributes, components, relationships, patterns, main ideas, and errors.

b.4. Summarize the proposed solutions of the training field and their results.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Implement comprehensive computing knowledge and skills in training field and in deployment of computers to solve position practical problems.

c.2. Apply computing information retrieval skills in computing community environment and industry.

c.3. Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.

c.4. Prepare technical reports, and a dissertation, to a professional standard; use IT skills in the training field.

c.5. Specify, design, and implement computer-based systems.

c.6. Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.

c.7. Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds and apply them in the training field.

c.8. Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.

c.9. Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Use IT skills and display mature computer literacy.

d.2. Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.

d.3. Demonstrate an appreciation of the need to continue professional development inrecognition of the requirement for life-long learning.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A6	The current and underlying technologies that support computer processing and inter-computer communication	**a1**
A9	Professional, moral, and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.	**a2**
A11	Requirements, practical constraints, and computer-based systems.	**a3**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1**
B3	Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.	**b2**
B13	Identify attributes, components, relationships, patterns, main ideas, and errors.	**b3**
B15	Restrict solution methodologies upon their results.	**B4**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c1**
C4	Apply computing information retrieval skills in computing community environment and industry.	**c2**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c3**
C13	Prepare technical reports, and a dissertation, to a professional standard; use IT skills and display mature computer literacy.	**c4**
C14	Specify, design, and implement computer-based systems.	**c5**
C15	Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.	**C6**
C16	Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.	**C7**
C17	Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.	**C8**
C18	Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning.	**C9**
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	**d1**
D6	Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.	**d2**
D8	Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.	**d3**

5- content:

Training Fields:

•Networks (Administration, design, implementation, infrastructure)
• Networks and ICT.
• Developing (Desktop, Web, Mobile, embedded systems)
• AI (smart home, smart cities, IoT, modeling, medical field)
•Information Systems.
• Business Intelligence.
• Database and Data warehouse (design, administration)
• Data mining (market research, e-Business, other).
• General Applications.
• Graphical Systems and Applications
• Microprocessor Applications and Peripherals.
• Other Information technology related fields (required approval from supervisor).

Rules and Regulations:

The student must perform Field Training for 120 hours in an industrial or service facility related to the student's program and must be under the full supervision of the department.
It is also possible to perform the training inside the department in a similar environment.
• The training follow-up will be handled by the academic advisor assigned by the Program Steering Committee.
• Identifying a company official contact person.
• The student must submit a technical report to his/her academic advisor at the end of the training period.

The company should submit a student's training evaluation form to the academic advisor at the end of the training period.
• The training is 18 weeks for the first levels
•The Field Training is evaluated is count in the cumulative GPA calculation.

6- Teaching and Learning and Assessment methods:

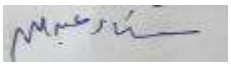
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Training Authority Report	Student Performance	20	**20 %**
2	Supervisor Report	Overall result	20	**20 %**
3	Training Authority Survey	For explanation	30	**30 %**
4	Student Survey	For explanation	30	**30 %**

8- learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	
	Other References	
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Shaimaa Abdallah Ibraheem	**Dr. Rania Ragab Hussien**
Signature		

Course Code: BSC 220

Course Name: Operations Research

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**	Level one	
Term/ Academic year	**Feb.**		2025/2026		**Credit Hours:**	3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	2	**Lab.:** -	**Total**	5
Pre-Requisite	---						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	PROF. DR. YOUSRYIA ABO ELNAGA
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Linear Programming. Formulations and graphical solutions. Algebraic solution: the simplex method and dual-simplex method. Sensitivity analysis. Transportation and assignment problems. Integer Programming: cutting-plane algorithms, branch, and bound method. Dynic programming Examples of dynamic programming by PERT-CPM.

3-Intended Learning Outcomes (ILOs)

a. Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Recognize the fundamental concepts of operations research theory and application.
a.2 Expresses logically to solve problems.
a.3 Understand the different types of problems like linear programming problems.
a.4 Decide under certainty, uncertainty, and risk.
a.5 Understand the theoretical workings of the different methods for linear programming and perform iterations of it by hand.
a.6 Formulate the problems as a network and graphs.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1 Analyze mathematical models.
b.2 Apply practical techniques for formulating and solving common optimization problems.
b.3 Solve linear programming problem with the different optimization techniques.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1 Employ gained skills in mathematics to create algorithms.
c.2 Suggest most moderate method to solve linear programming problems.
c.3 Develop and evaluate solutions to problems in computer vision.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1 Work effectively with others.
d.2 Demonstrate ability to think critically.
d.3 Design computer algorithms and software to model linear programming problems.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a2**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a3**
A4	Criteria and specifications appropriate to specific problems, and plan strategies for their solution.	**a4**
A6	The current and underlying technologies that support computer processing and inter-computer communication.	**a5**
A11	Requirements, practical constraints, and computer-based systems.	**a6**
B5	Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.	**b1**
B7	Achieve judgments considering balanced costs, benefits, safety, quality, reliability, and environmental impact	**b2**
B10	Define traditional and nontraditional problems, set goals towards solving them, and. observes results.	**b3**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c1**
C4	Apply computing information retrieval skills in computing community environment and industry.	**c2**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c3**
D3	Show the use of information-retrieval.	**d1**
D5	Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.	**d2**
D7	Show the use of general computing facilities.	**d3**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs.*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Operations Research historical background	5	3	2	-	a1, a2, a3
Week-2	Mathematical Programming Model. Linear programming Problem	5	3	2	-	a2, a3, b1
Week-3	Linear Programming Problem formulation	5	3	2	-	a2, a4, a6, b2
Week-4	Graphical Solution of LP problem.	5	3	2	-	a4, b3, c3,
Week5	Fundamental of the Algebraic solution of the Simplex Method Using STORM for solving the LP problem	5	3	2	-	a4, a5, b3, c1, c2, d1
Week-6	Different methods of solving the transportation problem. Northwest Method Row Minimum Method Matrix Minimum Method Vogle`s Approximation Method	5	3	2	-	a4, a5, a6, b3, c2, c3
Week-7	Revision	5	3	2	-	
Week-8	Midterm Exam					
Week-9	How to evaluate the transportation problem solution and how to get an optimal solution. Using STORM for solving the Transportation Problem	5	3	2		a4, a5, b2, b3, c1, c2, d1
Week-10	How to evaluate the Assignment problem solution and how to get an optimal solution	5	3	2		a4, a5, b2, b3, c1, c2
Week-11	Fundamental of network for a project management	5	3	2		a6, b3, c3, d1, d2
Week-12	Arrow Networking Diagram Representation the critical path method	5	3	2		a5, a6, b1, b2, b3, c2, d3
Week-13	Project Scheduling and Resources Planning (Gant chart)	5	3	2		a6, b3, c3, d1, d2
Week-14	Fundamental of the shortest route problem.	5	3	2		a5, a6, b1, b2, b3, c2, d3

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brainstorming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√					√	√		√						

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	4	5	5%
2	Quiz 2 written (Semester work)	10	5	5%
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	40	40 %
5	Final Practical Exam	14	0	
6	Final Oral Exam	-	0	
7	Assignments / Project	All weeks	20	20%
8	Field training	-	0	
9	Other (Mention)	-	0	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	• "Operations Research – An Introduction" by Hamdy A. Taha, 11th edition, 2023
	Other References	• Convex Optimization by Stephen Boyd and Lieven Vandenberghe (2004, 2nd edition released in 2023) • Fundamentals of Optimization by Mohan C. S. Reddy and A. Ravi Ravindran (2020) • Mathematical Programming: Theory and Methods by R. G. K. Meena (2021)
	Electronic Sources (Links must be added)	--------
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Prof. Dr. Yousria Abo Elnaga**	**Dr. Rania Ragab Hussien**
Signature		

توصيف المقرر

اسم المقرر: مبادئ الاقتصاد

كود المقرر: BSC 224

القسم القائم بتدريس المقرر	علوم الحاسب

1- معلومات أساسية :

نوع المقرر				**الفرقة الدراسية / المستوى الدراسي الذي يقدم فيه المقرر**			المستوى الثاني
العام الأكاديمي **الفصل الدراسي**	**2026/2025**		Choose an item.	**عدد الساعات المعتمدة**			2
ساعات الإتصال:	**المحاضرة:**	**2**	**التمارين:**	**-**	**المعامل:**	**-**	**إجمالي**	2
المتطلب السابق:	لا يوجد						
المعايير الأكاديمية	NARS 2018						
تاريخ الموافقة على اللائحة	2001						
منسق المقرر	د/ فرحات عبدالله						
تاريخ اعتماد توصيف المقرر	2025/8/20						
جهة مناقشة واعتماد توصيف المقرر	**مجلس/ القسم**						

2. الوصف العام للمقرر:

نظرية سلوك المستهلك والطلب: نظرية المنفعة والأداء، نظرية سلوك المستهلك، الطلب في السوق، نظرية الإنتاج والتكلفة، التنبؤ بتقدير التكلفة. نظرية الشركة وتنظيم السوق: نظرية السعر في الأسواق التنافسية الكاملة، نظرية السعر في ظل الاحتكار الخالص، نظرية السعر: في ظل المنافسة الاحتكارية. نظرية التوزيع: الإنتاجية الهامشية. نظرية التوزيع في الأسواق التنافسية الكاملة، نظرية التشغيل في الأسواق التنافسية غير الكاملة، تحديد الناتج الحقيقي ومستوى السعر، التضخم والبطالة، ميزانية الحكومة، اتخاذ القرار في ظل عدم اليقين، ميزانية رأس المال

3. مخرجات التعلم المستهدفه:

أ- المعرفه والفهم:

أ. 1 يعرف الطالب مفهوم علم الاقتصاد واهداف دراسته.

أ. 2 يعرف الطالب أبعاد المشكلة الاقتصادية

أ. 3 يعرف الطالب الأنظمة الاقتصادية المختلفة.

ب - المهارات الذهنيه:

ب. 1 يفهم طبيعة المشكلات الاقتصادية.

ب. 2 يستطيع بناء علاقات عمل جيدة وناجحة.

ب. 3 يميز مميزات وعيوب الأنظمة الاقتصادية .

ب. 4 يتمكن من بناء رؤية متوازنة للوضع الاقتصادي المعاصر.

ج - المهارات المهنية:

ج. 1 يتقن مهارة التواصل الجيد.

ج. 2 يكتسب مهارة حل المشكلات والتكامل مع الآخرين.

ج. 3 يشخص المشكلة الاقتصادية ويقترح الحلول.

د- المهارات العامه:

د. 1 يستطيع تحليل المشكلات واقتراح الحلول خاصة في مجال العمل

د. 2 يتقن مهارة التفكير المنظم وترتيب الأولويات

د. 3 يستطيع العمل من خلال فريق عمل.

4. مساهمه المقرر فى اهداف التعلم المستهدفه من البرنامج:

اتساق مخرجات التعلم المستهدفة مع مخرجات البرنامج

مخرجات البرنامج / المعايير الأكاديمية المتبناة (التي يحققها المقرر تبعا للمصفوفة في توصيف البرنامج)		مخرجات التعلم المستهدفة
الكود	النص	
A1	الحقائق الأساسية والمفاهيم والمبادئ والنظريات المتعلقة بالحوسبة وتطبيقات المعلومات والحاسوب بما يتناسب مع برنامج الدراسة.	أ. 1 – أ. 2 – أ.3
A2	نمذجة وتصميم الأنظمة المعتمدة على الحاسوب مع مراعاة المفاضلات.	أ. 2 – أ.3
B1	تحليل المشكلات الحاسوبية وتقديم الحلول المتعلقة بتصميم وبناء أنظمة الحاسوب.	ب. 1 – ب. 2
B2	إدراك المفاهيم والمبادئ والنظريات والممارسات الكامنة وراء الحوسبة والمعلومات كتخصص أكاديمي.	ب. 3 – ب.4
C1	تشغيل معدات الحاسوب مع التعرف على خصائصها المنطقية والفيزيائية وإمكاناتها وحدودها.	ج. 1 – ج 2.
C2	تطبيق المعرفة والمهارات الحاسوبية الشاملة في المشاريع وفي استخدام الحواسيب لحل المشكلات العملية المطروحة.	ج 3
D1	إظهار القدرة على الاستفادة من مجموعة متنوعة من مصادر التعلم وإدارة عملية التعلم الذاتية.	د1,د2,د3

5. محتوى المقرر:

رقم الإسبوع	الموضوع	مجموع الساعات	ساعات الإتصال			مخرجات التعلم المستهدفة المغطاة بواسطة المقرر
			محاضرة	حصص تمارين	معمل	
الإسبوع-1	تعريف علم الاقتصاد	2	2	0	0	1.أ
الإسبوع-2	**لماذا ندرس علم الاقتصاد ، ما المشكلة الاقتصادية**	2	2	0	0	2.أ
الإسبوع-3	أبعاد المشكلة الاقتصادية	2	2	0	0	1.أ2وب
الإسبوع-4	أهداف المجتمع الاقتصادي	2	2	0	0	3أ3وب1وج
الإسبوع-5	الأنظمة الاقتصادية : الرأسمالي	2	2	0	0	3أ3وب1وج
الإسبوع-6	الاشتراكي	2	2	0	0	2 .ج ، 3 .ب ،3 .أ
الإسبوع-7	النظام المختلط	2	2	0	0	3 .ج، 3 .ب ،3 .أ
الإسبوع-8	**إمتحان نصف الفصل**					
الإسبوع-9	النظام الاسلامي	2	2	0	0	3 .ج، 3 .ب. 3 .أ
الإسبوع-10	الاقتصاد الجزئي والكلي	2	2	0	0	4 .ب. 3 ،ب. 3 .أ ،ج. 3
الإسبوع-11	مصطلحات في علم الاقتصاد	2	2	0	0	4 .ب. 3 ،ب. 3 .أ ،ج. 3
الإسبوع-12	مصطلحات في علم الاقتصاد	2	2	0	0	4 .ب. 3 ،ب. 3 .أ ،ج. 3
الإسبوع-13	مراجعه عامه	2	2	0	0	4 .ب. 3 ،ب. 3 .أ ،ج. 3
الإسبوع-14	الامتحان النهائي	2	2	0	0	

6. طرق التعليم و التعلم للمقرر:

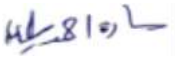
استراتيجيات التعلم بمساعدة تكنولوجيا المعلومات				التدريس الغير مباشر									التدريس المباشر	
الذكاء الإصطناعي في التعليم	التعلم الالكتروني	الافتراضية المعامل	النمذجة أو المحاكاة برامج	التعلم بالإكتشاف	التعلم الذاتى	الميدانية الزيارات	الميداني التدريب	والمناقشة الحوار	الأبحاث /التقارير كتابة	حل المشكلات	الحالة دراسة استراتيجية	الجماعية المشروعات على القائم التعلم	العصف الذهنى	العملية والتجارب التمارين	المحاضرات
									√	√			√	√	√

7. طرق تقييم الطلاب:

م	طرق التقييم *	توقيت التقييم المتوقع (رقم الأسبوع الدراسي)	درجات التقييم	النسبة المئوية من إجمالي درجة المقرر
1	امتحان 1 تحريري (أعمال سنة)	5	15	% 15
2	امتحان 2 تحريري (أعمال سنة)			
3	امتحان منتصف الفصل الدراسي	8	30	% 30
4	امتحان نهائي تحريري	15 و 16	40	% 40
5	امتحان نهائي عملي			
6	امتحان نهائي شفوي			
7	تكليفات / مشروع	12	15	% 15
8	تدريب ميداني			
9	أخرى (تذكر)			

8. مصادر التعلم و التسهيلات المادية:

مصادر التعلم (الكتب والمراجع العلمية وغيرها) *	المرجع الأساسي للمقرر (لابد من كتابة البيانات كاملة وفقا لطريقة توثيق علمي)	▪ معجم المصطلحات الاقتصادية د محمد عمارة ط دار السلام مصر.
	المراجع الأخرى	- دروس مبسطة في الاقتصاد " لروبرت ميرفي" 2 - دليل الرجل العادي لتاريخ الفكر الاقتصادي" ل د. حازم " البيلاوي دار الشروق 3 - المسلم في عالم الاقتصاد، مالك بن نبي دار الفكر-دمشق سورية 2000 م
	المصادر الالكترونية (لابد من إضافة الروابط)	لا يوجد
	المنصة التعليمية (لابد من إضافة الرابط)	Microdoft Teams
التجهيزات التعليمية المساندة للتعليم والتعلم *	الأجهزة	العرض التقديمي بمساعدة الحاسوب ▪ أجهزة الحاسوب ▪ ألواح الكتابة البيضاء
	المستلزمات	
	أخرى (تذكر)	

	منسق المقرر	منسق البرنامج
الإسم	د/ ساره احمد سليمان	د/ رانيا رجب
التوقيع		

Higher Technological Institute (HTI)-10th of Ramadan City
Computer Science Department

Course Specification

Course Code: CSC 222

Course Name: Operating Systems

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**		Level 2	
Term/ Academic year	**Oct.**		2025/2026		**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	-	**Lab.:**	2	**Total**	5
Pre-Requisite	CSC 121							

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Sara Ahmed
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Introduction. Operating system structures: System components, operating system services, system structure, virtual machines, system design, and implementation, system generation. Concurrent processes: Process concept, the producer/consumer problem, the critical section problem, semaphores, language constructs, interposes communication. CPU scheduling: scheduling concepts, performance criteria, scheduling algorithm. Memory management: Multi programming with fixed partitions. multiprogramming with variable partitions, paging, and segmentation. Secondary storage management: Physical characteristics, device directory, free space management, allocation methods, disk scheduling. File systems: File concept. access methods, directory systems, file protection.

3-Intended Learning Outcomes (ILOs)

CSC 222- Operating Systems

a. Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Define the fundamental concepts, principles, theories Operating Systems.

a.2 Describe the mechanisms that permit multiple programs to effectively share a single computer.

a.3 Identify the relationship between hardware, operating system, process and thread execution and file management.

a.4 List the fundamental concepts, principles and algorithms of the process scheduling, memory management and I/O Management.

a.5 Recall the principles and techniques of several application areas informed by the research directions of the subject, such as mathematics.

a.6 Describe The current and underlying technologies that support computer processing and inter-computer communication.

Know the design of computer-based systems bearing in mind the trade-offs.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Explain the building of a simple shell command interpreter.

b2. Distinguish between the scheduling algorithms.

b3. Rewrite multithreaded & concurrent programs.

b4. Distinguish between the operating systems tasks.

b5. Realize the main OS modules, i.e., managing process, memory, and storage.

b6. Analyze the alternative computer systems and processes taking into account limitations, and quality constraints.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Write programs that create processes and threads. c2. Build multithreaded programs. c3. Design programs that simulate a simple shell command interpreter. c4. Apply the grabbed knowledge to implement the given tasks in different OS modules. c5. Examine the technical merits of a specific OS module.

c6. Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Show a positive attitude towards the aim of the course.

d2. Demonstrate the important points of the course contents.

d3. Manage oral communication by making report presentation.
d4. Collect information from a variety of sources such as libraries, hard copies, or electronic sources.
d5. Demonstrate project management, risk analyze, quality assurance and system validation skills for variation in different fields.
d6. Exhibit a technical presentation that based on reading references

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a1,a2**
A5	The extent to which a computer-based system meets the criteria defined for its current use and future development.	**a3,a4**
A10	Current developments in computing and information research.	**a5,a6**
A11	Requirements, practical constraints, and computer-based systems.	**a7**
B3	Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.	**b1**
B4	Analyze, propose and evaluate alternative computer systems and processes taking into account limitations, and quality constraints.	**b2,b3**
B6	Evaluate the results of tests to investigate the functionality of computer systems.	**b4**
B8	Familiar with the professional, legal, moral, and ethical issues relevant to the computing industry.	**b5**
B9	Evaluate research papers in a range of knowledge areas	**b6**
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1,c2**
C3	Deploy the equipment and tools used for the construction, maintenance, and documentation of computer applications.	**c3**
C5	Develop a range of fundamental research skills, using online resources, technical repositories and library-based material	**c4,c5**
C7	Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.	**c6**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1,d2,d3**
D8	Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.	**d4,d5,d6**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to operating systems.	**5**	**3**	-	**2**	**a1, a2**
Week-2	Main component of operating system, operating system services, system structure	**5**	**3**	-	**2**	**a3, a4, a5, a6**
Week-3	Virtual machines, system design, implementation, system generation	**5**	**3**	-	**2**	**b1, b2, b3, b5**
Week-4	Concurrent processes	**5**	**3**	-	**2**	**a4**
Week5	CPU scheduling	**5**	**3**	-	**2**	**a4, a5, b3, b6**
Week-6	Processor scheduling	**5**	**3**	-	**2**	**a4, a5, b3, b6**
Week-7	**Revision**					
Week-8	**Midterm Exam**					
Week-9	Memory management: multi programming with variable partitions	**5**	**3**	-	**2**	**b1, b2, b3. c1, c 3, c5**
Week-10	Secondary storage management: physical characteristics, device directory	**5**	**3**	-	**2**	**b1, b2, b3, c2, c4, c5**
Week-11	Secondary storage management: free space management, allocation methods, disk scheduling	**5**	**3**	-	**2**	**b1, b2, b3, c1, c 3, c6**
Week-12	File systems: file concept, access methods	**5**	**3**	-	**2**	**a5, b3, c3, c5**
Week-13	File systems: directory systems, file protection	**5**	**3**	-	**2**	**a5, b3, c3, c4**
Week-14	Review	**5**	**3**	-	**2**	**a1, a2, a3, b1, b2, b3, c1, c2, c 3**

6- Teaching and Learning and Assessment methods:

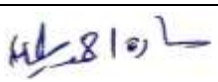
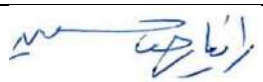
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√	√	√	√	√			√	√	√		

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	10	10 %
2	Quiz 2 written (Semester work)	9	10	10 %
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10 %
6	Final Oral Exam		0	
7	Assignments / Project	weekly	10	10 %
8	Field training		0	
9	Other (Mention)		0	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Abraham. S, Greg.G, and Peter.G, "Operating System Concepts", 10th edition, Wiley & Sons,Inc. 2019.
	Other References	• William Stallings, "Operating system Internal and design principles", 7th edition, Pearson Education Inc, 2011.
	Electronic Sources (Links must be added)	https://www.javatpoint.com/linux-tutorial https://linuxjourney.com/
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Sara Ahmed	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 210

Course Name: Object oriented programming

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**	Level Two	
Term/ Academic year	**Oct.**		2025/2026		**Credit Hours:**	4	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	-	**Lab.:** 3	**Total**	6
Pre-Requisite	**CSC 121**						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Sara Ahmed Soliman
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Objects: Object classes and inheritance through, a design example, deriving an object- oriented design. Functional oriented design: Data flow diagrams, structure charts, data dictionaries, deriving structure charts, design examples, concurrent systems design. User interface design: User interface design objectives, interface metaphors, WIMP (Window, Icons, Menus, and Pointing) interfaces using color displays.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Define fundamentals about the Object-Oriented Programming. Generate tests which investigate the functionality of computer programs and computer systems and evaluating their results.

a.2. Recognize the difference between structured programming and OOP.

a.3. Outline the scientific developments in the OOP Environment.

a.4 Outline the principles of inheritance and polymorphism to simplify problems.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Summarize the alternative developments using different OOP concepts.

b.2. Summarize different real problems can be solved using OOP.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1 Design technical presentations suitable for the time, place, and audience.

c.2 Use web resources to implement problems using OOP in creative manner.

c.3 Use scientific literature to implement an efficient algorithm based on OOP.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Formulate hard tasks to develop communication skills.

d.2. Schedule the tasks with multiple deadlines.

d.3. Demonstrate group working.

d.4. Collect information as references from a variety of sources such as libraries, hard copies, or electronic sources.

d.5. Use project management, risk analysis, quality assurance and system validation skills for variation in different fields

d.6. Design a technical presentation that is based on reading references.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1,a2**
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a3**
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	**a4**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1**
B5	Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.	**b2**
C6	Design, implement, maintain, and manage software systems.	**c1**
C8	Handle a mass of diverse data, assess risk and draw conclusions.	**c2**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c3**
D3	Show the use of information-retrieval.	**d1,d4,d6**
D7	Show the use of general computing facilities.	**d2,d3,d5**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	- Primitive data types and data types as objects. - Data Abstraction and encapsulation	5	3	-	2	a1,a2,c2,d1,d2
Week-2	Functions (call by value and call by reference).	5	3	-	2	a1,a2,c2,d1,d2
Week-3	Overloading, default,arguments. - Storage class specifier.	5	3	-	2	a1,a2,c2,d1,d2
Week-4	Classes Constructor ,destructor - Inline functions. - Class member access.	5	3	-	2	a2,a3,b1,c2,d2 ,d3
Week5	Array of objects Object references Classes: -Friend function. -Overloading constructor functions.	5	3	-	2	a3,a4,b1,c2,c3 ,d2,
Week-6	Assigning objects. - Passing objects to functions.	5	3	-	2	b1,c2,c3
Week-7	Copy constructor. - This keyword.	5	3	-	2	b1,c2,c3
Week-8	Midterm Exam.					
Week-9	Friend functions .	5	3	-	2	a4,b1,c2,c3,d2 ,d4
Week-10	Inheritance	5	3	-	2	a4,b1,c2,c3,d2 ,d4
Week-11	-Inheriting multiple base class .	5	3	-	2	a3,b1,b2,c2,c3 ,d2
Week-12	Polymorphism	5	3	-	2	a3,a4,b1,c2,c3 ,
Week-13	Abstract classes.	5	3	-	2	a3,a4,b1,c2,c3 ,
Week-14	Lab Exam					

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**10**	**10 %**
2	Quiz 2 written (Semester work)	**11**	**10**	**10 %**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10 %**
6	Final Oral Exam	**0**	**0**	**0**
7	Assignments / Project	**weekly**	**10**	**10 %**
8	Field training	**0**	**0**	**0**
9	Other (Mention)	**0**	**0**	**0**

8-Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Steven F. Lott, "Mastering Object-Oriented Python: Build powerful applications with reusable code using OOP design patterns and Python", 2nd Edition , Packt Inc., 2019.
	Other References	Deitel P.J., Deitel H.M., "Java How to Program, Early Objects", 11th Edition , PEARSON, 2019.
	Electronic Sources (Links must be added)	https://www.tutorialspoint.com/python/python_classes_objects.htm
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Sara Ahmed Soliman	**Dr. Rania Ragab Hussien**
Signature		

Course Code: FTR 230

Course Name: Field Training (2)

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		LEVEL 2	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		5	
Contact Hours	**Lecture:**	**18**	**Tutorial:**		**Lab.:**	**Total**	18
Pre-Requisite	FTR 130, 30 -credits completed.						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	Dr. Shaimaa Abdallah Ibraheem						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Each Student must attend a supervised training program of 10 weeks in a relevant field to gain practical experience in a real engineering environment. At the end of the training period, the student must submit a written report for evaluation.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Describe the current and underlying technologies in the labor market that support computer processing and inter-computer communication.

a.2. Recognize professional, moral and ethical issues involved in the computer technology labor market and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.

a.3. List of the requirements, practical constraints and computer-based systems.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Analyze computing problems and provide solutions related to the design and construction of computing systems.

b.2. Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.
b.3. Identify attributes, components, relationships, patterns, main ideas, and errors.
b.4. Summarize the proposed solutions of the training field and their results.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Implement comprehensive computing knowledge and skills in training field and in deployment of computers to solve position practical problems.
c.2. Apply computing information retrieval skills in computing community environment and industry.
c.3. Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.
c.4. Prepare technical reports, and a dissertation, to a professional standard; use IT skills in the training field.
c.5. Specify, design, and implement computer-based systems.
c.6. Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.
c.7. Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds and apply them in the training field.
c.8. Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.
c.9. Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Use IT skills and display mature computer literacy.
d.2. Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.
d.3. Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A6	The current and underlying technologies that support computer processing and inter-computer communication	a1,
A9	Professional, moral, and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.	a2
A11	Requirements, practical constraints, and computer-based systems.	a3
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	b1
B3	Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.	b2
B13	Identify attributes, components, relationships, patterns, main ideas, and errors.	b3
B15	Restrict solution methodologies upon their results.	B4
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	c1
C4	Apply computing information retrieval skills in computing community environment and industry.	c2
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	c3
C13	Prepare technical reports, and a dissertation, to a professional standard; use IT skills and display mature computer literacy.	c4
C14	Specify, design, and implement computer-based systems.	c5
C15	Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.	C6
C16	Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.	C7
C17	Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.	C8
C18	Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning.	C9
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	d1
D6	Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.	d2
D8	Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.	d3

5- content:

Training Fields:

•Networks (Administration, design, implementation, infrastructure)
• Networks and ICT.
• Developing (Desktop, Web, Mobile, embedded systems)
• AI (smart home, smart cities, IoT, modeling, medical field)
•Information Systems.
• Business Intelligence.
• Database and Data warehouse (design, administration)
• Data mining (market research, e-Business, other).
• General Applications.
• Graphical Systems and Applications
• Microprocessor Applications and Peripherals.
• Other Information technology related fields (required approval from supervisor).

Rules and Regulations:

The student must perform Field Training for 120 hours in an industrial or service facility related to the student's program and must be under the full supervision of the department.
It is also possible to perform the training inside the department in a similar environment.
• The training follow-up will be handled by the academic advisor assigned by the Program Steering Committee.
• Identifying a company official contact person.
• The student must submit a technical report to his/her academic advisor at the end of the training period.

• The company should submit a student's training evaluation form to the academic advisor at the end of the training period.
• The training is 18 weeks for the second levels
•The Field Training is evaluated is count in the cumulative GPA calculation.

6- Teaching and Learning and Assessment methods:

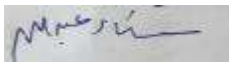
Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Training Authority Report	Student Performance	20	**20 %**
2	Supervisor Report	Overall result	20	**20 %**
3	Training Authority Survey	For explanation	30	**30 %**
4	Student Survey	For explanation	30	**30 %**

8- learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	
	Other References	
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Shaimaa Abdallah Ibraheem	**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 210

Course Name: Data Structure

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		**Level 2**	
Term/ Academic year	**Oct.**		2025/2026	**Credit Hours:**		**3**	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	**2**	**Total**	**5**
Pre-Requisite	**CSC 121**						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	Dr.Rania Ragab Hussien 						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Abstract Data Types (ADT). Stacks: Definition and operations, implementation of stacks with array and records, applications of stacks. queues: Definitions, implementation of circular queues, applications of queues. Linked lists, singly linked lists, linked stacks, linked queues, and doubly linked lists, application of linked lists, Tree structures, binary trees: binary tree traversals, binary tree search. Searching Definitions, sequential search. virtual memory,

cache memory, and memory management hardware. Pipelines and vector processing multiprocessor

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Define different abstract data types.
a.2. Define different sort techniques.
a.3. Recognize different types of trees.
a.4. outline sorting technique complexity
a.5. Recall the principles of list to solve the problems with stack and queue

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Summarize the alternative developments for different ADT
b.2. Identify different algorithms to implement the same ADT
b.3. Identify different real problems are solved using ADT.
b.4. Solve a wide range of problems related to the analysis, design and construction of computer systems
b.5. Analyze the requirements of a range of computer-based systems and examine the design alternatives based on the constraints imposed by society, organizations, and technology.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Design, write and debug computer programs in appropriate languages.
c.2. Design technical presentations suitable for the time, place, and audience.
c.3. Use web resources to implement ADT in a creative manner.
c.4. Use scientific literature to implement an efficient algorithm based on ADT.

