COLLEGE OF ENGINEERING TECHNOLOGY PROGRAM GOALS AND STUDENT LEARNING OUTCOMES

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Our Mission

Through an education rooted in technology-based applications, the College of Engineering Technology prepares students to become successful professionals within a global society. CET leverages this through its faculty's broad academic and industrial expertise, responsiveness to industry needs and global opportunities, student-centered teaching, proactive and adaptive service systems, and leadership in global outreach development.

We value the balance among teaching, scholarly activities, and service that capitalizes on the strengths and interests of the individual. We embrace the philosophy and principles of experiential learning through the application of theoretical knowledge. We embrace and encourage innovative curricula, teaching techniques, student discovery, entrepreneurial activities, and international outreach. We pursue partnerships with industry, government, education, and alumni. We promote a student-focused environment through personal and professional interactions among students, faculty, and staff. We recognize and embrace individual diversity. We embrace the tradition of career-focused education and core values of RIT. Through the integrity of our curriculum and instruction, we instill these values in our students.

Civil Engineering Technology (BS)

The Student Outcomes for the Civil Engineering Technology program have been established such that students will demonstrate the following skills, knowledge, and behaviors. Graduates of the Civil Engineering Technology program will have:

Outcome #1: An ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve broadly-defined engineering problems appropriate to the discipline

Outcome #2: An ability to design systems, components, or processes meeting specified needs for broadly defined engineering problems appropriate to the discipline

Outcome #3: An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature

Outcome #4: An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes

Outcome #5: An ability to function effectively as a team member as well as a leader on a technical team

Computer Engineering Technology (BS)

The Student Outcomes (SO's) for the Computer Engineering Technology program have been established such that students will demonstrate the following skills, knowledge, and behaviors, at the time of graduation. Graduates of the Computer Engineering Technology program will have:

Outcome #1: An ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, and technology to solve broadly defined engineering problems

Outcome #2: An ability to design systems, components, or processes meeting specified needs for broadly defined engineering problems

Outcome #3: An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature

Outcome #4: An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes

Outcome #5: An ability to function effectively as a member and leader on a technical team

Electrical Engineering Technology (BS)

The Student Outcomes (SO's) for the Electrical Engineering Technology program have been established such that students will demonstrate the following skills, knowledge, and behaviors, at the time of graduation. Graduates of the Electrical Engineering Technology program will have:

Outcome #1: An ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, and technology to solve broadly defined engineering problems

Outcome #2: An ability to design systems, components, or processes meeting specified needs for broadly defined engineering problems

Outcome #3: An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature

Outcome #4: An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes

Outcome #5: An ability to function effectively as a member and leader on a technical team

Environmental Sustainability, Health & Safety (BS)

Program Goal #1: Demonstrate an understanding of environmental sustainability, health and safety fundamentals. [ABET III.I.a.]

- Explain the basic fundamentals of occupational safety
- Explain the basic fundamentals of environmental sustainability including recognition of major types, sources, and impacts of air, water and waste-related pollution

Program Goal #2: Demonstrate an understanding of fundamental exposure assessment techniques [ABET III.I.d.]

- Select suitable methods to sample and analyze exposure to common agents
- Explain, interpret exposure limits for the workplace and environment

Program Goal #3: Exhibit an understanding of how organizations effectively manage environmental sustainability, health and safety [ABET III.I.j.]

- Explain the concept and purpose of a systematic approach to EHS management, including strategies and key elements of EHS management programs.
- Analyze and evaluate EHS policies

Program Goal #4: Demonstrate the ability to understand the impact of solutions on in a global and societal context [ABET III.A.h]

- Prepare and present socially responsible and environmentally sustainable EHS solutions report

Mechanical Engineering Technology (BS)

The Student Outcomes (SO's) for the Mechanical Engineering Technology program have been established such that students will demonstrate the following skills, knowledge, and behaviors, at the time of graduation. Graduates of the Mechanical Engineering Technology program will have:

Outcome #1: An ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, and technology to solve broadly defined engineering problems

Outcome #2: An ability to design systems, components, or processes meeting specified needs for broadly defined engineering problems

Outcome #3: An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature

Outcome #4: An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes

Outcome #5: An ability to function effectively as a team member as well as a leader on a technical team

Mechatronics Engineering Technology (BS)

The Student Outcomes (SO's) for the Mechatronics Engineering Technology program have been established such that students will demonstrate the following skills, knowledge, and behaviors, at the time of graduation. Graduates of the Mechatronics Engineering Technology program will have:

Outcome #1: An ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, and technology to solve broadly defined engineering problems.

Outcome #2: An ability to design systems, components, or processes meeting specified needs for broadly defined engineering problems.

Outcome #3: An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature.

Outcome #4: An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes.

