Graduate Engineering Technology Courses

ENGT 5086. Problems. 1-3 Credit Hours (Lecture: 1-3 Hours, Lab: 0 Hours).
This course is designed to meet the needs of Manufacturing Quality and Leadership students who have above average academic ability and who need to pursue subject matter that is not normally included in the Manufacturing Quality and Leadership curriculum. Approval for enrollment in this course shall be with the concurrence of the individual instructor and the department head.

ENGT 5088. Thesis. 1-6 Credit Hours (Lecture: 1-6 Hours, Lab: 0 Hours).
This course is designed to meet the needs of Quality and Engineering Management students who have above average academic ability and who need to pursue subject matter that is not normally included in the curriculum. A master's thesis is a piece of original scholarship written under the direction of a faculty advisor. A master's thesis is similar to a doctoral dissertation, but it is generally shorter and more narrowly focused. Students who chose to write a master's thesis often do so because they are interested in pursuing research. Like a good journal article, a master's thesis will respond to a debate of Engineering Management literature and will bring new evidence or arguments to bear upon the topic. Approval for enrollment in this course shall be with the concurrence of the individual instructor and the department head.

ENGT 5300. Engineering Management Survey. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
This course explores the concepts of the time value of money, project definition and control, and uncertainty in project evaluation. The course is intended for students who do not have the required backgrounds in engineering economics, project management, and statistics needed for the QEM program and does not count towards the degree requirements. Prerequisite: Advisor approval.

ENGT 5303. Engineering Economics and Decision Analysis. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Analysis of engineering costs and capital investments. Applications of classical optimization, mathematical programming, and the theory of production to the analysis of investment proposals. Evaluation and selection of individual projects and formulation of capital investment programs.

ENGT 5324. Statistics for Engineering Management. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Introduction to decision making using quantitative methods. In addition to exploratory data analysis, basic probability, distribution theory, and statistical inference will be covered. Special topics will include experimental design, regression, control charts, and acceptance sampling.

ENGT 5325. Advanced Concepts in Six Sigma. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Six Sigma and Design of Experiments allows students to identify and apply statistical variation methods that enable improvements for enhanced operational performance. Six Sigma is a data-driven approach for eliminating defects and waste in a business or operational process. Six Sigma knowledge can be applied to enhance operational and process performance resulting in improved effectiveness and efficiency. Six Sigma knowledge and skills enhance a student's ability to identify and implement process variation resolution. The course will apply the Define, Measure, Analyze, Improve and Control process. The course will emphasize the use of data driven measures through Design of Experiments, Measures of Variation, and Data Analysis. Prerequisite: ENGT 5368 ENGT 5324.

ENGT 5332. Financial Risk for Engineering Project Management. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Financial Risk Management for Engineering Projects addresses the process used to identify potential project financial risks both positive and negative. This course will provide an understanding of the project financial risk impacts as they relate to projects. The course will focus on the combination of risks and impacts to quality, operational, and financial issues as prescribed by risk practices. The course consists of identifying risks, analyzing them, and responding to risks throughout the project life cycle. This course is accomplished through application of American National Standards Institute (ANSI) 31004 and International Standards Organization (ISO) 3100 methods. Prerequisite: ENGT 5303.

ENGT 5336. Production and Inventory Control. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
This course explores the planning and control systems and processes that operate within a typical factory or service organization including: demand management, forecasting, sales and operations planning, scheduling, material requirements planning, and capacity management. The concepts of Enterprise Resource Planning, Just-in-Time, and supply chains are introduced. This course helps prepare students for the APICS Certified in Production and Inventory Management certification exams.

ENGT 5345. Systems Engineering. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Concepts of systems thinking. Covers the methodology used in systems engineering, including concept exploration and development, product/service development, system design/production, maintenance and support, and system domains definition and implementation.

ENGT 5346. Manufacturing Systems Management. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
A study of concepts and models used as a competitive advantage in the management of processes to produce and supply goods in the manufacturing/service industries. Topics will include operations management and strategy, product design and learning curves, project management, Manufacturing/Service process selection and design. Applications of Operations Research science techniques enable the development of the Manufacturing Systems Management methodologies.

ENGT 5362. Supply Chain Management. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Exploration of the key drivers associated with the design and management of industrial supply chains. The course will focus in covering high level supply chain strategy and concepts, and the use of analytical tools to solve supply chain problem. Specific content will include strategy, supply chain metrics and drivers, network design, forecasting, sales and operations planning, supply chain uncertainty, inventory, sourcing and sustainability and technology. Course helps prepare students for the APICS Certified Supply Chain Professional certification exam.

ENGT 5365. Logistics, Transportation, and Distribution. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
This course provides an understanding of how logistics, transportation, and distribution systems operate across an enterprise and how they can be made more efficient. Topics include: Strategy, order management, inventory and warehouse management, packaging and materials handling, transportation fundamentals. Global logistics basics, reverse logistics, and sustainability. This course helps prepare students for the APICS Certified in Logistics, Transportation, and Distribution (CLTD) certification exam.

ENGT 5368. Quality Management. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
The course focuses on the practical application of process improvement tools and the reduction of variation in production and operations processes. Statistical process control charts are created, and process capabilities are determined through the use of problems and case studies that cross multiple industries. Emphasis is placed on the interpretation, understanding, and use of quality principles and concepts throughout the problem-solving process. The history of the quality movement is covered and along with the steps in the quality improvement process. Best practices are presented, such as ISO 9000 Standards, Six Sigma, and supplier certification. Quality Function Deployment and Design of Experiments are introduced along with costs of quality and product liability issues. Prerequisite: ENGT 5324 or concurrent enrollment.

ENGT 5376. Automated Manufacturing Systems. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
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ENGT 5385. Advanced Concepts in Project Management. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Project Management is the use of specific knowledge, skills, tools and techniques to deliver project value to a customer or organization. Project Management is a set of principles and guidelines to manage and deliver a project. Use of Project Management concepts improve project delivery success within budget, scope, and schedule to customers and stakeholders. This course explores major problems, tasks and techniques required to manage a technical project through each phase of a project's life cycle of Initiating, Planning, Executing, Controlling, and Closing. Each phase of the project life cycle as defined by Project Management Institute, and International Standards Organization are applied. Additional concepts such as: Earned Value Analysis (EVA), Critical Path Management (CPM), Project Requirements Analysis, Requirements Control Analysis (RCA), Risk Assessment, and Monte Carlo Analysis will be explored in depth. Prerequisite: ENGT 5324.

ENGT 5398. Research in Engineering Management Topics. 3 Credit Hours (Lecture: 3 Hours, Lab: 0 Hours).
Engineering Research exposes the student to the complexities and realities of completing an in-depth research paper using American National Standards Institute (ANSI) and American Psychological Association (APA) guidelines on a topic of real-world technology needs. Guides the student through an in-depth application of the principles, techniques of quality and engineering technical research. Technology innovation is a result of engineering research leading to new products and methods for today's global needs. During Engineering Research students write papers based on self-chosen technology topic that reflects the complexities and realities of that subject. Engineering Research enhances student competency through an in-depth topic's research paper. Students will review current literature in the topic field and write a comprehensive report on the topic. Prerequisite: ENGT 5325 or concurrent enrollment.