Applied Engineering, Safety & Technology
Consolidated Student Learning Outcomes Statement

This document contains the student learning outcomes for the programs in the Department of Applied Engineering, Safety & Technology.

1 Applied Engineering & Technology Management

- Computer-Aided Drafting & Design
- Construction Managment
- General Technology
- Graphic Communication

2 Automation & Intelligent Robotics Engineering Technology

3 Manufacturing Engineering Technology

4 Occupational Safety & Environmental Health

5 Technology & Engineering Education

6 Master of Science, Technology & Innovation

1 Applied Engineering & Technology Management

Student Learning Outcomes Statement

A. **Disciplinary Knowledge:** An ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly defined applied engineering activities.

Concentration Specific Disciplinary Knowledge Learning Outcomes:

Advanced Manufacturing: An ability to apply specific skills and knowledge of tools, equipment, systems, materials, processes, and procedures to solve manufacturing and production problems.

Computer-Aided Drafting & Design: An ability to select and apply the knowledge, techniques, skills, and modern tools of the computer-aided drafting & design discipline.

Construction Management: An ability to select and apply the knowledge, techniques,skills and modern tools of the construction management discipline.

General Technology: An ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to manage complex projects and people in a technical environment.

Graphic Communication: An ability to select and apply the knowledge, techniques, skills, and modern tools of the graphic communication discipline.

Robotics & Control Systems: An ability to select and apply the knowledge, techniques, skills, and modern tools of the robotics and control systems discipline.

B. **Design:** An ability to design systems, components, or processes for broadly defined applied engineering problems appropriate to program educational objectives.

C. **Collaboration:** An ability to function effectively as a member or leader on a technical team.

D. **Oral Communication:** An ability to apply oral and graphical communication in both technical and non-technical environments.

E. **Written Communication:** An ability to apply written communication in both technical and non-technical environments.

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2 Automation & Intelligent Robotics Engineering Technology

Student Learning Outcomes Statement

General Student Learning Outcomes:

1. an ability to apply knowledge, techniques, skills and modern tools of mathematics, science, engineering, and technology to solve well-defined engineering problems appropriate to the discipline;
2. an ability to design solutions for well-defined technical problems and assist with the engineering design of systems, components, or processes appropriate to the discipline;
3. an ability to apply written, oral, and graphical communication in well-defined technical and non-technical environments; and an ability to identify and use appropriate technical literature;
4. an ability to conduct standard tests, measurements, and experiments and to analyze and interpret the results; and
5. an ability to function effectively as a member of a technical team.

3 Manufacturing Engineering Technology

Student Learning Outcomes Statement

A. General Student Student Learning Outcomes.

1. an ability to select and apply the knowledge, techniques, skills, and modern tools of the discipline to broadly-defined engineering technology activities;
2. an ability to select and apply a knowledge of mathematics, science, engineering, and technology to engineering technology problems that require the application of principles and applied procedures or methodologies;
3. an ability to conduct standard tests and measurements; to conduct, analyze, and interpret experiments; and to apply experimental results to improve processes;
4. an ability to design systems, components, or processes for broadly-defined engineering technology problems appropriate to program educational objectives;
5. an ability to function effectively as a member or leader on a technical team;
6. an ability to identify, analyze, and solve broadly-defined engineering technology problems;
7. 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;
8. an understanding of the need for and an ability to engage in self-directed continuing professional development;
9. an understanding of and a commitment to address professional and ethical responsibilities, including a respect for diversity;
10. a knowledge of the impact of engineering technology solutions in a societal and global context; and
11. a commitment to quality, timeliness, and continuous improvement.

B. Discipline Specific Student Learning Outcomes.

1. Define and use terminology common within industrial processing, fabrication, electronics, and controls.
2. Use electronics equipment, software, and programmable systems to design, simulate and integrate robotic and control systems; and identify different methods of manufacturing and fabrication used within modern industry.
3. Characterize properties and specific behavior of materials (as they are processed) used within modern industry.
4. Demonstrate proficiency in the Interpretation of CAD drawings, updating and editing CAD drawings and knowledge of multiple CAD/CAM applications and packages used in advanced manufacturing.

4 Occupational Safety & Environmental Health

Student Learning Outcomes Statement

Graduates of the B.S. OSEH program will demonstrate:

1. An ability to identify, formulate, and solve broadly defined technical or scientific problems by applying knowledge of mathematics and science and/or technical topics to areas relevant to the discipline.
2. An ability to formulate or design a system, process, procedure or program to meet desired needs.
3. An ability to develop and conduct experiments or test hypotheses, analyze and interpret data and use scientific judgment to draw conclusions.
4. An ability to communicate effectively with a range of audiences.
5. An ability to understand ethical and professional responsibilities and the impact of technical and/or scientific solutions in global, economic, environmental, and societal contexts.
6. An ability to function effectively on teams that establish goals, plan tasks, meet deadlines, and analyze risk and uncertainty.

5 Technology & Engineering Education

Student Learning Outcomes Statement

- **STUDENT LEARNING OUTCOME A (Prof Knowledge+Practice):** Demonstrate professional knowledge and practice expected of a preservice technology and engineering K-12 teacher.

- **STUDENT LEARNING OUTCOME B (Curriculum Development):** Demonstrate the ability to plan and prepare technology and engineering curriculum at a grade appropriate level.

- **STUDENT LEARNING OUTCOME C (Content Knowledge):** Demonstrate acceptable pedagogical and content knowledge in the field of technology & engineering education.

- **STUDENT LEARNING OUTCOME D (Impact on Student Learning):** Demonstrate an impact on their students' learning.

- **STUDENT LEARNING OUTCOME E (Professional Behavior):** Demonstrate professionalism that is aligned to national standards.

6 Master of Science, Technology & Innovation

Student Learning Outcomes Statement

- **STUDENT LEARNING OUTCOME A (Communication Skills):** Students will communicate clearly through the written word

- **STUDENT LEARNING OUTCOME B (Critical Thinking, Decision Making & Problem Solving):** Students will think critically in order to make sound decisions toward solving problems.

- **STUDENT LEARNING OUTCOME C (Leadership):** Students will demonstrate the characteristics of a good leader.

- **STUDENT LEARNING OUTCOME D (Analytical Thinking):** Students will use analytical thinking as one of their strategies for solving problems.

- **STUDENT LEARNING OUTCOME E (Design Thinking): Students will use design thinking as one of their strategies for solving problems.**