Faculty of Engineering
Department of Mechanical and Manufacturing Engineering
www.eng.upm.edu.my
Master Of Engineering Management
INTRODUCTION

Engineering Management is concerned with the design, improvement, and implementation of integrated systems of people, material, information, equipment, and energy. It draws upon specialized knowledge and skills in the mathematical, physical, and social sciences together with the principles and methods of engineering analysis and design to specify, predict, and evaluate the results obtained from such systems.

PROGRAMME REQUIREMENTS

Credit Requirements for Graduation

Students enrolling under this programme must fulfill 49 credits of course work to graduate. The credit distributions for compulsory courses, elective courses, project and independent study are as follows:

<table>
<thead>
<tr>
<th>Type</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compulsory Courses</td>
<td>24</td>
</tr>
<tr>
<td>Elective Course</td>
<td>9</td>
</tr>
<tr>
<td>Project</td>
<td>6</td>
</tr>
<tr>
<td>Independent Study</td>
<td>1</td>
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Compulsory Courses

Students must take all the listed compulsory courses:

- EMM5602 Total Quality Management 3 credits
- EMM5604 Industrial Marketing Management 3 credits
- EMM5606 Manufacturing Operation Management 3 credits
- EMM5608 Industrial Organization Management 3 credits
- EMM5612 Business Accounting 3 credits
- EMM5616 Industrial Safety, Health and Environment Management 3 credits
- EMM5618 Manufacturing Project Management 3 credits
- EMM5622 Risk Analysis in Engineering 3 credits

Elective Courses

Students must take three elective courses out of the listed courses:

- EMM5502 Finite Element in Computer Aided Engineering 3 credits
- EMM5504 Engineering Product Design and Innovation 3 credits
- EMM5506 Reverse Engineering and Rapid Prototyping 3 credits
- EMM5614 Maintenance Management Systems 3 credits
- EMM5620 Value Engineering 3 credits
- EMM5624 Supply Chain Management 3 credits
- EMM5626 Technology Management 3 credits
- EMM5602 Advanced Manufacturing Technology and Process 3 credits
- EMM5704 Computer Application in Manufacturing System 3 credits
- EMM5706 Design Of Manufacturing Systems 3 credits
- EMM5708 Automation and Robotics 3 credits
- EMM5710 Industrial Ergonomics 3 credits
- EMM5712 System Optimisation 3 credits
- EMM5714 Facilities Layout 3 credits
- EMM5716 Computer Aided Design and Manufacture 3 credits

Identification on the elective courses for the student will be made by the program coordinator.

Project And Independent Study

Project

Students are recommended to register for EMM5989-Project for 3 credits in the second semester and another 3 credits in the third semester. Students will be assessed by a panel of examiners based on the submitted report and oral presentation at the end of the project duration.

Independent Study

Every student is required to carry out a guided independent study EMM5977. The topic is chosen from one of the following areas:

- Computer Integrated manufacturing
- Computer aided engineering
- Manufacturing systems
- Automation and robotics
- Production management
- Computer control
- CAD/CAM
- Quality management
- Organization management
- Material technology
- Ergonomics
- Or any title deemed appropriate by the program.
Course Synopsis

- EMM5502 Finite Element in Computer Aided Engineering (3 credits)
  This course will cover the introduction, CAD software, an overview of finite element method, finite element method applied to elastic stress analysis, finite element solutions for Eigen problems, finite element applied to elastoplastic-cracking problems, finite element method as applied to fluid mechanics problems, programming of finite element method, and computer aided process planning project.

- EMM5504 Engineering Product Design and Innovation (3 credits)
  This course covers engineering design process, total design, design information, creativity in design, procedure-based design tools, computer-based design tools, and concurrent engineering.

- EMM5506 Reverse Engineering and Rapid Prototyping (3 credits)
  This course covers introduction, reverse engineering technology, rapid prototyping technology, rapid prototyping interface data, rapid prototyping application, rapid tools and rapid production.

