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

This course presents the foundations of decision analysis contextualized for engineering work. Students will learn to frame and model engineering problems as decisions that traverse physics by incorporating firm's objectives and the personal preferences of the engineer. In addition, the course will present formal and informal limitations of decision methods traditionally used in engineering, such as rank matrices, and will provide students with alternative theories and methods that foster better decisions. Finally, the course will present the notion of risk assessment and management as inherent to engineering decision making, instead of as an independent engineering process.

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.

26755: Project Management

Units: 3

The purpose of this course is to introduce selected topics, issues, problems, and techniques in the area of project management. Project management is implemented in most areas of business today; it is usually an assignment that provides essential exposure to decision-makers within a company. This course examines project management roles and environments, the project life cycle, and various techniques of work planning, control, and evaluation for project success.

Upon completion of the course, the students should be familiar with the tools and processes of project management (the how-to of a project), as well as typical issues and problems encountered during real-world implementation. After course completion the student should be able to address the issues that are important in effectively managing projects.

26756: Supply Chain Management

Units: 3

This course introduces students to the principles and practices of supply chain management and analytics, emphasizing data-driven decision-making to optimize supply chain performance. Topics include customer and supplier management, demand forecasting, inventory and warehouse management, and transportation and logistics. Students will learn to apply Python and essential python libraries to analyze and solve real-world supply chain problems. The course combines

theoretical insights with practical applications, equipping students with the skills necessary for managing complex supply chains in a globalized environment.

26757: Financial Modeling for Innovation

Units: 3

This is a graduate level course on economic analysis of technology/business development for commercialization. Topics include Pro Forma financial statements, time value of money, valuation approaches, and entrepreneurship.

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. From nowadays and future context emerge the need to develop solutions efficiently integrated with existent ones (legacy) and competitive against 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

In this course, you will learn how to develop or improve the quality programs at your workplace. You will use systems thinking to plan quality into your project, prioritize requirements to meet customers' quality needs, select quality assurance and quality control activities that are tailor-fit to your project, and use quality management processes, tools, and metrics to increase the likelihood of project success. You will use a Quality Management Plan to document and structure a thoughtful approach to project quality management. You will gain insight into applying quality planning, quality assurance, and quality control to real-world projects.

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

This course aims examined strategy development and implementation as a mean 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 aims to define the concept of a new venture, its attributes, the extent to which the product matches the organization's production capabilities, the phases of developing and preparing the product and the elements related to developing and selling the new successful product in the complicated environment. It also focuses on introducing the importance of providing new products and the internal and external forces affecting the organization in addition to strategies of evaluating new products.

33773: Management of Innovation

Units: 3

This course addresses selected challenges and opportunities related to managing innovation. We will move from an overview of the role of creativity and innovation to the managerial strategies and tactics for fostering innovation in organizations.