PSUT-UA Master of Engineering Management Program Course Description

26723: Mathematical Decision Making

Units: 3

The advances in technology and business are achieved by applying technical knowledge from statistics, computing science, finance, economics, management and mathematics. The mathematical decision making course curriculum will emphasize on optimization, decisions and constraints, linear programming, simple and multiple regression, sensitivity analysis, randomness, probability and expectation, Bayesian analysis, Markov models, Mote Carlo simulation and stochastic optimization and risk.

26724: Law for Engineers and Scientists

Units: 3

Topics covered in this course include patents, trade secrets, trademarks, copyrights, product liability contracts, business entities, employment relations and other legal matters important to engineers and scientists. Graduate-level requirements include an in-depth research paper on a current topic.

26725: Engineering Decision-Making under Uncertainty

Units: 3

Application of principles of probability and statistics to the design and control of engineering systems in a random or uncertain environment. Emphasis is placed on Bayesian decision analysis. Graduate-level requirements include a semester research project.

26754: Technical Sales and Marketing

Units: 3

Principles of the engineering sales process in technology-oriented enterprises; selling strategy, needs analysis, proposals, technical communications, electronic media, time management and ethics; practical application of concepts through study of real-world examples. Graduate-level requirements include a term paper on a course topic selected from a short list of topics, other graded components of the course and creation of a PowerPoint presentation to the class.

26755: Project Management

Units: 3

Processes and tools used to plan and control large scale projects. Topics include organizational design alternatives, formation and management of teams, construction and control of project schedules, risk assessment, and issues specific to global ventures and software development.

26756: Supply Chain Management

Units: 3

The course will provide students with a wealth of knowledge in the various areas of business analysis and business management. The course covers all areas of supply chain starting from handling suppliers to manufacturing, warehousing and retailing. Various aspects of procurement management and decision making in the supply chain is discussed.

During this course, student will study the concept of Supply Chain Management, understand its impact on enterprise efficiency, and understand various business functions, processes and supply chain terminology, master concepts and mathematical models behind various supply chain software packages, and clearly link supply chain management and logistics.

In addition, students will understand the various activities of logistics, understand all aspects of distribution management, understand the various activities of warehousing and inventory management, appreciate the importance of coordination between various supply chain entities, understand the best methods of sourcing and supplier selection, realize the various decision making strategies in supply chains, understand the bullwhip phenomenon and how to deal with it.

26757: Financial Modeling for Innovation

Units: 3

Strategic, tactical and operational planning; innovation and technological cycles; the elements of entrepreneurship, and human relations topics for technical managers. Graduate-level requirement includes two term papers.

26790: Advanced Topics in Engineering Management

Units: 3

This course covers the advanced topics in the Engineering Management field, and vary from course to another.

26797: Comprehensive Exam

Units: 0

13742: Enterprise Systems Architecture

Units: 3

This course intends to frame the student with the actual situation of Enterprise information systems development and integration. In this course, the student will learn how to cover the need of developing solutions that efficiently integrated with existent ones (legacy) and at the same time leverage the new business paradigm rules: flexibility to multimodal support, agility to easily adapt and react to continuous requirements changes and interoperable with different solutions. Cloud-based Multi-Enterprise Information Systems scenarios will be considered.

13743: Cloud Computing & Big Data

The course will introduce students to two major technologies: cloud computing and big data. The first part of the class will introduce the benefits of cloud computing as well as the challenges associated with it. The course will introduce different models of services that are common in cloud computing, namely: Infrastructure as a Service (IaaS), Platform as a Service (PaaS), and Software as a Service (SaaS). The class will discuss the types of clouds and benefits of each one as well as its cost model. The course includes studying current commercial offerings from major providers of cloud computing solutions like Amazon, Google, Microsoft and others. The second part of the course - Big data - will explain the challenges with analyzing the huge amounts of data being generated by worldwide social media and web applications. The course will adopt a map reduce framework (ex: Hadoop) to demonstrate the analysis of big data.

13746: Testing / Quality Management

Units: 3

This course concentrates on the rigorous development of high quality software systems. Topics covered in this course include software process, software verification and validation (testing, inspection), software metrics, and software maintenance. Students will be equipped with necessary processes, methods and techniques for developing quality software, for assessing software quality, and for maintaining the quality of software.

Students will be familiar with software testing at the unit, module, subsystem and system levels, automatic and manual techniques for generating and validating test data, and the testing process, static vs. dynamic analysis, functional testing, inspections and reliability assessment. Trade-offs between software cost, schedule, time, and quality, integration of quality into the software development process as well as the principles of test planning and test execution.

26758 :People Leadership/Human Resources Management

Units: 3

The course will equip students with the necessary knowledge, tools and techniques for leading people towards organizational and individual success. The novelty in this course is considering positive psychology a cornerstone towards development of people leadership skills. The course revolves around three main skill sets which are personal skills, interpersonal skills and group skills. Each group of skills include specific skills that proved to be most required in the current labor market such as the ability to solve problems analytically and creatively, communication skills, motivating others, building high performing teams and teamwork and leading positive change. Moreover, the course is designed to help in filling in main leadership skills gap discovered by different survives conducted and funded by Tempus. These survives have been submitted to different sizes and types of enterprises in Egypt, Tunis and Jordan.

The main focus is on promoting effective people management practices and addressing current management challenge. This will be achieved pragmatically rather than theoretically. Therefore, active learning is the fundamental mechanism through which this course is delivered. Participants are expected to be engaged in activities and higher order thinking (analysis, synthesis and evaluation) since more emphasis is placed on skill development rather than information transmission.

33762: Strategic Management of Entrepreneurial Organizations

Units: 3

Strategy development and implementation are examined as a means to guide decisions at each stage of the innovation and commercialization process. Insight is gained into the strategic issues faced by new ventures as they progress from seed / concept through market execution stages. Strategic analysis techniques are used to identify and analyze issues and as input into the design of the business concept and business model. The organizational structures, processes and policies used to build and maintain an entrepreneurial culture are key topics for the market execution stage.

33772: New Product Development

Units: 3

This course will focus on the elements that involved in creating and selling a successful new product in a complex environment, including internal organizational and external environmental influences. Also this course contains the nature and duties of the new product management, the identification of a new product, the characteristics of new products, the steps of planning for new product including :goals, strategies & marketing programs, the concept of new product adoption, management of product life cycle.

33773: Management of Innovation

Units: 3

Management of technological innovation requires an understanding of the interaction of technology with all aspects of the organization to build and maintain a sustainable, competitive advantage. The focus of this course is the creation of new products and services from concept through to launch. Evaluating new technologies, product development and deployment strategies are key topics.