



How to Apply

Information on the procedures, regulations and application form can be obtained from the Student Recruitment & Admission Division (SRAD)

www.sps.utm.my/sps/admission.html

Tuition Fees

Student Category	Fees for Per Semester by Programme			
	Master (Taught Course) Local students		Master (Taught Course) International students	
	Full Time (RM)	Part Time (RM)	Full Time (RM)	Part Time (RM)
New Student (First Semester)	3,485.00	2,485.00	7,810.00	5,310.00
Continuing Student	2,935.00	1,935.00	7,260.00	4,760.00
Continuing Student (Semester III)	2,935.00	1,935.00	7,260.00	4,760.00
Continuing Student (Semester IV & beyond)	** (Any extra sem)	1,935.00	** (Any extra sem)	4,760.00
Total Tuition Fees (Normal Duration)	9,355.00	8,290.00	22,330.00	19,590.00

****Any extra semester will be charged according to University charges.**

Fees for an international applicant (is not include Personal Bond; VISA, Medical Check-up & Accommodation).

Facilities & Labs

- Structural Laboratory
- Noise & Vibration Laboratory
- Computational Solid Mechanics Laboratory
- Thermodynamics & Fluids Laboratory
- Water Tunnel

Benefit from our programme

- Kolej Kemahiran Tinggi Mara Balik Pulau
- Intel Penang
- SCHOTT Glass (M) Sdn Bhd
- German Malaysian Institute (GMI)
- Proton Holdings Berhad
- JCY International Berhad



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Master of Science

Industrial Engineering



innovative • entrepreneurial • global

Programme Objective

The aim of the Master of Science in Industrial Engineering programme is to provide an opportunity for applied scientists and engineers to pursue an in-depth study beyond the undergraduate level in the broadly based industrial engineering disciplines. After completing the study, the graduates should be able to apply the knowledge gained to solve problems and design systems related to industrial engineering in various situations and contexts, efficiently and effectively, thus enhancing the technological developments.

Programme Duration

For a full-time student, the completion of a master programme typically requires three semesters (1½ years). However, the programme may be completed in a minimum time of 1 year (2 normal and 1 short semesters). The maximum duration allowed for full-time students is 6 normal semesters (or 3 years) while part-time students are given a maximum of 8 normal semesters. The full time student is allowed to take a maximum of 20 credits in a normal semester and 10 credits in a short semester. The part time student is allowed to take a maximum of 12 credits in a normal semester and 6 credits in a short semester.

Admission Requirement

The normal requirement for admission to the programme is a four-year bachelor degree recognized by the university in either engineering or sciences with a minimum overall grade point average of 3.0 or equivalent. Students applying for admission with an overall grade point average of less than 3.0 but with relevant professional experiences may however be considered.

Graduation Requirement

Students must obtain a minimum grade of B- (60%) for each course and overall average grade of B (65%) to graduate. Students are also required to complete a minimum of 40 credits (18 credits of the core industrial engineering courses; 9 credits of the elective industrial engineering courses; 10 credits of the master project and 3 credits of the university compulsory course). For the award of Master of Science (Industrial Engineering), the students should achieve a total minimum of 40 credit hours with minimum CPA of 3.0, including the completion of Master Project.

Programme Description

Master of Science in Industrial Engineering programme makes up the core of the industrial engineering studies at the Faculty of Mechanical Engineering. Students pursuing specialization in a particular field shall take additional elective courses. The fundamental areas of study in Master of Science in Industrial Engineering are; (a) Operations Design and Management (example of courses: Lean manufacturing, Facilities Planning and Design, Project Management and Advanced Engineering Economy and Accounting), (b) Safety (example of courses: Engineering and Environmental Safety, and Safety Management), (c) Quality (example of courses: Quality Management, Industrial Measurement, Advanced Design of Experiment, and Reliability Engineering), and (d) other related fields (example of courses: Modeling and Simulation, Information Technology for Industrial Engineering, Approved courses in M.Sc. in AMT, and Special Topics).

