

Competencies for Engineering Graduates

Competencies for Engineering Graduates (A-)

The Engineering Graduate must be able to:

- A1.** Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.
- A2.** Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.
- A3.** Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.
- A4.** Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
- A5.** Practice research techniques and methods of investigation as an inherent part of learning.
- A6.** Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.

A7. Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams.

A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.

A9. Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.

A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

Competencies for Engineering Specializations (B-)

In addition to the Competencies for All Engineering Programs the BASIC Specialization Chemical Engineering graduate and similar programs must be able to:

B1. Design a practical chemical engineering system, component or process utilizing a full range of chemical engineering principles and techniques including: Mass and Energy Balance, Thermodynamics, Mass Transfer, Heat Transfer, Momentum Transfer, Kinetics of Chemical Reactions, Reactor Design, Instrumentation and Control of Chemical Processes, and Process and Plant Design.

B2. Engage in the recent technological changes and emerging fields relevant to chemical engineering to respond to the challenging role and responsibilities of a professional chemical engineer.

B3. Apply numerical modeling methods and/or computational techniques appropriate to chemical engineering.

B4. Adopt suitable national and international standards and codes to: design, operate, inspect and maintain chemical engineering systems.