General and transferable skills:

On successful completion of the courses, students should be able to:

d.1 Formulate hard tasks to develop communication skills.
d.2 Schedule the tasks with multiple deadlines.
d.3 Demonstrate group working.
d.4 Collect information as references from a variety of sources such as libraries, hard copies, or electronic sources.
d.5 Use project management, risk analysis, quality assurance and system validation skills for variation in different fields.
d.6 Design a technical presentation that is based on reading references.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1, a2**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a3**
A10	Current developments in computing and information research.	**a4**
A11	Requirements, practical constraints, and computer-based systems.	**a5**
B4	Analyze, propose and evaluate alternative computer systems and processes taking into account limitations, and quality constraints.	**b1,b2**
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	**b3**
B12	Perform classifications of (data, results, methods, techniques, algorithms. etc.).	**b4,b5**
C3	Deploy the equipment and tools used for the construction, maintenance, and documentation of computer applications.	**c1, c2**
C8	Handle a mass of diverse data, assess risk and draw conclusions.	**c3**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c4**
D3	Show the use of information-retrieval.	**d1,d2**
D5	Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.	**d3**
D7	Show the use of general computing facilities.	**d4,d5,d6**

5- Course Schedule:

Week No.	Topic	Total Hours	Contact hrs			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction and overview	5	3	0	2	a1,c1
Week-2	Write an array using handling pointer	5	3	0	2	a1, b1,c1
Week-3	Basic operations done on linear arrays and multidimensional array	5	3	0	2	a2,b1,d1
Week-4	Write programs based on structures	5	3	0	2	a2,b2,c2
Week5	Recursion	5	3	0	2	a2,b2,c2,d2
Week-6	Stack	5	3	0	2	a3.b3,d3
Week-7	Queue	5	3	0	2	a3,b3,c3
Week-8	Midterm Exam.					
Week-9	Linked list and its operations	5	3	0	2	a4,b4,d4
Week-10	Linked list abstract data types	5	3	0	2	a4,c4,d5
Week-11	Write programs with different list types	5	3	0	2	a5,b5
Week-12	Mathematical functions and trees	5	3	0	2	a5,c4,d5
Week-13	Tree abstract data structures	5	3	0	2	a5,b5
Week-14	Write binary search tees with its applications	5	3	0	2	a5,b5,d6

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√									

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5th week	10	10%
2	Quiz 2 written (Semester work)	10th week	10	10%
3	Midterm exam	8th week	30	30 %
4	Final Written Exam	15th, 16thweek	30	30 %
5	Final Practical Exam	14th week	10	10%
6	Final Oral Exam	0	0	0
7	Assignments / Project	6th,12thweek	10	10%
8	Field training	0	0	0
9	Other (Mention)	0	0	0

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Robert Lafore, *Data Structures and Algorithms in C++* is the **4th Edition, 2021.**
	Other References	Manber, Udi. *Introduction to Algorithms: A Creative Approach*. Addison-Wesley, 1989. • Lafore, Robert. *Data Structures and Algorithms in Java*.

		2nd ed., Sams Publishing, 2018. • Miller, Bradley N., and David L. Ranum. *Problem-Solving with Algorithms and Data Structures using Python*. Franklin, Beedle & Associates Inc, 2005.
	Electronic Sources (Links must be added)	https://www.cs.usfca.edu/~galles/visualization/Algorithms.html
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Rania Ragab Hussien**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 211

Course Name: Introduction to Information Systems

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		Level one	
Term/ Academic year	**Feb.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	2	**Total**	5
Pre-Requisite	----------						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. RANIA RAGAB HUSSIEN
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Fundamental concepts, objective of information system, system definition, subsystem definition message passing in information system. message levels, data, information. knowledge. needs. System, sources, data processing (DP). electronic processing (EDP), management information system (MIS), decision support system (DSS), office automation system (OAS), executive information system (EIS), expert system (ES), computer-based information system (CBIS), types of CBIS. relationships among CBIS, the evolutionary view, the hierarchical view, the contingency view, the importance of CBTS, the nature of information system in different organizations. Management concepts in CBIS, data management, the organization of data, application-oriented files, database approach, decision-making concepts and tools, decision support system (DSS), building a DSS, application of DSS.

3-Intended Learning Outcomes (ILOs)

a. Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Recognize the ingredients of management knowledge.

a2. Recognize the synthesis of technological and business knowledge to develop and integrate effective IS solutions that support management decision making and organizational strategies.

a3. Recognize and analyze problems in organizational situations and select and defend a course of action.

a4. Define the necessary for success in the management of information technology

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Discuss and analyze ethical problems in organizational situations and select and defend a course of action.

b2. Explains Information Systems: Concepts and Management.

b3. Illustrate Data and Knowledge Management, critical thinking and problem-solving skills when analyzing and solving information system and business problems.

b4. Explain the Organization of Information Systems.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Use the knowledge of information systems to implement strategic support organization's objectives.

c2. Choose appropriate Information Systems and Applications according to their needs.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Prepare an assignment and project report.

d2. Communicate effectively with complex information systems and business concepts orally and in writing.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A4	Criteria and specifications appropriate to specific problems, and plan strategies for their solution.	**a2**
A11	Requirements, practical constraints, and computer-based systems.	**a3**
A14	Demonstrating basic knowledge and understanding of the core of analysis, algebra, applied mathematics and statistics.	**a4**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b2**
B12	Perform classifications of (data, results, methods, techniques, algorithms. etc.).	**b3**
B13	Identify attributes, components, relationships, patterns, main ideas, and errors.	**b4**
C4	Apply computing information retrieval skills in computing community environment and industry.	**c1**
C16	Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.	**c2**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group work, team management, time management and organizational skills.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs.*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to Information systems, Foundations of Information Systems in Business,	5	**3**	**0**	**2**	**a1, b1, b2, b4**
Week-2	Information Technologies: Computer Hardwar	5	**3**	**0**	**2**	**a2, b2**
Week-3	Information Technologies: Computer Software	5	**3**	**0**	**2**	**a2, b2**
Week-4	Data Resource and knowledge Management	5	**3**	**0**	**2**	**a1, a2, b2**
Week5	Telecommunications and Networks	5	**3**	**0**	**2**	**a1, a2, b2**
Week-6	Competitive Advantage and Electronic Business Systems	5	**3**	**0**	**2**	**a3, a4, b3, b4**
Week-7	Revision	5	**3**	**0**	**2**	
Week-8	**Midterm Exam.**					
Week-9	Customer Relations management and Electronic Commerce Systems	5	**3**	**0**	**2**	**a3, a4, b3, b4**
Week-10	Information systems and applications, Decision support system (DSS), building DSS, application of DSS	5	**3**	**0**	**2**	**a3, a4, b3, b4**
Week-11	Organizational Strategy, Developing Business/IT Solutions	5	**3**	**0**	**2**	**a3, a4, b3, b4**
Week-12	Information Security, Ethical and privacy Challenges	5	**3**	**0**	**2**	**a3, a4, b3, b4**
Week-13	Enterprise and Global Management of Information Technology	5	**3**	**0**	**2**	**a3, a4, b3, b4**
Week-14	Lab examination	5	**3**	**0**	**2**	

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brainstorming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√					√	√		√						

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**4**	**5**	**5%**
2	Quiz 2 written (Semester work)	**10**	**5**	**5%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam	**-**	**0**	
7	Assignments / Project	**All weeks**	**20**	**20%**
8	Field training	**-**	**0**	
9	Other (Mention)	**-**	**0**	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	• Information Systems: A Manager's Guide to Harnessing Technology (9th Edition) by John Gallaugher (2021)
	Other References	• Business Driven Information Systems (7th Edition) by Paige Baltzan (2022) • Information Systems for Business and Beyond (2020) by David Bourgeois
	Electronic Sources (Links must be added)	----------
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Rania Ragab Hussien**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 220

Course Name: System Analysis

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		LEVEL 2	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	**Lab.:**	2	**Total**	5
Pre-Requisite	INF 211						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Shaimaa Abdallah Ibraheem
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

The system devolvement environment. Success as system analyst: The analytical skills, including systems thinking needed for a systems analyst to be successful, the technical skills required of a systems analyst, the management skills required of a systems analyst, Identifying the interpersonal skills required of systems analyst, the systems analysis profession Systems Thinking, Organizational knowledge. Problem Identification, Problem analyzing and solving Managing the information systems project: Explain the process of managing an information systems project, skills required to be an effective project manager, skills and activities of a project manager during project initiation, planning, execution and closedown. Gantt and pert charts, review commercial project management software packages. Automated tools for systems development: Identify the trade- offs

when using Case, describe organizational forces for and against adoption of case tools, describe the role of case tools and how they are used to support the SDLC, list and describe the typical components of a comprehensive case environment, Describe the general functions of upper case tools, lower case tools, cross life-cycle case tools and the case repository, describe visual and emerging development tools and how they are begin used. Identifying and selecting Systems Development Projects the project identification and selection process, the corporate strategic planning and information systems planning process, the relationship between corporate strategic planning and information systems planning, how information systems planning can be used to assist in identifying and selecting systems development projects, analyze information systems planning matrices to determine affinity between information systems and IS projects and to forecast the impact of IS projects on business objectives, Describe the three classes of Internet electronic commerce applications: Internet. Intranets and Extranets.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Identify Essential facts, concepts, principles, and theories relating to system analysis and design

a.2. Describe various tools and techniques for requirements gathering and appropriate system analysis methodologies selection based on project needs

a.3. Clarify computer systems and the relationship between hardware, operating system and other software in addition to basic networking systems and WW technology

a.4. Understand the high-level programming languages can be beneficial for system analysts.

a.5. Recognize the fundamental topics in computing, including software architecture and software engineering principles.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Analyze the requirements of a range of computer-based systems with the design alternatives based on the constraints imposed by society, organizations, and technology.

b.2. Analyze idea, proposal and designs using rational and reasoned arguments for systems.

b.3. Identify a wide range of problems and their solution

b.4. realize the proposed solutions and their results

b.5. Evaluate the feasibility of proposed system solutions considering factors like cost, technical limitations, and user needs

b.6. Explain the selection of a final system design solution by providing a clear and concise rationale based on the evaluation criteria.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Apply the major development activities in designing a system
c.2. Apply knowledge of programming languages, design methodologies and database to design system.
c.3. Evaluate systems in terms of their quality and possible trade-offs.
c.4. Develop project management skills to plan, schedule, and manage system development projects effectively within time and budget constraints.
c5. Recognize risks or safety aspects involved in the operation of computer-based systems.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Demonstrate the ability to solve organizational problems.
d.2. Display an integrated approach to the deployment of communication skills
d.3. Prepare technical reports, and a dissertation, to a professional standard.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a2**
A10	Current developments in computing and information research.	**a3**
A13	Using of high-level programming languages.	**a4**
A18	The fundamental topics in Computer Science, including hardware and software architectures, software engineering principles and methodologies, operating systems, compilers, parallel and distributed computing, systems, and software tools.	**a5**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1**
B5	Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.	**b2**
B10	Define traditional and nontraditional problems, set goals towards solving them, and. observes results.	**b3**
B14	Summarize the proposed solutions and their results.	**b4**
B15	Restrict solution methodologies upon their results.	**b5**
B17	Identify a range of solutions and critically evaluate and justify proposed design solutions.	**b6**
C3	Deploy the equipment and tools used for the construction, maintenance, and documentation of computer applications.	**c1**
C6	Design, implement, maintain, and manage software systems.	**c2**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c3**
C13	Prepare technical reports, and a dissertation, to a professional standard; use IT skills and display mature computer literacy.	**c4**
C14	Specify, design, and implement computer-based systems.	**c5**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d1**
D3	Show the use of information-retrieval.	**d2**
D7	Show the use of general computing facilities.	**d3**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to Systems Analysis	5	3	-	2	a1, a2, a3,b1
Week-2	Information System Development	5	3	-	2	a1, a2, a4,b1
Week-3	System analysis - structured	5	3	-	2	a4,b3,b2,b3
Week4	System analysis – prototyping - JAD	5	3	-	2	b1,b3,b5,c1,c2,
Week-5	Rapid Application Development (RAD) Tools (Visual Basic Programming)	5	3	-	2	a4,a5,b5,c2,c5
Week-6	Data Modeling (Entity Relationship M odeling) -Proc ess Modeling	5	3	-	2	B3,b4,b5,c4,c5, c6,
Week-7	Revision					
Week-8	Midterm Exam.					
Week-9	Data Flow Diagrams- functional decomposition Object Modeling	5	3	-	2	a5,b4,b5,c1,c2,d1,d2
Week-10	Functional-decomposition-Object Modeling CASE tools	5	3	-	2	b4,b5,b6,c1,c2,d2
Week-11	Input and Output Design - User interface Design	5	3	-	2	a3,a4,b1,b2,b3,b4,b5 ,c1,c2,d1,d 2
Week-12	SQL server database- Object Oriented System Analysis & Design Using UML	5	3	-	2	a3,b4,b5,b5,c2,c3,c4
Week-13	Project-Management-information Gathering	5	3	-	2	B5,b6,c1,c3,c5,d1,d 2,d3
Week-14	LAB AND ORAL EXAM					

6- Teaching and Learning and Assessment methods:

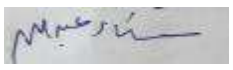
Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√	√	√	√			√	√	√			

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	10	10	10 %
2	Quiz 2 written (Semester work)		0	
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10 %
6	Final Oral Exam		0	
7	Assignments / Project	weekly	10	10 %
8	Field training		0	
9	Other (Mention)		10	10 %

8- learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Jullie E. Kendall Pearson, "System Analysis and Design", 10th Edition , 2021
	Other References	John Satzinger, Robert Jackson, Stephen D. Burd,"System Analysis and Design In A Changing World ", 7th Edition.2008 Dennis, Wixom, Roth, " System Analysis and Design", 5th Edition 2012.
	Electronic Sources (Links must be added)	System analysis and design(cengage)book https://www.cengage.com/c/systems-analysis-and-design-11e-shelly/?utm_source=chatgpt.com
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

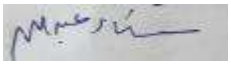
	Course Coordinator	Program Coordinator
Name	Dr. Shaimaa Abdallah Ibraheem	**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 221

Course Name: File Organization

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		Level 2	
Term/ Academic year	**Oct.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** 2	**Lab.:**		**Total**	5
Pre-Requisite	**INF 210**						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	Dr. Shimaa Abd Allah 						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

File Processing Environment: Overview of files, blocking and buffering, secondary storage devices, sequential access: sequential file organization, external sort/merge algorithms. Random access: Direct addressing, hashing, perfect hashing, and Dynamic hashing Tree structured file organization, high balanced binary search trees, Indexed sequential the organization. List structured file organization, multiple-key and inverted file, the merits of these file organizations and the optimum choice for a given application (application in information system).

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Define the essential mathematics relevant to file organization.

a.2 Define the concepts of file compression techniques.

a.3 List the secondary storge devices.
a.4 Identify the fundamental topics in Computer Science, including hardware and methodologies for file organization.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1 Explain comparisons between different methods in file organization.
b.2 Evaluate the different techniques used in file organization.
b.3 Analyze classifications of data, results and methods in file organization.
b.4 Clarify the different algorithms in file organization.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1 Apply the principles of effective information management.
c.2 Implement the information organization techniques.
c.3 Test the used information-retrieval skills.
c.4 Examine the different applications according to its needs.
c.5 Add skills through research in File organization literature that will prepare them for life-long learning in the field.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1 Show the use of information-retrieval systems.
d.2 Communicate effectively with complex information systems and business concepts orally and in writing.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1,a2,a3,a4**
A5	The extent to which a computer-based system meets the criteria defined for its current use and future development.	**a4**
A11	Requirements, practical constraints, and computer-based systems.	**a4**
A19	Selecting advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.	**a4**
B8	Familiar with the professional, legal, moral, and ethical issues relevant to the computing industry.	**Not covered**
B10	Define traditional and nontraditional problems, set goals towards solving them, and. observes results.	**b2,b3**
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	**b1,b4**
B17	Identify a range of solutions and critically evaluate and justify proposed design solutions.	**b2**
C3	Deploy the equipment and tools used for the construction, maintenance, and documentation of computer applications.	**Not covered**
C6	Design, implement, maintain, and manage software systems.	**Not covered**
C7	Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.	**Not covered**
C12	Prepare and present seminars to a professional standard.	**Not covered**
C18	Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning.	**Not covered**
D3	Show the use of information-retrieval.	**Not covered**
D7	Show the use of general computing facilities.	**Not covered**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to file organization	5	3	2	-	a1, a2, b1
Week-2	Fundamentals of operations in file processing	5	3	2	-	a2, b3
Week-3	Secondary storage devices	5	3	2	-	a2, b2
Week-4	File compression	5	3	2	-	a1, a2, b1, b2
Week5	Sequential File organizations	5	3	2	-	a1, a2, b1, b2
Week-6	Direct file organization	5	3	2	-	a1, a2, b3, b4
Week-7	Revision					
Week-8	Midterm Exam.					
Week-9	Indexing	5	3	2	-	a2, a3, a4
Week-10	Overview of trees and Binary trees	5	3	2	-	a2, a3, a4
Week-11	Overview of trees and Binary trees	5	3	2	-	a2, a3, a4
Week-12	Overview of hashing and Hashing Techniques	5	3	2	-	a2, a3, a4
Week-13	Overview of hashing and Hashing Techniques	5	3	2	-	a2, a3, a4
Week-14	Revision	5	3	2	-	

6- Teaching and Learning and Assessment methods:

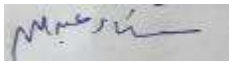
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√	√	√			√					

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	10	10 %
2	Quiz 2 written (Semester work)	9	10	10 %
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	40	40 %
5	Final Practical Exam	14	0	
6	Final Oral Exam		0	
7	Assignments / Project	weekly	10	10 %
8	Field training		0	
9	Other (Mention)		0	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Malek, Zakiya. Data and File Structures. BPB Publications, 2016.
	Other References	Alan L. Tharp," File organization and processing, " John willy and sons, 2008.
	Electronic Sources (Links must be added)	None
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Shimaa Abd Allah	**Dr. Rania Ragab Hussien**
Signature		

اسم المقرر: تربية رياضية (2)

كود المقرر: PHE 220

القسم القائم بتدريس المقرر	علوم الحاسب

1- معلومات أساسية :

نوع المقرر	**اجباري**				**الفرقة الدراسية / المستوى الدراسي الذي يقدم فيه المقرر**		**الفرقة/المستوي الثاني**
العام الأكاديمي / **الفصل الدراسي**	**2026/2025**		أكتوبر		**عدد الساعات المعتمدة**		1
ساعات الإتصال:	**المحاضرة:**	**1**	**التمارين:**	**1**	**المعامل:**	**-**	**إجمالي** 2
المتطلب السابق:							

المعايير الأكاديمية	NARS 2018
تاريخ الموافقة على اللائحة	2001
منسق المقرر	د. محمد ابو زيد
تاريخ اعتماد توصيف المقرر	2025/8/20
جهة مناقشة واعتماد توصيف المقرر	**مجلس القسم**

2. الوصف العام للمقرر:

ا هندسة الرياضية:المعدات الحديثة للتربية البدنية وعلاقتها باختيار الرياضيين ،تحليل الحركة والتقييم والقياس الفسيولوجي ،المعدات الحديثة وعلاقتها باختيار الرياضيين، معالجة مياه حمامات السباحة، أبعاد الملاعب ، الاختلافات الفسيولوجية خلال مزاولة الرياضة وتأثيرها على الملابس الرياضية. مقدمة في علم النفس الرياضي ،تعريف علم النفس الرياضي، والدافع، والقلق، والتدريب العقلي، والاسترخاء، التصور العقلي، واستخدام أجهزة الكمبيوتر في قياس الحالة النفسية، العلاقة بين علم النفس الرياضي والهندسة الرياضية

3. مخرجات التعلم المستهدفه:

أ- المعرفه والفهم:

أ.1 التعرف علي الكفاءه الهوائيه وقدراتها وانواعها

أ.2 معرفة بعض الاسس الخاصة بالكفاءة الهوائية

أ.3 تنمية المعرفة ببعض المصطلحات الخاصة بالهندسة والرياضه

ب - المهارات الذهنيه:

ب.1 معرفة الاختبارات والمعايير الخاصة بالكفاءة الهوائية

ب.2 التعرف علي العمل العضلي اللاهوائي وانواع القدرات الخاصة به

ب.3 التعرف علي العجز الاكسجيني والدين الاكسجيني وانواعهما

ج - المهارات المهنية:

ج.1 التعرف علي الهندسة الرياضية واهميتها واهدافها

ج.2 تنمية المعرفه بانواع العضلات والانقباض العضلي

د- المهارات العامه:

د1زيادة معرفة الطالب بالاجهزة الرياضية الحديثة واستخداماتها

د2 تطوير الاجهزة بما يتناسب مع التقنيات الحديثة

4. مساهمه المقرر فى اهداف التعلم المستهدفه من البرنامج:

اتساق مخرجات التعلم المستهدفة مع مخرجات البرنامج

مخرجات التعلم المستهدفة	مخرجات البرنامج / المعايير الأكاديمية المتبناة (التي يحققها المقرر تبعا للمصفوفة في توصيف البرنامج)	
	النص	الكود
أ.1	المعايير والمواصفات المناسبة للمشكلات المحددة، وتخطيط الاستراتيجيات اللازمة لحلها.	A4
أ.1 و أ.2	تفسير وتحليل البيانات سواءً بشكل نوعي أو كمي.	A15
أ.3	المبادئ والتقنيات في مجالات تطبيقية مثل الذكاء الاصطناعي، ومعالجة البيانات	A16
ب.1	وضع معايير والتحقق من الحلول	B16
ب.2	إجراء تصنيفات (بيانات، نتائج، طرق...)	B12
ب.3	تحديد السمات والمكونات والعلاقات والأنماط... إلخ	B13
ج.1 و ج.2	تقييم الأنظمة من حيث السمات العامة للجودة والمقايضات	C15
د1 و د2	إظهار القدرة على الاستفادة من مصادر التعلم وإدارة التعلم الذاتي	D1

5. محتوى المقرر:

رقم الإسبوع	الموضوع	مجموع الساعات	ساعات الإتصال			مخرجات التعلم المستهدفة المغطاة بواسطة المقرر
			محاضرة	حصص تمارين	عملى	
الإسبوع-1	*المقدمة ومفهوم عن علم الهندسه الرياضيه اهدافها اهميتها + تدريبات على اللياقة البدنية*	2	1		1	ج 1و أ3
الإسبوع-2	*الكفاءة الهوائية واختباراتها + تدريبات على اللياقة البدنية*	2	1		1	أ1 و أ2 و ب1
الإسبوع-3	*اسس تنمية الكفاءة الهوائية + تدريبات على اللياقة البدنية*	2	1		1	أ1 و أ2
الإسبوع-4	*الكفاءة اللاهوائية واختباراتها + تدريبات على اللياقة البدنية*	2	1		1	ب2 و د1
الإسبوع-5	*شروط تنمية التحمل اللاهوائي + تدريبات على اللياقة البدنية*	2	1		1	ب2 و ب3
الإسبوع-6	*علم البيوميكانيك(البيوميكانيك الرياضي بعض المفاهيم والمصطلحات الخاصة بالحركة) + التدريب على اختبارات اللياقه*	2	1		1	ج2 و ب3 و أ3
الإسبوع-7	مراجعة	2	1		1	أ.1 و أ.2 و أ.3 و ب.1 و ب.2 و ب.3
الإسبوع-8	**إمتحان نصف الفصل**					
الإسبوع-9	*الجهاز الحركي(تركيب العضلة/انواع العضلات)+ تدريبات على اللياقة البدنية*	2	1		1	أ.3 وج.2
الإسبوع-10	*الاعتبارات الخاصة باختيار الموقع (المنشاة الرياضية) + تدريبات على اختبارات اللياقة البدنية*	2	1		1	ج.1 و د.1
الإسبوع-11	*الاشتراطات العامة لتصميم المنشات الرياضية + تدريبات على اختبارات اللياقة البدنية*	2	1		1	ج.1 و د.2
الإسبوع-12	*التقنيات الحديثة في معالجة المياه + تدريبات على اللياقة البدنية*	2	1		1	د.2 و د.1
الإسبوع-13	*علم النفس الرياضي (الاجهزة الحديثة للتدريب العقلي) + تدريبات على اللياقة البدنية*	2	1		1	د.1 و د.2
الإسبوع-14	**عملي إختبارات الفصل الدراسي النهائية**					

6. طرق التعليم و التعلم للمقرر:

استراتيجيات التعلم بمساعدة ت كنولوجيا المعلومات				التدريس الغير مباشر								التدريس المباشر	
الذكاء الإصطناعي في التعليم	التعلم الالكتروني	الافتراضية المعامل	النمذجة أو المحاكاة برامج	التعلم بالإكتشاف	التعلم الذاتى	الميدانية الزيارات	الميداني التدريب	والمناقشة الحوار	الأبحاث /التقارير كتابة	حل المشكلات	الحالة دراسة استراتيجية	الجماعية المشروعات على القائم التعلم	العصف الذهنى	العملية والتجارب التمارين	المحاضرات
	√				√			√	√				√	√	√

7. طرق تقييم الطلاب:

م	طرق التقييم *	توقيت التقييم المتوقع (رقم الأسبوع الدراسي)	درجات التقييم	النسبة المئوية من إجمالي درجة المقرر
1	بحث تقييمي للشق العملي	4	20	%20
2	امتحان منتصف الفصل الدراسي	8	20	% 20
3	امتحان نهائي تحريري	15-16	30	%30
4	امتحان نهائي عملي	14	30	%30

8. مصادر التعلم و التسهيلات المادية:

مصادر التعلم (الكتب والمراجع العلمية وغيرها) *	المرجع الأساسي للمقرر (لابد من كتابة البيانات كاملة وفقا لطريقة توثيق علمي)	التطور التقني ودوره في المجال الرياضي صبري عمر_زكي حسن دار المعرفه2020م
	المراجع الأخرى	تطبيقات البيوميكانيك في التدريب والاداء صريح عبد الكريم دار دجلة الطبعة الاولي 2019م
	المصادر الالكترونية (لابد من إضافة الروابط)	• https://ar.wikipedia.org/wiki • https://ar.wikipedia.org/wiki
	المنصة التعليمية	EKB - Microsoft office

التجهيزات التعليمية المساندة للتعليم والتعلم *	1	قاعة محاضرات مجهزة .
	2	المكتبات المركزية والفرعية.
	3	الوسائل التعليمية (داتا شو) وجهاز كمبيوتر محمول.
	4	مّذكرة لتدريس المقرر وكشوف متابعة للطلاب

	منسق المقرر	منسق البرنامج
الإسم	د. محمد ابو زيد	د. رانيا رجب حسين
التوقيع	M. A. Shaalan	

Course Code: BSC 210

Course Name: Mathematics III

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		**Level 2**	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** 2	**Lab.:**	--	**Total**	5
Pre-Requisite	**BSC 120 (Mathematics II)**						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	Dr. Mohamed Abozeid						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Sets, sequences, algorithms and pseudo codes, prepositional logic Proof by induction. Matrices and Boolean matrices. Relations and functions. Graph theory. Posits lattices. Boolean algebra. Linear equation and matrices. Vector spaces. Inner product spaces. Linear transformations. Eigenvalues and eigenvectors. Canonical forms. Jordan forms.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Understand essential facts, concepts, principles, and theories relating to the sets, relations between the sets, functions, and the logic.

a.2 Know the tools, practices, and methodologies used in matrices, determinants and solutions of the system of linear equation.

a.3 Understand essential mathematics relevant to List the main items of eigenvalues and eigenvectors and their applications.

a.4 Demonstrate basic knowledge and understanding of the basic concepts for mathematical induction.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Analyze computing problems and provide solutions related to mathematical modeling.
b2. Realize the concepts, principles, theories and practices of problem solving.
b3. Define traditional and nontraditional problems, set goals towards solving them, and. observes results.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Implement comprehensive computing knowledge and skills in matrices, linear equations, eigenvalues and eigenvectors, sets and relations between the sets, and Functions and the logic.
c2. Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.
d2. Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes.

Program ILOs		Course ILOs
Code	**Text**	
A14	**Demonstrating basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics.**	**a1,a2,a3,a4**
A12	**Essential mathematics relevant to computer science.**	
B11	**Perform comparisons between (algorithms, methods, techniques...etc.).**	**b1,b2,b3**
B12	**Perform classifications of (data, results, methods, techniques, algorithms. etc.).**	
C11	**Perform independent information acquisition and management, using scientific literature and Web sources.**	**c1,c2**
C15	**Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.**	
D1	**Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.**	**d1,d2**
D2	**Demonstrate skills in group working, team management, time management and organizational skills.**	
D3	**Show the use of information-retrieval.**	

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Matrices	5	3	2	0	a2
Week-2	Rules of matrices algebra	5	3	2	0	a1,a2,b3
Week-3	Determinants	5	3	2	0	a3,c1
Week-4	Exercise on the matrices and Determinants	5	3	2	0	c2,d1
Week5	Solution of the linear system	5	3	2	0	c2,b3
Week-6	Eigenvalues and eigenvectors	5	3	2	0	a3,d1
Week-7	Applications of eigenvalues and eigenvectors	5	3	2	0	b2,c2
Week-8	Midterm Exam					
Week -9	Sets	5	3	2	0	a1,d2
Week-10	relations between the sets	5	3	2	0	a1,b2
Week-11	The mathematical induction.	5	3	2	0	a4,d2
Week-12	Binomial theorem	5	3	2	0	**a1**
Week-13	Functions and the logic	5	3	2	0	a1,b1
Week-14	Revision	5	3	2	0	a1,c2

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√			√	√	√		√	√	√			√	√

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**4**	**10**	**10%**
2	Quiz 2 written (Semester work)	**10**	**10**	**10%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**40**	**40 %**
5	Final Practical Exam	**--**	**0**	**0%**
6	Final Oral Exam	**--**	**0**	**0%**
7	Assignments / Project	**Weekly**	**10**	**10%**
8	Field training	**--**	**0**	**0%**
9	Other (Mention)	**--**	**0**	**0%**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Richard Johnsonbaugh, Discrete Mathematics 8th Edition, DePaul University, Chicago, Pearson 2018.
	Other References	Glyn James, Glyn James, David Burley, Dick Clements, Phil Dyke, John Searl, Nigel Steele and Jerry Wright, Advanced Modern Engineering Mathematics, fourth edition, 2011.
	Electronic Sources (Links must be added)	**chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://broman.dev/download/Discrete%20Mathematics%208th%20Edition.pdf** **chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://library.uniq.edu.iq/storage/books/file/Advanced%20Engineering%20%20Mathematics/16678907951.pdf**
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Mohamed Abozeid**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: BSC 214

Course Name: English Language (3)

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**		LEVEL 2	
Term/ Academic year	**Oct.**		2025/2026		**Credit Hours:**		1	
Contact Hours	**Lecture:**	**2**	**Tutorial:**	-	**Lab.:**	-	**Total**	2
Pre-Requisite	BSC 123							

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Mai M. Abouzaid
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

This course enables learners to develop the ability to communicate clearly, accurately and effectively, using a wide range of vocabulary, and the correct grammatical rules, in addition to spelling and punctuation rules to develop their personal style and their awareness of using English language. Learners are also encouraged to read widely, both for their own knowledge and to further their masterfulness of the ways in which English can be used.

