EMP

Engineering Management

EMP 501: Leadership
In this course, we review current and classic concepts and theories in leading in engineering contexts. We examine leadership at different levels: leading groups and teams, leading projects, and leading complex organizations. We consider seminal questions in leadership studies including: What are the differences between managing and leading? How do leadership styles interact for effective leadership? How do leaders build community in their organizations? And we review several practical concerns of leadership, including leading change, leading in diverse contexts, and leader succession planning.

3 credits, Letter graded (A, A-, B+, etc.)
May be repeated 1 times FOR credit.

EMP 502: Engineering Economics
This is a course in advanced cost justifications for business and projects. The objective is to give the student a better understanding of what is required to justify, budget, plan and carry out technological projects in industry today. The student will also understand how management decisions are influenced by financial analysis when making budgetary project plans.

3 credits, Letter graded (A, A-, B+, etc.)

EMP 504: Quantitative Methods in Management
This course is a rapid introduction to the application of modern mathematical concepts and techniques in management science. Algebraic operations, mathematical functions and their graphical representation, and model formulation are reviewed. Topics covered include the following: algebraic and graphic methods of linear programming; PERT, CPM, cost controls, Enterprise Resource Planning (ERP), lead-time, inventory, just-in-time systems, quality control and other network models for product goods or services as well as facility location and plant layout analysis, and project management. Simple management-oriented examples are used to introduce mathematical formulations and extensions to more general problems. The Value Chain approach will be fully investigated and analyzed thru the: design, forecasting, supply chain, production and quality control stages. This is the process of creating company equity by transforming ideas and materials into true value-added, goods and services for stakeholders. Computer laboratories may be used to give students experience with PC software packages that solve problems in all course topics. The interpretation of computer outputs is also stressed.

3 credits, Letter graded (A, A-, B+, etc.)

EMP 507: Research and Special Topics in Global Industrial Management
An individual study course for students investigating special topics relating to global industrial management.

1-3 credits, Letter graded (A, A-, B+, etc.)
May be repeated 1 times FOR credit.

EMP 509: Enterprise Information and Knowledge Systems Management
This course covers the different types of enterprise systems, how they are used to manage an organization's processes, re-engineering the business with enterprise systems, and the relationship among technology, organization, and management. Knowledge-based and web-based features in modern enterprise systems will be emphasized. Database Management, Security, Control, Ethical, and Social issues of enterprise systems will be discussed.

Spring, 3 credits, Letter graded (A, A-, B+, etc.)

EMP 511: Starting a Business Venture
This course covers the necessities of beginning a business from turning a concept into a new venture and developing a business plan for a venture. Topics include how to identify and evaluate the product and its market potential; management and organization issues; production and channels of distribution; and how to present a plan to the financial community. Specific case studies and guest speakers are utilized.

Summer, 3 credits, Letter graded (A, A-, B+, etc.)

EMP 517: Quality and Value Management
Management's approach to quality has changed radically; this course explains why and how.

It covers methods used by both manufacturing and service organizations to achieve high quality: how each organizational function is involved in quality; how improving quality can reduce costs; importance of communication; importance of involving all employees; need to measure quality; and introduction to statistical quality control and how it is used.

3 credits, Letter graded (A, A-, B+, etc.)

EMP 518: Project Management
This is a course in project management. The objective is to give the student a fundamental understanding of what is required to plan organize and carry out projects in industry today. The student will also understand how management decisions are influenced by project and financial analysis when making project plans.

3 credits, Letter graded (A, A-, B+, etc.)

EMP 521: Developing New Products
This course covers how to manage enterprise innovation, corporate innovation cultures, ideation and creative thinking, product design and development processes and phases, issues in product design, collaboration between R&D and operations/marketing. Also, this class will focus on how to use forecasting to ensure the successful launch of a technology product. Case studies will be discussed.

3 credits, Letter graded (A, A-, B+, etc.)

EMP 522: Strategic Marketing: Planning and Process
This course will examine the vital role that strategic marketing and planning plays in all businesses, as well as non-profit and government organizations. Marketing's role in our economy, society and the appropriate marketing target and mix of media will also be presented. The various careers which exist in marketing and the structure of marketing plans and departments are studied. The class will create a marketing plan based on real products and present it.

3 credits, Letter graded (A, A-, B+, etc.)
EMP 523: International Business and Management
This course covers the world's marketplace, international environment, managing international business, and managing international business operations. Additional topics include cultural issues in a global marketplace, the impact of law and legal differences in the world marketplace compared to the U.S., and addressing competitive issues related to items such as a need for local contact.
3 credits, Letter graded (A, A-, B+, etc.)

EMP 524: Modern Transportation Systems and Logistics
The integration of the activities that procure materials and services, transform them into intermediate goods and final products, and deliver them to the customers in a global environment. This course covers all the logistical, ethics, and outsourcing issues in strategic and global ways.
3 credits, Letter graded (A, A-, B+, etc.)

EMP 525: Technology Assessment for Emerging Technologies
This course will address the technology assessment for emerging technology through four basic components of technology assessment: scope, technology, impact, and policy. Emerging technology will cover information technology, energy, and medical technology.
Offered Summer, 3 credits, Letter graded (A, A-, B+, etc.)
May be repeated for credit.

EMP 530: Intro of Big Data & Data Science for Technological Management
This course is an introduction to big data techniques, its applications and its challenges. We will analyze customer relationship management processes using software management tools such as DFD and UML and Lean & Six Sigma management to improve applications or services in a cloud computing environment. Data modeling, mining and visualization tools will be introduced for developing business intelligence, predictive analytics and decision support applications. Technologies in related areas such as data warehousing, data sharing, data security, networking, and operating systems will also be included to support big data applications in cloud computing environments.
3 credits, Letter graded (A, A-, B+, etc.)

EMP 531: Data Mining for Technological Management
Data mining can be used to extract meaningful and actionable information from large data sets and then used for business intelligence, predictive analytics and decision support. Supervised and unsupervised machine learning techniques, such as linear regression, classification, decision trees, support vector machines, and clustering, will be discussed. These techniques and associated tools will be introduced in the context of customer relationship management (CRM), supply chain management (SCM), and global operations management applications. Semesters Offered: Fall, Spring, 3 credits, Letter graded (A, A-, B+, etc.)

EMP 532: Big Data Systems for Technology Management
Over the past two decades, the amount of data that is generated has grown exponentially and there is an increasing need to analyze all this data. This class will introduce students to the statistical software R, data analysis, text mining, and big data analyses.
3 credits, Letter graded (A, A-, B+, etc.)

EMP 572: Special Topics
This multidisciplinary course provides a comprehensive overview of emerging topics in society from both policy and technology point of view. Topics include energy, smart city, big data, disaster, bio-medical, and security. The goal of the course is to assist students to gain insights into different special topics to solve challenging problems and discover new ones.
Offered Spring & Fall
3 credits, Letter graded (A, A-, B+, etc.)