



1 KNOWLEDGE BASE FOR ENGINEERING

- › Demonstrate competence in mathematics and modeling
- › Understand the natural sciences and engineering fundamentals
- › Possess specialized engineering knowledge appropriate to the program

2 PROBLEM ANALYSIS

- › Identify and characterize an engineering problem
- › Formulate a solution plan (methodology) for an engineering problem
- › Formulate and interpret a model
- › Execute solution process for an engineering problem

3 INVESTIGATION

- › Define a problem
- › Devise and execute a plan to solve a problem
- › Use critical analysis to reach valid conclusions supported by the results of the plan

4 DESIGN

- › Frame a complex, open-ended problem in engineering terms
- › Generate a diverse set of candidate engineering design solutions
- › Select candidate engineering design solutions for further development
- › Advance an engineering design to a defined end state

5 USE OF ENGINEERING TOOLS

- › Use fundamental modern techniques, resources and engineering tools
- › Use discipline-specific techniques, resources and engineering tools
- › Recognize limitations of the tools used

6 INDIVIDUAL & TEAM WORK

- › Establish and monitor team organizational structure
- › Promote team effectiveness through individual action
- › Be successful in a team-based project

7 COMMUNICATION SKILLS

- › Identify and credibly communicate engineering knowledge
- › Use different modes of communication
- › Develop communication through an iterative process

8 PROFESSIONALISM

- › Describe engineering roles in a broader context (pertaining to the environment, health, safety and public welfare)
- › Recognize the impact of engineering within global society (the broader public interest)
- › Behave in a professional manner

9 IMPACT OF ENGINEERING ON SOCIETY & ENVIRONMENT

- › Understand relationships among technology and the social, cultural, economic and environmental conditions of society—both locally and globally, and in the short- and long-term
- › Identify and choose alternative ways to mitigate or prevent adverse social, environmental, health and safety impacts
- › Demonstrate awareness of legal issues relevant to an engineering activity

10 ETHICS & EQUITY

- › Recognize ethical and equity-based dilemmas
- › Apply the Code of Ethics and equity principles
- › Act ethically and demonstrate individual accountability

11 ECONOMICS & PROJECT MANAGEMENT

- › Estimate the life-cycle economic and financial costs and benefits for relevant engineering activities
- › Evaluate the economic and financial performance of an engineering activity and compare alternative proposals on the basis of these measures
- › Read and understand financial statements for engineering activities
- › Plan and manage engineering activities to be within time and budget constraints

12 LIFELONG LEARNING

- › Independently summarize, analyze, synthesize and evaluate information from a wide variety of sources
- › Develop a strategy to identify and address gaps in knowledge