3- Intended Learning Outcomes (ILOs)

a. Knowledge and understanding:

On successful completion of the course, students should be able to:

a.1. Motivate student to have a mix of skills in English Language.

a.2. Understand spoken English at a conversational pace on familiar topics.

a.3. Participate in conversations and discussions on a range of everyday topics.
a.4. Write clear and concise paragraphs and short essays.

b. Intellectual skills:

On successful completion of the course, students should be able to:

b.1. Analyze a variety of texts, including news articles, emails, and short stories.
b.2. Express ideas with fluency and confidence in speaking and writing English.
b.3. Clarify concepts giving examples.

c. Professional and practical skills:

On successful completion of the course, students should be able to:

c.1. Prepare presentations and speeches with confidence.
c.2. Generate ideas using English language correctly.
c.3. Develop content and post it online.

d. General and transferable skills:

On successful completion of the course, students should be able to:

d.1.Communicate and participate professionally.
d.2.Exhibit awareness of team-work dynamics
d.3.Show ability to work effectively on multi-disciplinary systems and integration of different fields of knowledge.
d.4.Demonstrate 21st century skills.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a2**
A9	Professional, moral, and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.	**a3**
A10	Current developments in computing and information research.	**a4**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b2**
B4	Analyze, propose and evaluate alternative computer systems and processes taking into account limitations, and quality constraints.	**b1.b3**
C10	Communicate effectively by oral, written, and visual means.	**c3**
C15	Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.	**c1.c2**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d2**
D7	Show the use of general computing facilities.	**d3.d4**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	**Unit 1:** That's What Friends are for!	2	2	-	-	a1.a3.b3
Week-2	**Unit 2:** Career Moves	2	2	-	-	a1.a3.c3
Week-3	**Unit 3:** Could you do me a Favor	2	2	-	-	a1.b2.c3
Week-4	**Unit 4:** What a Story!	2	2	-	-	a3.b3.d3
Week5	**Unit 5:** Crossing Cultures	2	2	-	-	a3.b3.d3
Week-6	**Unit 6:** What's wrong with it ?	2	2	-	-	a1.a3.b2.c3.d3
Week-7	**Unit 7**: The World we live in	2	2	-	-	a1.a3.b2.c2.
Week-8	Midterm Exam.					
Week-9	**Unit 8**: Learning to Learn	2	2	-	-	c1.c2.d3
Week-10	Supplementary Material and Quiz	2	2	-	-	c2.c3.d2.d3
Week-11	Supplementary Material and Quiz	2	2	-	-	a1.a3.b2.c2.d4
Week-12	Presentations	2	2	-	-	c1.c3d2.d3
Week-13	Revision	2	2	-	-	a1.a2.a4.b1.b3.d3
Week-14	Revision and Quiz	2	2	-	-	a1.a2.a4.b1.b3.d3

6- Teaching and Learning and Assessment methods:

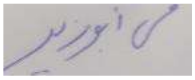
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√		√				√	√			√					√

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**14**	**10**	**10 %**
2	Quiz 2 written (Semester work)	**-**	**-**	**-**
3	Midterm exam	**7**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**40**	**40 %**
5	Final Practical Exam	**-**	**-**	**-**
6	Final Oral Exam	**-**	**-**	**-**
7	Assignments / Project	**-**	**-**	**-**
8	Field training	**-**	**-**	**-**
9	Other (Mention) “Class work for lecture “	**Weekly**	**20**	**20%**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Presentation (handed to students part by part).
	Other References	• Interchange 3rd edition, Cambridge University Press, 2020. • Interchange Workbook 3rd edition, Cambridge University Press, 2020 • English Grammar in Use. Cambridge University Press, 2020 • English Vocabulary in Use. Cambridge University Press, 2021
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Mai M. Abouzaid	**Dr. Rania Ragab Hussien**
Signature		

Course Code: BSC 222

Course Name: Statistical Methods

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**		**Level 2**
Term/ Academic year	**Choose an item.**		2025/2026		**Credit Hours:**		3
Contact Hours	**Lecture:**	**3**	**Tutorial:**	2	**Lab.:**	--	**Total** 5
Pre-Requisite	**BSC 110 (Mathematics I)**						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Mohamed Abozeid
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Basic concepts of probability and statistics with computer science applications Permutations and combinations: random variables; probability distributions.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Recognize the probability problems.

a.2 Use the probability theory to model different problems.

a.3 Think logically in specific problem solving.

a.4 Describe and discuss the random variables.

a.5 Recognize the generating function of random variables**.**

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Analyze the components of the probability problems.

b2. Classify and solve different types of real time problems.

b3. Illustrate the results obtained of probability problems.

b4. Apply different techniques to solve statistical and probability problems.

b5. Use generating random variables.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Suggest the most moderate distribution to model a specific real problem.
c2. Create physical model using differential equations.
c3. Show mathematical thinking for students to be self-independent in problem solving.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Work effectively with others.
d2. Demonstrate ability to think critically.
d3. Illustrate and model the problems and their applications.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes.

Program ILOs		Course ILOs
Code	**Text**	
A14	**Demonstrating basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics.**	**a1,a2,a3,a4,a5**
A12	**Essential mathematics relevant to computer science.**	
B11	**Perform comparisons between (algorithms, methods, techniques...etc.).**	**b1,b2,b3,b4,b5**
B12	**Perform classifications of (data, results, methods, techniques, algorithms. etc.).**	
C11	**Perform independent information acquisition and management, using scientific literature and Web sources.**	**c1,c2,c3**
C15	**Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.**	
D1	**Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.**	**d1,d2,d3**
D2	**Demonstrate skills in group working, team management, time management and organizational skills.**	
D3	**Show the use of information-retrieval.**	

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Random Experiments, Sample Space, Events and the Axioms of Probability	5	3	2	-	a1, a2, b1
Week-2	Conditional Probability, Independent Events, Bayes' Theorem and Total Probability Formula Permutations, Combinations, Fundamental Principle of Counting	5	3	2	-	a1, a3, b2
Week-3	Bayes' Theorem and Total Probability Formula Permutations, Combinations, Fundamental Principle of Counting	5	3	2	-	a3, a2, b3,c1
Week-4	Random Variables, Discrete Probability Distributions,	5	3	2	-	a1, a3, b2,c1
Week5	Distribution Functions for Random Variables. Cumulative Distribution Functions for Random Variables	5	3	2	-	a2, b2, d1,c1
Week-6	Continuous random variable	5	3	2	-	a4, b3, d2,c2
Week-7	Revision	5	3	2	-	a1,a2,a4,b2, b3, d2,c2
Week-8	Midterm Exam					
Week-9	Definition of mathematical expectation and Functions of Random Variables	5	3	2	-	a2, b4, d2,c3
Week-10	The Mean, Variance, Standard deviation and Covariance	5	3	2	-	a4, b2, d3,c2
Week-11	Probability Generating Function and Moment Generating Function Conditional Expectation	5	3	2	-	a5, b4, d3,c2
Week-12	Discrete probability distributions, Bernoulli, Binomial and Poisson Distributions Geometric, Uniform	5	3	2	-	a3, b4, d2,c1
Week-13	Continuous probability distributions	5	3	2	-	a5, b5, d2,c1
Week-14	Descriptive data	5	3	2	-	a5, b5, d2,c1

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√			√	√	√		√	√	√			√	√

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**4**	**10**	**10%**
2	Quiz 2 written (Semester work)	**10**	**10**	**10%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**40**	**40 %**
5	Final Practical Exam	**--**	**0**	**0%**
6	Final Oral Exam	**--**	**0**	**0%**
7	Assignments / Project	**Weekly**	**10**	**10%**
8	Field training	**--**	**0**	**0%**
9	Other (Mention)	**--**	**0**	**0%**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Ronald E. Walpole, Raymond H. Myers, Sharon L. Myers and Keying Ye, "*Probability & Statistics for Engineers & Scientists*" 9th Edition, 2012.
	Other References	George C. Runger, Douglas C. Montgomery, *"Applied Statistics and Probability for Engineers"* 7th Edition, 2014.
	Electronic Sources (Links must be added)	**chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.uoanbar.edu.iq/eStoreImages/Bank/9223.pdf** **chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://kolegite.com/EE_library/books_and_lectures/%D0%9C%D0%B0%D1%82%D0%B5%D0%BC%D0%B0%D1%82%D0%B8%D0%BA%D0%B0/Douglas%20C.%20Montgomery%2C%20George%20C.%20Runger%20-%20Applied%20Statistics%20and%20Probability%20for%20Engineers-**

		Wiley%20%282018%29.pdf
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Mohamed Abozeid**	**Dr. Rania Ragab Hussien**
Signature		

توصيف المقرر

اسم المقرر: مبادئ ادارة

كود المقرر: BSC213

القسم القائم بتدريس المقرر	علوم الحاسب

1- معلومات أساسية :

نوع المقرر	اجباري			**الفرقة الدراسية / المستوى الدراسي الذي يقدم فيه المقرر**		المستوي الثاني	
العام الأكاديمي **الفصل الدراسي**	**2026/2025**		Choose an item.	**عدد الساعات المعتمدة**		1 ساعه	
ساعات الإتصال:	**المحاضرة:**	**2**	**التمارين:**	-	**المعامل:**	-	**إجمالي**	2
المتطلب السابق:	-						
المعايير الأكاديمية	NARS 2018						
تاريخ الموافقة على اللائحة	2001						
منسق المقرر	د/ محمد أبو زيد						
تاريخ اعتماد توصيف المقرر	2025/8/20						
جهة مناقشة واعتماد توصيف المقرر	**مجلس/ القسم**						

2. الوصف العام للمقرر:

مفاهيم الإدارة، مستويات وأنواع الإدارة، خصائص الإدارة الناجحة، عملية التخطيط، تحديد أهداف وغايات المنظمة، التنظيم، الأفراد والإنتاج، اتخاذ القرار، أساسيات الرقابة، تقنيات وأساليب إدارة الموارد البشرية، دور الشراء وإدارة المواد في الأعمال

3. مخرجات التعلم المستهدفه:

أ- المعرفه والفهم:

أ.1 يعرف الطالب مفهوم الإدارة واهدافها
أ.2 يعرف الطالب عناصر الإدارة الاساسية
أ.3 يعرف الطالب مستويات الإدارة المختلفة

ب - المهارات الذهنيه:

ب.1 يقدر على التواصل الجيد مع الآخرين
ب.2 يستطيع على بناء علاقات عمل جيدة وناجحة
ب.3 . يتمكن من بناء فرق عمل.

ب.4. يقدر على ممارسة مهارات وفنون القيادة.

ج - المهارات المهنية:

ج.1 يقدر على بناء تحالفات عمل.

ج.2 يمتلك مهارة بناء فرق عمل وادارته.

ج.3 يكتسب مهارة حل المشكلات والتكامل مع الآخرين.

ج.4 يتقن مهارات القيادة.

د- المهارات العامه:

د.1 يستطيع تحليل المشكلات واقتراح الحلول خاصة في مجال العمل.

د.2 يتقن مهارة التفكير المنظم وترتيب الأولويات.

د.3 يستطيع التواصل الجيد مع الآخرين والعمل من خلال فريق عمل

4. مساهمه المقرر فى اهداف التعلم المستهدفه من البرنامج:

اتساق مخرجات التعلم المستهدفة مع مخرجات البرنامج

مخرجات التعلم المستهدفة	مخرجات البرنامج / المعايير الأكاديمية المتبناة (التي يحققها المقرر تبعا للمصفوفة في توصيف البرنامج)	
	النص	الكود
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications.	a1
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	a2
A9	Professional, moral, and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices.	a3
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	b1
B3	Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.	b2

5. محتوى المقرر:

رقم الإسبوع	الموضوع	مجموع الساعات	ساعات الإتصال			مخرجات التعلم المستهدفة المغطاة بواسطة المقرر
			محاضرة	حصص تمارين	معمل	
الإسبوع-1	**تعريف الإدارة وأهدافها ومكوناتها**	2	2	-	-	**أ.1-أ.2**
الإسبوع-2	عناصر الإدارة : التخطيط والتنظيم والتوجيه والرقابة	2	2	-	-	**أ.2**
الإسبوع-3	مستويات الادارة	2	2	-	-	أ.3
الإسبوع-4	مهارات ومعارف الادارة	2	2	-	-	ب.1-ب.3
الإسبوع-5	بين الإدارة العامة وإدارة الاعمال	2	2	-	-	ب.2-ب.3
الإسبوع-6	بين المدير والقائد	2	2	-	-	ب.2-ب.3-ب.4
الإسبوع-7	مراجعه	2	2	-	-	**أ.1**، **أ.2**، ب.2، ب.3
الإسبوع-8	**إمتحان نصف الفصل**					
الإسبوع-9	القيادة تعريفها واهميتها وصفات القائد	2	2	-	-	ب.4-ج.3
الإسبوع-10	المهارات الأساسية للقائد	2	2	-	-	ج.4-د.2
الإسبوع-11	العادات السبع للنجاح	2	2	-	-	ب.3،ب.4،ج.3، ج.4
الإسبوع-12	مهارات التواصل	2	2	-	-	ج.4-د.2-د.3
الإسبوع-13	.مراجعة عامة	2	2	-	-	أ.2،أ.3،ب.3،ب.4-ج.2-ج.3
الإسبوع-14	**الامتحان النهائي**					

6. طرق التعليم و التعلم للمقرر:

استراتيجيات التعلم بمساعدة ت كنولوجيا المعلومات				التدريس الغير مباشر								التدريس المباشر	
الذكاء الإصطناعي في التعليم	التعلم الالكتروني	الافتراضية المعامل	النمذجة أو المحاكاة برامج	التعلم بالإكتشاف	التعلم الذاتى	الميدانية الزيارات	الميداني التدريب	والمناقشة الحوار	الأبحاث /التقارير كتابة	حل المشكلات	الحالة دراسة استراتيجية	الجماعية المشروعات على القائم التعلم	العصف الذهنى	العملية والتجارب التمارين	المحاضرات
					√			√	√			√	√		√

7. طرق تقييم الطلاب:

م	طرق التقييم *	توقيت التقييم المتوقع (رقم الأسبوع الدراسي)	درجات التقييم	النسبة المئوية من إجمالي درجة المقرر
1	امتحان 1 تحريري (أعمال سنة)	إسبوعيا	15	% 15
2	امتحان 2 تحريري (أعمال سنة)	طبقا للتوقيت المحدد	15	%15
3	امتحان منتصف الفصل الدراسي	7	30	% 30
4	امتحان نهائي تحريري	15 و 16	40	% 40
5	امتحان نهائي عملي		0	
6	امتحان نهائي شفوي		0	
7	تكليفات / مشروع		0	
8	تدريب ميداني		0	
9	أخرى (تذكر)		0	

8. مصادر التعلم و التسهيلات المادية:

مصادر التعلم (الكتب والمراجع العلمية وغيرها) *	المرجع الأساسي للمقرر (لابد من كتابة البيانات كاملة وفقا لطريقة توثيق علمي)	إدارة الاستراتيجية مدخل متكامل، المؤلف: شارلز هل و جاريث جونز، المترجم: د. رفاعي محمد رفاعي - د. محمد سيد أحمد عبد المتعال، الناشر: دار المريخ للنشر ستيفن كوفي: العادات السبع لناس الأكثر فعالية، مكتبة جرير
	المراجع الأخرى	لفن ا إدارة، المؤلف: بيتر دركر، المترجم: عبد الهادي الميداني ، الناشر: مكتبة العبيكان -المملكة العربية السعودية ، الطبعة: العربية ا لولى، تاريخ النشر:1435 هـ 2004
	المصادر الالكترونية (لابد من إضافة الروابط)	**لا يوجد**
	المنصة التعليمية (لابد من إضافة الرابط)	Microdoft Teams
التجهيزات التعليمية المساندة للتعليم والتعلم *	الأجهزة	**الحاسوب**
	المستلزمات	العرض التقديمي بمساعدة أجهزة الحاسوب ألواح الكتابة البيضاء
	أخرى (تذكر)	

	منسق المقرر	منسق البرنامج
الإسم	د/ رانيا رجب	د/ محمد ابوزيد
التوقيع		

Course Code: BSC 215

Course Name: Logic Design

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		**Level 2**	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** 2	**Lab.:**	-	**Total**	5
Pre-Requisite	BSC 122						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	Dr. Rania Ragab						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Basic logic concepts: Logic states number systems, Boolean algebra, Basic logical operations, gates, and truth tables. Combinational Logic: Minimization techniques. Multiplexes and de-Multiplexes, encoders, decoders, adders, and subtractions, look- ahead Carry, compurgators, programmable logic arrays and memories, design with MSI. logic families, tri-state devices. CMOS and TTL logic interfaces. Sequential logic: Flip-flops. mono stable. multi-vibrators, Itches registers, counters, shift registers. Analog to digital conversion, digital-to-analog conversion. Data acquisition

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Understand the essential mathematics relevant to logic design field.

a.2 Demonstrate basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics for logic design field.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1 Perform comparisons between (methods, techniques...etc) in logic design field.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Design combinational and/or sequential circuits.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1 Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.

d.2 Demonstrate skills in group working, team management, time management and organizational skills.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1, a2**
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a2**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b1**
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c1**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**D2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Basic digital concepts.	5	3	2	-	a1, a2
Week-2	Number systems and coding	5	3	2	-	a1, a2, b1, d1
Week-3	Arithmetic operations with binary and signed numbers.	5	3	2	-	a1, a2, b1, d1
Week-4	Boolean algebra and logic gates	5	3	2	-	a1, a2, b1, d1
Week5	Basic logic operations and truth tables.	5	3	2	-	a1, a2, b1, d1
Week-6	Minimization of Boolean functions using Karnaugh maps	5	3	2	-	a1, a2, b1, d1
Week-7	Combinational logic circuits	5	3	2	-	a1, a2, b1, d1
Week-8	Midterm Exam.					
Week-9	Adders, Decoders and Encoders.	5	3	2	-	a1, a2, b1, c1, d1
Week-10	Multiplexers and Demultiplexers.	5	3	2	-	a1, a2, b1, c1, d1
Week-11	Sequential logic circuits	5	3	2	-	a1, a2, b1, c1, d1
Week-12	Registers	5	3	2	-	a1, a2, b1, c1, d1
Week-13	Counters	5	3	2	-	a1, a2, b1, c1, d1, d2
Week-14	Revision and oral	5	3	2	-	a1, a2, b1, c1, d1, d2

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√			√	√	√				√				

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	15	15 %
2	Quiz 2 written (Semester work)		0	
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	40	40 %
5	Final Practical Exam		0	
6	Final Oral Exam		0	
7	Assignments / Project	10	15	15 %
8	Field training		0	
9	Other (Mention)		0	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**Mano, M. M., & Ciletti, M. D. (2022). Logic and computer design fundamentals (6th ed.). Pearson.**
	Other References	**Mano, M. Morris, and Kime, Charles. Logic and Computer Design Fundamentals. 5th**
	Electronic Sources (Links must be added)	**www.pearsoned.co.uk.**
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Rania Ragab Hussien**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: BSC 320

Course Name: English Language (4)

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**	LEVEL 3	
Term/ Academic year	**Oct.**		2025/2026		**Credit Hours:**	1	
Contact Hours	**Lecture:**	**2**	**Tutorial:**	-	**Lab.:** -	**Total**	2
Pre-Requisite	BSC 214						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Rasha Osman
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

This course enables learners to develop the ability to communicate clearly, accurately and effectively, using a wide range of vocabulary, and the correct grammatical rules, in addition to spelling and punctuation rules to develop their personal style and their awareness of using English language. Learners are also encouraged to read widely, both for their own knowledge and to further their masterfulness of the ways in which English can be used. The course also sustained the ability of knowing the language of computer programming.

3- Intended Learning Outcomes (ILOs)

a. Knowledge and understanding:

On successful completion of the course, students should be able to:

a.1. Motivate student to have a mix of skills in English Language.
a.2. Understand spoken English at a conversational pace on familiar topics.
a.3. Participate in conversations and discussions on a range of everyday topics.
a.4. Write clear and concise paragraphs and short essays.

b. Intellectual skills:

On successful completion of the course, students should be able to:

b.1. Analyze a variety of texts, including news articles, emails, and short stories.
b.2. Express ideas with fluency and confidence in speaking and writing English.
b.3. Clarify concepts giving examples.
b.4. To enhance students' abilities in computer techniques

c. Professional and practical skills:

On successful completion of the course, students should be able to:

c.1. Prepare presentations and speeches with confidence.
c.2. Generate ideas using English language correctly.
c.3. Develop content and post it online.
c.4. Gain knowledge of computer terms that would help the students in various topics.

d. General and transferable skills:

On successful completion of the course, students should be able to:

d.1.Communicate and participate professionally.
d.2.Exhibit awareness of team-work dynamics
d.3.Show ability to work effectively on multi-disciplinary systems and integration of different fields of knowledge.
d.4.Demonstrate 21st century skills.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a2**
A9	Professional, moral, and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.	**a3**
A10	Current developments in computing and information research.	**a4**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b2**
B4	Analyze, propose and evaluate alternative computer systems and processes taking into account limitations, and quality constraints.	**b3.b4**
C10	Communicate effectively by oral, written, and visual means.	**c2**
C11	Perform independent information acquisition and management, using scientific literature and Web sources.	**c3**
C15	Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.	**c1.c4**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d2**
D6	Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.	**d3**
D7	Show the use of general computing facilities.	**d4**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Unit 1: Computers Today	2	2	-	-	a1.a3.b3
Week-2	Unit 2: Computer Essentials	2	2	-	-	a1.a3.c3
Week-3	Unit 3: Inside the System	2	2	-	-	a1.b2.c3
Week-4	Unit 4: Buying a Computer	2	2	-	-	a3.b3.d3
Week5	Unit 5: Type, click and Talk and quiz	2	2	-	-	a3.b3.d3
Week-6	Presentations and quiz	2	2	-	-	a1.a3.b2.c3.d3
Week-7	Unit 6: Capture your Favorite Image Unit 7: Display Screens	2	2	-	-	a1.a3.b2.c2.
Week-8	Midterm Exam.					
Week-9	Units 8: Choosing a Printer Unit 9: Devices for the Disabled	2	2	-	-	c1.c2.d3
Week-10	Supplementary Material and Quiz	2	2	-	-	c2.c3.d2.d3
Week-11	Supplementary Material and Quiz	2	2	-	-	a1.a3.b2.c2.d4
Week-12	Presentations	2	2	-	-	c1.c3d2.d3
Week-13	Revision	2	2	-	-	a1.a2.a4.b1.b3.d3
Week-14	Revision and Quiz	2	2	-	-	a1.a2.a4.b1.b3.d3

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√		√				√	√			√					√

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**6**	**10**	**10 %**
2	Quiz 2 written (Semester work)	**14**	**10**	**10 %**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**40**	**40 %**
5	Final Practical Exam	-	-	-
6	Final Oral Exam	-	-	-
7	Assignments / Project	-	-	-
8	Field training	-	-	-
9	Other (Mention) “Class work for lecture “	**Weekly**	**10**	**10 %**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	PowerPoint presentations for Info-tech Book.
	Other References	• Info-tech 4th edition, Cambridge U P, 2021. • Info-tech Workbook 4th edition, Cambridge UP, 2021. • English for Internet. Cambridge UP, 2021. • English for Computer Science. Cambridge U P, 2022.
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Rasha Osman	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CS 322

Course Name: Computer Networks

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		Level 3	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	3	**Tutorial:** -	**Lab.:**	2	**Total**	5
Pre-Requisite	CS 310						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	**Dr. Sarah Ahmed Soliman**
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Wide Area Networks (WAN) and Local Area Networks (LAN) background, overview of networks system and services, general WAN concepts and detailed discussions of WAN installations and configurations. Fundamentals of networking, junction devices (modulation and multiplexing), routing and switching techniques. Open Systems Interconnection layered architectures model, communication protocols, peer-to-peer and server-based networks, case studies: TCP/IP and X.25 network.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Identify essential facts and concepts related to networks and their applications.

a.2 Define different network devices, protocols, and technologies required for inter- computer communication.

a.3 Identify tools and practices needed for designing and implementing network protocols.

a.4 Define the requirements, practical constraints, and computer-based systems in the lab of computer networks.

a.5 Specify principles of Private and Public IPv4 addressing.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1 Summarize the principles of network layers and their protocols.

b.2 Explain to Perform comparisons between different protocols used in network layers.

b.3 Suggest innovative ideas relevant to networks design, network protocols, and network security problems.

b.4 Perform classifications between network types and its applications considering computational cost, quality and infrastructure.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1 Analyze the network performance using Wireshark Commands, Shells, and Editors.

c.2 Perform independent information acquisition and management, using scientific literature and Web sources.

c.3 Design a simple computer network, recognizing its capabilities and limitations.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1 Demonstrate skills in group working, team management, time management and organizational skills.

d.2 Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.

d.3 Demonstrate the ability to Solve problems relevant to network using ideas and techniques.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	**Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.**	**a1**
A3	**Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.**	**a2**
A6	**The current and underlying technologies that support computer processing and inter computer communication.**	**a3**
A11	**Requirements, practical constraints, and computer-based systems.**	**a4, a5**
B6	**Evaluate the results of tests to investigate the functionality of computer systems.**	**a1, a6**
B11	**Perform comparisons between (algorithms, methods, techniques...etc.).**	**a5, a6**
B12	**Perform classifications of (data, results, methods, techniques, algorithms. etc.).**	**b1**
B19	**Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.**	**b2**
C1	**Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.**	**b3**
C11	**Perform independent information acquisition and management, using scientific literature and Web sources.**	**b4, b5**
C14	**Specify, design, and implement computer-based systems.**	**b4, b5**
D1	**D1. Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.**	**d1**
D2	**Demonstrate skills in group work, team management, time management and organizational skills.**	**d2**
D3	**Show the use of information-retrieval.**	**d3**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Network fundamental	5	3	-	2	**a1, a2,a3**
Week-2	OSI Model and Headers and Encapsulation	5	3	-	2	a2,a3, b1,c3
Week-3	Transport layer	5	3	-	2	a2, a4, b2, c1,d3
Week-4	Network Layer	5	3	-	2	a4, b3,c3,d3
Week-5	Data Link Layer	5	3	-	2	a4, a5, c1, c2, d1
Week-6	IPv4 address, Private and Public IPv4 addressing.	5	3	-	2	a4, a5, b4, c2, c3
Week-7	Revision	5	3	-	2	a1,a2,a3,a4, a5, b1,b2, b4, c1, c2
Week-8	**Midterm Exam.**					
Week-9	Fixed Subnetting	5	3	-	2	a4, a5, b2, b4, c1, c2
Week-10	Variable length subnet mask (VLSM)	5	3	-	2	b3, b4, c3, d1, d2
Week-11	Route Summarization	5	3	-	2	a5, b1, b2, b3, c2, d3
Week-12	Router configuration	5	3	-	2	a4, a5, b3, b4, c1, c2
Week-13	Router and switch password setting. Configuring a banner and Remote access telnet	5	3	-	2	a4, a5, b3, b4, c1, c2
Week-14	Practical Exam / Final Revision					

6- Teaching and Learning and Assessment methods:

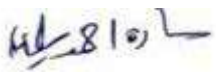
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√	√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	10	10%
2	Quiz 2 written (Semester work)	10	10	10%
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10%
6	Final Oral Exam	-	0	0
7	Assignments / Project	6, 12	10	10%
8	Field training	-	0	0
9	Other (Mention)	-	0	0

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Behrouz A. Forouzan, "Data Communications and Networking with TCP/IP Protocol Suite", 6th edition McGraw-Hill, 2021
	Other References	• "CCNA-200-301-Official-Cert-Guide - volume 1 and 2", WENDELL ODOM, 2020, ISBN-10: 0-13-579273-8, Published by: Cisco Press. • Jim Kurose, Keith Ross, "Computer Networking: A Top-Down Approach", 8th Edition, Pearson, 2021 • Peter L Dordal, "An Introduction to Computer Networks", 2020 available in: https://intronetworks.cs.luc.edu/current2/html/ • James F. Kurose, Keith W. Ross, "Computer Networking a Top-Down Approach", Pearson, 8th edition, ISBN-13: 978-0-13-285620-1 • A.S. Tanenbaum, "Computer Networks", 4th edition, Pearson Education/ PHI, New Delhi, India
	Electronic Sources (Links must be added)	https://www.networkcomputing.com
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Sarah Ahmed Soliman**	**Dr. Rania Ragab Hussien**
Signature		

توصيف المقرر

اسم المقرر: مقرر ثقافي (ب)

كود المقرر: HUM 320

القسم القائم بتدريس المقرر	علوم حاسب

1- معلومات أساسية :

نوع المقرر	اجباري			**الفرقة الدراسية / المستوى الدراسي الذي يقدم فيه المقرر**	الثالثه	
العام الأكاديمي **الفصل الدراسي**	**2026/2025**		فبراير	**عدد الساعات المعتمدة**	1	
ساعات الإتصال:	**المحاضرة:**	**2**	**التمارين:**	**المعامل:**		**إجمالي**
المتطلب السابق:						

المعايير الأكاديمية	NARS 2018
تاريخ الموافقة على اللائحة	2001
منسق المقرر	**د. محمد ابو زيد**
تاريخ اعتماد توصيف المقرر	2025/8/20
جهة مناقشة واعتماد توصيف المقرر	**مجلس/ القسم**

2. الوصف العام للمقرر:

كيفية قراءة الناس، القيادة، نظريات القيادة، الصفات التي يجب أن تكون في القائد، المهارات الأساسية التي يجب أن يمتلكها القائد، هرم الإدارة."

3. مخرجات التعلم المستهدفه:

أ- المعرفه والفهم:

أ.1 يعرف حقيقة الاختلاف بين البشر
أ.2 يفهم أن الاختلاف لا يستلزم العداء
أ.3 يعرف النسبي والمطلق من حقائق الوجود

ب - المهارات الذهنيه:

ب.1 يحلل الطالب المشكلات ويقترح الحلول .
ب.2 يميز الطالب بين الثوابت والمتغيرات في القيم والأفكار.
ب.3يميز بين التفكير الإيجابي والتفكير السلبي
ب.4 يبتكر الطالب مهارات جديدة للتواصل الجيد مع الاخرين.