- EMM5602 Total Quality Management (3 credits)
  This course covers quality management, total quality, customer focus, continuous improvement, techniques of TQM, some factors for consideration in total quality implementation, quality standards, and case studies.

- EMM6004 Industrial Marketing Management (3 credits)
  This course provides an understanding of the concepts and theories of marketing management. The topics include marketing concepts in modern business environment, consumer behaviour and purchasing decisions, market strategies pertaining to marketing mix such as product and pricing strategies, and promotional and distribution policies. Strategic marketing planning, information and control of marketing program will also be discussed. In addition, the course will assess the major techniques in gathering information that determines the marketing objectives and policies of the companies.

- EMM6006 Manufacturing Operations Management (3 credits)
  This course will cover the aspects of industrial operations management, product planning, forecasting, master production scheduling, materials requirement planning, capacity planning, loading and scheduling, inventory control, use of computers in production management, planning and control, and quality control.

- EMM6008 Industrial Organisation Management (3 credits)
  This course will discuss the different aspects of management and effects of environmental forces with emphasis on the responsibility of the manager to plan, organize, lead, and control and implement organizational changes.

- EMM6112 Business Accounting (3 credits)
  This course covers the topics which will include financial reporting, accounting principles, concepts and conventions, the accounting equations, the accounting cycle, accounting information and internal control, cash flow statement, financial statement analysis, accounting assets and liabilities, management accounting, and planning and decision making.

- EMM6114 Maintenance Management System (3 credits)
  This course will cover the maintenance management system, which includes the nature and types of failure and maintenance, the implementation of planned maintenance system taking into consideration various factors such as plant and machine spaces, inventory, and work plan etc. It will also emphasize on the importance of condition maintenance, reliability and maintainability, its implications and the role and methods in maintenance system auditing in the industry.

- EMM6118 Industrial Safety, Health and Environmental Management (3 credits)
  This course will discuss on environmental, safety and health management, which includes the recognition and control of hazards in the workplace and the human variables involved in causing and preventing accidents. It will also discuss on the various laws, regulations and standards as they apply to workplace safety and health and relevant issues in promoting safety and health in the organization.

- EMM6118 Manufacturing Project Management (3 credits)
  This course will cover the aspects of project management in a manufacturing environment, which includes elements of project management and PERT/CPM techniques. It will also equip the students with resource management, forecasting techniques in inventory management, learning curves analysis and its effects on productivity and quality. Manufacturing economic analysis, data analysis and management and expert system for production scheduling are also included.

- EMM6220 Value Engineering (3 credits)
  This course covers background and significance of value engineering (VE), the principles of VE, the meaning and analysis of functions, the role of management in VE, VE techniques, value and decision, scheduling of VE activity, organization and staffing for VE and VE at work.

- EMM6222 Risk Analysis in Engineering (3 credits)
  This course covers background and significance of knowledge and ignorance, risk analysis methods, system definition and structure, reliability assessment, failure consequences and severity, engineering economics and finance, risk control methods, data for risk studies.

- EMM6224 Supply Chain Management (3 credits)
  This course covers the introduction to SCM, Logistical Network Configuration, Inventory Management & Risk Pooling, The value information, Supply Chain Integration: Implications of demand and supply uncertainty, Strategic Alliance in Procurement and Outsourcing Strategies, Coordinated Product and Supply Chain Design, Customer value and Supply Chain management, Information Technology for SCM, Decision Support Systems for SCM and International Issues in Supply Chain Management.

- EMM6226 Technology Management (3 credits)
  This course covers the Introduction, Development of new technologies, making money from new technologies, new product introduction, planning for the future, technology management in application.

- EMM6702 Advanced Manufacturing Technology and Processes (3 credits)
  This course will cover product specification and overall manufacturing requirement, selection of materials, factor in manufacturing process selection, metal based manufacturing method, polymer based manufacturing method, manufacturing processes, and manufacturing of semi-conductor component and case studies.

