

# EGR-Engineering Master's (EGR)

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## **EGR 501/EM 501 Engineering Leadership and Strategic Change** (3 credit hours)

In the current business environment, an understanding of leadership and change management is essential to career success. The objective of this course is to provide practitioners in technical fields the knowledge to lead, align and transform the human element, individuals and teams, to achieve organizational performance excellence. The class includes both individual and collaborative (team) learning. An engineering, technical, or scientific undergraduate degree is required.

*Typically offered in Fall and Spring*

## **EGR 503 Statistical Engineering using Six Sigma DMAIC Process** (3 credit hours)

Statistical Engineering: systematic approach (Six Sigma DMAIC methodology) for improving manufacturing and business processes and products using advanced graphical and statistical methods. Defining the improvement opportunity, measurement system analysis (MSA), Failure Mode and Effects Analysis (FMEA), data collection, graphical and statistical analysis, design of experiment (DOE) methods, and statistical process control (SPC) methods. Application of statistical engineering to business and manufacturing case studies.

ST 361 or ST 370 or Entry Level Statistics

*Typically offered in Fall and Spring*

## **EGR 505 Managerial Finance for Engineers** (3 credit hours)

In the current business environment, familiarity with and appreciation of finance is essential to career success. Technically competent managers must be able to speak the common language of business and to understand how their work affects the performance of their organization. The objective of this course is to provide practitioners in technical fields the financial know-how to plan, control and make decisions that achieve organizational performance excellence. The class includes both individual and collaborative (team) learning. An engineering, technical or scientific undergraduate degree is required.

*Typically offered in Fall and Spring*

## **EGR 506/EM 506 Managing New Hi Tech Product Launches** (3 credit hours)

This course covers new high-tech product development and launch from the perspective of the technical manager responsible for developing and launching new products and new lines of business within the high tech firm. Topics cover the entire spectrum of the new products development and launch process starting from concept generation and ideation and concept evaluation all the way through market testing and product launch. Each phase of the new products management process will be covered and illustrated by case studies. Students will generate a new product development and launch plan as a course project..3 credit hours.

Requirement: Graduate standing in Engineering

*Typically offered in Spring and Summer*

## **EGR 507/EM 507 Product Life Cycle Management** (3 credit hours)

This course covers the management of complex technical products during all phases of the product life cycle. It is a broad survey of all the tools needed by the technical product manager throughout the life cycle of a complex product. The course is taught with a systems approach and from the engineering manager's viewpoint. The product life cycle includes all aspects of managing products from launch through maturity.

Requirement: Graduate standing in Engineering

*Typically offered in Fall, Spring, and Summer*

## **EGR 508/EM 508 Managing New Product Creation** (3 credit hours)

The purpose of this course is to cover the best practices and methods for creating and innovating new high-tech products, for management of the design process, and for the management of the development and prototyping of new engineering products. This course is for engineering graduate students aspiring to be product managers, product designers and engineering managers. The course covers the sources of new product ideas including customer feedback, technology evolution, technology brokering, scenario analysis, customer problem solving, focus groups, and group brainstorming. Next the design process will be addressed. A method known as "design thinking" will be covered in depth, and students will complete a project in an area of interest based on design thinking. Students will be required to complete a design thinking project, a draft of a patent disclosure, a management plan for its development, and "pitch" the idea and plan.

This course is for graduate students with a technical undergraduate.

This course is part of 3 course sequence on management of engineering products. The other two are EGR506 and EGR507 which may be taken in any order. (Sequentially advised; not required)

*Typically offered in Fall and Summer*

## **EGR 517/EM 517 Facilities Engineering Systems** (3 credit hours)

This course covers the multi-disciplinary Facilities Engineering functions, as would be found in a municipal public works department, university facilities engineering organization, medical complex, various State government agencies, departments of transportation, airports, port authorities, and facilities engineering organizations at both the installation level and the headquarters level of certain Federal Government agencies. Engineering practice in Facilities Engineering is by nature broad, requiring engineers to understand underlying principles of related engineering disciplines to address the cross-cutting issues in the practice. Facilities engineering as covered in this course begins with the planning phase and continues through the full lifecycle of buildings and infrastructure. Engineering topics include electrical and mechanical systems, structural and architectural features, electrical distribution systems, and protection from physical and cyber threats.

R: Graduate Standing in Engineering

*Typically offered in Fall only*

**EGR 518/EM 518 Environmental Compliance for Facilities****Engineers** (3 credit hours)

Facilities Engineering is the application of multidisciplinary engineering required to effectively manage the technical aspects of a portfolio of physical assets. Practitioners in the public sector include city and town engineers, university facilities engineering organizations, Federal and State government installations, and port authorities, among others. Engineers in the industrial sector include those in the petrochemical industry, pharmaceutical plants, food/poultry and meat processing plants, IT and manufacturing plants, all of which are subject to environmental regulation. There are literally thousands of such regulations spread across Federal, State, and local jurisdictions. The Facilities Engineer must, from an engineering perspective, know how to identify and comply with these regulations. Environmental compliance may very well be the only aspect of engineering where an individual can incur both civil and criminal liability for violation of these laws. This course will teach the student the gamut of environmental regulations across the engineering disciplines.

R: Graduate Standing in Engineering

*Typically offered in Spring only*

**EGR 531 Engineering Project Management** (3 credit hours)

The course will cover project management concepts and tools focused on sustainability. All these basic concepts will be employed to discuss industry strategies and global competitiveness. People responsible for project management must develop projects that are focused and friendly for their companies, customers and the sustainability global goals. The course will provide the student an understanding of the main concepts and principles of Project Management (PM), as well as the different tools utilized in project management to support the sustainability and sustainable development theories. Lectures will focus on theoretical and practical discussion of project management and its connection with sustainability. We will also see the practical ramifications of our topics discussed in class during the class activities. Conduct of Course: This class will be conducted on-line only. Grading will be based upon performance on homework, and two examinations.

Restriction: Senior or graduate standing in engineering or a related discipline and consent of instructor. The course is open to graduate students, advanced undergraduates and practicing engineers.

*Typically offered in Spring and Summer*

**EGR 590 Special Topics in Engineering** (1-6 credit hours)

Discussion of special topics in engineering. Identification of various specific topics and prerequisites for each section from term to term.

*Typically offered in Fall, Spring, and Summer*

**EGR 688 Non-Thesis Masters Continuous Registration-Half Time Registration** (1 credit hours)

For students in non-thesis master's programs who have completed all credit hour requirements for their degree but need to maintain half-time continuous registration to complete incomplete grades, final master's exam, etc.

Prerequisite: Master's student

*Typically offered in Fall, Spring, and Summer*