ج - المهارات المهنية:

ج.1 أ يشخص الطالب أسباب المشكلات في العمل الإداري
ج.2 يستخدم الطالب مهارات التواصل مع الآخرين بكفاءة
ج.3 يتعامل الطالب بمرونة مع المختلفين ثقافيا واجتماعيا

د- المهارات العامه:

د.1 يستطيع تحليل المشكلات واقتراح الحلول خاصة في مجال العمل.
د.2 يتقن مهارة التفكير المنظم وترتيب الأولويات.
د.3 يستطيع التواصل الجيد مع الآخرين والعمل من خلال فريق عمل

4. مساهمه المقرر فى اهداف التعلم المستهدفه من البرنامج:

اتساق مخرجات التعلم المستهدفة مع مخرجات البرنامج

مخرجات البرنامج / المعايير الأكاديمية المتبناة (التي يحققها المقرر تبعا للمصفوفة في توصيف البرنامج)		مخرجات التعلم المستهدفة
الكود	النص	
ا1	الحقائق والمفاهيم والمبادئ والنظريات الأساسية المتعلقة بالحوسبة والمعلومات وتطبيقات الكمبيوتر بما يتناسب مع برنامج الدراسة.	أ.1
ا3	الأدوات والممارسات والمنهجيات المستخدمة في تحديد وتصميم وتنفيذ وتقييم أنظمة البرمجيات الحاسوبية.	أ.2
ا9	القضايا المهنية والأخلاقية والقيمية المتعلقة باستغلال تكنولوجيا الكمبيوتر، والاسترشاد بالممارسات المهنية والأخلاقية والقانونية المناسبة ذات الصلة بصناعة الحوسبة والمعلومات.	أ.3
ب1	تحليل مشاكل الحوسبة وتقديم الحلول المتعلقة بتصميم وبناء أنظمة الحوسبة.	ب.1
ب3	تحليل مشاكل الحوسبة وتقديم الحلول المتعلقة بتصميم وبناء أنظمة الحوسبة.	ب.2
ب6	تقييم نتائج الاختبارات للتحقيق في وظائف أنظمة الكمبيوتر.	ب.2
ب8	التعرف على القضايا المهنية والقانونية والأخلاقية ذات الصلة بصناعة الحوسبة.	ب.3
ج1	تشغيل معدات الحوسبة، والتعرف على خصائصها المنطقية والفيزيائية، وقدراتها، وحدودها.	ج.1
ج2	تنفيذ المعرفة والمهارات الحاسوبية الشاملة في المشاريع وفي نشر أجهزة الكمبيوتر لحل المشاكل العملية.	ج.2
ج6	تصميم وتنفيذ وصيانة وإدارة أنظمة البرمجيات.	ج.3
د1	إظهار القدرة على الاستفادة من مجموعة متنوعة من مصادر التعلم وإدارة التعلم الخاص بك.	د.1
د2	إظهار مهارات العمل الجماعي وإدارة الفريق وإدارة الوقت والمهارات التنظيمية.	د.2
د6	الكشف عن مهارات الاتصال، ومهارات التحدث والعرض أمام الجمهور، والتفويض، ومهارات الكتابة، والإلقاء الشفهي، والاستخدام الفعال لمختلف وسائل الإعلام لمجموعة متنوعة من الجماهير.	د.3

5. محتوى المقرر:

رقم الإسبوع	الموضوع	مجموع الساعات	ساعات الإتصال			مخرجات التعلم المستهدفة المغطاة بواسطة المقرر
			محاضرة	حصص تمارين	معمل	
الإسبوع-1	أنا والاخر	2	2	---	---	أ.1، أ.2
الإسبوع-2	القائد والمدير	2	2	---	---	أ.1، أ.2،ج.1
الإسبوع-3	فريق العمل	2	2	---	---	أ.2،ب.4،ج.1،د.3
الإسبوع-4	اختلاف الراي	2	2	---	---	أ.2،ب.4،ج.3
الإسبوع-5	مهارات التحدث	2	2	---	---	ج.2،ج.3
الإسبوع-6	المطلق والنسبي	2	2	---	---	أ.3،ب.3
الإسبوع-7	كيف تبنى الافكار	2	2	---	---	ب.2،د.1،د.2
الإسبوع-8	إمتحان نصف الفصل					
الإسبوع-9	كتابة الرسائل	2	2	---	---	ب.4،ج.3،د.3
الإسبوع-10	مراجعة	2	2	---	---	أ.2،ب.4،ج.1،د.3
الإسبوع-11	الجدال المسموح والممنوع	2	2	---	---	أ.2،ب.4،ج.1،د.3
الإسبوع-12	الفكرة والاسلوب	2	2	---	---	ب.2،د.1
الإسبوع-13	الاهتمام بالمتكلم	2	2	---	---	ب.4،ج.2،د.3
الإسبوع-14	امتحان نهاية الفصل الدراسي.			---	---	

6. طرق التعليم و التعلم للمقرر:

استراتيجيات التعلم بمساعدة ت كنولوجيا المعلومات				التدريس الغير مباشر									التدريس المباشر	
الذكاء الإصطناعي في التعليم	التعلم الالكتروني	الإفتراضية المعامل	النمذجة أو المحاكاة برامج	التعلم بالإكتشاف	التعلم الذاتي	الميداني التدريب	الميدانية الزيارات	والمناقشة الحوار	الأبحاث /التقارير كتابة	حل المشكلات	الحالة دراسة استراتيجية	الجماعية المشروعات على القائم التعلم	المصف الذهني	العملية والتجارب التمارين	المحاضرات
				√	√			√	√	√	√	√	√		√

7. طرق تقييم الطلاب:

م	طرق التقييم *	توقيت التقييم المتوقع (رقم الأسبوع الدراسي)	درجات التقييم	النسبة المئوية من إجمالي درجة المقرر
1	امتحان 1 تحريري (أعمال سنة)	10	15	%15
2	امتحان 2 تحريري (أعمال سنة)	0	0	0
3	امتحان منتصف الفصل الدراسي	8	30	% 30
4	امتحان نهائي تحريري	15 و 16	40	% 40
5	امتحان نهائي عملي	0	0	0
6	امتحان نهائي شفوي	0	0	0
7	تكليفات / مشروع	اسبوعيا	15	%15
8	تدريب ميداني	0	0	0
9	أخرى (تذكر)	0	0	0

8. مصادر التعلم و التسهيلات المادية:

مصادر التعلم (الكتب والمراجع العلمية وغيرها) *	المرجع الأساسي للمقرر (لابد من كتابة البيانات كاملة وفقا لطريقة توثيق علمي)	• كتاب : الثقافة والمعرفة البشرية • كتاب: الثقافة العربية أمام تحديات التغيير
	المراجع الأخرى	• **كتاب : الثقافة العربية وعصر المعلومات** • **كتاب : حوار الثقافات** **كتاب : نظرية الثقافة**
	المصادر الالكترونية (لابد من إضافة الروابط)	https://www.ekb.eg/ar/home https://www.ida2at.com/
	المنصة التعليمية (لابد من إضافة الرابط)	Microsoft Teams
التجهيزات التعليمية المساندة للتعليم والتعلم *	الأجهزة	
	المستلزمات	
	أخرى (تذكر)	

	منسق المقرر	منسق البرنامج
الإسم	Dr. Mohamed Abozeid	د/ رانيا رجب
التوقيع	M. A. Shaalan	

Course Code: BSC 311

Course Name: Data Communications

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		Level 3	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** 2	**Lab.:**	-	**Total**	5
Pre-Requisite	BSC 210						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Rania Ragab Hussien
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

The basic data communication theory common modulation techniques, analog facility parameters including transmission anomalies such as noise and jitter, roles of network interconnections, details of modem operation and how to select the best type for a typical network environment. Data communications devices such as terminal controllers and front-end processors, data switches, network control centers, data communications protocols such as HDLC and SDLC. ISDN networks,

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Define the overall Communication model between two devices.
a2. Specify digital data using Line, block coding.
a3. Describe different transmission methods.
a4. Identify how errors occur, and techniques used to detect such occurrences.
a5. Explain the roles of various network interconnections, including local area networks (LANs), wide area networks (WANs), and how they facilitate data communication.
a6. Identify and assess analog facility parameters (bandwidth, SNR, latency, jitter) and their impact on data transmission quality and reliability.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Analyze both existing and new data communication protocols.
b2. Realize comparisons between techniques.
b3. Realize and fix problems of existing communication systems.
b4. Analyze common modulation techniques (AM, FM, PSK, QAM) and their suitability for different communication scenarios.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Indicate data communication systems and their impact on individuals ,organizations and society.
c2. Provide a deeper understanding of some aspects of the subject ,such as hardware systems design.
c3. Demonstrate knowledge of ISDN and HDSL technologies, including their architecture, functionality, and applications in modern networks.
c4. Apply IP protocol principles to implement effective switching and routing strategies, enhancing data communication efficiency.
c5. Apply data communication protocols (HDLC and SDLC) in real-world scenarios, evaluating their effectiveness and efficiency.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Work effectively as a part of a team to apply skills gained.
d2. Show the use of information-retrieval.
d3. Develop critical thinking skills to analyze data communication challenges and propose viable solutions in various networking contexts.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1, a2, a3, a4, a5, a6**
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a2, a3, a4, a5, a6**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1, b3, b4**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b1, b2, b3**
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1, c2, c3**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c4, c5**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d2, d3**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction To Data communication:	5	3	2	0	a1
Week-2	Modulation Techniques	5	3	2	0	a1,a2
Week-3	Modulation Techniques (cont.,)	5	3	2	0	a.2, a3,a4b1
Week-4	Analog Facility Parameters	5	3	2	0	a.2,a3,b2
Week5	Network Interconnections	5	3	2	0	a.3,a4,a5, a6b1,b2
Week-6	Modem Operation and Selection	5	3	2	0	a.3,a4,a6,b1,b2,c1
Week-7	Revision	-	-	-		Revision
Week-8	Midterm Exam.					
Week-9	Data Communications Devices	5	3	2	0	a.3,a4,b1,b2,c1,c2
Week-10	Data Communication Protocols	5	3	2	0	a.4, b3, d2
Week-11	ISDN Networks	5	3	2	0	a1,a2,a3,a4,b1,b2,b3 ,c1,c2,d2
Week-12	High-Speed Digital Subscriber Lines (HDSL)	5	3	2	0	a1,a2,a3,a4,b1,b2,b3 ,b4c1,c2,d2
Week-13	Switching and Routing Using IP Protocol	5	3	2	0	a1,a2,a3,a4,b1,b2,b3 ,c1,c2,d2,d3
Week-14	Switching and Routing Using IP Protocol (cont.,)	5	3	2	0	a1,a2,a3,a4,b1,b2,b3 ,c1,c2,d2,d3

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√					√					√				

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	15	15 %
2	Quiz 2 written (Semester work)		0	
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	40	40 %
5	Final Practical Exam		0	
6	Final Oral Exam		0	
7	Assignments / Project	10	15	15 %
8	Field training		0	
9	Other (Mention)		0	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**"Modern Digital and Analog Communication" (The Oxford Series in Electrical and Computer Engineering) 5th Edition, by BP Lathi (Author), Zhi Ding (Author), Oxford University Press, October 2021.**
	Other References	**Behrouz A. Forouzan, Data communications and networking, Mc-Graw Hill, third Edition, 2003.**
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Rania Ragab Hussien**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 310

Course Name: Computer interface & peripherals

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		**Level 3**	
Term/ Academic year	**Oct.**		2025/2026	**Credit Hours:**		**3**	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	**2**	**Total**	**5**
Pre-Requisite	**CSC 110**						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	Dr.Rania Ragab Hussien						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2- Course Overview:

Input devices: Introduction, human factor considerations, keyboards, digitizers, input. tables, mouse, track balls, joysticks, voice input systems. CRT, LCD, GAS-plasma displays, controllers, software support. Output hard copy devices: Plotters, impact printer (line and matrix). No impact printers (Electro-photographic, magneto, and monographic, thermal, inkjet). Color printing, printer controllers. Mass storage devices: Semiconductor. flash, magnetic tapes, standard cartridge, optical (CD-ROM, WORM). magneto optical. Multimedia and virtual reality devices: head mounted displays, data gloves.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Learning how to utilize knowledge gained by studying hardware oriented courses dealing with the construction of computer systems.

a.2. Understanding the classical and modern technologies of controlling peripheral devices together with the construction of peripheral devices

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Understand the concepts of peripheral and interface devices and why the interface Devices are needed and the techniques of programmed I/O and interrupts.

b2. Understand the organization of the external memory, magnetic disk, optical disk, magnetic tape and RAID, Etc., beside to familiarize the students how to differentiate between input and output devices

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Learning how to utilize this information for other activities like the design of external adapters or developing drivers of peripheral devices.

c2. providing with the information on trends in peripheral devices design and their utilization.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Understanding displays, graphic adapters and their structure, development stages.

d2. Getting skills about the principles of communication between peripheral device controller and a peripheral device, examples of interfaces: parallel ATA, serial ATA, USB, Centronics and its versions, SCSI. Etc.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a1, a2**
A6	The current and underlying technologies that support computer processing and inter-computer communication.	**a2**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b1**
B7	Achieve judgments considering balanced costs, benefits, safety, quality, reliability, and environmental impact	**b1, b2**
C6	Design, implement, maintain, and manage software systems.	**c1,c2**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c1**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	**d1,d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction	5	3	0	2	A1,c1
Week-2	Input devices	5	3	0	2	A1, b1
Week-3	CRT, LCD, GAS-plasma displays, controller, software support	5	3	0	2	A2,b1
Week-4	Output hard copy devices: plotter	5	3	0	2	A2,b2
Week5	Output hard copy devices: impact printer (line and matrix)	5	3	0	2	b2,c2
Week-6	No impact printers (electro- photographic)	5	3	0	2	B1, c2
Week-7						
Week-8	**Midterm Exam**					
Week-9	Files: text files	5	3	0	2	B2, c1
Week-10	Files: random handling files	5	3	0	2	c2,d1
Week-11	Dynamic data structures (pointers)	5	3	0	2	A2,b1
Week-12	Recursion: recursive functions	5	3	0	2	c2,d2
Week-13	Recursion: towers of Hanoi	5	3	0	2	A2,b2
Week-14	Review	5	3	0	2	

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√	√									

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5th week	10	10%
2	Quiz 2 written (Semester work)	10th week	10	10%
3	Midterm exam	8th week	30	30 %
4	Final Written Exam	15th, 16thweek	30	30 %
5	Final Practical Exam	14th week	10	10%
6	Final Oral Exam	0	0	0
7	Assignments / Project	6th,12thweek	10	10%
8	Field training	0	0	0
9	Other (Mention)	0	0	0

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	- William Stallings - Computer Organization and Architecture, tenth Edition- Pearson (2021)
	Other References	William Buchanan: Applied PC, Interfacing, Graphics and Interrupts, Addison-Wesley, 1996, Anglie, ISBN 0-201-87728-7, 383 page. Mano, M. Morris, and Kime, Charles. Logic and Computer Design Fundamentals. 5th ed., Pearson, 2015.
	Electronic Sources (Links must be added)	None
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

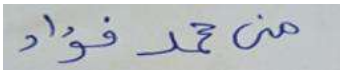
	Course Coordinator	Program Coordinator
Name	**Dr. Rania Ragab Hussien**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 313

Course Name: Computer Architecture & Organization & Assembly Language

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**		**Level 3**	
Term/ Academic year	**Oct.**		2025/2026		**Credit Hours:**		**3**	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	-	**Lab.:**	**2**	**Total**	**5**
Pre-Requisite	**BSC 215**							
Academic standards	**NARS 2010**							
Bylaw Approval	**2001**							
Course Coordinator	**Dr. Mona Mohamed Fouad** 							
Course Specification Approval	**Department Council**							
Course Specification Approval Date	**20/8/2025**							

2. Course Overview:

Basic computer organization and design: Computer instructions and their codes, timing and control, execution of instructions. Input, output, and interrupt. Assembly language: Programming loops, programming arithmetic & logical operations, subroutines, I/O programming. Central processor organization: Processor bus organizations, Arithmetic logic unit, stack organization. Instruction formats. Addressing modes. Data transfer and manipulation, program control. Micro program control organization: Control memory. Address sequencing. Arithmetic processor design and algorithms: Comparison and subtraction of unsigned binary numbers, addition and subtraction algorithms, and multiplication and division algorithms. Input/output organization: Peripheral devices. asynchronous data transfer. direct memory access. Memory organization: Auxiliary memory, virtual memory, cache memory, and memory management hardware. Pipelines and vector processing multiprocessor

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Define basic knowledge of machine language code and hexadecimal format.
a.2. Define the steps involved in assembling programs.
a.3. List the steps in linking programs.
a.4. Identify the procedures of executing programs.
a.5. Define the steps to debug programs.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Explain computer programs in assembly language.
b.2. Analyze the various computer system hardware (keyword, printer, screen, …, etc) through the assembly language.
b.3. Evaluate the steps of debugging.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Apply programs in assembly language to handle the keyboard and screen, perform arithmetic, convert between ASCII and binary formats, perform table searches and sorts, and handle disk input and output.
c.2. Examine machine execution as an aid in program debugging.
c.3. Add macro instructions to facilitate faster coding.
c.4. Apply by linking separately assembled programs into one executable program.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Show the use of assembly programs.
d.2. Communicate effectively with different numbering systems (binary, hexadecimal…etc). concepts orally and in writing.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a2,a3**
A4	Current developments in computing and information research.	**a5**
A7	Requirements, practical constraints, and computer-based systems.	**a4**
A11	Requirements, practical constraints, and computer-based systems.	**a2.a4**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b1**
B4	Analyze, propose and evaluate alternative computer systems and processes taking into account limitations, and quality constraints.	**b2**
B6	Evaluate the results of tests to investigate the functionality of computer systems.	**b3.b1**
C3	Deploy the equipment and tools used for the construction, maintenance, and documentation of computer applications.	**c1,c2**
C7	Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.	**c2**
C14	Specify, design, and implement computer-based systems.	**c4.c1**
C17	Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.	**c3**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	**d1.d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Basic computer organization and design	5	3	0	2	a1,a2
Week-2	8086 microprocessor Architecture and 5 3 2 memory management	5	3	0	2	a3,b1
Week-3	Assembly language fundamentals	5	3	0	2	a4,b2
Week-4	Instruction formats & using Debugger	5	3	0	2	a5,b3
Week5	Addressing modes	5	3	0	2	a2
Week-6	Arithmetic and Logic Instructions	5	3	0	2	a1
Week-7	Review	5	3	0	2	a2,b2
Week-8	Midterm Exam.					
Week-9	Call and Control instructions	5	3	0	2	a1,b2
Week-10	Translating Conditional Constructions	5	3	0	2	a1,b1
Week-11	Procedure management	5	3	0	2	a2,b2
Week-12	Stack management	5	3	0	2	a2,b2
Week-13	Interrupts and I/O	5	3	0	2	a2
Week-14	Practical Exam / Final Revision					

6- Teaching and Learning and Assessment methods:

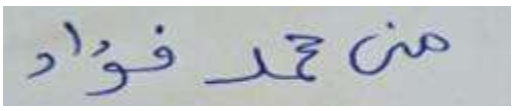
Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√	√	√			√					

7- Students Evaluation:

8- No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5th week**	**10**	**10%**
2	Quiz 2 written (Semester work)	**10th week**	**10**	**10%**
3	Midterm exam	**8th week**	**30**	**30 %**
4	Final Written Exam	**15th, 16thweek**	**30**	**30 %**
5	Final Practical Exam	**14th week**	**10**	**10%**
6	Final Oral Exam	**0**	**0**	**0**
7	Assignments / Project	**6th,12thweek**	**10**	**10%**
8	Field training	**0**	**0**	**0**
9	Other (Mention)	**0**	**0**	**0**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	• KIP R. IRVINE, "Assembly Language for x86 Processors", 8th Edition 2019
	Other References	• M. Morris Mano, "Computer Architecture" Third edition ©2017. • BARRY B. BREY , "THE INTEL MICROPROCESSORS Architecture, Programming, and Interfacing", Eighth Edition 2009
	Electronic Sources (Links must be added)	• **None**
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Mona Mohamed Fouad**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 320

Course Name: Software Engineering (1)

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		Level 3	
Term/ Academic year	**Feb.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	**Lab.:**	2	**Total**	5
Pre-Requisite	INF 220						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr/Sarah Ahmed Soliman
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Introduction. Well-engineered software. the software process, software evolution, and software reliability. Human factors in software engineering: Human diversity, knowledge processing, group working. Software specification and system modeling: The software requirements document. requirements evolution, system contexts, viewpoint analysis, model description, real-time system modeling, data modeling.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Explain the core concepts of software engineering and the SDLC
a.2. Recognizes how the phases of the lifecycle can be managed using different models of the lifecycle.
a.3. Identify agile development techniques and code refactoring techniques.
a.4. Define the concept of software requirements and their types (functional, non-functional)
a.5. Explain the purpose and benefits of system modeling in software development.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Analyze the professional, legal, moral, and ethical considerations involved in software engineering practices
b.2. Evaluate the categorize application domains for computer software.
b.3. Analyze and critically evaluate software requirements to ensure clarity, completeness, and feasibility.
b.4. Analyze complex software requirements and design efficient and scalable solutions considering trade-offs involved in design decisions

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Apply the process models to software development.
c.2. Apply agile techniques including SCRUM and XP
c.3. Apply system modeling tools like data flow diagrams (DFDs) and entity-relationship diagrams (ERDs) to represent system functionality

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Demonstrate effectively within multidisciplinary team.
d.2. Prepare technical reports, and a dissertation, to a professional standard; use IT skillsand display mature computer literacy.
d.3. Show strong presentation skills.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A4	Criteria and specifications appropriate to specific problems, and plan strategies for their solution	a1, a2, a4, a5
A5	The extent to which a computer-based system meets the criteria defined for its current use and future development	a2, a4, a5
A7	Principles of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results	a3, a4, a5
A10	Current developments in computing and information research	a1, a2, a3
A11	Requirements, practical constraints, and computer-based systems	a4, a5
B8	Familiar with the professional, legal, moral, and ethical issues relevant to the computing industry	b1
B10	Define traditional and nontraditional problems, set goals towards solving them, and observe results	b2
B11	Perform comparisons between (algorithms, methods, techniques, etc.)	b3
B13	Identify attributes, components, relationships, patterns, main ideas, and errors	b4
C3	Deploy the equipment and tools used for the construction, maintenance, and documentation of computer applications	c1, c3
C6	Design, implement, maintain, and manage software systems	c1, c2
C7	Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context	c1
D2	Demonstrate skills in group working, team management, time management and organizational skills	d1
D7	Show the use of general computing facilities	d2
D8	Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning	d3

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Chapter 1: Introduction	**5**	**3**	-	**2**	**a1,a2**
Week-2	Chapter 1: Case Studies	**5**	**3**	-	**2**	**c1, d1**
Week-3	Chapter 2: Software Process	**5**	**3**	-	**2**	**a2,b1, b2, c1**
Week-4	Chapter 2: Software Process	**5**	**3**	-	**2**	**b1, b2, c1**
Week5	Chapter 3: Agile Process	**5**	**3**	-	**2**	**a3,a4, c1, c2**
Week-6	Chapter 3: Agile Process	**5**	**3**	-	**2**	**a3,a4, c1, c2**
Week 7	Quiz and revision	**5**	**3**	-	**2**	**a1, a4, b1, b2, c1, c2**
Week-8	midterm exam					
Week-9	Chapter 4: Requirement Engineering	**5**	**3**	-	**2**	**a1, a4,b2, b4**
Week-10	Chapter 4: Requirement Engineering	**5**	**3**	-	**2**	**a1, a4,b2, b4**
Week-11	Chapter 4: Requirement Engineering	**5**	**3**	-	**2**	**a1, a4,b2, b4**
Week-12	Chapter 5: System Modelling	**5**	**3**	-	**2**	**c3,d2, d3**
Week-13	Chapter 5: System Modelling	**5**	**3**	-	**2**	**c3,d1, d2, d3**
Week-14	Use Cases	**5**	**3**	-	**2**	**d1, d2, d3**

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√		√		√	√			√				√	

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**6**	**5**	**5%**
2	Quiz 2 written (Semester work)	**10**	**5**	**5%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam			
7	Assignments / Project	**Through the semseter**	**20**	**20%**
8	Field training			
9	Other (Mention)			

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**Engineering Software Products: An Introduction to Modern Software Engineering, by Ian Sommerville, 2020.**
	Other References	**ressman, Roger S., and Maxim, Bruce R. *Software Engineering: A Practitioner's Approach*. 9th ed. McGraw-Hill, 2019.**
	Electronic Sources (Links must be added)	**iansommerville.com/engineering-software-products/**
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr.Sarah Ahmed Soliman**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 323

Course Name: Computer Graphics

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**		**Level 3**	
Term/ Academic year	**Oct.**		2025/2026		**Credit Hours:**		**3**	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	-	**Lab.:**	**2**	**Total**	**5**
Pre-Requisite	--							

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr /Sarah Ahmed Soliman ساره احمد سليمان
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Introduction to computer graphics: history, applications, and graphics system software. Output primitives: Points, lines, circles, ellipses, character generation. Attributes of output primitives: Color and intensity, area filling, character attributes. Two-dimensional transformations: Basic transformations, translation. scaling, and rotation. Matrix representations and homogeneous coordinates, Composite transformations. Windowing and clipping. Segments. Interactive input devices. asynchronous data transfer. direct memory access. Memory organization: Auxiliary memory,
virtual memory, cache memory, and memory management hardware. Pipelines and vector processing multiprocessor

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Illustrate the principles of mathematics for computer graphics.
a.2. Define the fundamental concepts of the Computer Graphics systems.
a.3. Identify how to build their own graphical image from multiple 3D objects.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Analyze the influence of computer graphics to the other fields like medicine.
b.2. Have some skills to build a graphical interpreter.
b.3. Understand how the graphical primitives are combined to build a complex graphics system.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Develop basic drawing problem using famous graphics systems like OpenGL.
c.2. Design and implement using graphical representation like CGAL package.
c.3. Handle implementation problems of raster scan devices.

General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Deal with standard 3D drawing tools.
d.2. Render the 3D surfaces.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a1,a2,a3**
A6	The current and underlying technologies that support computer processing and inter-computer communication.	**a2**
A11	Requirements, practical constraints, and computer-based systems.	**a2**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b1,b3**
B7	Achieve judgments considering balanced costs, benefits, safety, quality, reliability, and environmental impact.	**b2**
B9	Evaluate research papers in a range of knowledge areas.	**b1**
C6	Design, implement, maintain, and manage software systems.	**c2,c3**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c1.c2**
C12	Prepare and present seminars to a professional standard.	**c3**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1.d2**
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	**d1**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction	5	3	0	2	a1, a 2, b1
Week-2	Output primitive	5	3	0	2	a 2, b 2, c1
Week-3	Attribute of Output primitive	5	3	0	2	a 3, b1, b 2, c 3
Week-4	Basic User Interface Concepts	5	3	0	2	a1, a 2, b 3, c 2
Week5	Two dimensional transformations: basic transformation	5	3	0	2	a 2, a 3, b1, b 2, c 3
Week-6	Two dimensional transformations: translation, scaling and rotation	5	3	0	2	a1, a 3, b1, b 3, c1, c 2
Week-7	Revision					
Week-8	Midterm Exam.					
Week-9	Matrix representations and homogeneous	5	3	0	2	a 3, b 2, b 3, c 3
Week-10	Composite transformation	5	3	0	2	a1, b1, b 2, c 2, c 3
Week-11	Composite transformation	5	3	0	2	a 2, a 3, b 2, b 3, c1, c 2
Week-12	Windowing and clipping	5	3	0	2	a 3, b1, b 3, c 2, c 3
Week-13	Segments	5	3	0	2	a 2, a 3, b 2, c1, c 2
Week-14	Practical Exam / Final Revision					

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√	√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5th week	10	10%
2	Quiz 2 written (Semester work)	10th week	10	10%
3	Midterm exam	8th week	30	30 %
4	Final Written Exam	15th, 16thweek	30	30 %
5	Final Practical Exam	14th week	10	10%
6	Final Oral Exam	0	0	0
7	Assignments / Project	6th,12thweek	10	10%
8	Field training	0	0	0
9	Other (Mention)	0	0	0

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Interactive Computer Graphics: A Top-Down Approach with WebGL". The most recent edition is the 7th edition, 2015
	Other References	Angel, E., & Shreiner, D. (2014). Interactive Computer Graphics: A Top-Down Approach with WebGL (7th ed.). Pearson Education. "Computer Graphics with OpenGL" by Donald Hearn and M. Pauline Baker available. 4th edition, 2010
	Electronic Sources (Links must be added)	• **None**
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr/Sarah Ahmed Soliman**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 324

Course Name: Logic Programming

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**		Level 3
Term/ Academic year	**Oct.**		2025/2026		**Credit Hours:**		3
Contact Hours	**Lecture:**	**3**	**Tutorial:**	**-**	**Lab.:**	**2**	**Total**	**5**
Pre-Requisite	**BSC 215**						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	**Dr. Sarah Ahmed Soliman**						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Introduction facts, objects, and predicates: expressing facts, turbo prolog objects. Prolog variables: using variables bound and free variables, anonymous variables, compound goals, and backtracking, variable rules. Using rules: rules, variables in rules, prolog execution rules, using the trace, unification, execution control, the built-in predicate. Simple input and output. Controlling execution: success through failure; the fail predicate, exclusion using the fail predicate, recursion, and the cut. Arithmetic operations Compound objects dynamic database. Lists. String operations.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Understand the core concepts of logic programming, including predicates, clauses, facts, unification, and resolution.

a.2 Know the basics for well-formed logic programs using a specific logic programming language (e.g., Prolog, DATALOG).

a.3 Summarize the importance of programming in logic in expert systems and artificial intelligence

a.4 Identify the relationship between logic programming and other programming paradigms (e.g., imperative, functional).

