

ENGINEERING MANAGEMENT (EM)

Subject-area course lists indicate courses currently active for offering at the University of Louisville. Not all courses are scheduled in any given academic term. For class offerings in a specific semester, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>).

500-level courses generally are included in both the undergraduate- and graduate-level course listings; however, specific course/section offerings may vary between semesters. Students are responsible for ensuring that they enroll in courses that are applicable to their particular academic programs.

Course Fees

Some courses may carry fees beyond the standard tuition costs to cover additional support or materials. Program-, subject- and course-specific fee information can be found on the Office of the Bursar website (<http://louisville.edu/bursar/tuitionfee/>).

EM 525. Project Management 3 Units

Prerequisite(s): Admission into the Industrial Engineering or Engineering Management program or instructor permission.

Description: Use of CPM, PERT, precedence diagramming, resource allocation heuristics, and other techniques for planning, managing, and controlling engineering projects involving research and development, production, maintenance, and construction. Computer procedures and codes for analyzing complex project networks will be covered.

Note: Cross-listed with IE 525.

For class offerings for a specific term, refer to the Schedule of Classes (<http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm>)

EM 560. Construction Management 3 Units

Prerequisite(s): Admission into the Engineering Management program or instructor permission.

Description: An investigation of the engineer's role in the construction process. Study of the many variables influencing the project and associated methods of managing variables. Includes a practical demonstration of student's understanding schedule and cost estimate for a project of the student's choosing.

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EM 561. Engineering Statistics I 3 Units

Prerequisite(s): Admission into the Engineering Management program or instructor permission.

Description: . Study of the laws of probability, discrete and continuous probability distributions, point and interval estimation, tests of hypothesis, simple linear regression, and the single factor analysis of variance.

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EM 582. Management of Human Systems 3 Units

Prerequisite(s): Admission into the Engineering Management program or instructor permission.

Description: Computer-aided, quantitative application of human performance capabilities and limitations to the planning, design, development, and evaluation of complex human-machine/industrial systems.

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EM 613. Operations Management 3 Units

Prerequisite(s): Admission in EM program or instructor permission.

Description: Concepts in strategic planning, quality management, operations research, facility design, supply chain and logistics, forecasting, inventory control, resource planning, and scheduling. Emphasis is on appropriate analytical and computer-based techniques.

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EM 615. Management Science 3 Units

Prerequisite(s): Admission in EM program or instructor permission.

Description: Students will gain knowledge in the application of management science processes and models used in decision making. Emphasis will be placed on the mathematical tools and will cover the following topics: Decision Analysis, Regression Models, Forecasting, Inventory, Control Models, Linear Programming, Queuing Theory, and Discrete Event Simulation.

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EM 620. Safety Management 3 Units

Term Typically Offered: Summer Only

Prerequisite(s): Admission into the EM program, or instructor permission.

Description: This course will introduce concepts of designing, operating, maintaining, and managing safety programs. Topics will be drawn from hazard avoidance, risk management, legislation (including OSHA & Worker's Compensation), health management, accident investigation, building/facility safety, industrial hygiene, fire safety, personal protection, ergonomics, materials handling, machine guarding, electrical hazards, construction safety, systems safety, certification issues, ethics, and professionalism.

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EM 624. Human Resource Management 3 Units

Prerequisite(s): Admission in EM program or instructor permission.

Description: This course will present HR management various activities including hiring, training, performance review, motivation, and employee satisfaction.