- EMM6704 Computer Applications in Manufacturing Systems (3 credits)
  This course covers computer hardware, computer software, computer communication and networks, computer control of manufacturing processes, and artificial intelligence (AI) expert systems applications in manufacturing.

- EMM6706 Design of Manufacturing Systems (3 credits)
  This course will cover the role of manufacturing industries in the Malaysian economy, manufacturing strategies, manufacturing system, systems layout, material handling, system design, system modelling, flexible manufacturing and assembly systems, quality management, implementation of effective manufacturing systems, application case studies, and field work.

- EMM6708 Automation and Robotics (3 credits)
  This course covers and emphasizes on automation, automated materials handling system and storage, robot technology and applications, robot motion and vision, robot programming, robot applications and implementing robotics in manufacturing.

- EMM710 Industrial Ergonomics (3 credits)
  This course will discuss and emphasize on the application of ergonomic principles in designing man-machine systems. It will cover topics on ergonomics and human behaviour, biomechanics and physiology of work, anthropometry, workplace and workspace design, work methods, manual material handling and environmental ergonomics.

- EMM712 System Optimisation (3 credits)
  This course provides an in-depth study of operation research system parameters, linear programming, non-linear programming, computer evolution, designing evolutionary algorithms, and multi-objective optimisation for various engineering applications.

- EMM714 Facilities Layout (3 credits)
  This course covers planning and design of facilities layout. Flow analysis technique and activity relationship analysis are also included. Conventional and computer techniques are applied in designing facilities layout.

- EMM716 Computer Aided Design and Manufacture (3 credits)
  This course covers computer aided design and manufacture of products. It includes CAD/CAM system introduction, computer graphic design, CAD database, CAD and CAM integration, manual programming and operations of computer-aided manufacture.

For more information

Please contact:

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Programme Coordinator:

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ADMISSION REQUIREMENTS

An applicant with a bachelor degree in engineering with CGPA 2.500/55%/Second Class Lower and at least three (3) years working experience experiences in relevant field; or
An applicant with a bachelor degree in engineering with CGPA 2.750/60%/Second Class Lower
An applicant with a bachelor degree in science with CGPA 3.000/65%/Second Class Upper OR CGPA 2.750/60%/ Second Class Lower and at least three (3) years working experience experiences in relevant field

* Please refer to programme coordinator for more information on admission requirements

FEES

<table>
<thead>
<tr>
<th>Fees</th>
<th>Master without thesis</th>
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<tbody>
<tr>
<td></td>
<td>Malaysian Student</td>
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<tr>
<td>Basic Fees (1st semester)</td>
<td>1,200.00</td>
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<tr>
<td>Basic Fees (2nd and subsequent semester)</td>
<td>950.00</td>
</tr>
<tr>
<td>Credit Fees</td>
<td>250.00 / credit hour</td>
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<td>*subject to change</td>
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Language Requirement

- A Malaysian candidate must have obtained at least a credit in English at Sijil Pelajaran Malaysia level or have passed English courses conducted at the Diploma or Bachelor's Level.

- All international candidates from countries where English is not a medium of instruction must have obtained a minimum score of 550 for TOEFL or Band 6 for IELTS. This requirement is not applicable to candidates applying for admission into the Malay Language Studies.

- A candidate without the requisite minimum score for TOEFL or IELTS may be granted a provisional admission. Such candidate will be required to pass an English Placement Test conducted by the University.

- A candidate who has failed the English Placement Test will be required in the first semester to pass a prescribed English course. Should the candidate fail to obtain the prescribed minimum grade, the University may allow him to repeat the prescribed English course in the second semester.

- A candidate who fails after the second attempt will have his candidature suspended until he passes the English course before being allowed to continue with his Masters programme.

Application For Admission

Please apply online via http://www.sgs.upm.edu.my and send your application supporting documents to the address below:

Dean
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Email : admission@putra.upm.edu.my
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