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1 Explain the different concepts in logic programming.

b.2 Evaluate the strengths and limitations of logic programming for specific applications.

b.3 Distinguish between logical reasoning techniques (e.g., deduction, induction) to solve problems using logic programs.

b.4 Evaluate the results of logic program execution to verify if they meet the established criteria and represent valid solutions.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1 Design programs using prolog language.

c.2 Apply logic programs to solve problems by formulating them as queries.

c.3 Examine the correctness and completeness of logic programs, ensuring they produce accurate and comprehensive results

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1 Demonstrate the ability to make use of a range of learning resources and to manage one's own learning for logic programming concepts

d.2 Show the use of general computing facilities.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a4**
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results	**a2**
A13	Using of high-level programming languages	**a1 , a2**
A15	Interpreting and analyzing data qualitatively and/or quantitatively	**a3**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1**
B5	Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.	**b1 , b2**
B6	Evaluate the results of tests to investigate the functionality of computer systems	**b4**
B12	Perform classifications of (data, results, methods, techniques, algorithms. etc.)	**b3, b4**
C4	Apply computing information retrieval skills in computing community environment and industry.	**c2**
C6	Design, implement, maintain, and manage software systems	**c1 , c3**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c1 , c2**
D3	Show the use of information-retrieval.	**d1**
D7	Show the use of general computing facilities	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	An overview of Prolog: Facts, Relations, Objects, Rules.	5	3	-	2	a1, a2, a4,b1
Week-2	An overview of Prolog: Facts, Relations, Objects, Rules.	5	3	-	2	a1, a2, a4,b1
Week-3	Syntax and meaning of Prolog programs	5	3	-	2	a1, a2, a4,b1,c1,c2
Week-4	Structures and trees	5	3	-	2	a4,b3,b2
Week5	Structures and trees	5	3	-	2	b1,b4,c1,c2,c3,d1
Week-6	Recursive search and mapping	5	3	-	2	a4,b4
Week-7	Revision					
Week-8	Midterm Exam.					
Week-9	Recursive comparison, joining structures	5	3	-	2	a4,b4,c1,c2,d1,d2
Week-10	Accumulators and different structures	5	3	-	2	a4,b4,c1,c2,d2
Week-11	Controlling backtracking	5	3	-	2	a3,a4,b1,b2,b3,b4 ,c1,c2
Week-12	Using cut and Solving problems	5	3	-	2	b3,b4,c2
Week-13	Reading and writing	5	3	-	2	a3,c1,c2,c3,d1,d2
Week-14	Practical Exam					

6- Teaching and Learning and Assessment methods:

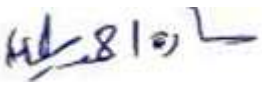
Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√			√	√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**10**	**10%**
2	Quiz 2 written (Semester work)	**10**	**10**	**10%**
3	Midterm exam	**8**	**30**	**20 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam	**0**	**0**	**0%**
7	Assignments / Project	**6,12**	**10**	**10%**
8	Field training	**0**	**0**	**0%**
9	Other (Mention)	**0**	**0**	**0%**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Introduction to logic programming, Ronald J. Brachman, Francesca Rossi, and Peter Stone, Series Editors,2020
	Other References	None
	Electronic Sources (Links must be added)	•https://www.tutorialspoint.com/execute_prolog_online.php • https://swish.swi-prolog.org/
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Sarah Ahmed Soliman**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 310

Course Name: Design of Information Systems

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**		Level 3
Term/ Academic year	**Oct.**		2025/2026		**Credit Hours:**		**3**
Contact Hours	**Lecture:**	**2**	**Tutorial:**	-	**Lab.:**	**3**	**Total**	**5**
Pre-Requisite	**INF 220**						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Mona Mohamed منى محمد فؤاد
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Systems design, Implementation, Maintenance, AND Review: logical systems Design. Physical system Design. special system design considerations, Emergency alternative procedures and disaster recovery. systems control, generating systems design alternatives, financial options to acquire computer systems. Evaluating and selecting system design. Evaluation techniques. Design report, systems implementation, Tools, and techniques for software development. Types of testing Start-up Approaches. Systems Maintenance, Systems review, systems performance measurement Input, Output and Interface Design: Define the appropriate format and media for computer input. The difference between data capture, data entry, and data input. Identify and describe several automatic collection technologies. Apply human factors to the design of computer inputs. Designment control for computer inputs. Select proper screen-based control for input are to appear on a GUI input screen. Design a web-based input interface.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Explain the importance of understanding IS in its context to successful IS practice by looking at issues such as IS-supported core competencies, competitive advantage, business-IS alignment, governance and outsourcing, and change management in IS.

a.2. Apply key areas of research and practice in information systems

a.3. Identify interrelationships between concepts in information systems

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Critically discuss and analyze information systems issues at an advanced level

b.2 Exploit the key knowledge and transferable skills as basis for further post-graduate level

b3. Use the learned context to assess the role of IS in organizations

C.Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Analytical and interpretive skills through introduction to and use of case studie

c.2. Ability to look at cases and business contexts from multiple perspectives

c.3 Research and critical thinking skills through preparation of discussion materials

c. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Team work through group and project work

d.2. Confidence through online discussion

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	a1, a3
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	a1, a3
A12	Essential mathematics relevant to computer science.	a1, a3
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	b1
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	b1
B3	Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.	b1, b3
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	c1
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	c1
C3	Deploy the equipment and tools used for the construction, maintenance, and documentation of computer applications.	c1
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	d1
D2	Demonstrate skills in group working, team management, time management and organizational skills.	d1, d2

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	What Is Information Systems Analysis and Design ?	5	3	-	2	**a1, b1, c1**
Week-2	A Modern Approach to Systems Analysis and Design	5	3	-	2	a1, a2, b2
Week-3	Developing Information Systems and the Systems Development Life Cycle	5	3	-	2	a1, a2, b1,b2, c1
Week-4	Designing the Human Interface	5	3	-	2	a1, a3, b1, b2, c2, d1
Week5	General Guidelines for Designing Web Interfaces	5	3	-	2	a1, b1, c1, c2, c3, d2
Week-6	Designing the Human Interface at Pine Valley Furniture	5	3	-	2	a1, a3, b1, b3, c1, d2
Week-7	designing databases	5	3	-	2	a1, a3, b1, b2, c2, d1
Week-8	Midterm Exam					
Week-9	Transforming E-R Diagrams into Relations	5	3	-	2	a2, a3, b1, c1, c3, d2
Week-10	Merging Relations	5	3	-	2	a3, b1, b2, b3, c2, c3, d1
Week-11	systems Implementation and operation	5	3	-	2	a1, a3, b1, b2, b3, c2, c3
Week-12	The Processes of Documenting the System, Training Users, and Supporting Users	5	3	-	2	a1, a2, b2, b3, c1, c2, d2
Week-13	Software Application Testing	5	3	-	2	a2, a3, b1, b2, c2, c3, d2
Week-14	Role of Automated Development Tools in Maintenance	5	3	-	2	a3, b3, c2, c3, d2

6- Teaching and Learning and Assessment methods:

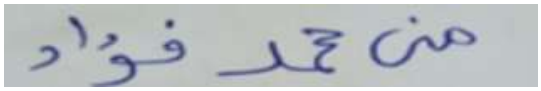
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√		√	√					

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	5	5	5 %
2	Quiz 2 written (Semester work)	10	5	5 %
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10 %
6	Final Oral Exam	-	0	0%
7	Assignments / Project	weekly	20	20 %
8	Field training	-	0	0%
9	Other (Mention)	-	0	0%

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	*Essentials of Systems Analysis and Design, 6th edition*
	Other References	
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Mona Mohamed**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 320

Course Name: Decision Support Systems

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		Level Three	
Term/ Academic year	**Feb.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**2**	**Tutorial:** 2	**Lab.:**	-	**Total**	4
Pre-Requisite	**BSC 220**						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Mona Mohamed Fouad
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

An overview of decision support systems (DSS). a definition of decision support systems, decision support systems characteristics, a brief example of a decision support system, some differences between MIS and decision support systems, the inputs for decision support systems, decision support systems levels, institutional and ad hoc decision support systems. The decision support systems: operating and evolving a decision support system, application of decision support systems, hardware selection of decision support systems, software selection of decision support systems.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Define the fundamental terms, concepts and theories associated with Decision Support Systems, including their purpose and significance in aiding organizational decision-making.

a2. Identify and describe the distinctive characteristics of DSS, such as their flexibility, interactivity, and capability to process complex data for supporting decision-making.

a3. understand the differences between DSS and Management Information Systems (MIS), including the unique role each plays within an organization and the types of decisions they support.

a4. Understand the considerations involved in selecting DSS software, including the need for functionality, user-friendliness, compatibility, and support for advanced analytics and reporting.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Discuss and develop the analysis, design and implementation of computerized Decision Support Systems.

b2. Acquire intellectual skills to compare and differentiate between DSS and Management Information Systems (MIS), assessing their unique roles, functionalities, and impact within organizational contexts.

b3. analyze and adapt DSS to meet evolving organizational demands, exploring how to modify systems for optimal support as technology and business needs change.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. apply foundational knowledge of DSS to analyze and understand how DSS can be used effectively in various business and organizational scenarios.

c2. analyze practical examples of DSS, gaining insights into how such systems are implemented and utilized to solve complex decision-making problems.

c3. design and specify necessary data, models, and user interfaces, required to build a functional and efficient DSS.

c4. Differentiate between institutional (long-term, consistent) and ad hoc (temporary, situation-specific) DSS, understanding when and why each type is used based on organizational requirements.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Develop the ability to communicate complex technical concepts related to DSS and MIS clearly and effectively to diverse audiences, including both technical and non-technical stakeholders.

d2. Gain experience in working collaboratively, both in groups and with interdisciplinary teams, to design and implement DSS solutions, leveraging each team member's unique skills and knowledge.

d3. Acquire research skills to gather, assess, and synthesize information on DSS tools, methodologies, and industry trends, supporting informed decision-making and continual learning.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1,a2,a3**
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a5**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a4**
A9	Professional, moral, and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.	**a7,a8**
A16	The principles and techniques of several application areas informed by the research directions of the subject, such as artificial intelligence, natural language processing, data mining, databases, and computer graphics.	**a6**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1**
B4	Analyze, propose and evaluate alternative computer systems and processes taking into account limitations, and quality constraints..	**b2**
B5	Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.	**b3**
B17	Identify a range of solutions and critically evaluate and justify proposed design solutions.	**b4**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c1**
C7	Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.	**c2**
C16	Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.	**c3**
C18	Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning.	**c4**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d1**
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	**d2,d3,d4**
D6	Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.	**d5**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	DSS overview, definition for DSS, DSS characteristics	4	**2**	**0**	**2**	a1,a2
Week-2	Decision Support Systems life cycle	4	**2**	**0**	**2**	a1,a2,b1
Week-3	Difference between DSS and MIS	4	**2**	**0**	**2**	a3,b2,
Week-4	DSS levels, institutional and ad hoc DSS	4	2	0	2	b3,c1,c2
Week5	Computerized and innovative decision support :Evolution of DSS into Business Intelligence(BI)	4	2	0	2	a1,a2,a4,c4
Week-6	Computerized and innovative decision support :Evolution of DSS into Business Intelligence(BI)	4	2	0	2	a1,a2,a4,c4
Week-7	Applications for DSS and BI connection	4	2	0	2	a4,b3,c2,d1
Week-8	Midterm Exam.					
Week-9	Decision support system development, operation, and evolution	4	2	0	2	b3,c3,d1,d2
Week-10	Decision Making and Analytics: -Approaches to Analytics -Modeling and Analysis	4	2	0	2	b1,b3,c3,d1,d2,d3
Week-11	Modeling and Analysis	4	2	0	2	a4,c3,d1,d2
Week-12	Foundations and Technologies for enhancing Decision Making: Data Warehousing Definitions and development	4	2	0	2	a1,b1,c1,c3,c4,d1,d2,d3
Week-13	Foundations and Technologies for enhancing Decision Making: Data Warehousing Definitions and development Data and Information Visualization, Visual Analytics	4	2	0	2	a1,b1,c1,c3,c4,d1,d2,d3
Week-14	Foundations and Technologies for enhancing Decision Making: Data and Information Visualization, Visual Analytics					a1,b1,c1,c3,c4,d1,d2,d3

6- Teaching and Learning and Assessment methods:

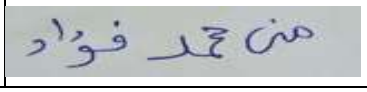
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√		√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**10**	**10 %**
2	Quiz 2 written (Semester work)	**11**	**10**	**10 %**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**40**	**40 %**
5	Final Practical Exam	**14**	**0**	**0 %**
6	Final Oral Exam	**0**	**0**	**0**
7	Assignments / Project	**weekly**	**10**	**10 %**
8	Field training	**0**	**0**	**0**
9	Other (Mention)	**0**	**0**	**0**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	- "Decision Support and Business Intelligence Systems" by Efraim Turban, Ramesh Sharda, and Dursun Delen",2011. - Case studies and other academic publications as they are assigned during the course.
	Other References	- Business Intelligence and Analytics: Systems for Decision Support" by Ramesh Sharda, Dursun Delen, and Efraim Turban,2014. - "Business Intelligence and Analytics: Systems for Decision Support" by Ramesh Sharda,Dursun Delen, and Efraim Turban (10th Edition, 2020).
	Electronic Sources (Links must be added)	- **Decision Support Systems Society (DSS Society):** The professional society for decision support systems, offering resources, conferences, and publications. - **INFORMS:** The Institute for Operations Research and Management Science, a leading professional society in the field of operations research and management science. - **Association for Computing Machinery (ACM):** A professional society for computing professionals, with a special interest group on decision support systems**.** - **Decision Support Systems Blog:** A blog dedicated to providing news, articles, and insights on decision support systems.
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Mona Mohamed Fouad	**Dr. Rania Ragab Hussien**
Signature		

Course Code: FTR 330

Course Name: Field Training (3)

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		LEVEL 3	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		5	
Contact Hours	**Lecture:**	**18**	**Tutorial:**		**Lab.:**	**Total**	18
Pre-Requisite	FTR 230, 50 - credits completed.						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	Dr. Shaimaa Abdallah Ibraheem						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Each Student must attend a supervised training program of 10 weeks in a relevant field to gain practical experience in a real engineering environment. At the end of the training period, the student must submit a written report for evaluation.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Describe the current and underlying technologies in the labor market that support computer processing and inter-computer communication.

a.2. Recognize professional, moral and ethical issues involved in the computer technology labor market and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.

a.3. List of the requirements, practical constraints and computer-based systems.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Analyze computing problems and provide solutions related to the design and construction of computing systems.

b.2. Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.

b.3. Identify attributes, components, relationships, patterns, main ideas, and errors.

b.4. Summarize the proposed solutions of the training field and their results.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Implement comprehensive computing knowledge and skills in training field and in deployment of computers to solve position practical problems.

c.2. Apply computing information retrieval skills in computing community environment and industry.

c.3. Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.

c.4. Prepare technical reports, and a dissertation, to a professional standard; use IT skills in the training field.

c.5. Specify, design, and implement computer-based systems.

c.6. Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.

c.7. Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds and apply them in the training field.

c.8. Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.

c.9. Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Use IT skills and display mature computer literacy.

d.2. Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.

d.3. Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A6	The current and underlying technologies that support computer processing and inter-computer communication	**a1,**
A9	Professional, moral, and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.	**a2**
A11	Requirements, practical constraints, and computer-based systems.	**a3**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1**
B3	Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.	**b2**
B13	Identify attributes, components, relationships, patterns, main ideas, and errors.	**b3**
B15	Restrict solution methodologies upon their results.	**B4**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c1**
C4	Apply computing information retrieval skills in computing community environment and industry.	**c2**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c3**
C13	Prepare technical reports, and a dissertation, to a professional standard; use IT skills and display mature computer literacy.	**c4**
C14	Specify, design, and implement computer-based systems.	**c5**
C15	Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.	**C6**
C16	Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.	**C7**
C17	Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.	**C8**
C18	Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning.	**C9**
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	**d1**
D6	Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.	**d2**
D8	Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.	**d3**

5- content:

Training Fields:

•Networks (Administration, design, implementation, infrastructure)
• Networks and ICT.
• Developing (Desktop, Web, Mobile, embedded systems)
• AI (smart home, smart cities, IoT, modeling, medical field)
•Information Systems.
• Business Intelligence.
• Database and Data warehouse (design, administration)
• Data mining (market research, e-Business, other).
• General Applications.
• Graphical Systems and Applications
• Microprocessor Applications and Peripherals.
• Other Information technology related fields (required approval from supervisor).

Rules and Regulations:

The student must perform Field Training for 120 hours in an industrial or service facility related to the student's program and must be under the full supervision of the department.
It is also possible to perform the training inside the department in a similar environment.
• The training follow-up will be handled by the academic advisor assigned by the Program Steering Committee.
• Identifying a company official contact person.
• The student must submit a technical report to his/her academic advisor at the end of the training period.

• The company should submit a student's training evaluation form to the academic advisor at the end of the training period.
• The training is 18 weeks for the Third levels
•The Field Training is evaluated is count in the cumulative GPA calculation.

6- Teaching and Learning and Assessment methods:

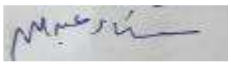
Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Training Authority Report	Student Performance	20	**20 %**
2	Supervisor Report	Overall result	20	**20 %**
3	Training Authority Survey	For explanation	30	**30 %**
4	Student Survey	For explanation	30	**30 %**

8- learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	
	Other References	
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Shaimaa Abdallah Ibraheem	**Dr. Rania Ragab Hussien**
Signature		

Course Code: INF 311

Course Name: Database Management System (1)

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		LEVEL 3	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		4	
Contact Hours	**Lecture:**	**3**	**Tutorial:** 1	**Lab.:**	2	**Total**	6
Pre-Requisite	INF 220						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Shaimaa Abdallah Ibraheem
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

An overview of database management, what are a database system, operational data, data independence, relational systems, and others. Architecture of a database system: The three levels of architecture, the external level, the conceptual level, the internal level, mappings, the database administrator, the database management system. The internal level: Database accesses, page sets, and files, indexing. Hashing, pointer chains, comparison techniques. An overview of DB2: Relational databases, the SQL language, major system components. Relational algebra: A syntax for relational algebra, traditional set operations, special relational operations. Relational calculus: Tuple oriented relational calculus, relational calculus vs. relational algebra, domain-oriented relational calculus, query-by-examples. Data definition: Base tables, indexing. Data Manipulation: Simple queries, and join queries, built-in functions, advanced features, update operations. The system catalog: Querying the catalog, updating the catalog. View: View definition. DML operations and view. logical data independence, advantages of views. Embedded SQL: Operations not involving cursors, operations involving cursors, a comprehensive example, dynamic SQL Database environment: Recovery and concurrence security and integrity, database product family.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Define concepts, principles of database and database management system.
a.2. Describe the fundamentals of relational, object-oriented, and distributed database systems including data models, database architectures, and database manipulations.
a.3. List the major system components.
a.4. Define the theories and techniques in developing database applications and be able to demonstrate the ability to build databases using enterprise DBMS products such as Oracle or SQL Server

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Express the different issues involved in the design and implementation of a database system.
b.2. Explain the tools used for the creation of database.
b.3. Explain essential DBMS concepts such as database security, integrity, concurrency, distributed database, and intelligent database,Client/Server Database Server), Data Warehousing.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Implement comprehensive computing knowledge and skills to build simple database system and demonstrate competence with the fundamental tasks involved with modeling, designing, and implementing a DBMS.
c.2. Use the tools of querying languages, primarily SQL, and another database supporting software to apply information retrieval.
c.3. Apply security and integrity policies relating to databases.
c.4. Apply the principles of the physical and logical database designs, database modeling, relational, hierarchical, and network models to handle a mass of data.
c.5. Use appropriate programming languages, web-based systems and tools to design database systems.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Show the use of information retrieval in database system.
d2. Demonstrate appropriate numeracy skills in understanding and presenting cases Involving a quantitative dimension of database..

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a2**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a3**
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results	**a4**
B3	Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.	**b1**
B4	Analyze, propose and evaluate alternative computer systems and processes taking into account limitations, and quality constraints.	**b2**
B10	Define traditional and nontraditional problems, set goals towards solving them, and. observes results.	**b3**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c1**
C4	Apply computing information retrieval skills in computing community environment and industry.	**c2**
C6	Design, implement, maintain, and manage software systems.	**c3**
C8	Handle a mass of diverse data, assess risk and draw conclusions.	**c4**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c5**
D3	Show the use of information-retrieval.	**d1**
D5	Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Overview of Database Concepts	6	3	1	2	a1, a2
Week-2	Database & Database Users part1	6	3	1	2	a1, a2
Week-3	Database & Database Users part2	6	3	1	2	a1, a2, a3
Week-4	Database Concepts &architecture	6	3	1	2	a3, b1, c2, d1
Week5	Relational data Model and Constraints	6	3	1	2	a3, a4, b1, b2, c1, c2, d1
Week-6	Enhanced Entity-Relationship (EER) Modeling	6	3	1	2	a4, b1, b2, b3, c2, c3, d1, d2
Week-7	Revision					
Week-8	Midterm Exam.					
Week-9	Basic SQL	6	3	1	2	a4, b2, b3, c1, c2, d1, d2
Week-10	View definition, DML operations & view, logical data independence	6	3	1	2	b2, b3, c3, c4, d1, d2
Week-11	The Relational Data Model and Relational Database Constraints	6	3	1	2	a4, b2, b3, c3, c4, c5, d1, d2
Week-12	Relational Database Design by ER- and EERR-to-Relational Mapping	6	3	1	2	b2, b3, c2, c3, c4, d1, d2
Week-13	Normalization	6	3	1	2	b3, c3, c4, c5, d1, d2
Week-14	LAB AND ORAL EXAM					

6- Teaching and Learning and Assessment methods:

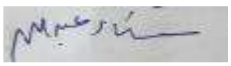
Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√	√	√	√			√	√	√			

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**10**	**10**	**10 %**
2	Quiz 2 written (Semester work)		**0**	
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10 %**
6	Final Oral Exam		**0**	
7	Assignments / Project	**weekly**	**10**	**10 %**
8	Field training		**0**	
9	Other (Mention)		**10**	**10 %**

8- learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Ramez Elmasri and Shamkant B. Navathe, "Fundamentals of Database Systems", Addison Wesley, seventh edition. Connolly & Begg "Database Systems, A practical approach to design, implementation, and management", Addison Wesley.
	Other References	Mark Gillenson, "Fundamentals of Database Management Systems" second edition
	Electronic Sources (Links must be added)	https://www.w3schools.com/sql/ https://www.coursera.org/
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Shaimaa Abdallah Ibraheem	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 426

Course Name: Neural Networks

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		Level4	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**2**	**Tutorial:** -	**Lab.:**	2	**Total**	4
Pre-Requisite	CSC 412						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	Dr. Sara Ahmed Soliman						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Introduction and a historical review: Overview of neural networks, history of neural networks. Neural network concepts: Basic definition, connections, processing elements. Learning Laws: Self-adaptation equations, coincidence learning performance learning. competitive learning, and filter learning spatio-temporal learning. Associative networks: Data transformation structures, linear association network, Learn matrix network, and recurrent associative networks. Mapping networks: Multilayer data transformation structures, the mapping implementation problem, theorem the back propagation neural network, self-0 Organizing map, counter propagation network. Spatiotemporal stochastic and hierarchical networks: Spatiotemporal pattern recognizer neural network, the Boltzmann machine network, and the neurocognition network.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Define neuron model and its learning mechanism.
a2. Describe different concepts related to basic neural network models.
a3. Define practical issues and optimizations algorithms in neural networks training.
a4. Display the basic concept of deep learning vs. traditional machine learning algorithms.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Explain the basic architecture of the perceptron.
b2. Verify the different neural network models.
b3. Compare different NN algorithms to real life application.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Apply different techniques of NN.
c2. Develop new algorithms for NN.
c3. Use Python and MATLAB toolbox for NN to solve different problems.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Communicate effectively by oral, written, and visual means.
d2. Work effectively as an individual and as a member of a team.
d3. Manage specific tasks in a certain period, 'training problems in labs.'

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1, a2**
A16	The principles and techniques of several application areas informed by the research directions of the subject, such as artificial intelligence, natural language processing, data mining, databases, and computer graphics.	**a2, a3**
A17	Showing a critical understanding of the principles of artificial intelligence, image, and pattern recognition.	**a1,a4**
A19	Selecting advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.	**a4**
B10	Define traditional and nontraditional problems, set goals towards solving them, and. observes results.	**b1, b2**
B14	Summarize the proposed solutions and their results.	**b2**
B17	Identify a range of solutions and critically evaluate and justify proposed design solutions.	**b2, b3**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c2, c3**
C11	Perform independent information acquisition and management, using scientific literature and Web sources.	**c1**
C14	Specify, design, and implement computer-based systems.	**c2**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d1,d2**
D3	Show the use of information-retrieval.	**d3**
D8	Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to neural networks	4	2	0	2	a1, a2
Week-2	the basic structure of neural networks	4	2	0	2	a2, b1
Week-3	Multilayer Neural Networks	4	2	0	2	b1, b2, b3, a4
Week-4	Practical issues in Neural networks Training	4	2	0	2	a2, a3, b2
Week5	Optimization algorithms	4	2	0	2	a3, b2, c1,
Week-6	Common Neural Networks' Architectures	4	2	0	2	b2, c1
Week-7	Revision	4	2	0	2	a1,a2,a3,a4, a5, b1,b2, b3, c1,c2
Week-8	Midterm Exam.					
Week-9	Convolutional neural networks (CNN)	4	2	0	2	b2,b3, c2, c3
Week-10	Recurrent Neural Networks (RNN)	4	2	0	2	b2,b3, c2, c3
Week-11	Advanced topic: Generative Adversarial Networks	4	2	0	2	b2,b3, c2, c3
Week-12	Autoencoder: Basic concepts	4	2	0	2	b2,b3, c2, c3
Week-13	Quiz and revision	4	2	0	2	a3,a4, b2,b3,c1, c3, d1,d3
Week-14	LAB AND ORAL EXAM	4	2	0	2	c3, d1

6- Teaching and Learning and Assessment methods:

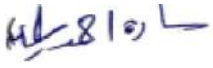
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√			√	√	√		√						

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**6**	**10**	**10%**
2	Quiz 2 written (Semester work)	**13**	**10**	**10%**
3	Midterm exam	**7**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam		**0**	
7	Assignments / Project	**weekly**	**10**	**10%**
8	Field training		**0**	
9	Other (Mention)		**0**	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**Choi RY, Coyner AS, Kalpathy-Cramer J, Chiang MF, Campbell JP. "Introduction to machine learning, neural networks, and deep learning. Translational vision science & technology" . 2020 Jan.**
	Other References	**Introduction to Artificial Neural Systems "Jacek M. Zurada", 1992.** **Aggarwal CC. "Neural networks and deep learning" . Cham: springer; 2018 Sep.**
	Electronic Sources (Links must be added)	**https://www.coursera.org/learn/neural-networks-deep-learning.** **https://www.javatpoint.com/artificial-neural-network.**
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Sara Ahmed Soliman	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 400

Course Name: Senior Project

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**	Level 4	
Term/ Academic year			2025/2026		**Credit Hours:**	6	
Contact Hours	**Lecture:**	**1**	**Tutorial:**		**Lab.:** 5	**Total**	6
Pre-Requisite							

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr/Sarah Ahmed Soliman
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

The student develops a software application in the Specialization.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Current developments in computing and information research.
a.2. Define essential mathematics relevant to computer science.
a.3. Define basic knowledge and understanding of a core of analysis, algebra, applied mathematics, and statistics, and their application in solving computational and engineering problems
a.4. Define Requirements, practical constraints, and computer-based systems.
a.5. Selecting advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and implementation.
a.6. Demonstrate artificial intelligence, and parallel and concurrent computing tools.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1.Analyze, propose and evaluate alternative computer systems and processes considering limitations, and quality constraints.

b.2. Explain making ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.

b.3. Evaluate the results of tests to investigate the functionality of computer systems.

b.4.Evaluate research papers in a range of knowledge areas.

b.5.Define traditional and nontraditional problems, set goals towards solving them, and. observes results.

b.6.Perform comparisons between (algorithms, methods, techniques...etc).

b.7.Solve Computer problems with pressing commercial, time, and industrial constraints.

b.8.Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Operate computing equipment, recognizing its logical and physical properties, capabilities and limitations.

c.2. Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.

c.3. Apply computing information retrieval skills in computing community environment and industry.

c.4. Develop a range of fundamental research skills, through the use of online resources, technical repositories and library-based material.

c.5. Design, implement, maintain, and manage software systems.

c.6. Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.

c.7. Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.

c.8. Communicate effectively by oral, written and visual means.

c.9. Prepare and present seminars to a professional standard, demonstrating effective communication, critical analysis, and the ability to engage an academic or professional audience.

c.10. Prepare technical reports, and a dissertation, to a professional standard; use IT skills and display mature computer literacy

c.11. Specify, design, and implement computer-based systems.

c.12. Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.

c.13. Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.

c.14. Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.

c.15. Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Demonstrating the ability to make use of a range of learning resources and to manage one's own learning.

d.2. Demonstrating skills in group working, team management, time management and organizational skills.

d.3. Use IT skills and display mature computer literacy.

d.4. Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.

d.5. Show the use of information-retrieval.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A8	Management and economics principles relevant to computing and information disciplines	a.1
A9	Professional, moral, and ethical issues involved in the exploitation of computer technology	a.1
A10	Current developments in computing and information research	a.1
A11	Requirements, practical constraints, and computer-based systems	a.4
A15	Interpreting and analyzing data qualitatively and/or quantitatively	a.2, a.3
A19	Selecting advanced topics for deeper understanding (hardware design, OOP, AI, parallel/concurrent computing)	a.5, a.6
B3	Identify criteria to measure and interpret the appropriateness of a computer system	b3
B4	Analyze, propose and evaluate alternative computer systems and processes	b1
B6	Evaluate results of tests to investigate computer system functionality	b3
B7	Achieve judgments considering balanced costs, safety, quality, etc.	b7
B8	Familiar with professional, legal, and ethical issues	b2
B9	Evaluate research papers in knowledge areas	b4
B12	Perform classifications of data, results, algorithms, etc.	b6
B18	Solve computer science problems with commercial/industrial constraints	b7
B19	Generate innovative designs considering industrial constraints	b8
C1	Operate computing equipment, recognizing logical & physical properties	c1
C2	Implement computing knowledge in projects & practical problems	c2
C4	Apply computing information retrieval skills	c3
C5	Develop fundamental research skills	c4
C6	Design, implement, maintain and manage software systems	c5
C7	Assess implications, risks, safety aspects in computing operations	c6
C9	Use appropriate programming languages and tools	c9
C10	Communicate effectively (oral, written, visual)	c8
C12	Prepare and present seminars to a professional standard	c9
C13	Prepare technical reports & dissertation, use IT skills	c10
C14	Specify, design, and implement computer-based systems	c11
C15	Evaluate systems considering quality attributes/trade-offs	c12
C16	Apply principles of effective information management & retrieval	c7, c13
C17	Apply human-computer interaction to systems & interfaces	c14
C18	Manage continuing professional & practical development	c15

D1	Demonstrate ability to use learning resources & self-learning	d1
D2	Demonstrate teamwork, management, and organizational skills	d2
D3	Show use of information-retrieval	d5
D4	Use tools to prepare/present reports for different audiences	d3, d4
D6	Reveal communication, public speaking, writing & presentation skills	d4
D8	Demonstrate appreciation of life-long learning	d1, d2

5- Course Schedule:

Project Classifications:

- Parallel Processing
- Artificial Intelligence
- Systems Programming
- Distributed Systems
- Information Systems
- Networks and ICT
- Formal Specifications
- Web Programming
- General Applications
- Simulation
- Computer Aided Design
- Microprocessor Applications and Peripherals
- Graphical Systems and Applications

6- Article (40): Graduation Project

In the final two semesters, a senior student must be engaged in one of the research laboratories of the corresponding department to carry out his/her graduation project. The graduation project weights six credit hours distributed on two semesters. One credit hour for the project is equivalent to four contact hours in labs/practical because the student needs to stay enough time in a research lab during the project period according to the department best practices. The student must earn at least 100 Credit Hours Level (including successfully passing all of program's Level Three mandatory courses required by the project) to register for the graduation project. The first part of the graduation project must be registered first, while the second part of the graduation project can be registered the semester following that of the first part.

How to Choose a Project?

The list of projects for each semester will be available at the beginning of the semester. This list will contain the projects title and names of supervisors. The main selection and allocation of students to projects was made at the beginning of the semester. It is possible for students to propose their own projects, in which case, they should prepare a proposal and give it to
the Graduation Project Committee (GPC).
Usually each project is suitable for more than one student (normally 3 students). Therefore, groups of three students should be arranged by students themselves. Each group of three students should make three choices of projects on the selection form obtained from the GPC. Students are strongly encouraged to see the associated members of staff for projects they are interested in, to find out more about the projects.