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EM 626. Effective Communication for Engineers	3 Units	EM 645. Decision and Risk Analysis	3 Units
Term Typically Offered: Summer Only		Term Typically Offered: Fall, Spring, Summer	
Prerequisite(s): Admission into the EM program, or instructor permission.		Prerequisite(s): Admission in EM program or instructor permission.	
Description: This class will discuss efficient ways of communicating engineering ideas, projects, e-mails, and presentations to make them clear and concise to a variety of audiences.		Description: In this course students will gain knowledge in the process of decision-making. Emphasis will be placed on quantitative and qualitative tools and will cover the following topics: Introduction to Decision Analysis, Elements of Decision Problems, Structuring Decisions, Making Choices, Sensitivity Analysis, and Organizational Use of Decision Analysis.	
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EM 627. Information Technology Management	3 Units	EM 646. Marketing and the Engineer	3 Units
Term Typically Offered: Spring Only		Prerequisite(s): Admission into the EM program or instructor permission.	
Prerequisite(s): Admission in EM program or instructor permission.		Description: Provides an introduction to marketing principles and techniques with an emphasis on technical product development, pricing, promotion and distribution strategies. It stresses the role the engineers play in the product marketing plan of an organization, as well as methods for forecasting technology and measuring marketing decisions. It includes a unit on marketing aspects of engineering entrepreneurship.	
Description: In this course, students will gain knowledge in the application of information systems in business environments. The use and management of data supplied externally to the firm (e.g., customer transactions) and data generated internally by the firm (e.g., production orders) will be considered. Emphasis will be placed on leveraging reliable data to derive meaningful information that is relevant to the decisions a firm must make. The following topics will be included: Data Structure, Network Structure, System Security, System Access, System Reliability, Component Integration, User Interfaces, and Analytical Reports.		For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)		EM 656. Supply Chain Management	3 Units
EM 628. Engineering Management	3 Units	Prerequisite(s): EM 613 and admission in EM program, or instructor permission.	
Prerequisite(s): Admission in EM program or instructor permission.		Description: Understand how supply chain design and planning decisions impact the performance of the firm as well as the entire supply chain. Understand the link between supply chain structures and logistical capabilities in a firm. Case studies and problems are used throughout the course to highlight important concepts and principles.	
Description: The principles and practices of administration of the engineering function, including management, organization, planning, controlling and measuring results, management of human resources, communication and decision-making.		For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)		EM 661. Engineering Statistics II	3 Units
EM 632. Quality Management	3 Units	Term Typically Offered: Fall, Spring	
Term Typically Offered: Fall, Spring		Prerequisite(s): IE 360 (or equivalent) and admission into the EM program, or instructor permission.	
Prerequisite(s): EM 661 or IE 563; admission in EM program or instructor permission.		Description: The principles and techniques of advanced statistics, including multiple linear regression, multi-factor analysis of variance, experimental design, nonparametric statistics, and quality control.	
Description: In this course, students will gain knowledge in the application of quality improvement methodology in both manufacturing and service environments. Emphasis will be placed on philosophical approaches to quality improvement and quantitative methods of quality control. The following topics will be included: Corporate Quality Programs, Applications for Quality Improvement, Measurement Systems Analysis, Statistical Process Control, Experimental Design, Root Cause Analysis, and Design for Quality.		Note: Students may not obtain credit for both EM 661 and ME 611; or for EM 661 and IE 563.	
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EM 640. Applied Systems Analysis	3 Units	EM 670. Engineering Financial Management	3 Units
Prerequisite(s): IE 360 or equivalent; admission into the EM program or instructor permission.		Prerequisite(s): Admission in EM program or instructor permission.	
Description: Methods of engineering management applied to case studies so as to define the problems, analyze the data, and recommend solutions or decisions.		Description: This course examines various approaches for managing financial resources in the technology enterprise, including cost accounting and cost estimating. The focus is both direct and indirect costs for materials, labor and overhead.	
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EM 672. Management Law for Engineers	3 Units	EM 685. Applications for Process Improvement II	1.5 Units
Term Typically Offered: Fall, Spring, Summer		Term Typically Offered: Fall, Spring	
Prerequisite(s): Admission in EM program or instructor permission.		Prerequisite(s): EM 613/IE 240, EM 661/IE 563; admission in EM program or instructor permission.	
Description: In this course, students will study the common law as it pertains to Contracts, Torts and Real Estate; rules governing business transactions in the area of creditors' rights in secured transactions and suretyship; sales as covered by the Uniform Commercial Code; business relationships such as agency and forms of business ownership, and ethics and professional liability.		Corequisite(s): EM 684.	
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)		Description: In this course, students will apply the tools learned in EM 684 to complete a project. Students entering the class will have already completed the Define phase of DMAIIC and in this class, will complete Measure, Analyze, Improve, Implement, and Control. At the end of the class, students have the option of taking an exam (for an additional fee) to obtain their Six Sigma Black Belt Certification.	
EM 674. Intellectual Property Law for Engineers	3 Units	For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	
Prerequisite(s): Admission in EM program or instructor permission.		EM 693. Independent Study in Engineering Management	1-6 Units
Description: A study of U.S. law governing the protection for various forms of intellectual property including patent, trademark, and copyright law. Issues addressed include creation, ownership, acquisition, use, and transfer of various forms of intellectual property.		Description: Opportunity for the student, under the supervision of a sponsoring faculty member, to pursue individualized study related to research or practice that is not included in regular courses in the curriculum.	
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EM 676. Effective Leadership	3 Units	EM 694. Special Topics in Engineering Management	1-6 Units
Term Typically Offered: Fall, Spring, Summer		Prerequisite(s): Admission in EM program or instructor permission.	
Description: In this course, students will gain a comprehensive understanding of the leadership skills and practices required to advance the mission of an organization. Emphasis will be placed on establishing strategic direction with supporting tactics, enhancing the organization's problem solving capabilities, fostering an environment of reliable change implementation, and communicating with impact. The following topics will be included: Mission and Vision Statements, Corporate Values, Sourcing Decisions, Performance Improvement Systems, Change Management, and Leadership Styles.		Description: A theoretical or experimental investigation of an engineering management problem.	
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EM 684. Applications for Process Improvement I	1.5 Units	EM 697. MEng Thesis in Engineering Management	1-6 Units
Term Typically Offered: Fall, Spring		Description: A candidate for the Master of Engineering degree, specializing in the field of engineering management, is required to perform a study, design, or investigation under the direction of a faculty member. A written thesis is required to be presented orally and submitted to the faculty for approval.	
Prerequisite(s): EM 613/IE 240, EM 661/IE 563; admission in EM program or instructor permission.		For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)	
Corequisite(s): EM 685.		EM 699. Engineering Management Master's Degree Project	3 Units
Description: In this course, students will learn the process improvement methodologies of six sigma. Emphasis will be placed on the quantitative and qualitative tools covered in EM 613 (IE 240 equivalent) and EM 661 (IE 563 equivalent) and how to use these tools within framework of the DMAIIC process of six sigma. Students will compete the Define Phase of DMAIIC.		Prerequisite(s): Instructor permission required.	
For class offerings for a specific term, refer to the Schedule of Classes (http://htmlaccess.louisville.edu/classSchedule/setupSearchClassSchedule.cfm)		Description: The Engineering Management MEng student carries out an engineering project under the supervision of a faculty mentor, prepares an acceptable written report, and presents a seminar on the project.	
		Note: Cross-listed with IE 699.	
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