

TECHNOLOGY AND INNOVATION

The Program

The Department of Technology and Innovation offers:

- Entrepreneurial and Innovation Graduate Certificate (<https://catalog.millersville.edu/graduate/college-science-technology/technology-innovation/entrepreneurial-innovation-graduate-certificate/>)
- Technology and Innovation, M.S. (<https://catalog.millersville.edu/graduate/college-science-technology/technology-innovation/technology-innovation-ms/>)
- Technology and Innovation, M.S., Education Concentration (<https://catalog.millersville.edu/graduate/college-science-technology/technology-innovation/technology-innovation-ms-education-concentration/>)
- Technology and Innovation, M.S., Enterprise Concentration (<https://catalog.millersville.edu/graduate/college-science-technology/technology-innovation/technology-innovation-ms-enterprise-concentration/>)
- Technology Education K-12, Post Baccalaureate Certification (<https://catalog.millersville.edu/graduate/college-science-technology/technology-innovation/technology-education-k-12-post-baccalaureate-certification/>)

Graduate Faculty

Len Litowitz, Department Chairperson. Ed.D., University of Minnesota, 1986. Power, Energy and Transportation, Professional.
 Scott A. Warner, Graduate Program Coordinator. Ed.D., West Virginia University, 2000. Product Design, Manufacturing, Professional.
 Sharon A. Brusic. Ed.D., Virginia Polytechnic Institute and State University, 1991. Electronics, Professional.
 Barry G. David. Ed.D., Temple University, 1990. Production, Management.
 John Haughey, Ph.D., Iowa State University, 2020, Electronics
 Alex Johnson. Ph.D., University of North Dakota, 2010. Production Processes and Materials.
 Mehdi Khalighi. Ph.D., University of Utah, 2001. Environmental Health, Safety.
 Betty-Jo Legutko. Ph.D., Alvernia University, 2016. Occupational Safety, Environmental Health.
 Joseph M. McCade. Ed.D., Virginia Polytechnic Institute and State University, 1989. Power, Professional.
 Jack Ogutu. Ph.D., Auburn University, 2013. Ergonomics, Safety.
 Mark R. Snyder. Ed.D., Virginia Polytechnic Institute and State University, 1992. Graphic Communications.
 John R. Wright Jr. Ph.D., Iowa State University, 1998. Electronics, Power, Robotics.

AENG 500: 3-12 s.h.

Co-Op Ed Experience in AENG

Co-Op Ed Experience in AENG

AENG 515: 3 s.h.

Adv Prob:

Resources, processes and outcomes of selected technical areas in technology education. Technical area emphasized (e.g., computer-aided drafting and design, computer numerical control, desktop publishing, digital electronics, manufacturing, photography and robotics) varies with the course offering. Laboratory experiences focus on technological problem solving. 2 hrs. lec., 3 hrs. lab.

AENG 525: 3 s.h.

Adv Prob:

Resources, processes and outcomes of selected technical areas in technology education. Technical area emphasized (e.g., computer-aided drafting and design, computer numerical control, desktop publishing, digital electronics, manufacturing, photography and robotics) varies with the course offering. Laboratory experiences focus on technological problem solving. 2 hrs. lec., 3 hrs. lab.

AENG 535: 3 s.h.

Adv Prob:

Resources, processes and outcomes of selected technical areas in technology education. Technical area emphasized (e.g., computer-aided drafting and design, computer numerical control, desktop publishing, digital electronics, manufacturing, photography and robotics) varies with the course offering. Laboratory experiences focus on technological problem solving. 2 hrs. lec., 3 hrs. lab.

AENG 579: 3 s.h.

Experimental

Experimental

AENG 586: 1-3 s.h.

Special Topics:

Investigation of one or more topics of current interest in technology and innovation. Topics vary according to needs and interests of students and faculty involved. Offered periodically.

AENG 587: 1-3 s.h.

Special Topics:

Investigation of one or more topics of current interest in technology and innovation. Topics vary according to needs and interests of students and faculty involved. Offered periodically.

AENG 588: 1-3 s.h.