OWN Projects

If a student has successfully negotiated a project - outside the list of projects given by the

department - with the project committee, and possibly a prospective supervisor, he/she still gives another 2 choices, and code choice number 1 as "OWN"; this is likely to be the student's first choice, but it does not have to be.

Project Timetable

You are expected to be in regular attendance working on your project. You must cooperate in maintaining regular contact with your supervisor. It is an attendance requirement that you see your supervisor every week during term time. The formal project deliverables are a demonstration with discussion, and a written report. Not contacting your supervisor regularly is equivalent to absence from lectures which shall not exceed 15%. Students who exceed the 15% limit without a medical or emergency excuse acceptable to and approved by the Dean of the relevant college/faculty shall not be allowed to take the final presentation of the project and shall receive a mark of zero for the course. f the excuse is approved by the Dean, the student shall be considered to have withdrawn from the course. The project lifecycle should follow a sensible methodology and include the various stages identified in any Software Engineering course. Work on the project itself, use of equipment and computing facilities, must finish at the end of the 16th week of the semester. In some cases, this can be extended to another semester. The project report and the Auxiliary Appendix together with any relevant discs, logic circuit and wiring diagrams etc., must be handed in to the Graduation Project Committee after being signed by the supervisor by the end of the 16th week of the second semester. The GPC will announce a timetable for all project discussions. It forms a number of discussion committees, where each consists of two staff members and discusses one project. The formal demonstrations and project discussion take place within one week after the submission of the report. The demonstration and discussion will contribute to the assessment of the "Quality of the project work".

7- Teaching and Learning and Assessment methods for Students with special needs:

The subdivision of marks within the project is:

- The supervisor mark: 40%
- The Project committee mark: 60% divided into:

- Demonstration, 20%
- Discussion, 20%
- Report, 20%

Note that the 20% is awarded for the report judged as a report only, independent of the quality of the work being described.

Marking Scheme for Reports

The report, as a document, is worth 20% of the project mark. These marks are divided among the following headings:

- Organization (5%): balance of content, clarity, flow, relevance.
- Context (5%): discussion of background, aims, and significance of achievements.
- Literacy (5%): English, style, report manner.
- Presentation (5%): tidy layout, headings, references, diagrams.

8- Demonstration

The demonstration is an informal presentation of the results of the project to one of the project discussion committee. The students will say briefly, what the aims of the project are, and will then demonstrate the results for example by running the program or using the equipment constructed.

The duration is about 20 minutes. See Guidance on demonstrations below for more information.

9- Report

The report is a formal written report on the project. This must be word processed. The report must follow a set of standards, given below, to facilitate its inclusion in the library and its usefulness for subsequent readers. Besides these, student will find it useful to read the slides of the talk given on writing, which is given in the lecture.

Copies of previous graduation project reports are available for reference in the Department.

Project documentation may be prepared on the PCs and printed on a laser printer. Students should hand in three soft cover copies of the report. After the discussion with the discussion committee, students should make all the correction that are suggested by the committee within the specified period of time under the supervision of their supervisors, then they should be handed in three Blue color hard cover copies of the project. The title of the project, the University, Faculty, Department names, and students' names are all written in Golden color.

10- Overhead Projector

Students are expected to make reasonable use of the overhead projector or power point presentation on the day of their demonstrations.

11- Guidance on Demonstrations

A demonstration lasts about 20 minutes.

The group of students should aim to spend no more than 10 minutes summarizing what their project is designed to achieve and showing what it currently does achieve. The rest of the time is spent in answering questions.

Note: Students should not attempt to demonstrate on the computer every last thing their program can do. A demonstration of its basic operation plus one or two highlights should suffice.

The mark given for the demonstration is based on the quality and quantity of the work attempted and the final state of achievement.

Students should have their working documents to hand and appropriate reference material, design workings, reasonably up-to-date listings, examples, tests, etc. They are not giving a 20-minute seminar; at least half the time must be available for questions.

Obviously, the kinds of things that are sensibly shown in a demonstration vary from project to project. If students are in doubt as to what to show, they should ask their Supervisors.

The discussion committee consists of two staff members. In general, the supervisor of the project is not present. In general, students should be available and ready to start their demonstrations at least within one week of their submission of the project.

12- Report Standards

a. The report is a formal written account of the project, satisfying certain standards for inclusion in a library. Students must hand in all relevant work on the project by the end of the 11th week of the second semester. In addition to the report, this includes program listings, discs, detailed logic and wiring lists, etc. It is important to meet this deadline. When students hand this to their supervisors it must be accompanied by a signed version of a form supplied by the GPC. In the case of programming projects, program listings must be submitted in some bound form in an ``Auxiliary Appendix" that does not need to satisfy any standard apart from being neat and tidy. It is suggested however that an economical listing would be double-sided on A4.

Here is a suggested structure for a report. Some projects may be rather different from others, and therefore have good reasons for not following these suggestions exactly. Supervisor guidance should anyway be sought!

- Introduction (1st chapter). What is the overall aim of the project. Why is it worth doing? Who will benefit from it? If the overall aim can be split into a number of sub goals, this is a possible place to do it. Finish with a chapter by chapter overview of the rest of the report.
- Background (2nd chapter). Analyze the background to the project. This should mention any previous work, here or elsewhere, and explain its relevance to the project. This could be an appropriate place to justify the choice of platform/software etc. used in the project.
- Description of the student's own work: Design and Implementation (a chapter each). The structure of these chapters may reflect the project lifecycle, but do not write a diary of progress. The design should be clearly described and justified. Supporting diagrams should be used where appropriate and helpful. Keep your design description fairly high level. When describing implementation, confine yourself to the important, difficult, or interesting bits. Do not include large chunks of code. Figures may well be useful.
- Results (1 chapter). What is the resulting system like to use. Include screen shots as appropriate.
- Testing and Evaluation (1 chapter). What testing was done? How confident are student that everything works correctly, and what evidence can they produce to support this claim? Have students evaluated the system against its aims? How did they make this evaluation?
- Conclusions (last chapter). What conclusions can students draw from the whole project? This should include a clear statement of what has been achieved overall, and will normally continue by suggesting areas of further related work, which could be done.

b. The report itself (apart from technical considerations) is worth 25% of the project mark. However, it forms the basis of an independent assessment of the project and therefore has greater effect than 25% in practice.
c. The report must be on paper of A4 size (210 x 297 mm). Only one side of paper should be used except in the Auxiliary Appendix.
d. The report must be produced using word processing facilities. The body of the report should be suitably divided into chapters and sections. Chapters, sections, pages, figures

and appendices should all be numbered. Chapters, sections and appendices should have a heading. Each chapter should start on a new page. The body of the report should be preceded by a temporary title page, an abstract and a list of contents, and it should be followed by the references and then any appendices.

References to other published work should follow the conventions used in giving references in published work. e.g.: [1] P.J. Denning. Human error and the search for blame, *Communications of the ACM* 33(1): pp 6-7, January 1990. The abstract page must give the title, author, and supervisor, as well as an abstract of the project.

e. Straightforward and peripheral aspects of the work done should be mentioned only briefly, and description and explanation concentrated on important and interesting aspects. No extra credit is gained by writing a long report and excessive length is detrimental. More detailed description should be placed in appendices to the report. The appendices and/or the Auxiliary Appendix should contain any further documentation. Only the report itself will be held in the Department. Therefore, where important material is not included in it, e.g. because it is not convenient to produce it in A4 format, or it would be too bulky, it may sometimes be appropriate to include extracts in the report.

13- Copyright

In general, it is an infringement of copyright to reproduce any material, except short acknowledged quotations, from a published book or journal without the written permission of the publisher.

Except for the copying of material that is clearly from internal documents of the Department, any copying of books, journals, or documents required for the report should be checked with the supervisor before it is carried out.

Any material that is copied must be acknowledged as such. Attempting to present material written by others as your own is plagiarism and a serious disciplinary offence, as described in the University guidelines in the Undergraduate Handbook.

14- Avoiding Plagiarism

a. Unacknowledged direct copying from the work of another person, or the close paraphrasing of somebody else's work, is called plagiarism and is a serious offence, equated with cheating in examinations. This applies to copying both from other students' work and from published sources such as books, reports or journal articles.
b. Paraphrasing, when the original statement is still identifiable and has no acknowledgement, is plagiarism. A close paraphrase of another person's work must have an acknowledgement to the source. It is not acceptable for you to put together unacknowledged passages from the same or from different sources linking these together with a few words or sentences of your own and changing a few words from the original text: this is regarded as over-dependence on other sources, which is a form of plagiarism.
c. Direct quotations from an earlier piece of your own work, if not attributed, suggest that your work is original, when in fact it is not. The direct copying of one's own writings qualifies as plagiarism if the fact that the work has been or is to be presented elsewhere is not acknowledged.
d. Plagiarism is a serious offence and will always result in imposition of a penalty. In deciding upon the penalty, the Department will take into account factors such as the year of study, the extent and proportion of the work that has been plagiarized, and the apparent intent of the student. The penalties that can be imposed range from a minimum f a zero mark for the work (without allowing resubmission) through caution to disciplinary measures (such as suspension or expulsion).

15- Teaching and Learning and Assessment methods:

Direct Instruction	Indirect Instruction	Information Technology- Assisted Learning

Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
	√	√	√	√	√	√	√		√	√					

16- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Class work for Lab. / Tutorial	Weeks 4,7,10,13	40	**40%**
2	Class work for lecture	week Sixteenth	60	**60%**

17-Learning Resources and Supportive Facilities

Learning resources (books,	**The main (essential) reference**	C. W. Dawson, "The Essence of Computing Projects, A Student's Guide", Prentice Hall 2000.

scientific references, etc.) *	**Other References**	
	Electronic Sources (Links must be added)	https://www.cs.york.ac.uk/projects/howtodo.html
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr/Sarah Ahmed Soliman**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 411

Course Name: Simulation and Modeling

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	2	**Total**	5
Pre-Requisite	BSC 220						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	Dr. Rania Ragab Hussien						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Basic simulation modeling. Nature of simulation. System models & simulation, discrete event simulation. Simulation of a single-server queuing system. Simulation of an inventory system. List Processing in simulation. Simulation languages Simulation of time-sharing systems. Simulation of output data and stochastic processes. Building valid and credible simulation models. Principles of valid simulation modeling. Verification computer programs. An approach for developing valid &credible simulation models. Statistical procedures for computing real-world observation & simulation output data. Some practical considerations. Selecting input probability distributions. Random number generators; random variables. Output data analysis for a single system.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Define and explain key concepts and terminology in modeling and simulation, including types of models, simulation methodologies, and performance metrics.

a.2. Describe distributed simulation techniques to model complex network systems involving multiple interconnected simulations.

a.3. Describe the role and importance of modeling and simulation in analyzing and solving performance issues in computer networks and communication systems.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Analyze project results, draw conclusions, and present findings effectively, including documenting the simulation process, data analysis, and recommendations.

b.2. Address synchronization and communication issues in distributed simulations and understand their impact on simulation accuracy and performance.

b.3. Explain various simulation protocols used in distributed and network simulations, such as Time Warp, GVT (Global Virtual Time), and protocol-specific simulations.

b.4. Discuss the importance and applications of modeling and simulation in computer networks and communication systems.

b.5. Explain the significance and applications of modeling and simulation in analyzing and solving performance issues in computer networks and communication systems.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Use analytical methods to assess and solve performance issues in computer networks, such as queuing theory, network flow analysis, and throughput calculations.

c.2. Interpret performance metrics to evaluate the efficiency and effectiveness of network systems and protocols.

c.3. Apply simulation techniques to model network behaviors and communication protocols using simulation software tools.

c.4. Develop and execute simulation experiments to analyze network performance and validate theoretical models.

c.5. Plan, develop, and execute simulation projects that address specific performance analysis and engineering problems in computer networks and communication systems.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Demonstrate proficiency in using commonly employed simulation software tools relevant to computer networks and communication systems (e.g., NS-3, OMNeT++).

d2. Create and configure simulation scenarios, including setting up network topologies, defining parameters, and running simulations.

d3. Implement and evaluate the effectiveness of different simulation protocols in managing and coordinating simulation processes.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a1, a2, a3**
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	**a1, a2, a3**
A19	Selecting advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.	**a1, a2, a3**
B5	Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems.	**b1, b2, b3, b4, b5**
B6	Evaluate the results of tests to investigate the functionality of computer systems.	**b1, b2, b3, b4, b5**
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	**b1, b2, b3, b4, b5**
B15	Restrict solution methodologies upon their results.	**b1, b2, b3, b4, b5**
B18	Solve computer science problems with pressing commercial or industrial constraints.	**b1, b2, b3, b4, b5**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c1, c2,c3, c4,c5**
C3	Deploy the equipment and tools used for the construction, maintenance, and documentation of computer applications.	**c1, c2,c3, c4,c5**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c1, c2,c3, c4,c5**
C10	Communicate effectively by oral, written, and visual means.	**c1, c2,c3, c4,c5**
C17	Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.	**c1, c2,c3, c4,c5**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d1, d2, d3**
D5	Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.	**d1, d2, d3**
D7	Show the use of general computing facilities.	**d1, d2, d3**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Basic Simulation Modeling Nature of Simulation	5	3	0	2	a1, a3
Week-2	System Models & Simulation	5	3	0	2	a1, a2, a3, b1
Week-3	Discrete Event Simulation	5	3	0	2	a1, a2, a3, b2, b3, b4
Week-4	Simulation of a Single-Server Queuing System	5	3	0	2	a1, a2, a3, b2, b3, b4
Week5	Simulation of an Inventory System	5	3	0	2	b4, b5, c1, c2, c3, c4, c5
Week-6	List Processing in Simulation	5	3	0	2	b4, b5, c1, c2, c3, c4, c5
Week-7	Simulation Languages	5	3	0	2	b4, b5, c1, c2, c3, c4, c5
Week-8	Midterm Exam.					
Week-9	Simulation of Time-Sharing Systems	5	3	0	2	b4, b5, c1, c2, c3, c4, c5
Week-10	Simulation of Output Data and Stochastic Processes	5	3	0	2	b4, b5, c1, c2, c3, c4, c5
Week-11	Building Valid and Credible Simulation Models	5	3	0	2	c1, c2, c3, c4, c5, d1, d2, d3
Week-12	Principles of Valid Simulation Modeling	5	3	0	2	c1, c2, c3, c4, c5, d1, d2, d3
Week-13	Verification of Computer Programs	5	3	0	2	c1, c2, c3, c4, c5, d1, d2, d3
Week-14	An Approach for Developing Valid & Credible Simulation model	5	3	0	2	c1, c2, c3, c4, c5, d1, d2, d3

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√	√	√		√	√		√			√

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**6**	**10**	**10%**
2	Quiz 2 written (Semester work)	**13**	**10**	**10%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam	**-**	**0**	**-**
7	Assignments / Project	**weekly**	**10**	**10%**
8	Field training	**-**	**0**	**-**
9	Other (Mention)	**-**	**0**	**-**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**Banks, Jerry, Carson, John, Nelson, Barry, and Nicol, David. Discrete-Event System Simulation. 6th ed., Pearson, 2019.**
	Other References	**Simulation Modeling and Analysis. 5th ed., McGraw-Hill, 2015.** **o Network Simulation Experiments Manual by Emad Aboelela,3rd , 2011.** **o "Modeling and Simulation of Computer Networks and Systems: Methodologies and Applications" by Mohammad S. Obaidat and Sabah S. Mohammed** **" Introduction to Simulation Using SIMAN by Jeffrey S. Owen, co-authored with Claude Dennis Pegden, is the 2nd edition, 1995**
	Electronic Sources (Links must be added)	coursera.org/learn/network-simulation
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Rania Ragab Hussien**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 412

Course Name: Artificial Intelligence

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Oct.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	**Lab.:**	2	**Total**	5
Pre-Requisite	CSC 210						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr/Sarah Ahmed Soliman
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

This course develops basic competence in knowledge-based programming and introduces the major principles and techniques of artificial intelligence. The students learn a symbolic programming language (lisp or prolog), which they use to solve problems entailing knowledge representation and reasoning. Topics include problem solving (search, theorem proving, production systems, and planning), knowledge representation (predicate calculus, production rules, semantic networks, and frames), natural language processing, and expert systems.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Demonstrate basic knowledge and understanding of a core idea of artificial Intelligence and its application areas.

a.2. Know and understand the principles and techniques of a number of application areas informed by the different types of intelligent agents.

a.3. Show a critical understanding of the principles of artificial intelligence.

a.4. Understand the fundamental topics for state-space search algorithms in the modeling and designing of AI systems.

a.5. Select advanced topics to provide a deeper understanding of some aspects of the basic knowledge representation, problem solving, and learning methods of Artificial Intelligence.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Define traditional and nontraditional problems, set goals towards solving them, with observing the results.

b.2. Perform comparisons between (algorithms, methods,...etc) in the used AI searching

b.3. Perform classifications of (data, results, algorithms.. etc.) considering the most suitable knowledge representation for solving the problem.

b.4. Summarize the proposed solutions and their results.

b.5. Identify a range of solutions and critically evaluate and justify proposed types of artificial agents considering the environments characteristics.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Use appropriate programming languages, like Python language, web-based systems and tools, design methodologies, and knowledge to develop a small logic-based, rule-based, and search-based systems.

c.2. Perform independent information acquisition and management, using scientific literature and Web sources.

c.3. Develop AI agents through specification, design, and implementation.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Demonstrating skills in group working, team management, time management and organizational skills in presenting different of AI fields

d.2. Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.

d.3. Demonstrate the ability to solve problems relevant to artificial intelligence using ideas and techniques.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A13	Using of high-level programming languages.	a1
A16	The principles and techniques of several application areas informed by the research directions of the subject, such as artificial intelligence, natural language processing, data mining, databases, and computer graphics.	a2
A17	Showing a critical understanding of the principles of artificial intelligence, image, and pattern recognition.	a3
A18	The fundamental topics in Computer Science, including hardware and software architectures, software engineering principles and methodologies, operating systems, compilers, parallel and distributed computing, systems, and software tools.	a4
A19	Selecting advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.	a5
B10	Define traditional and nontraditional problems, set goals towards solving them, and observe results.	b1
B11	Perform comparisons between algorithms, methods, techniques, etc.	b2
B12	Perform classifications of data, results, methods, techniques, algorithms, etc.	b3
B14	Summarize the proposed solutions and their results.	b4
B17	Identify a range of solutions and critically evaluate and justify proposed design solutions.	b5
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	c1
C11	Perform independent information acquisition and management, using scientific literature and Web sources.	c2
C14	Specify, design, and implement computer-based systems.	c3
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	d2
D2	Demonstrate skills in group working, team management, time management and organizational skills.	d1
D3	Show the use of information-retrieval.	d3

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to AI	5	3	-	2	a1, a2,a3
Week-2	Intelligent agents	5	3	-	2	a2,a3, b1,c3
Week-3	Problem solving agents	5	3	-	2	a2, a4, b2, c1,d3
Week-4	Uniformed search strategies I	5	3	-	2	a4, b3,c3,d3
Week5	Uniformed search strategies II	5	3	-	2	a4, a5, b5, c1, c2, d1
Week-6	Informed search strategies	5	3	-	2	a4, a5, b4, b5, c2, c3
Week-7	Midterm Revision and reminder	5	3	-	2	a1, a2,a3, a4, a5, b5, c1, c2, d2
Week-8	Midterm Exam					
Week-9	Adversarial search	5	3	-	2	a4, a5, b2, b4, c1, c2
Week-10	Uncertain knowledge and reasoning I	5	3	-	2	b3, b4, b5, c3, d1, d2
Week-11	Uncertain knowledge and reasoning II	5	3	-	2	a5, b1, b2, b3, c2, d3
Week-12	Machine learning part I	5	3	-	2	a4, a5, b3, b4, b5, c1, c2
Week-13	Machine learning part II	5	3	-	2	b1, b2, b3, b4, b5, c1, c2 c3, d1, d2, d3
Week-14	LAB AND ORAL EXAM	2	-	-	2	a2,a3,a4, a5, b1, b2, b3, b4, b5, c1, c2 c3,d2, d3

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√	√	√								

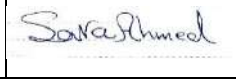
7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**6**	**5**	**5%**
2	Quiz 2 written (Semester work)	**10**	**5**	**5%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam			
7	Assignments / Project	**Through the semester**	**20**	**20%**
8	Field training			
9	Other (Mention)			

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**Russell, S. J., & Norvig, P. (2021). Artificial Intelligence: A Modern Approach (4th ed.). Pearson.**
	Other References	**Knowledge Based Information Systems (KBIS)** By D. Partridge K.M. Hussain, Publisher Mc Graw-Hill Book Company, London, UK
	Electronic Sources (Links must be added)	**https://www.coursera.org/learn/introduction-to-ai · https://www.udacity.com/course/intro-to-artificial-intelligence--cs271**

	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr.Sarah Ahmed Soliman**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 414

Course Name: Software Engineering (2)

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Oct.**		2025/2026	**Credit Hours:**		4	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	**Lab.:**	2	**Total**	5
Pre-Requisite	CSC 320						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr/Sarah Ahmed Soliman
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Requirements definition and specification: Requirements specification, nonfunctional requirements definition. Requirements validation and prototyping: The prototyping process, prototyping techniques. Formal specifications, algebraic specification. Model based specification. Software design: Top-down design, systems design, design decomposition, software design quality, and design description languages

3-Intended Learning Outcomes (ILOs)

CSC 414- Software Engineering (2)

a. Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Summarize the essential of Software Engineering generally
a.2 Recognize the basic knowledge and understanding of architecture design
a.3 Know and understand the principles and techniques in object oriented design and how different models be used to document object oriented design
a.4 Specify the fundamental activities of testing from testing during development to acceptance testing by system customers;
a.5 Describe the principles of software evolution.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Differentiate between traditional and nontraditional problems of Architectural patterns, well-tried ways of organizing software architectures that can be reused in system designs
b.2. Compare between different design patterns and how these are a way ofreusing design knowledge and experience
b.3. Explain test-first development, where you design tests before writing code and runthese tests automatically.
b.4. Simulate problems of how legacy systems can be assessed to decide whether theyshould be scrapped, maintained, reengineered, or replaced.
b.5. Realize application domains for computer software

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Apply design patterns on different software application types
c.2. Use appropriate UML models on object oriented design.
c.3. Generate test first development on different cases
c.4. Employ different software testing techniques.
c.5. Apply prototyping techniques (e.g., throwaway, evolutionary) to refine and validate system requirements
c.6. Employ appropriate design description languages (DDL), such as UML

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Communicate effectively within multidisciplinary team
d.2. Write technical reports, and a dissertation, to a professional standard.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A4	Criteria and specifications appropriate to specific problems, and plan strategies for their solution.	a4, a5
A5	The extent to which a computer-based system meets the criteria defined for its current use and future development.	a4, a5
A14	Demonstrating basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics.	a1, a2, a3
A18	The fundamental topics in Computer Science, including hardware/software architectures, software engineering principles, operating systems, compilers, parallel and distributed computing, systems, and software tools.	a1, a2, a3
A19	Selecting advanced topics to provide a deeper understanding of aspects like hardware systems design, object-oriented analysis, AI, parallel and concurrent computing.	a3
B11	Perform comparisons between algorithms, methods, techniques, etc.	b1
B12	Perform classifications of data, results, methods, techniques, algorithms, etc.	b2
B13	Identify attributes, components, relationships, patterns, main ideas, and errors.	b2, b3
B16	Establish criteria and verify solutions.	b3, b4
B19	Generate an innovative design to solve a problem containing commercial and industrial constraints.	b5
C6	Design, implement, maintain, and manage software systems.	c1, c2
C7	Assess the implications, risks or safety aspects in operation of computing equipment.	c4
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	c1, c2, c6
C11	Perform independent information acquisition and management, using scientific literature and Web sources.	c5
C12	Prepare and present seminars to a professional standard.	c5
C15	Evaluate systems in terms of quality attributes and possible tradeoffs.	c1, c3, c4
D2	Demonstrate skills in group working, team management, time management and organizational skills.	d1, d2
D4	Use tools and aids in preparing and presenting reports for management, technical, users, or academic community.	d2, d4

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Revision on software engineering 1	**5**	**3**	-	**2**	**a1**
Week-2	Architecture design decisions, architecture view	**5**	**3**	-	**2**	**a2**
Week-3	Architecture patterns, applications architecture	**5**	**3**	-	**2**	**b1, b2, c1**
Week-4	Object-oriented design using the UML, Design patterns	**5**	**3**	-	**2**	**a3,b2,c2**
Week5	Implementation issues, Open-source development	**5**	**3**	-	**2**	**a4,a5,b3**
Week-6	Development testing, Test-driven development	**5**	**3**	-	**2**	**a4,a5,b3**
Week-7	**Revision**					
Week-8	**MidtermExam**					
Week-9	Release testing, User testing	**5**	**3**	-	**2**	**a4,b3,c3,c4**
Week-10	Evolution processes	**5**	**3**	-	**2**	**a5,b4**
Week-11	Dependability properties, Sociotechnical systems	**5**	**3**	-	**2**	**d1,d2**
Week-12	Redundancy and diversity, Dependable processes	**5**	**3**	-	**2**	**d2,d3**
Week-13	Formal methods and dependability	**5**	**3**	-	**2**	**d4**
Week-14	Use cases	**5**	**3**	-	**2**	**d1,d2,d3,d4**

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√		√	√			√				√	

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	6	5	5%
2	Quiz 2 written (Semester work)	10	5	5%
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10%
6	Final Oral Exam			
7	Assignments / Project	Through the semseter	20	20%
8	Field training			
9	Other (Mention)			

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Engineering Software Products: An Introduction to Modern Software Engineering, by Ian Sommerville, 2020.
	Other References	**ressman, Roger S., and Maxim, Bruce R. *Software Engineering: A Practitioner's Approach*. 9th ed. McGraw-Hill, 2019.**
	Electronic Sources (Links must be added)	https://software-engineering book.com/slides/?fbclid=IwAR2dIm0em4aOkDb_o-h6JxDG2k7xS8qdc_70szC94gVdzHT3RjlKuGDf8lk
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr.Sarah Ahmed Soliman**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 415

Course Name: Compiler Design

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**		Level 4
Term/ Academic year	**Choose an item.**		2025/2026		**Credit Hours:**		3
Contact Hours	**Lecture:**	**3**	**Tutorial:**	-	**Lab.:**	2	**Total** 5
Pre-Requisite	-						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Sara Ahmed Soliman
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

Introduction and overview. Scanning theory and practice: Regular expressions, finite automata, and scanners, scanner generators, practical considerations, translating regular expressions to finite automata. Grammar and parsing: Context frees grammars, parsers and recognizers, grammar analysis algorithms. Semantic processing: Syntax directed translation. semantic processing techniques. Symbol tables: Basic techniques, block structured and extensions, implicit declarations. Run time storage organization: Static allocation, sack allocation, heap allocation, and program layout in memory Dain structures: analysis declaration processing fundamentals action routines. Procedures and functions: If statements, loops, case statement, exception handling, passing parameters to subprograms.

Code generation and optimization: Register and temporary management interpretive code generation, generating code from subprogram calls, loop optimization.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Explain the key specifications and components of compiler systems.
a.2 Illustrate the functionalities and phases of compiler construction.
a.3 Demonstrate understanding of formal language theory and automata
a.4 Explain the role of lexical analysis, syntax, semantic analysis, optimization, and code generation in compiler design
a.5 Understand the concepts of abstract syntax trees and intermediate code representation.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Convert high-level programming constructs into machine-level code.
b2. Formulate grammar rules and construct syntax-directed translation schemes.
b3. Understand the correspondence between different phases of compiler design.
b4. Apply formal language concepts to analyze and design programming languages.
b5. Implement step-by-step compiler construction tasks.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Implement lexical and syntax analyzers using appropriate tools.
c2. Hands-on experience with compiler construction tools and environments.
c3. Design and implement a compiler for a simplified programming language.
c4. Formulate and implement optimization strategies
c5. Design and implement code generation techniques.
c6. Analyze and evaluate the performance of a compiler.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Enhance project management skills related to compiler development.
d2. Enhance work presentation skills for explaining compiler design decisions.
d3. Enhance problem-solving skills in the context of compiler optimization.
d4. Enhance communication skills for conveying complex compiler concepts.
d5. Foster teamwork skills through collaborative compiler construction projects.
d6. Enhance data and information retrieval skills for compiler analysis and optimization

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1, a2**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a2**
A5	The extent to which a computer-based system meets the criteria defined for its current use and future development.	**a3,a4**
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	**a2,a5**
A19	Selecting advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.	**a2,a3**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1,b2**
B6	Evaluate the results of tests to investigate the functionality of computer systems.	**b3**
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	**b4,b5**
B12	Perform classifications of (data, results, methods, techniques, algorithms. etc.).	**b6**
B14	Summarize the proposed solutions and their results.	
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1, c2**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c3**
C6	Design, implement, maintain, and manage software systems.	**c4**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c5,c6**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d1,d2,d3**
D7	Show the use of general computing facilities.	**d4,d5,d6**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction.	5	3	-	2	a1, a2, c1, d1
Week-2	Lexical Analysis	5	3	-	2	a1, a2, c1, d1
Week-3	Syntax Analysis	5	3	-	2	a1, a2, a3, c1, d1
Week-4	Top-Down Parsing part I	5	3	-	2	a3, a4, b4, c4, d2, d3
Week5	Top-Down Parsing part I	5	3	-	2	a3, a4, b4, c4, d2, d3
Week-6	Bottom-up Parsing	5	3	-	2	a3, a6, a7, b1,b4, c3, c4, d3,
Week-7	Revision	5	3	-	2	
Week-8	Midterm Exam.					
Week-9	Code generation	5	3	-	2	a2, a5, b2, b3,c3, c4,d2, d3,d6
Week-10	Introduction and View of Optimization	5	3	-	2	a2, a5, b2, b3, c3
Week-11	• Global Optimization. • Local Optimization	5	3	-	2	a7, b1,b4, c3, c4, d1, d3, d4, d5
Week-12	Implementation Projects in Compiler Design	5	3	-	2	a2, a3, a7, a8, b1, b4, c3, c4, d1, d3, d4, d5
Week-13	Implementation Projects in Compiler Design	5	3	-	2	a1, a2, a9, b4, b5, c2, c3, d1, d3, d4
Week-14	Practical - Oral	5	3	-	2	b2, b3, c1, c2, c4, c6, d2,d6

6- Teaching and Learning and Assessment methods:

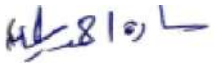
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√		√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	6	10	10%
2	Quiz 2 written (Semester work)	13	10	10%
3	Midterm exam	8	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10%
6	Final Oral Exam		0	
7	Assignments / Project	weekly	10	10%
8	Field training		0	
9	Other (Mention)		0	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**Compilers: Principles, echniques, and Tools Addison- Wesley**
	Other References	**Alfred V. Aho, Ravi Sethi, and Jeffrey D. Ullman, Compilers: Principles, echniques, and Tools Addison- Wesley, 1986.**
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Sara Ahmed Soliman	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 416

Course Name: Network programming

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**		**Level 4**	
Term/ Academic year	**Oct.**		2025/2026		**Credit Hours:**		4	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	**-**	**Lab.:**	**2**	**Total**	**5**
Pre-Requisite	**BSC 215**							
Academic standards	**NARS 2010**							
Bylaw Approval	**2001**							
Course Coordinator	Dr. Mona Mohamed Fouad							
Course Specification Approval	**Department Council**							
Course Specification Approval Date	**20/8/2025**							

2. Course Overview:

Implementing windows internet name services: The WINS process name renewal. WINS database replication. WINS database maintenance. IP Internet work Browsing and Domain Functions. Browsing in one IP. Browsing across Subnets. The IP router solution. Domain master browser. LMHOSTS file solution. WINS solution. Host names resolution: TCP/IP naming schemes. Domain name system: domain name system basics. The need for a domain name system. The domain name system. Zones of authority. Roles for name sever. DNS name resolution. DNS implementation and planning. DNS installation and configuration. Installing the service. Configuring the DNS server. Integrating DNS with other name servers. Connecting to DNS root server. Connecting DNS to WINS server. Configuring a DNS server for WINS lookup. Configuring DNS server roles. Primary names sever. Secondary name

server. Master name server. Caching- on server Forwarder. Slave. Configuring a DNS client. Connectivity in heterogeneous. Remote execution utilities. Configuring a windows port TCP/IP printing.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Understand the Network automation.

a.2 Describe routing protocols.

a.3 Describe the network simulation and programming concepts.

a.4 Describe VLANs

a.5 Define the socket programming (TCP-UDP).

a.6 Identify the DHCP and DNS server.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1 Determine the difference between protocols solving the same issue in the same layer.

b.2 Analyze the different algorithms to design of different layers protocols.

b.3 Analyze the difference between routing algorithms.

b.4 Clarify programs to solve networking issues using sockets..

