



**CYPRUS INTERNATIONAL UNIVERSITY**

INSTITUTE OF GRADUATE STUDIES AND RESEARCH

**ENGINEERING MANAGEMENT MASTER PROGRAM**

Engineering Management Master: Non - Thesis Option

<b>Course Code</b>	<b>Course Name</b>	<b>Credit</b>
EMN 580	Term Project	Non-Credit
EMN 501	Production Planning and Scheduling	Non-Credit
EMN 502	Total Quality Management	(3,0) 3
EMN XXX	Elective Course	(3,0) 3
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**Course Definitions**

**EMN 580 Term Project (Non-credit)**

This is a Non-credit course. Each student will be assigned a supervisor. With the guidance and approval of his/her supervisor, a student has flexibility in concentrating on a particular interest/research area for his/her term project.

**EMN 501 Production Planning and Scheduling (3,0) 3**

Analysis of some specific problem areas within the context of planning and scheduling of production activities. Definition, formulation and available solution procedures for aggregate planning, lot sizing. Scheduling in manufacturing systems, scheduling in service systems, design and operation of scheduling systems.

**EMN 502 Total Quality Management (3,0) 3**

Total quality concept. Total quality management decision. Customer focus. Quality organization. Team formation and problem solving. Policy deployment. Quality through planning. Design and control. Quality standards and award models. Real life applications and cases.

## **Elective Courses**

### **EMN 503 Project Scheduling (3,0) 3**

Principles of project management. Representation of project operations: project breakdown, network representation and terminology, network data. Network planning with respect to costs and durations: critical path analysis, linear time cost trade-off analysis. Resource-constrained network planning, resource scheduling, resource leveling. Financial planning and cost control in project systems. Project scheduling with probabilistic networks.

### **EMN 508 Logistic Systems Engineering (3,0) 3**

Physical distribution, after-sale services (product repair and maintenance), procurement, logistic performance and cost control, and logistic concepts of product systems design. Overview of material handling. Packaging facilities repair and maintenance and automation in logistics.

### **EMN 509 Quality Engineering (3,0) 3**

Introduction to Quality Engineering. Parameter design by Taguchi design of experiment, Taguchi's Loss Function. Tolerance design and tolerancing. Online feedback quality control. Online process parameter control.

### **EMN 510 Strategic Planning (3,0) 3**

Methods and techniques of strategic management, that is, formulation, implementation and evaluation of actions that enable an organization to achieve its mission and objectives. Strategic Choice and Decision Making, Strategy Implementation Process Structure and Planning Style, Strategy Review, Evaluation and Control.

### **EMN 511 Qualitative Methods for Engineers (3,0) 3**

Qualitative research methods serving as means to better understand and change a complex social phenomenon. Models employed in applied fields for gaining a better understanding of human interactions among others, qualitative interviewing and observation, Delphi technique, Balanced Scorecard and System Dynamics. Through systematic means the students will gather information about actions and interactions, reflect on their meaning, arrive at and evaluate conclusions, and eventually put forward an interpretation.

### **EMN 512 Closed-Loop Supply Chains (3,0) 3**

Introduction to closed-loop supply chains and classification of closed-loop supply chains. Strategic drivers for take-back, product and part recovery. Forecasting product returns. Closed-loop supply chain network structures and design. Production/inventory planning models for part/product recovery: stationary and non-stationary deterministic demand, and uncertain demand. Reverse MRP models. Disassembly scheduling and sequencing problems. Some modeling and solution methods for these problems encountered in the design and operations of closed-loop supply chains.

### **EMN 513 Advanced Topics in Facilities Layout and Location (3,0) 3**

Formal and heuristic techniques of layout and location analysis, philosophical aspects of facilities planning in general. Special topics such as design of non-manufacturing facilities and warehouse automation.

### **EMN 514 Production and Inventory Theory (3,0) 3**

Structure of production-inventory systems. Deterministic and stochastic ordering decision models in continuous and periodic review systems. Coordinated replenishment of multiple items.

### **EMN 515 Computer Aided Data Analysis (3,0) 3**

Following a general introduction, the qualitative and quantitative data, their systems of collection and analysis are given to the students. Regression and correlation analysis concepts. Case studies and solutions by using relevant software such as SPSS. Quality control concepts with respect to data analysis.

### **EMN 516 Research Techniques in Human Engineering (3,0) 3**

Laboratory and field research techniques in industry. Practical applications, instrumental methods and the general principles of project development. Classroom discussions, term projects and library research.

### **EMN 517 Operations Research Techniques (3,0) 3**

Introduce students to developed techniques, methodologies and models used in Operations Research (OR). Operations Research (or Management Science) is a field of Applied Mathematics that uses mathematical methods and computers to make rational decisions in solving a variety of optimization problems. Most OR techniques require the use of computer software to solve large, complex problems in industry, business, science and technology, management, decision support and other areas and disciplines. In this course Deterministic

Problems are considered – the data and future outcomes are known with certainty. Optimization of the solution is the primary goal. Matlab and Excel are used for representing and solving the problems.

**EMN 518 Technology & Innovation Management (3,0) 3**

Introduces students to the various 'systems' concepts at the centre of contemporary analysis of technological change and innovation: technological systems, and cluster, sectoral, regional, national and international systems. It identifies differing perspectives on the core actors and structural configurations of these systems. It also examines the processes underlying knowledge accumulation and innovative activity. It reviews the historical and contemporary emergence of innovation systems, as well as their structures in differing contexts. This sets the framework for exploring the nature and role of public policy within innovation systems, and the ways in which it may influence the technological and innovative activities of business firms and other organisations.

**EMN 519 Financial Engineering and Management (3,0) 3**

Financial engineering is the application of engineering methods to financial economics. It helps to design and analyze financial contracts, to solve problems and exploit opportunities. The course studies cases of non-financial firms using financial engineering – especially derivatives and risk management techniques – to advance strategic goals. The course enables students to establish capabilities in banker designing, pricing and trading securities for the entire stakeholders. The basic derivatives and the financial risk management issues will both be considered.

**EMN 520 Advanced Engineering Economy (3,0) 3**

This course provides the skills and techniques need for solving some typical problems faced in making engineering decisions in industry and government. The focus is on analytic schemes and systematic methodologies for making decisions with explicit consideration of the economic aspects. Topics include the time value of money, selection of alternatives, scheduling, and inventory analysis and decision-making under uncertainty. Several test cases are covered.

**EMN 524 Supply Chain Management (3,0) 3**

This course provides an insight to the supply chain concept and explores the management of supply chains to improve an organization's overall supply efficiency. Other concepts included are the definitions of supply chains, identification procedures, an overview of methods, processes, and systems that are used in the operation of supply chains, and the applications of methods, processes, and systems to improve supply chain performance.

**EMN525 Research Methods (3,0) 3**

Scientific thinking skills and methods of research. Using library and online archives. Experimental design, presenting quantitative data. Scientific communication. Research proposal, report and thesis writing. Conference presentation. Time management, ethical issues, plagiarism. Working in a group and networking.

**EMN 560 Engineering Ethics (3,0) 3**

One of the conditions rendering a specific field of activity into a profession is the rules and regulations related to ethics. In this respect, engineering disciplines also possess unique professional rules of ethics; which are in fact inseparable from the general business ethics. Within the scope of the course and with the help of examples from different sectors, ethic topics, regulations and behaviours are forward.