



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