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Employ network tools for packet sniffing and packet tracing.

c2. develop software program to solve network issues.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1 Communication and teamwork practice.

d.2 Reveal the use of general computing facilities.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A6	The current and underlying technologies that support computer processing and inter-computer communication.	**a1, a2, a4, a5, a6**
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	**a3, a5**
A12	Essential mathematics relevant to computer science.	**a3**
A15	Interpreting and analyzing data qualitatively and/or quantitatively.	**a3**
A18	The fundamental topics in Computer Science, including hardware and software architectures, software engineering principles and methodologies, operating systems, compilers, parallel and distributed computing, systems, and software tools.	**a3**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline	**b2**
B5	Make ideas, proposals and designs using rational and reasoned arguments for presentation of computing systems	**b4**
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	**b1, b3**
B15	Restrict solution methodologies upon their results.	**b4**
C6	Design, implement, maintain, and manage software systems.	**c2**
C18	Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning.	**c1, c2**

D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d1**
D7	Show the use of general computing facilities.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Describe the network concepts, IP-V4 Addressing.	5	3	-	2	a.1
Week-2	Router Components , Router Modes,	5	3	-	2	a.1,a2
Week-3	Router configuration, Cisco Router and switch Password Setting & Configuring a banner.	5	3	-	2	a.1,a2
Week-4	Telnet Automation on Routers. Design and implement routing Protocols using simulator.	5	3	-	2	a.1,a2,a3,b1
Week5	Connected, static & dynamic routes	5	3	-	2	a2, a3,b1,b2
Week-6	Host and Floating Routes.	5	3	-	2	a2, a3,b1,b2
Week-7	Virtual local area network (VLAN)	5	3	-	2	a.2, a3,a4, b1,b2,b3
Week-8	Midterm Exam.					
Week-9	Dynamic trunking protocol (DTP). Implement VLAN Trunking Protocols (VTP).	5	3	-	2	a.2, a3,a4, b1,b2,b3
Week-10	Implement Inter-VLAN Routing	5	3	-	2	a3,a4, b1,b2,b3,c1
Week-11	Sockets, IPv4, Simple Client/Server Programming. HTTP and Working with the Web	5	3	-	2	a.5,a6, b4,c2
Week-12	Dynamic Host Configuration Protocol (DHCP),	5	3	-	2	a.5,a6, b4,c2
Week-13	Configuring Router as DHCP Server and DHCP Relay Agent	5	3	-	2	a.5,a6, b4,c2
Week-14	Practical Exam					

6- Teaching and Learning and Assessment methods:

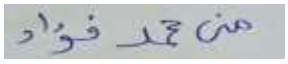
Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√				√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**10**	**10%**
2	Quiz 2 written (Semester work)	**10**	**10**	**10%**
3	Midterm exam	**8**	**30**	**20 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam	**0**	**0**	**0%**
7	Assignments / Project	**6,12**	**10**	**10%**
8	Field training	**0**	**0**	**0%**
9	Other (Mention)	**0**	**0**	**0%**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	"CCNA-200-301-Official-Cert-Guide - volume 1 and 2", WENDELL ODOM, 2020, ISBN-10: 0-13-579273-8, Published by: Cisco Press
	Other References	Pradeeban Kathiravelu, Dr. M. O. Faruque Sarker, "Python Network Programming Cookbook", Packt Publishing, 2nd edition, 2017, ISBN 978-1 78646-399-9.
	Electronic Sources (Links must be added)	None
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

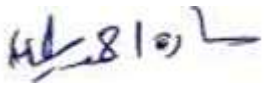
	Course Coordinator	Program Coordinator
Name	**Dr. Mona Mohamed Fouad**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 417

Course Name: Image Processing

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**				**Academic level at which the course is taught**		**Level 4**
Term/ Academic year	**Oct.**		2025/2026		**Credit Hours:**		3
Contact Hours	**Lecture:**	**3**	**Tutorial:**	**-**	**Lab.:**	**2**	**Total**	**5**
Pre-Requisite	**CSC 412**						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	**Dr. Sarah Ahmed Soliman** 						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

This course covers Fundamentals of image processing. Images: Image representation, components of an image processing sequence, Image acquisition and digitization: Biology and optics of image processing, cameras, scanners, and other acquisition devices; digitization. Grey value histograms and point operations. Grey value histograms: Grey value distributions & statistics, threshold & segmentation. Point operations: Histogram transforms pixels, girding. and quantization. Spatial transforms. Geometric transformations: Interpolation, geometric operations, and projections. Linear filtering: Neighborhoods. kernels, convolutions & their applications. Non-linear filtering: Morphological operators, erosion & dilation of binary and grayscale images variant operations. Frequency domain transforms. Fourier transforms 1-D and 2-D transforms. An application of frequency domain transforms: Analysis, restoration & compression of images. Pattern recognition: Image segmentation & texture analysis. Global and local threshold. Gradient ledge detection. Adaptive segmentation. Texture analysis: Definitions. and measures of texture, point- and neighborhood-based methods. Introduction to PIT program. Processing of color and multi-spectral images. Acquisition and representation: Image
acquisition from color camera, spectral radiometer etc.; color representations and transforms. Multi-spectral transforms: Statistics, principal component analysis, and classification. Object measurements. Size, shape, and orientation: Statistics of size distributions, resolution, and scale; shape analysis, orientation statistics. Stereological models and micro structural analysis. Analysis of 3-D data sets. Image-processing applications in geosciences: Strategies, and Applications.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Define image processing bearing in mind the trade-offs.

a.2 Describe Image compression and specifications appropriate to specific problems, and plan strategies for their solution.

a.3 Describe compression principles relevant to computing and information disciplines.

a.4 Define Histogram manipulation.

a.5 List the principles of object recognition using AI.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Explain with the professional issues relevant to the image processing.

b2. Express traditional and nontraditional image problems, set goals towards solving them, and. observes results. b3. Explain attributes of Image enhancements in the spatial domain.

b4. Establish criteria for histogram manipulation and verify solutions.

b5. Generate an innovative object recognition to solve a problem containing a range of commercial and industrial constraints.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Apply compression tools, recognizing its logical and physical properties, capabilities and limitations.

c2. Deploy tools used for the construction, processing, and restoration of images.

c3. Assess the implications, risks or safety aspects involved in the processing of image within a specific context.

c4. Use appropriate methods and tools, design methodologies for image compression.

c5. Use independent information acquisition and management, using the scientific literature and Web sources in the field of image processing.

c6. Apply image enhancements.

c7. Apply Histogram manipulation to image of various kinds.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Demonstrating the ability to make use of a range of learning resources and to manage one's own learning.

d2. Use IT skills and display mature computer literacy. d3. Show the use of general computing facilities.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A2	Modeling and design of computer-based systems bearing in mind the trade-offs	a1,a3
A4	Criteria and specifications appropriate to specific problems, and plan strategies for their solution	a2
A8	Management and economics principles relevant to computing and information disciplines.	a3
A13	Using of high-level programming languages.	a4
A17	Showing a critical understanding of the principles of artificial intelligence, image, and pattern recognition.	a5
B8	Familiar with the professional, legal, moral, and ethical issues relevant to the computing industry	b1
B10	Define traditional and nontraditional problems, set goals towards solving them, and. observes results.	b2
B13	Identify attributes, components, relationships, patterns, main ideas, and errors.	b2,b3
B16	Establish criteria and verify solutions	b4
B19	Generate an innovative design to solve a problem containing a range of commercial and industrial constraints.	b5
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	c1
C3	Deploy the equipment and tools used for the construction, maintenance, and documentation of computer applications.	c2
C7	Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.	c3
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	c4
C11	Perform independent information acquisition and management, using scientific literature and Web sources.	c5
C14	Specify, design, and implement computer-based systems.	c4,c6
C16	Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.	c7
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	d1
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	d2
D7	Show the use of general computing facilities.	d3

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to digital image fundamentals	3	2	-	2	a1,b1,b2
Week-2	Image Intensity Transformations	3	2	-	2	a1,b1,b2
Week-3	Image enhancements in the spatial domain	3	2	-	2	b3,c3,c6
Week-4	Image enhancements in the frequency domain	3	2	-	2	b3,c3,c6,d3
Week5	Histogram manipulation	3	2	-	2	a4,c7,d3
Week-6	Spatial Domain Filters	3	2	-	2	b2,b3,c2,c3,c5, d2,d3
Week-7	Frequency Domain Filters	3	2	-	2	b2,b3,c2,c3,c5, d2,d3
Week-8	Midterm Exam					
Week-9	Image restoration	3	2	-	2	b2,c2,c3,c5,d1
Week-10	Edge detection	3	2	-	2	a5,b5,c5,d1,d2 ,d3
Week-11	Corners detection	3	2	-	2	a5,b5,c5,d1,d2 ,d3
Week-12	Image Segmentation	3	2	-	2	a5,b5,c5,d1,d2 ,d3
Week-13	Image compression	3	2	-	2	A2,a3,c1,c4,d3
Week-14	Practical Exam					

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√			√	√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**10**	**10%**
2	Quiz 2 written (Semester work)	**10**	**10**	**10%**
3	Midterm exam	**8**	**30**	**20 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam	**0**	**0**	**0%**
7	Assignments / Project	**6,12**	**10**	**10%**
8	Field training	**0**	**0**	**0%**
9	Other (Mention)	**0**	**0**	**0%**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Jähne, Bernd. Digital Image Processing: Concepts, Algorithms, and Scientific Applications. 7th Edition, Springer, 2022.
	Other References	None
	Electronic Sources (Links must be added)	• https://www.mathworks.com/ https://pce-fet.com/common/library/books/17/5186_FundamentalsofDigitalImageProcessing APracticalApproachwithExamplesinMatlab.pdf
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Sarah Ahmed Soliman**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 420

Course Name: Expert Systems

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**	Level 4	
Term/ Academic year	**Choose an item.**		2025/2026		**Credit Hours:**	3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	-	**Lab.:** 2	**Total**	5
Pre-Requisite	CSC 412						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	Prof. Dr. Yossria Abo E Naga 						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Introduction: Knowledge based expert systems, conventional programming versus knowledge engineering. Human problem solving: Human information processing, the production system as a processing model, problem solving, varieties of knowledge, and the nature of expertise. Representation of knowledge: An informal look at a knowledge base, strategies for representing knowledge, semantic networks, object attribute value triplets, rules, frames. Representing facts and relationships using logic. Drawing inferences control, the future of representation and inference. Languages and tools: Levels of software, the languages tool, languages and environments, knowledge engineering tools. Expert shells. Building a mall knowledge system: The role of small systems, selection of an appropriate problem, and development of a prototype System

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Explain the fundamental concepts of expert systems, including their purpose, capabilities, and limitations.

a2. Identify different knowledge representation techniques used in expert systems (e.g., production rules, frames, semantic networks).

a3. Integrate external libraries or frameworks commonly used in expert system development with a high-level programming language.

a4. Integrate qualitative and quantitative data analysis findings into the knowledge acquisition process for building expert systems.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Critically analyze proposed solutions for expert system applications within a specific domain.

b2. Evaluate the effectiveness of these solutions based on their design, reasoning methods, and knowledge representation.

b3. Compare the selected design with alternative solutions, highlighting the trade-offs and rationale behind the decision.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Perform independent information acquisition and management, using scientific literature and Web sources related to expert system.

c2. Prepare technical reports, and a dissertation, to a professional standard; use IT skills and display mature computer literacy.

c3. Evaluate an existing expert system based on its fulfillment of these quality attributes.

c4. Implement strategies to maintain and update the knowledge base as new information becomes available.

c5. Evaluate the impact of new developments on existing expert systems and potential applications.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Show the use of information-retrieval.

d2. Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.

d3. Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a1,a2**
A13	Using of high-level programming languages.	**a3,a4**
A14	Demonstrating basic knowledge and understanding of a core of analysis, algebra, applied mathematics and statistics.	**a1**
A15	Interpreting and analyzing data qualitatively and/or quantitatively.	**a3,a4**
B14	Summarize the proposed solutions and their results.	**b1, b2**
B15	Restrict solution methodologies upon their results.	**b3**
B17	Identify a range of solutions and critically evaluate and justify proposed design solutions.	**b4**
C11	Perform independent information acquisition and management, using scientific literature and Web sources.	**c1, c2**
C13	Prepare technical reports, and a dissertation, to a professional standard; use IT skills and display mature computer literacy.	**c3,c4**
C15	Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.	**c1, c5**
C16	Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.	**c2, c3**
C18	Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning.	**c1, c2, c4, c5**
D3	Show the use of information-retrieval.	**d1, d2**
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	**d3**
D5	Exhibit appropriate numeracy skills in understanding and presenting cases involving a quantitative dimension.	**d1, d3**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to expert system definitions.	5	3	-	2	a1, a2
Week-2	Problem domain and knowledge domain advantages of ES	5	3	-	2	a2, a3, b1, b2,b3
Week-3	Introduce the study of logic- meaning of knowledge Acquisition	5	3	-	2	a1,a2,b1, b2,b3
Week-4	Representation of Knowledge	5	3	-	2	a4,b3,c1,c2,d1,d2
Week5	Method of inference	5	3	-	2	c1,c2,c3,c4,c5 d1,d2,d3
Week-6	Meaning of forward and backward chaining	5	3	-	2	c1,c2,c3,c4,c5 d1,d2,d3
Week-7	Revision					
Week-8	Midterm Exam.					
Week-9	Logic Representation Systems	5	3	-	2	d1,d2
Week-10	first order logic	5	3	-	2	a4,c1,c2,c3,c4,c1,d2 ,d3
Week-11	Unification – chaining with modus pones Resolution	5	3	-	2	a1,a2,c1,c2, d1,d2
Week-12	Reasoning under Uncertainty	5	3	-	2	b3,b4,c1,c2,c3,c4,d 1,d2
Week-13	Inference using probability	5	3	-	2	a1,a2 d1,d3
Week-14	Lab exam					

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√		√	√		√	√	√		√						

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**6**	**10**	**10%**
2	Quiz 2 written (Semester work)	**13**	**10**	**10%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam		**0**	
7	Assignments / Project	**weekly**	**10**	**10%**
8	Field training		**0**	
9	Other (Mention)		**0**	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**Artificial Intelligence and Expert Systems, by I. Gupta and G. Nagpal, Publisher: Mercury Learning and Information (April 14, 2020)**
	Other References	**Knowledge Based Information Systems (KBIS) By D. Partridge K.M. Hussain, Publisher Mc Graw-Hill Book Company, London,UK.** **Expert Systems: Principles and Programming, 4th ed. by Joseph C. Giarratano and Gary D. Riley (2004)**
	Electronic Sources (Links must be added)	**Stanford Encyclopedia of Philosophy - Expert Systems: Stanford Encyclopedia of Philosophy**
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Prof. Dr. Yossria Abo El Naga	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 421

Course Name: Theory of Computing

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		**Level 4**	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** 2	**Lab.:**	-	**Total**	5
Pre-Requisite	None						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	**Dr. Rania Ragab Hussien**						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Church's thesis: Grammars, the M- recursive function, and Turing computability of the M recursive functions. Incommutability: the halting problem. Turing innumerability, Turing acceptability, and Turing decidability, unsolvable problems about. Turing machines and M recursive functions. Computational complexity: Time-bounded Turing machines. Rate of growth of functions. NP Completeness. The complex hierarchy. Prepositional calculus: Syntax, Truth- Compactness

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1- Manipulate an abstract specification describing the requirements of a computer system.
a2- Understand advanced techniques for formal languages.
a3- Understand various proof methods and know how to apply them.
a4- Comprehend some abstract models of the process of computation such as Turing Machines, its variations, and Post Machines.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1- Explain and illustrate by means of examples the terms undecidability, equivalence and decision procedures

b2- Describe and compare the main models of computing

b3- Analyze the complexity of simple computing programs

b4- Explain the use of advanced formal systems in computers

b5- Analyze simple properties of advanced topics for formal specifications through proof.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1- Demonstrate the ability to configure Turing machines to solve specific computational problems.

c2- Apply concepts of propositional calculus, including syntax and truth values, to solve logical problems in computation.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1- Deploy communication and research skills.

d2- Work collaboratively on complex hierarchy and classification problems in computational complexity.

d3- Justify students design decisions in a written document.

d4- Work more easily within a team to achieve an objective.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A5	The extent to which a computer-based system meets the criteria defined for its current use and future development.	**a2**
A7	Principals of generating tests which investigate the functionality of computer programs and computer	**a3**

	systems and evaluating their results.	
A19	Selecting advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.	**a2,a4**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b3**
B6	Evaluate the results of tests to investigate the functionality of computer systems.	**b5**
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	**b2**
B12	Perform classifications of (data, results, methods, techniques, algorithms. etc.).	**b1,b2**
B14	Summarize the proposed solutions and their results.	**b4,b5**
C6	Design, implement, maintain, and manage software systems.	**c1,c2**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c2**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d2**
D3	Show the use of information-retrieval.	**d3**
D7	Show the use of general computing facilities.	**d1,d4**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction Introduction to theory of formal languages	5	3	2	0	a1, a2, c1, d1
Week-2	Regular expressions	5	3	2	0	a1, a2, c1, d1
Week-3	Finite automata part I	5	3	2	0	a1, a2, a3, c1, d1
Week-4	Finite automata part II	5	3	2	0	a3, a4, b4, c2, d2, d3
Week5	Non-determinism finite automata	5	3	2	0	a3, a4, b1, b4, d3, d4
Week-6	Transition Graphs	5	3	2	0	a3, b1, b4, c1, c2, d3, d4
Week-7	Revision					
Week-8	Midterm Exam.					
Week-9	Context free grammar Pushdown automata	5	3	2	0	a2, b2, b3, d2, d3, d4
Week-10	PDA Automata-decidability	5	3	2	0	a2, a5, b2, b3, c2, d2, d3
Week-11	Turing Machines	5	3	2	0	a2, a3, b1, b4, c1, d1, d3, d4
Week-12	Post Machines	5	3	2	0	a2, a3, b1, b4, c2, d3, d4
Week-13	Variations on TM	5	3	2	0	a1, a2,b5, c2,d1, d3, d4
Week-14	Computers	5	3	2	0	b2, b3, c1, c2, d2

6- Teaching and Learning and Assessment methods:

Direct Instruction	Indirect Instruction	Information Technology- Assisted Learning

Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**4**	**15**	**15%**
2	Quiz 2 written (Semester work)		**0**	
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15&16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10 %**
6	Final Oral Exam		**0**	
7	Assignments / Project	**weekly**	**15**	**15 %**
8	Field training		**0**	
9	Other (Mention)		**0**	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Introduction to the Theory of Computation" by Michael Sipser, 3rd edition, 2012.
	Other References	ntroduction to Computer Theory, D. I. A. Cohen, Wiley, 1986.
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
	Devices/Instruments	Computers, computer aided data show

Supportive facilities & equipment for teaching and learning *	**Supplies**	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Rania Ragab Hussien**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 423

Course Name: Distributed and parallel computer systems

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**2**	**Tutorial:** -	**Lab.:**	2	**Total**	4
Pre-Requisite	CSC 313						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	Prof. Dr. Yossria Abo E Naga 						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

This course explores the ways in which greater computing power be achieved through parallel computer architectures. Parallel architectures that have been proposed in the literature or implemented are discussed in light of relevant design, implementation, and application issues. Multistage interconnection networks (MINS) are analyzed. Formal specifications of the M1Ns are used to derive other properties such as the ability of partitioning of each type of network. Throughout the course, the impact of VLSI technology and the parallel computing software environment on the design of these. Parallel-processing systems is discussed.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Display modeling and design of computer-based systems bearing in mind the trade-offs.
a.2 Recall the current and underlying technologies that support computer processing and inter-computer communication.
a.3 Describe the principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.
a.4 Mention the principles and techniques of several application areas informed by the research directions of the subject, such as artificial intelligence, natural language processing, data mining, databases, and computer graphics.
a.5 Summarize the fundamental topics in Computer Science, including hardware and software architectures, software engineering principles and methodologies, operating systems, compilers, parallel and distributed computing, systems, and software tools.
a.6 Select the advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Realize judgments considering balanced costs, benefits, safety, quality, reliability, and environmental impact
b2. Evaluate research papers in a range of knowledge areas
b3. Categorize solution methodologies upon their results.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. implement computing equipment, recognizing its logical and physical properties, capabilities, and limitations.
c2. Employ the equipment and tools used for the construction, maintenance, and documentation of computer applications.
c3. Design, implement, maintain, and manage software systems.
c4. Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.
c5. Examine systems in terms of general quality attributes and possible tradeoffs presented within the given problem.
c6. Examine and manage the need for continuing professional and practical development in recognition of the need for life long-learning

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Demonstrate skills in group work, team management, time management and organizational skills.
d2. Show an appropriate mix of tools and aids in preparing and presenting reports for a range

of audiences, including management, technical, users, industry, or the academic community.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a1, a2**
A6	The current and underlying technologies that support computer processing and inter-computer communication.	**a3**
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	**a4**
A16	The principles and techniques of several application areas informed by the research directions of the subject, such as artificial intelligence, natural language processing, data mining, databases, and computer graphics.	**a3, a4**
A18	The fundamental topics in Computer Science, including hardware and software architectures, software engineering principles and methodologies, operating systems, compilers, parallel and distributed computing, systems, and software tools.	**a5,a6**
A19	Selecting advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.	**a2,a5,a6**
B7	Achieve judgments considering balanced costs, benefits, safety, quality, reliability, and environmental impact	**b1**
B9	Evaluate research papers in a range of knowledge areas	**b2**
B15	Restrict solution methodologies upon their results.	**b1, b3**
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1, c2**
C3	Deploy the equipment and tools used for the construction, maintenance, and documentation of computer applications.	**c3, c4**
C6	Design, implement, maintain, and manage software systems.	**c1, c5**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c6**
C15	Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.	**c1, c2, c6**
C18	Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning.	**c1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d1, d2**
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	**d1, d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Explain the basic concept of distributed database systems.	4	2	-	2	a1, a2
Week-2	System Models	4	2	-	2	a2, a3,a2, a4, b1, b2, c1
Week-3	Explain the basic concepts of communication and discriminate between transmission media.	4	2	-	2	a2, a3, a4, b1, c1, c2, b2, d1
Week-4	Discriminate between sequential traditional computers and vector processing computers.	4	2	-	2	b2, b3, c2, c3, d2
Week5	The application areas where parallel processing is used.	4	2	-	2	a2, a3, c2, c3, d1
Week-6	Describe the types of multiprocessors.	4	2	-	2	a2, a4, b1, b2, b3, c3, c4
Week-7	Explain the characteristics of multiprocessors.	4	2	-	2	a2, a4, b1, b2, b3, c3, c4
Week-8	Midterm Exam.					
Week-9	classify the organization of multiprocessors.	4	2	-	2	a5, a6, b1, b2, b3, c4, c5
Week-10	Processes and threads -Multithreading parallelism and performance	4	2	-	2	b2, b3, c6, d1, d2
Week-11	Multiprocessor Hardware - Multiprocessor Operating System - Multiprocessor Synchronization - Multiprocessor Scheduling.	4	2	-	2	a5, b2, b3, c5, c6, d2
Week-12	Write program for scalar and vector and parallel processing. Explain the practical parallel processers approaches.	4	2	-	2	a6, b3, c5, c6
Week-13	Flynn's classification of the types of parallel processors.	4	2	-	2	b3, b2, c1, c6
Week-14	LAB AND ORAL EXAM					

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√		√	√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**6**	**10**	**10%**
2	Quiz 2 written (Semester work)	**13**	**10**	**10%**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10%**
6	Final Oral Exam		**0**	
7	Assignments / Project	**weekly**	**10**	**10%**
8	Field training		**0**	
9	Other (Mention)		**0**	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**Andrew S. Tanenbaum, Herbert Bos," Modern Operating Systems", Vrije Universiteit Amsterdam, The Netherlands , Fourth Edition, Pearson Education,2015.**
	Other References	**Willian stallings, " Computer Organization and Architecture , Designing for Performance ", 2000.** **J.M.C Crichlow, " An Introduction to Distributed and Parallel Computing ", second edition, 1997.'** **George Coulouris, Jean Dollimore, Tim Kindberg and Gordon Blair, "Distributed System Concepts and Design "Fifth Edition, Addison Wesley, May 2011.**
	Electronic Sources (Links must be added)	**None**
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Prof. Dr. Yossria Abo El Naga	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 424

Course Name: Multi-media

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Elective**			**Academic level at which the course is taught**		Level 4	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	-	**Total**	5
Pre-Requisite	CSC 210						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Sara Ahmed Soliman
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

What is Multimedia? Multimedia hardware systems (PC's AS400, SON, SC), Screen resolution and screen technology, video accelerator design system, raster graphics (3D- transformation), analog-to-digital conversion, video compression, mixing and displaying at 30 FPS with full color capacity. Physics of Sound, sound cards, sound cards limitations, mixing sound video and voice traffic control, animation.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1 Define the main components of multimedia.

a.2 Identify the different types of digital image representations.

a.3 Define the High-Level Programming Languages in multimedia systems (e.g., Python

a.4 List the relevant techniques from various multimedia application areas such as Animation.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Categorize multimedia data according to relevant criteria, such as content type (educational, entertainment, marketing), format (JPEG, MP3, etc.), or purpose (illustration, narration, background music).

b2. Analyze the classifications of (data, results, methods, techniques, algorithms. etc.)

b3. Explain the strategy to solve computer science problems with pressing commercial or industrial constraints.

b4. Evaluate the effectiveness of this solution under constraints, considering the cost and quality.

b5. Simulate an innovative design to solve a problem containing a range of commercial and industrial constraints.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Use different color models.

c2. Use appropriate programming languages for multimedia systems.

c3. Design computer-based systems for multimedia projects.

c4. Implement computer-based systems for multimedia projects.

c5. Use various methods of multimedia data compression.

c6. Use multimedia applications efficiently.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1. Manage how to present the multimedia data content desired.

d2. Work to interpret multimedia data compression algorithms.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1, a2, a3, a4**
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a3, a4**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1, b3, b4, b5**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b1, b2**
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1, c2**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c2, c3, c4, c5, c6**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to multimedia	5	3	-	2	a1, a2
Week-2	- Components of a Multimedia System - Classification of Multimedia System - Explain different Media types	5	3	-	2	a1, a2, b1
Week-3	- Digital Data Acquisition - Analog to digital conversion - Sampling Theorem and Aliasing	5	3	-	2	a2, a3, b1, b2
Week-4	Raster Image	5	3	-	2	a3, b2, c1
Week5	Vector Image	5	3	-	2	a3, b2, c1, c2, d1
Week-6	Image Dithering	5	3	-	2	a3, b2, b3, c1, c2, c3, d1
Week-7	Revision	-	-	-	-	Revision
Week-8	Midterm Exam.					
Week-9	- Image Transition and different image formats	5	3	-	2	a2, b3, c3, c4, d1
Week-10	- Physics of sound, sound cards - Digital Audio representation - Quantiziation - Characteristic of Sound - Different Audio Formats	5	3	-	2	a3, a4, c4, d1
Week-11	2D Graphic Representation - Animation	5	3	-	2	a3, a4, b3, c4, d1
Week-12	Video conversion, mixing, and displaying	5	3	-	2	a3, a4, b1, b4, b5, c5, d1
Week-13	Basic Compression Algorithms	5		-	2	c4, c5, c6, d1, d2
Week-14	LAB AND ORAL EXAM	5	3	-	2	a3, b3, b4, b5, c2, c3, c4, c5, c6, d1, d2

6- Teaching and Learning and Assessment methods:

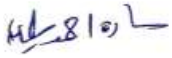
Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√	√	√	√		√						

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**5**	**15**	**15 %**
2	Quiz 2 written (Semester work)		**0**	
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10 %**
6	Final Oral Exam		**0**	
7	Assignments / Project	**12**	**15**	**15 %**
8	Field training		**0**	
9	Other (Mention)		**0**	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	**Li, Ze-Nian, Drew, Mark S., and Liu, Jiangchuan. Fundamentals of Multimedia. 2nd ed., Springer, 2014.**
	Other References	**Chow, K., Chan, V. & Ho, A. (2009). *Multimedia Rules: Rethinking Design Principles*. (1st ed.), School of Design, The Hong Kong Polytechnic University**
	Electronic Sources (Links must be added)	**https://www.aonlinetraining.com/**
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Sara Ahmed Soliman	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 430

Course Name: Pattern Recognition

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		**Level 4**	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	2	**Total**	5
Pre-Requisite	CSC 412						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	**Dr/Sarah Ahmed Soliman**						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Scope of pattern recognition: Numerical, syntactic, and structural, Components of numerical pattern recognition system: Process description: feature analysis, classifier design, and cluster analysis. Process description: Syntactic, numerical, contextual, fuzzy. rule based. Feature analysis: Preprocessing. feature extraction classification: Bays decision theory, two category classification, classifiers, discriminate functions. and decision surfaces, the Bays classifier. Clustering: Data description and clustering. clustering criteria, hierarchical clustering. Applications.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Define image processing and pattern recognition bearing in mind the trade-offs.
a2. Describe Image compression and specifications appropriate to specific problems, and plan strategies for their solution.
a3. Describe compression principles relevant to computing and information disciplines.
a4. Define Histogram manipulation.
a5. List the principles of pattern recognition using AI.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Explain with the professional issues relevant to the image processing.

b2. Express an appropriate performance metric for evaluating AI algorithms/tools for a given pattern.