Outcome #5: An ability to function effectively as a team member as well as a leader on a technical team.

Print and Graphic Media Technology (BS)

Program Goal #1: Apply information & technology principles & methods to produce & distribute content accurately & efficiently across print & electronic media

- Demonstrate a working knowledge of publishing hardware and software
- Describe the process of publishing using standard industry terms and vocabularies
- Prepare text and images for publication to print and to electronic media
- Compare and contrast the strengths of different media
- Create web pages and develop dynamic media content using current technology
- Create appropriate workflows to prepare and distribute content
- Use best practices for image workflow, archiving, storage, and retrieval

Program Goal #2: Apply business principles relevant to developing or growing a business involving print and electronic media

- Develop a market assessment and a business plan (or industry segment, etc.)
- Apply intellectual property (IP) protection concepts (e.g., copyrights) and ethics
- Examine and develop financial statements for business analysis

Program Goal #3: Analyze industry & technology trends for the strategic purpose of improvement and/or development of products, applications & business models

- Develop strategies for cross-media publishing
- Develop content management strategies for asset storage and reuse
- Identify and examine sustainability trends

Packaging Science (BS)

Program Goal #1: Demonstrate a professional work ethic and commitment to lifelong learning through the clear ability to achieve increasing technical and/or management responsibility

- Demonstrate an ability to assess, draw conclusions & apply this knowledge creatively in the design of sustainable & innovative packaging systems
- Demonstrate skills for designing transport packaging that will be compatible with manufacturing, distribution and end user requirements

Program Goal #2: Demonstrate an ability to participate & lead in teams that act as change agents & innovators in the packaging field & related organizations

- Demonstrate creative/innovative packaging designs and approaches within the project work
- Demonstrate the value and role of the packaging discipline and its execution to the total supply chain

Program Goal #3: Demonstrate an ability to design effective new packaging systems, as well as improve the performance of existing packaging systems

- Demonstrate knowledge of the relationship between the packaging material, conversion process and container performance
- Identify requirements for food degradation systems and necessary conditions for them to exist

Program Goal #4: Demonstrate an ability to communicate at all levels of the organization and articulate the economic & organizational importance of packaging to companies, individuals and the community

- Demonstrate the ability to generate effective written internal documents
- Demonstrate the ability to apply major government regulations to organizations, departments, and quality systems and work processes within a global supply chain
- Demonstrate an ability to work effectively on multi-disciplinary design teams

Program Goal #5: Demonstrate a mastery of the knowledge, techniques, skills and modern tools of the discipline to function in a packaging organization and the ability to apply this knowledge creatively in the design of packaging systems, components or processes appropriate to the project objectives

- Calculate the levels of displacement, velocity and acceleration in product/package systems
- Demonstrate the ability to explain the basic terms of engineering design graphics

Robotics and Manufacturing Engineering Technology (BS)

The Student Outcomes (SO's) for the Robotics & Manufacturing Engineering Technology program have been established such that students will demonstrate the following skills, knowledge, and behaviors, at the time of graduation:

Outcome #1: An ability to apply knowledge, techniques, skills, and modern tools of mathematics, science, engineering, and technology to solve broadly defined engineering problems

Outcome #2: An ability to design systems, components, or processes meeting specified needs for broadly defined engineering problems

Outcome #3: An ability to apply written, oral, and graphical communication in both technical and non-technical environments; and an ability to identify and use appropriate technical literature

Outcome #4: An ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results to improve processes

Outcome #5: An ability to function effectively as a team member as well as a leader on a technical team

Communications Networks (MS)

Outcome #1: Demonstrate knowledge of appropriate network architectures for data communication services

Outcome #2: Demonstrate knowledge to apply specific technologies for the provision of telecommunications networks and services

Outcome #3: Demonstrate knowledge about the underlying principles of current technologies

Outcome #4: Demonstrate knowledge of the policies, regulations and laws that govern the telecommunication industry

Outcome #5: Demonstrate ability to research topics in the field of telecommunications and effectively and accurately generate written documentation of the findings.

Smart Cities Construction Management (MS)

Program Goal #1: Develop the ability to determine and analyze the cost, economics, and financial problems in Smart City Infrastructure, Transportation, and Construction areas

- Analyze the cost, economics, and financial problems in Smart City Infrastructure, Transportation, and Construction areas

Program Goal #2: Demonstrate knowledge of project organization dynamics in Smart City Infrastructure, Transportation, and Construction Management areas

- Analyze Transportation and Construction Industry organizational behavior and identify approaches designed to promote organizational learning

Program Goal #3: Demonstrate knowledge of technologies and tools in Smart City Infrastructure, Transportation, and Construction areas

- Utilize technologies and tools to design, construct, operate, and manage Smart City Infrastructure

Program Goal #4: Determine best practices to improve construction productivity in Smart City Infrastructure, Transportation, and Construction areas