Special Topics:

Investigation of one or more topics of current interest in technology and innovation. Topics vary according to needs and interests of students and faculty involved. Offered periodically.

AENG 589: 1-3 s.h.

Special Topics:

Investigation of one or more topics of current interest in technology and innovation. Topics vary according to needs and interests of students and faculty involved. Offered periodically.

EDTE 586: 1-3 s.h.

Topics in Industry & Tech

Investigation of one or more topics of current interest in industry and technology. Topics vary according to needs and interests of students and faculty involved.

EDTE 587: 1-3 s.h.

Topics in Industry & Tech

Investigation of one or more topics of current interest in industry and technology. Topics vary according to needs and interests of students and faculty involved.

EDTE 588: 1-3 s.h.**Sp Topics in Industry & Tech**

Investigation of one or more topics of current interest in industry and technology. Topics vary according to needs and interests of students and faculty involved.

EDTE 589: 1-3 s.h.**Sp Topics in Industry & Tech**

Investigation of one or more topics of current interest in industry and technology. Topics vary according to needs and interests of students and faculty involved.

EDTE 603: 3 s.h.**Fostering Creativity by Design**

This course will expose students to the concept of how creativity, within the context of the technological world, is manifested through design. Whether it is during the ideation, development, use, modification and updating, or disposal of the artifact or system of technology, design is the overarching force that is present through each stage. Students will also explore the latest theories on creativity as well as the ways that a designer uses creativity and design thinking toward solving problems in an increasingly technologically complex world. Design-based thinking skills such as problem solving, decision making, researching, designing and creating, will be emphasized. The course is appropriate for all graduate students especially those in education, technological fields, and entrepreneurship.

EDTE 604: 3 s.h.**Engineering Principles and Concepts for the Non-Engineer**

The innovations and inventions of engineering design are vital toward enhancing the standards of living for humanity. In this course, which is intended for the non-engineer, students will learn what engineers do and how they do it. The connections between the engineering profession and society will be examined. This will include a review of engineering organizations and their standards, problem solving techniques and the methods of modeling systems.

EDTE 605: 3 s.h.**Applying Critical Thinking and Decision Making**

An exploration of the nature and application of critical thinking toward acts of decision making. Students will learn how to understand, facilitate, and practice the techniques of disciplined critical thinking and decision-making while avoiding the pitfalls of thinking traps such as biases and irrational tendencies. The course has been designed to address a variety of audiences including all teachers at all levels as well as entrepreneurs and individuals from business and industry, the sciences and the technological fields.

EDTE 646: 3 s.h.**Writing the Professional Paper**

Development of competencies for identifying and developing graduate research topics and for publishing in professional literature. Emphasis on research methods, organization and effective writing. The satisfactory completion of this course is required before pursuit of EDTE 698 Research and Development in Technical Areas or EDTE 699 Thesis.

EDTE 679: 1-3 s.h.**Experimental****EDTE 690: 3 s.h.****Integrative Learning Experience**

The purpose of this course is to engage students in curriculum planning, design, and assessment that will enable them to identify, use, and evaluate experiential and integrative teaching-learning strategies that facilitate connections between all subjects in grades Pre-K to grade 6 (e.g., literacy, science, mathematics, social studies, arts, technology, physical education, engineering).

EDTE 691: 1-6 s.h.**Independent Study**

Pursuit of a topic of special interest and of potential application in technology education. Written proposal must be approved by an appropriate faculty sponsor, the graduate program coordinator and the department chairperson prior to the semester of formal registration in this course. Completion of an approved independent study includes a written research report, which partially determines the grade received.

EDTE 698: 6 s.h.**Research and Development Technical Project**

Design, execution and communication of applied research in technology education. Emphasis on recent technological advances and experimentation with contemporary processes, materials and techniques. Three types of applied research may be pursued: technical project, innovative instruction or technical research. Study is guided by a faculty adviser. Research and development results and applications are recorded as a research report.

EDTE 699: 6 s.h.**Thesis:**

Planning, conducting and recording basic research in technology education. Includes application of an experimental, descriptive, historical or other pertinent educational research method. Study is guided by research adviser and faculty committee. Research results and interpretation are recorded as a thesis.