b3. Express comparisons between image compression models.

b4. Summarize visual perception and properties of human eye.

b5. Verify solutions of image processing and pattern recognition.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Apply compression tools, recognizing its logical and physical properties, capabilities and limitations.

c2. Deploy tools used for the construction, processing, and restoration of images.

c3. Assess the implications, risks or safety aspects involved in the processing of image within a specific context.

c4. Use appropriate methods and tools, design methodologies for image compression.

c5. Apply image enhancements.

c6. Compare analytical techniques and design tools in the development of AI software.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1.Demonstrating the ability to make use of a range of learning resources and to manage one's own learning.

d.2.Use IT skills and display mature computer literacy.

d.3.Show the use of general computing facilities

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a1**
A4	Criteria and specifications appropriate to specific problems, and plan strategies for their solution.	**a2**
A8	Management and economics principles relevant to computing and information disciplines.	**a3**
A13	Using of high-level programming languages.	**a4**

A17	Showing a critical understanding of the principles of artificial intelligence, image, and pattern recognition.	**a5**
B8	Familiar with the professional, legal, moral, and ethical issues relevant to the computing industry.	**b1**
B10	Define traditional and nontraditional problems, set goals towards solving them, and. observes results.	**b2,b5**
B13	Identify attributes, components, relationships, patterns, main ideas, and errors.	**b4**
B16	Establish criteria and verify solutions.	**b3**
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1**
C3	Deploy the equipment and tools used for the construction, maintenance, and documentation of computer applications.	**c2**
C7	Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.	**c3**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c4**
C12	Prepare and present seminars to a professional standard.	**c5**
C16	Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds,	**c6**

	including text, images, sound, and video.	
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	**d1,d2**
D7	Show the use of general computing facilities.	**d3**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to Pattern Recognition	5	3	0	2	a1,a2.,b1,d1
Week-2	Probability and Statistics Review	5	3	0	2	a1,a2.,b1,d1,c1
Week-3	Bayes' theorem Statistical distributions	5	3	0	2	a.3,b1,b2,b3,c2,d1, d3
Week-4	Feature Extraction and Selection	5	3	0	2	a.3,b1,b2,b3,c2,d1, d3
Week5	Feature selection techniques	5	3	0	2	a.3,b1,b2,b3,c3,d1, d3
Week-6	Statistical Pattern Recognition	5	3	0	2	a.3,b1,b2,b3,c3,d1, d3
Week-7	Parametric and non-parametric classifiers	5	3	0	2	a.3,b1,b2,b3,c3,d1, d3
Week-8	Midterm Exam.					
Week-9	Maximum likelihood estimation	5	3	0	2	a.5,a.6,b4,b5,b3,c4, d1,d3
Week-10	Supervised Learning Classification algorithms (e.g., k-NN, SVM, decision trees)	5	3	0	2	a.5,a.6,b6, c4,d1,d3
Week-11	Deep Learning for Pattern recognition	5	3	0	2	a.4,a.6,b4,b6,c4,c6, d4
Week-12	Recurrent Neural Networks (RNNs) Transfer learning	5	3	0	2	a.4,b5,b6,c5c6,d31, d4
Week-13	Pattern Recognition in Computer Vision	5	3	0	2	a.5,a.6,b4,b6,b3,c6, d4,d3

Week-14	Practical lab examination					

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√	√		√				√	

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	4	15	15 %
2	Quiz 2 written (Semester work)		0	
3	Midterm exam	8	30	30 %
4	Final Written Exam	15&16	30	30 %
5	Final Practical Exam	14	10	10 %
6	Final Oral Exam		0	
7	Assignments / Project	weekly	15	15 %
8	Field training		0	
9	Other (Mention)		0	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Theodoridis, Sergios, and Koutroumbas, Konstantinos,Pattern Recognition. 5th ed., Academic Press, 2019.
	Other References	• Rafael C.Gonzalez, Richard E.Woods, Steven L.Eddins, " Digital Image Processing ",4 th edition, Pearson, 2017. • Pattern Recognition and Machine Learning" by Christopher M. Bishop,2006.
	Electronic Sources (Links must be added)	https://37steps.com/ https://www.sciencedirect.com/journal/pattern-recognition
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr/Sarah Ahmed Soliman**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: FTR 430

Course Name: Field Training (4)

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		LEVEL 4	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		5	
Contact Hours	**Lecture:**	**18**	**Tutorial:**		**Lab.:**	**Total**	18
Pre-Requisite	FTR 330, 80 - credits completed.						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	Dr. Shaimaa Abdallah Ibraheem						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Each Student must attend a supervised training program of 10 weeks in a relevant field to gain practical experience in a real engineering environment. At the end of the training period, the student must submit a written report for evaluation.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a.1. Describe the current and underlying technologies in the labor market that support computer processing and inter-computer communication.

a.2. Recognize professional, moral and ethical issues involved in the computer technology labor market and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.

a.3. List of the requirements, practical constraints and computer-based systems.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b.1. Analyze computing problems and provide solutions related to the design and construction of computing systems.

b.2. Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.

b.3. Identify attributes, components, relationships, patterns, main ideas, and errors.

b.4. Summarize the proposed solutions of the training field and their results.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c.1. Implement comprehensive computing knowledge and skills in training field and in deployment of computers to solve position practical problems.

c.2. Apply computing information retrieval skills in computing community environment and industry.

c.3. Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.

c.4. Prepare technical reports, and a dissertation, to a professional standard; use IT skills in the training field.

c.5. Specify, design, and implement computer-based systems.

c.6. Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.

c.7. Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds and apply them in the training field.

c.8. Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.

c.9. Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1. Use IT skills and display mature computer literacy.

d.2. Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.

d.3. Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A6	The current and underlying technologies that support computer processing and inter-computer communication	**a1,**
A9	Professional, moral, and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.	**a2**
A11	Requirements, practical constraints, and computer-based systems.	**a3**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b1**
B3	Identify criteria to measure and interpret the appropriateness of a computer system for its current deployment and future evolution.	**b2**
B13	Identify attributes, components, relationships, patterns, main ideas, and errors.	**b3**
B15	Restrict solution methodologies upon their results.	**B4**
C2	Implement comprehensive computing knowledge and skills in projects and in deployment of computers to solve position practical problems.	**c1**
C4	Apply computing information retrieval skills in computing community environment and industry.	**c2**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c3**
C13	Prepare technical reports, and a dissertation, to a professional standard; use IT skills and display mature computer literacy.	**c4**
C14	Specify, design, and implement computer-based systems.	**c5**
C15	Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.	**C6**
C16	Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.	**C7**
C17	Apply the principles of human-computer interaction to the evaluation and construction of a wide range of materials including user interfaces, web pages, and multimedia systems.	**C8**
C18	Apply and manage the need for continuing professional and practical development in recognition of the need for life long-learning.	**C9**
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	**d1**
D6	Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.	**d2**
D8	Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.	**d3**

5- content:

Training Fields:

•Networks (Administration, design, implementation, infrastructure)
• Networks and ICT.
• Developing (Desktop, Web, Mobile, embedded systems)
• AI (smart home, smart cities, IoT, modeling, medical field)
•Information Systems.
• Business Intelligence.
• Database and Data warehouse (design, administration)
• Data mining (market research, e-Business, other).
• General Applications.
• Graphical Systems and Applications
• Microprocessor Applications and Peripherals.
• Other Information technology related fields (required approval from supervisor).

Rules and Regulations:

The student must perform Field Training for 120 hours in an industrial or service facility related to the student's program and must be under the full supervision of the department.
It is also possible to perform the training inside the department in a similar environment.
• The training follow-up will be handled by the academic advisor assigned by the Program Steering Committee.
• Identifying a company official contact person.
• The student must submit a technical report to his/her academic advisor at the end of the training period.

• The company should submit a student's training evaluation form to the academic advisor at the end of the training period.
• The training is 18 weeks for the forth levels
•The Field Training is evaluated is count in the cumulative GPA calculation.

6- Teaching and Learning and Assessment methods:

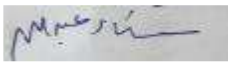
Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Training Authority Report	Student Performance	20	**20 %**
2	Supervisor Report	Overall result	20	**20 %**
3	Training Authority Survey	For explanation	30	**30 %**
4	Student Survey	For explanation	30	**30 %**

8- learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	
	Other References	
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Shaimaa Abdallah Ibraheem	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 421

Course Name: Theory of Computing

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**	**Level 4**	
Term/ Academic year	**Choose an item.**		2025/2026		**Credit Hours:**	3	
Contact Hours	**Lecture:**	**3**	**Tutorial:**	2	**Lab.:** -	**Total**	5
Pre-Requisite	None						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	**Dr. Rania Ragab Hussien**						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Church's thesis: Grammars, the M- recursive function, and Turing computability of the M recursive functions. Incommutability: the halting problem. Turing innumerability, Turing acceptability, and Turing decidability, unsolvable problems about. Turing machines and M recursive functions. Computational complexity: Time-bounded Turing machines. Rate of growth of functions. NP Completeness. The complex hierarchy. Prepositional calculus: Syntax, Truth- Compactness

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1- Manipulate an abstract specification describing the requirements of a computer system.
a2- Understand advanced techniques for formal languages.
a3- Understand various proof methods and know how to apply them.
a4- Comprehend some abstract models of the process of computation such as Turing Machines, its variations, and Post Machines.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1- Explain and illustrate by means of examples the terms undecidability, equivalence and decision procedures

b2- Describe and compare the main models of computing

b3- Analyze the complexity of simple computing programs

b4- Explain the use of advanced formal systems in computers

b5- Analyze simple properties of advanced topics for formal specifications through proof.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1- Demonstrate the ability to configure Turing machines to solve specific computational problems.

c2- Apply concepts of propositional calculus, including syntax and truth values, to solve logical problems in computation.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d1- Deploy communication and research skills.

d2- Work collaboratively on complex hierarchy and classification problems in computational complexity.

d3- Justify students design decisions in a written document.

d4- Work more easily within a team to achieve an objective.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A5	The extent to which a computer-based system meets the criteria defined for its current use and future development.	**a2**
A7	Principals of generating tests which investigate the functionality of computer programs and computer systems and evaluating their results.	**a3**
A19	Selecting advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.	**a2,a4**
B1	Analyze computing problems and provide solutions related to the design and construction of computing systems.	**b3**
B6	Evaluate the results of tests to investigate the functionality of computer systems.	**b5**
B11	Perform comparisons between (algorithms, methods, techniques...etc.).	**b2**
B12	Perform classifications of (data, results, methods, techniques, algorithms. etc.).	**b1,b2**
B14	Summarize the proposed solutions and their results.	**b4,b5**
C6	Design, implement, maintain, and manage software systems.	**c1,c2**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c2**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d2**
D3	Show the use of information-retrieval.	**d3**
D7	Show the use of general computing facilities.	**d1,d4**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction Introduction to theory of formal languages	5	3	2	0	a1, a2, c1, d1
Week-2	Regular expressions	5	3	2	0	a1, a2, c1, d1
Week-3	Finite automata part I	5	3	2	0	a1, a2, a3, c1, d1
Week-4	Finite automata part II	5	3	2	0	a3, a4, b4, c2, d2, d3
Week5	Non-determinism finite automata	5	3	2	0	a3, a4, b1, b4, d3, d4
Week-6	Transition Graphs	5	3	2	0	a3, b1, b4, c1, c2, d3, d4
Week-7	Revision					
Week-8	Midterm Exam.					
Week-9	Context free grammar Pushdown automata	5	3	2	0	a2, b2, b3, d2, d3, d4
Week-10	PDA Automata-decidability	5	3	2	0	a2, a5, b2, b3, c2, d2, d3
Week-11	Turing Machines	5	3	2	0	a2, a3, b1, b4, c1, d1, d3, d4
Week-12	Post Machines	5	3	2	0	a2, a3, b1, b4, c2, d3, d4
Week-13	Variations on TM	5	3	2	0	a1, a2,b5, c2,d1, d3, d4
Week-14	Computers	5	3	2	0	b2, b3, c1, c2, d2

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction										Information Technology-Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√								

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**4**	**15**	**15%**
2	Quiz 2 written (Semester work)		**0**	
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15&16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10 %**
6	Final Oral Exam		**0**	
7	Assignments / Project	**weekly**	**15**	**15 %**
8	Field training		**0**	
9	Other (Mention)		**0**	

8- Learning Resources and Supportive Facilities

Learning resources	The main (essential) reference	Introduction to the Theory of Computation" by Michael Sipser, 3rd edition, 2012.

(books, scientific references, etc.) *	**Other References**	ntroduction to Computer Theory, D. I. A. Cohen, Wiley, 1986.
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr. Rania Ragab Hussien**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 426

Course Name: Neural Networks

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**	Level4	
Term/ Academic year	**Choose an item.**		2025/2026		**Credit Hours:**	3	
Contact Hours	**Lecture:**	**2**	**Tutorial:**	-	**Lab.:** 2	**Total**	4
Pre-Requisite	CSC 412						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	Dr. Sara Ahmed Soliman						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Introduction and a historical review: Overview of neural networks, history of neural networks. Neural network concepts: Basic definition, connections, processing elements. Learning Laws: Self-adaptation equations, coincidence learning performance learning. competitive learning, and filter learning spatio-temporal learning. Associative networks: Data transformation structures, linear association network, Learn matrix network, and recurrent associative networks. Mapping networks: Multilayer data transformation structures, the mapping implementation problem, theorem the back propagation neural network, self-0 Organizing map, counter propagation network. Spatiotemporal stochastic and hierarchical networks: Spatiotemporal pattern recognizer neural network, the Boltzmann machine network, and the neurocognition network.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:
a1. Define neuron model and its learning mechanism.
a2. Describe different concepts related to basic neural network models.
a3. Define practical issues and optimizations algorithms in neural networks training.
a4. Display the basic concept of deep learning vs. traditional machine learning algorithms.

b. Intellectual skills:

On successful completion of the courses, students should be able to:
b1. Explain the basic architecture of the perceptron.
b2. Verify the different neural network models.
b3. Compare different NN algorithms to real life application.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:
c1. Apply different techniques of NN.
c2. Develop new algorithms for NN.
c3. Use Python and MATLAB toolbox for NN to solve different problems.

d. General and transferable skills:

On successful completion of the courses, students should be able to:
d1. Communicate effectively by oral, written, and visual means.
d2. Work effectively as an individual and as a member of a team.
d3. Manage specific tasks in a certain period, 'training problems in labs.'

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1, a2**
A16	The principles and techniques of several application areas informed by the research directions of the subject, such as artificial intelligence, natural language processing, data mining,	**a2, a3**

	databases, and computer graphics.	
A17	Showing a critical understanding of the principles of artificial intelligence, image, and pattern recognition.	**a1,a4**
A19	Selecting advanced topics to provide a deeper understanding of some aspects of the subject, such as hardware systems design, object-oriented analysis and design, and artificial intelligence, and parallel and concurrent computing.	**a4**
B10	Define traditional and nontraditional problems, set goals towards solving them, and. observes results.	**b1, b2**
B14	Summarize the proposed solutions and their results.	**b2**
B17	Identify a range of solutions and critically evaluate and justify proposed design solutions.	**b2, b3**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c2, c3**
C11	Perform independent information acquisition and management, using scientific literature and Web sources.	**c1**
C14	Specify, design, and implement computer-based systems.	**c2**

D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d1,d2**
D3	Show the use of information-retrieval.	**d3**
D8	Demonstrate an appreciation of the need to continue professional development in recognition of the requirement for life-long learning.	**d2**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to neural networks	4	2	0	2	a1, a2
Week-2	the basic structure of neural networks	4	2	0	2	a2, b1
Week-3	Multilayer Neural Networks	4	2	0	2	b1, b2, b3, a4
Week-4	Practical issues in Neural networks Training	4	2	0	2	a2, a3, b2
Week5	Optimization algorithms	4	2	0	2	a3, b2, c1,
Week-6	Common Neural Networks' Architectures	4	2	0	2	b2, c1
Week-7	Revision	4	2	0	2	a1,a2,a3,a4, a5, b1,b2, b3, c1,c2
Week-8	Midterm Exam.					
Week-9	Convolutional neural networks (CNN)	4	2	0	2	b2,b3, c2, c3

Week-10	Recurrent Neural Networks (RNN)	4	2	0	2	b2,b3, c2, c3
Week-11	Advanced topic: Generative Adversarial Networks	4	2	0	2	b2,b3, c2, c3
Week-12	Autoencoder: Basic concepts	4	2	0	2	b2,b3, c2, c3
Week-13	Quiz and revision	4	2	0	2	a3,a4, b2,b3,c1, c3, d1,d3
Week-14	LAB AND ORAL EXAM	4	2	0	2	c3, d1

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction									Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√			√	√	√		√						

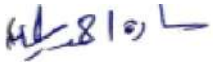
7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	6	10	10%
2	Quiz 2 written (Semester work)	13	10	10%
3	Midterm exam	7	30	30 %
4	Final Written Exam	15, 16	30	30 %
5	Final Practical Exam	14	10	10%
6	Final Oral Exam		0	
7	Assignments / Project	weekly	10	10%
8	Field training		0	
9	Other (Mention)		0	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	The main (essential) reference	Choi RY, Coyner AS, Kalpathy-Cramer J, Chiang MF, Campbell JP. "Introduction to machine learning, neural networks, and deep learning. Translational vision science & technology" . 2020 Jan.
	Other References	Introduction to Artificial Neural Systems “Jacek M. Zurada”, 1992.

		Aggarwal CC. "Neural networks and deep learning" . Cham: springer; 2018 Sep.
	Electronic Sources (Links must be added)	**https://www.coursera.org/learn/neural-networks-deep-learning. https://www.javatpoint.com/artificial-neural-network.**
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Sara Ahmed Soliman	**Dr. Rania Ragab Hussien**
Signature		

Course Code: CSC 430

Course Name: Pattern Recognition

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**			**Academic level at which the course is taught**		**Level 4**	
Term/ Academic year	**Choose an item.**		2025/2026	**Credit Hours:**		3	
Contact Hours	**Lecture:**	**3**	**Tutorial:** -	**Lab.:**	2	**Total**	5
Pre-Requisite	CSC 412						
Academic standards	**NARS 2010**						
Bylaw Approval	**2001**						
Course Coordinator	**Dr/Sarah Ahmed Soliman**						
Course Specification Approval	**Department Council**						
Course Specification Approval Date	**20/8/2025**						

2. Course Overview:

Scope of pattern recognition: Numerical, syntactic, and structural, Components of numerical pattern recognition system: Process description: feature analysis, classifier design, and cluster analysis. Process description: Syntactic, numerical, contextual, fuzzy. rule based. Feature analysis: Preprocessing. feature extraction classification: Bays decision theory, two category classification, classifiers, discriminate functions. and decision surfaces, the Bays classifier. Clustering: Data description and clustering. clustering criteria, hierarchical clustering. Applications.

3-Intended Learning Outcomes (ILOs)

a.Knowledge and understanding:

On successful completion of the courses, students should be able to:

a1. Define image processing and pattern recognition bearing in mind the trade-offs.
a2. Describe Image compression and specifications appropriate to specific problems, and plan strategies for their solution.
a3. Describe compression principles relevant to computing and information disciplines.
a4. Define Histogram manipulation.
a5. List the principles of pattern recognition using AI.

b. Intellectual skills:

On successful completion of the courses, students should be able to:

b1. Explain with the professional issues relevant to the image processing.

b2. Express an appropriate performance metric for evaluating AI algorithms/tools for a given pattern.

b3. Express comparisons between image compression models.

b4. Summarize visual perception and properties of human eye.

b5. Verify solutions of image processing and pattern recognition.

c. Professional and practical skills:

On successful completion of the courses, students should be able to:

c1. Apply compression tools, recognizing its logical and physical properties, capabilities and limitations.

c2. Deploy tools used for the construction, processing, and restoration of images.

c3. Assess the implications, risks or safety aspects involved in the processing of image within a specific context.

c4. Use appropriate methods and tools, design methodologies for image compression.

c5. Apply image enhancements.

c6. Compare analytical techniques and design tools in the development of AI software.

d. General and transferable skills:

On successful completion of the courses, students should be able to:

d.1.Demonstrating the ability to make use of a range of learning resources and to manage one's own learning.

d.2.Use IT skills and display mature computer literacy.

d.3.Show the use of general computing facilities

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A2	Modeling and design of computer-based systems bearing in mind the trade-offs.	**a1**
A4	Criteria and specifications appropriate to specific problems, and plan strategies for their solution.	**a2**
A8	Management and economics principles relevant to computing and information disciplines.	**a3**
A13	Using of high-level programming languages.	**a4**
A17	Showing a critical understanding of the principles of artificial intelligence, image, and pattern recognition.	**a5**
B8	Familiar with the professional, legal, moral, and ethical issues relevant to the computing industry.	**b1**
B10	Define traditional and nontraditional problems, set goals towards solving them, and. observes results.	**b2,b5**
B13	Identify attributes, components, relationships, patterns, main ideas, and errors.	**b4**
B16	Establish criteria and verify solutions.	**b3**
C1	Operate computing equipment, recognizing its logical and physical properties, capabilities, and limitations.	**c1**
C3	Deploy the equipment and tools used for the construction, maintenance, and documentation of computer applications.	**c2**
C7	Assess the implications, risks or safety aspects involved in the operation of computing equipment within a specific context.	**c3**
C9	Use appropriate programming languages, web-based systems and tools, design methodologies, and knowledge and database systems.	**c4**
C12	Prepare and present seminars to a professional standard.	**c5**
C16	Apply the principles of effective information management, information organization, and information-retrieval skills to information of various kinds, including text, images, sound, and video.	**c6**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D4	Use an appropriate mix of tools and aids in preparing and presenting reports for a range of audiences, including management, technical, users, industry, or the academic community.	**d1,d2**
D7	Show the use of general computing facilities.	**d3**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Introduction to Pattern Recognition	5	3	0	2	a1,a2.,b1,d1
Week-2	Probability and Statistics Review	5	3	0	2	a1,a2.,b1,d1,c1
Week-3	Bayes' theorem Statistical distributions	5	3	0	2	a.3,b1,b2,b3,c2,d1, d3
Week-4	Feature Extraction and Selection	5	3	0	2	a.3,b1,b2,b3,c2,d1, d3
Week5	Feature selection techniques	5	3	0	2	a.3,b1,b2,b3,c3,d1, d3
Week-6	Statistical Pattern Recognition	5	3	0	2	a.3,b1,b2,b3,c3,d1, d3
Week-7	Parametric and non-parametric classifiers	5	3	0	2	a.3,b1,b2,b3,c3,d1, d3
Week-8	Midterm Exam.					
Week-9	Maximum likelihood estimation	5	3	0	2	a.5,a.6,b4,b5,b3,c4, d1,d3
Week-10	Supervised Learning Classification algorithms (e.g., k-NN, SVM, decision trees)	5	3	0	2	a.5,a.6,b6, c4,d1,d3
Week-11	Deep Learning for Pattern recognition	5	3	0	2	a.4,a.6,b4,b6,c4,c6, d4
Week-12	Recurrent Neural Networks (RNNs) Transfer learning	5	3	0	2	a.4,b5,b6,c5c6,d31, d4
Week-13	Pattern Recognition in Computer Vision	5	3	0	2	a.5,a.6,b4,b6,b3,c6, d4,d3
Week-14	Practical lab examination					

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√	√	√	√			√	√	√		√				√	

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**4**	**15**	**15 %**
2	Quiz 2 written (Semester work)		**0**	
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15&16**	**30**	**30 %**
5	Final Practical Exam	**14**	**10**	**10 %**
6	Final Oral Exam		**0**	
7	Assignments / Project	**weekly**	**15**	**15 %**
8	Field training		**0**	
9	Other (Mention)		**0**	

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	Theodoridis, Sergios, and Koutroumbas, Konstantinos,Pattern Recognition. 5th ed., Academic Press, 2019.
	Other References	• Rafael C.Gonzalez, Richard E.Woods, Steven L.Eddins, " Digital Image Processing ",4 th edition, Pearson, 2017. • Pattern Recognition and Machine Learning" by Christopher M. Bishop,2006.
	Electronic Sources (Links must be added)	https://37steps.com/ https://www.sciencedirect.com/journal/pattern-recognition
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	**Dr/Sarah Ahmed Soliman**	**Dr. Rania Ragab Hussien**
Signature		

Course Code: BSC 410

Course Name: English Language (5)

Department participating in delivery of the course	Computer Science

1. Basic Information:

Course Type	**Compulsory**				**Academic level at which the course is taught**	LEVEL 4	
Term/ Academic year	**Oct.**		2025/2026		**Credit Hours:**	1	
Contact Hours	**Lecture:**	**1**	**Tutorial:**	2	**Lab.:** -	**Total**	3
Pre-Requisite	BSC 320						

Academic standards	**NARS 2010**
Bylaw Approval	**2001**
Course Coordinator	Dr. Rasha Osman
Course Specification Approval	**Department Council**
Course Specification Approval Date	**20/8/2025**

2. Course Overview:

3- Course Learning Objectives:

This course enables learners to develop the ability to communicate clearly, accurately and effectively, using a wide range of vocabulary, and the correct grammatical rules, in addition to spelling and punctuation rules to develop their personal style and their awareness of using English language. Learners are also encouraged to read widely, both for their own knowledge and to further their masterfulness of the ways in which English can be used. The course also sustained the ability of knowing the language of computer programming.

3- Intended Learning Outcomes (ILOs)

a. Knowledge and understanding:

On successful completion of the course, students should be able to:

a.1. Motivate student to have a mix of skills in English Language.
a.2. Understand spoken English at a conversational pace on familiar topics.
a.3. Participate in conversations and discussions on a range of everyday topics.
a.4. Write clear and concise paragraphs and short essays.

b. Intellectual skills:

On successful completion of the course, students should be able to:

b.1. Analyze a variety of texts, including news articles, emails, and short stories.
b.2. Express ideas with fluency and confidence in speaking and writing English.
b.3. Clarify concepts giving examples.
b.4. To enhance students' abilities in computer techniques

c. Professional and practical skills:

On successful completion of the course, students should be able to:

c.1. Prepare presentations and speeches with confidence.
c.2. Generate ideas using English language correctly.
c.3. Develop content and post it online.
c.4. Gain knowledge of computer terms that would help the students in various topics.

d. General and transferable skills:

On successful completion of the course, students should be able to:

d.1. Communicate and participate professionally.
d.2. Exhibit awareness of team-work dynamics
d.3. Show ability to work effectively on multi-disciplinary systems and integration of different fields of knowledge.
d.4. Demonstrate 21st century skills.

4- Contribution in the Program ILO

Matrix of intended learning outcomes ILOs with program outcomes POs.

Program ILOs		Course ILOs
Code	**Text**	
A1	Essential facts, concepts, principles, and theories relating to computing and information and computer applications as appropriate to the program of study.	**a1**
A3	Tools, practices, and methodologies used in the specification, design, implementation and evaluation of computer software systems.	**a2**
A9	Professional, moral, and ethical issues involved in the exploitation of computer technology and be guided by the appropriate professional, ethical and legal practices relevant to the computing and information industry.	**a3**
A10	Current developments in computing and information research.	**a4**
B2	Realize the concepts, principles, theories and practices behind computing and information as an academic discipline.	**b1.b2**
B4	Analyze, propose and evaluate alternative computer systems and processes taking into account limitations, and quality constraints.	**b3.b4**
C10	Communicate effectively by oral, written, and visual means.	**c1.c4**
C15	Evaluate systems in terms of general quality attributes and possible tradeoffs presented within the given problem.	**c2.c3**
D1	Demonstrate the ability to make use of a range of learning resources and to manage one's own learning.	**d1**
D2	Demonstrate skills in group working, team management, time management and organizational skills.	**d2**
D6	Reveal communication skills, public speaking and presentation skills, and delegation, writing skills, oral delivery, and effectively using various media for a variety of audiences.	**d3**
D7	Show the use of general computing facilities.	**d4**

5- Course Schedule:

Week No.	*Topic*	*Total Hours*	*Contact hrs*			ILOs Covered by Course
			Lec.	Tut.	Lab.	
Week -1	Unit 1: The Operating System	3	1	2	-	a1.a3.b3
Week-2	Unit 2: Word Processing	3	1	2	-	a1.a3.c3
Week-3	Unit 3: Spreadsheets and Database	3	1	2	-	a1.b2.c3
Week-4	Unit 4: The Internet and E-mail	3	1	2	-	a3.b3.d3
Week5	Unit 5: The Web and quiz	3	1	2	-	a3.b3.d3
Week-6	Presentations and quiz	3	1	2	-	a1.a3.b2.c3.d3
Week-7	Unit 6:Chat and conferencing	3	1	2	-	a1.a3.b2.c2.
Week-8	Midterm Exam.					
Week-9	Units 7: Internet Security	3	1	2	-	c1.c2.d3
Week-10	Supplementary Material and Quiz	3	1	2	-	c2.c3.d2.d3
Week-11	Supplementary Material and Quiz	3	1	2	-	a1.a3.b2.c2.d4
Week-12	Presentations	3	1	2	-	c1.c3d2.d3
Week-13	Revision	3	1	2	-	a1.a2.a4.b1.b3.d3
Week-14	Revision and Quiz	3	1	2	-	a1.a2.a4.b1.b3.d3

6- Teaching and Learning and Assessment methods:

Direct Instruction		Indirect Instruction										Information Technology- Assisted Learning			
Lectures	Tutorial / Practical	Brain Storming	Project based learning	Case Study	Problem Base Learning	Reports & Research	Discussion	Field Training	Site Visit	Self-Learning	Discovery Learning	Simulation Programs	Virtual labs	E-Learning	AI in Education
√		√				√	√			√					√

7- Students Evaluation:

No.	Assessment Methods *	Assessment Timing (Week Number)	Marks/ Scores	Percentage of total course Marks
1	Quiz 1 written (Semester work)	**6**	**10**	**10 %**
2	Quiz 2 written (Semester work)	**14**	**10**	**10 %**
3	Midterm exam	**8**	**30**	**30 %**
4	Final Written Exam	**15, 16**	**30**	**40 %**
5	Final Practical Exam	-	-	-
6	Final Oral Exam	-	-	-
7	Assignments / Project	-	-	-
8	Field training	-	-	-
9	Other (Mention) “Class work for lecture and Class work for lab“	**Weekly**	**20**	**20 %**

8- Learning Resources and Supportive Facilities

Learning resources (books, scientific references, etc.) *	**The main (essential) reference**	PowerPoint presentations for Info-tech Book.
	Other References	• Info-tech 4th edition, Cambridge U P, 2021. • Info-tech Workbook 4th edition, Cambridge UP, 2021. • English for Internet. Cambridge UP, 2021. • English for Computer Science. Cambridge U P, 2022.
	Electronic Sources (Links must be added)	
	Learning Platforms (Links must be added)	Microsoft Teams
Supportive facilities & equipment for teaching and learning *	**Devices/Instruments**	Computers, computer aided data show
	Supplies	White board, teaching aids
	Other (to be mentioned)	Lecturer Notes (PDF file, Presentation, and Word documents)

	Course Coordinator	Program Coordinator
Name	Dr. Rasha Osman	**Dr. Rania Ragab Hussien**
Signature