- Utilize industry strategies to design productivity improvement programs incorporating lean construction principles

Program Goal #5: Demonstrate the ability to research and/or apply Smart City Infrastructure, Transportation, and Construction Management strategies and tools

- Conduct research and demonstrate effective written communication, strategies and tools to design, develop, and present a Smart City Infrastructure, Transportation, and Construction Management related project

Environmental Health and Safety Management (MS)

Program Goal #1: Demonstrate an understanding of global EHS management systems and identification of related EHS aspects and impacts

- Explain the concept and purpose of a systematic approach to EHS management, including fundamental system characteristics and functions
- Develop an appropriate EHS policy statement for a specific organization
- Identify and prioritize EHS aspects and impacts

Program Goal #2: Demonstrate an understanding of how to design an EHS management system

- Develop EHS management system objectives and targets
- Develop systems for operational controls including intervention based upon performance evaluation
- Map a functional EHS management system

Program Goal #3: Demonstrate an understanding of strategies & tools used to integrate EHS into business management to drive an organization towards sustainability

- Identify strategies and tools for integrating EHS into business management that will drive the organization towards sustainability
- Explain how quality tools can be used to improve and integrate EHS into the business

Program Goal #4: Demonstrate the ability to research or apply environmental, health and safety (EHS) management strategies & tools

- Integrate the key EHS management strategies and tools demonstrating effective written communication
- Summarize and analyze current EHS integration practices using effective written communication

Manufacturing and Mechanical Systems Integration (MS)

Program Goal #1: Systems Thinking (Define, Develop, Integrate and Manage Systems)

- Define system requirements and identify the components required to develop systems
- Demonstrate the ability to integrate system components
- Outline and defend the financial details for developing systems
- Demonstrate the ability to manage systems and work in a team environment

Program Goal #2: Analytical Problem Solving (Define, Measure, Analyze, Improve and Control System Issues)

- Apply lean six sigma tools, methods and models to evaluate systems and to develop solutions
- Define, measure and analyze relevant data and information to improve and control the systems
- Demonstrate the ability to compile and present analysis findings in written and/or oral format

Program Goal #3: Effective Written and Oral Communication Skills

- Access research databases on-line; cite references, and recognize plagiarism sources
- Develop a research paper or proposal
- Construct or create a project report and/or white paper. Present research/project findings and conclusions.

Packaging Science (MS)

Program Goal #1: Model effective and efficient new packaging systems as well as improve the performance of existing packaging systems

- Apply packaging techniques, skills and current software tools
- Redesign and improve an aspect of an existing package system

Program Goal #2: Demonstrate knowledge of the impact of packaging from raw materials extraction through disposal

- Design an innovative package system that provides a solution to a contemporary environmental problem

Program Goal #3: Participate and lead in team projects and act as change agents in the packaging field

- Demonstrate teamwork and leadership skills
- Demonstrates resourcefulness and initiative to generate ideas and solutions

Program Goal #4: Communicate effectively with a wide variety of audiences at all levels of organization

- Demonstrates ability to communicate clearly through writing
- Demonstrates ability to clearly communicate verbally

Program Goal #5: Demonstrate knowledge of the value and role of packaging in the lifecycle of products

- Apply the concept of a circular economy to minimization and the conservation of materials, energy and/or water

Print and Graphic Media Science (MS)

Program Goal #1: Students will be able to identify and apply the appropriate materials and processes, including color management and cross-media workflows to solve problems in graphic communication industries

Students will apply information/ technology principles and applications to produce and distribute content accurately and efficiently across print and electronic media

- Specify the optimal substrate and printing process combination for a sample product
- Apply color measurement to specify color and verify color matches
- Implement ICC-based color matches
- Use information technology tools to distribute content across multiple platforms

Program Goal #2: Students will be able to analyze industry trends and identify business management factors that impact the success of firms in the graphic communication industries

Students will demonstrate ethical business acumen by connecting the capabilities of dominant print and electronic media platforms with industry-driven applications

- Describe the steps to implement a quality systems initiative
- Create a written Standard Operating Procedure for a measurement system consistent with ISO guidelines
- Students will compare and contrast previous MS Culminations (e.g., Capstone, Thesis).

Program Goal #3: Students will demonstrate the link between academic literature and a research question for future ethical research.

Students will analyze industry and technology trends for the purpose of informing strategic decisions aimed at addressing business challenges and opportunities.

- Students will develop a meaningful and feasible research question and respond in writing by creating a culminating paper or project appropriate for the MS degree.

Program Goal #4: Students will demonstrate effective academic writing using a recognized citation style (e.g., APA, Chicago) and a synthesis of research through a written review of academic literature.

- Students will write a literature review to support their research using a recognized academic and formatting style (e.g., APA, Chicago)