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

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