

GRADUATE ATTRIBUTES

Knowledge Base for Engineering	<ul style="list-style-type: none">• Demonstrated competence in university-level mathematics, natural sciences, engineering fundamentals, and specialized engineering knowledge appropriate to the program.
Problem Analysis	<ul style="list-style-type: none">• An ability to use appropriate knowledge and skills to identify, formulate, analyze, and solve complex engineering programs in order to reach substantiated conclusions.
Investigation	<ul style="list-style-type: none">• An ability to conduct investigations of complex problems by methods that include appropriate experiments, analysis, and interpretation of data, and synthesis of information in order to reach valid conclusions.
Design	<ul style="list-style-type: none">• The ability to perform engineering design. Engineering design is a process of making informed decisions to creatively devise products, systems, components, or processes to meet specified goals based on engineering analysis and judgement. The process is often characterized as complex, open-ended, iterative, and multidisciplinary. Solutions incorporate natural sciences, mathematics, and engineering science, using systematic and current best practices to satisfy defined objectives within identified requirements, criteria and constraints. Constraints to be considered may include (but are not limited to): health and safety, sustainability, environmental, ethical, security, economic, aesthetics and human factors, feasibility and compliance with regulatory aspects, along with universal design issues such as societal, cultural and diversification facets.
Use of Engineering Tools	<ul style="list-style-type: none">• An ability to create, select, apply, adapt, and extend appropriate techniques, resources, and modern engineering tools to a range of engineering activities, from simple to complex, with an understanding of the associated limitations.
Individual and Teamwork	<ul style="list-style-type: none">• An ability to work effectively as a member and leader in teams, preferably in a multi-disciplinary setting.
Communication	<ul style="list-style-type: none">• An ability to communicate complex engineering concepts within the profession and society at large. Such ability includes reading, writing, speaking and listening, and the ability to comprehend and write effective reports and design documentation, and to give and effectively respond to clear instructions.
Professionalism	<ul style="list-style-type: none">• An understanding of the roles and responsibilities of the professional engineer in society, especially the primary role of protection of the public and private interest.
Impact of Engineering on Society and Environment	<ul style="list-style-type: none">• An ability to analyze societal and environmental aspects of engineering activities. Such ability includes an understanding of the interactions that engineering has with the economic, health, safety, legal, and cultural aspects of society, the uncertainties in the prediction of such interactions, and the concepts of sustainable design development and environmental stewardship.
Ethics and Equity	<ul style="list-style-type: none">• An ability to apply professional ethics, accountability, and equity.
Economics and Project Management	<ul style="list-style-type: none">• An ability to properly incorporate economics and business practices including project, risk, and change management into the practice of engineering and to understand limitations.
Lifelong Learning	<ul style="list-style-type: none">• An ability to identify and to address their own educational needs in a changing world in ways sufficient to maintain their competence and to allow them to contribute to the advancement of knowledge.



Accreditation Indicators (College-Level)

1. Knowledge Base for Engineering

- 1a) Apply fundamental math, including linear algebra, calculus, and probability & statistics.
- 1b) Demonstrate knowledge in natural sciences.
- 1c) Demonstrate competence in engineering fundamentals, including computing, statics & dynamics, and electricity & magnetism
- 1d) Demonstrate competence in program specific knowledge & principles - varies by program.

2. Problem Analysis

- 2a) Define - articulate the objective of the analysis and identify relevant information
- 2b) Solve - choose and appropriately apply methods, models, and assumptions.
- 2c) Verify - evaluate the validity of the solution and reach substantial conclusion.

3. Investigation

- 3a) Conduct - apply an investigative approach / experimental plan.
- 3b) Analyze - analyze and interpret experimental or other data.
- 3c) Validate - assess validity of conclusions within limitations of data and methods.

4. Design

- 4a) Define problem - synthesize and explain the design problem, requirements, objectives, and constraints.
- 4b) Identify approach - create and compare alternative design solutions.
- 4c) Develop solution - create the design, often applying an iterative, open-ended approach.

5. Use of Engineering Tools

- 5a) Select - select a tool appropriate for the engineering activity.
- 5b) Apply - apply an appropriate tool(s) to accomplish an engineering activity.
- 5c) Evaluate - understand limitations and evaluate the reliability and quality of results from engineering tools.

6. Individual and Teamwork

- 6a) Work effectively - as a team, effectively work towards achieving the goal of the engineering activity.
- 6b) Contribute - be a responsible, respectful and contributing member of a team, and/or a leader showing initiative, prioritizing and directing activities.



7. Communication

- 7a) Write - communicate engineering concepts clearly and effectively through written work.
- 7b) Present - effectively communicate to intended audience through presentations.
- 7c) Create - effectively develop engineering graphics, including drawings, tables, and diagrams.

8. Professionalism

- 8a) Understand roles and limitations - recognize roles and limitations of a professional engineer.
- 8b) Understand responsibilities – embrace awareness of standards, codes & regulations which aim to protect the public.

9. Impact of Engineering on Society and Environment

- 9a) Analyze impact - recognize social aspects of engineering activities, such as the interaction between engineering and the economy, health, safety, culture, and legal implications, and associated uncertainties.
- 9b) Analyze environmental impact – recognize concepts of sustainable design & development in engineering activities.

10. Ethics and Equity

- 10a) Apply professional ethics – demonstrate knowledge and application of professional ethics, such as maintaining confidentiality, avoiding conflicts of interest, fairly distributing workload, and properly acknowledging sources.
- 10b) Be accountable – Demonstrate accountability to stakeholders, such as co-workers, clients, supervisors/advisors, the public.
- 10c) Consider equity - recognize the role of equity in our practice, such as potential impacts of the composition of the team and stakeholders on design decisions, and the composition of the audience on design needs.

11. Economics and Project Management

- 11a) Incorporate economics - consider economics on an engineering project, such as through cost-benefit analysis, timelines, and risk assessment.
- 11b) Manage projects - apply principles of project, risk, and change management as a basis for planning, organizing & managing resources, including setting clear milestones.

12. Life-long Learning

- 12a) Self assess - identify own competencies and deficiencies in a changing world.
- 12b) Address - demonstrate an ability to identify and critically evaluate sources of information, with appropriate citation and referencing.