EMP

Engineering Management

EMP 501: Behavioral and Organizational Aspects of Management
This course provides an understanding of the management process by analyzing organizational behavior. Topics include behavior in two-person situations, factors influencing attitudes and changes in organizational behavior, group influence on behavior, formal and informal organizational structures, conflict and conflict resolutions, and the dynamics of planned change.

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

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 503: Legal and Regulatory Aspects of Management
A survey of business and regulatory law. Topics include contracts, sales, warranties, and business partnerships and corporations. An overview is provided of high technology topics such as computer law, product liability, patent, trademark, copyright, and environmental law and their impact on business.

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

EMP 504: Quantitative Methods
This course will lay the foundation for an understanding of basic quantitative methods for solving business questions. A working knowledge of these quantitative methods can help managers optimize true value-added for company stakeholders. In this course we will explore probability theory, decision science and linear programming among other basic mathematical principles as a way of quantifying the decision-making process, but will not forget the basics of good management. We will also discuss several quantitative methods for analyzing and controlling cost, lead time, and quality of the goods or services being produced.

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

EMP 506: Strategic Technology Analysis
This course will lay the foundation for an understanding of Operations Management principles for Engineers. Operations Management is the art of transforming ideas and materials into true value-added for company stakeholders. In this course we will explore the entire value chain from design to forecasting to supply chain management, production and quality control. We will look at the latest trends in global Operations theory, but will not forget the basics of good management. We will use several case studies to get real-world experience and emphasize situational learning. We will also discuss several quantitative methods for analyzing and controlling cost, lead time, and quality of the goods or services being produced.

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
Modern management's approach to quality has changed radically in the last 20 years; 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.

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

EMP 518: Technology Projects
This course will lay the foundation for an understanding of project management principles for Engineers. We will delve into conflict resolution and time management and spend a good deal of time talking about the importance of management support in engineering companies. Quantitative approaches to planning, time, cost and performance will be compared and contrasted and critical trade-offs will be explored. Other topics will include planning, organizing, and controlling resources; monitoring progress toward objectives; identifying and managing risks; communicating effectively; setting priorities; and writing engineering proposals. The systems approach will be emphasized. Finally, we will identify future trends and take a look at various case studies that will sharpen our problem-solving skills for when we undergo a "live" engineering project.

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 sharpen our problem-solving skills for when we undergo a "live" engineering project. 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.)

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 Technological Management
The infrastructure requirements and challenges of big data systems to support large-scale technology management applications will be discussed. Advanced topics in big data infrastructure such as data center operations, network and system security, data management and integration will be covered. Cloud computing platforms such as IaaS, SaaS, and PaaS will also be included. Other topics including advanced data mining and visualization techniques as they relate to customer relationship management (CRM), supply chain management (SCM), and global operations management applications will also be discussed. Semesters Offered: Fall, Summer, 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.)