Programme Structure :

Course	Credit
University Core (1 course only) UHAP 6013 Development & Global Issues UHAW 6023 Science Philosophy & Social Development (or other courses UXXX xxx3)	3
Industrial Engineering Core MKMI 1803 Production and Operations Management MKMI 1813 Supply Chain Management MKMI 1823 Human Factors Engineering MKMI 1833 Quality Engineering MKMI 1843 Operations Research MKMI 1903 Research Methodology	18
Electives (18 credits only) Operations Design and Management MKMI 2803 Lean Manufacturing MKMI 2813 Facilities Planning and Design MKMI 2823 Project Management MKMI 2833 Advanced Engineering Economy & Accounting Safety MKMI 2843 Engineering & Environmental Safety MKMI 2853 Safety Management Quality MKMI 2863 Quality Management MKMI 2873 Industrial Measurement MKMI 2883 Advanced Design of Experiment MKMI 2893 Reliability Engineering Others MKMI 3803 Modeling & Simulation MKMI 3813 Information Technology for Industrial Engineering MKMI 38x3 Special Topics (depend on current research areas) MKMP 37x3 Option (Approved subjects in M.Sc. Advanced Manufacturing Technology)	9
Master Projects MKMI 1914 Master Project 1 MKMI 2926 Master Project 2	10
Total Credits	40

*Elective courses are offered based on availability of academic staff and facilities

List of Academic Staff

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Course Description

CORE COURSES

MKMI 1803 – Production and Operations Management

Apply production and operations management concepts and issues from both strategic and operational perspectives. Analysis of strategic issues related to competitiveness in production and operations management, and application of tools to improve productivity in production and operations.

MKMI 1813 – Supply Chain Management

Supply chain design and management which covers supply chain drivers, supply chain strategy, roles of supply chain members and supply chain networks in order to satisfy end customers. This course also concerns about techniques for purchasing management, designing transportation networks, distribution issues, logistics management, integration issues and performance measurement.

MKMI 1823 – Human Factors Engineering

The course covers concepts and tools in human factors engineering for industrial application. Application and practice of ergonomics principles and methodology, solving industrial problems related to ergonomics. Information input and design, human physical work capacity, job design and task analysis.

MKMI 1833 – Quality Engineering

This course is about statistical methods in quality improvement. It encompasses various statistical process control problem-solving tools. For control charts, emphasis is given on additional control charts not covered previously at the undergraduate level. Advanced tools and techniques such as Gauge Reliability and Reproducibility (GR & R), and experimental design methodology are also covered.

MKMI 1843 – Operations Research

This course provides students with the concepts and tools to model manufacturing or service systems efficiently using mainly Operations Research techniques. It focuses on formulating models based on deterministic and stochastic Operations Research techniques, applying these techniques for decision making, developing solutions from the models, and conducting simulation studies.

ELECTIVE COURSES

MKMI 2803 – Lean Manufacturing

The course provides concepts related to lean manufacturing including kaizen system, Value Stream Mapping (VSM), Just in Time (JIT), Kanban, Single Minute Exchange of Die (SMED) technique and line balancing. Selection of lean techniques for problem solving and waste minimization program are also covered.

MKMI 2813 – Facilities Planning and Design

This course provides students with the concepts and issues related to selection of facilities locations, facilities layout planning and design at the macro and micro levels. It also introduces students to the planning and design of warehousing, material handling systems and it related equipment. It uses both, quantitative and qualitative approaches in the analyses, together with the application of several layout procedures, algorithms and computerized layout planning concepts within a typical manufacturing plant.

MKMI 2823 – Project Management

This course enhances students to the myriad and exacting skills and knowledge expected of engineers in order to manage high risk projects and produce high quality deliverables within the time and cost constraints of an organization. It covers the phases of the project life-cycle, management deliverables, project charters, scope, work breakdown structures, activity lists, duration estimates, CPM/PERT network diagrams and risk analysis. This subject also covers scheduling resources and costs, reducing project duration as well progress performance measurement and evaluation.

MKMI 2833 – Advanced Engineering Economy and Accounting

The course provides a broad managerial perspective on the strategic impact of financial and accounting activities to other activities of the firm. Evaluation of company's performance from financial statements, designing cost structures and determine costs of products or services for managerial use, Activity-Based Costing, time value of money, inflation, taxes, measures of worth of individual projects and alternatives, and methods for capital budgeting methods for long term projects.

MKMI 2843 – Engineering and Environmental Safety

The course provides concepts of engineering safety and environmental safety beside some knowledge in the safety management of engineering and environment. In engineering safety, the focus is on the safety of equipment commonly used in engineering installation and maintenance, safety of chemicals used in engineering processes, and implementation of safety engineering programs in engineering installations and plants. In environmental safety, it provides the principles and concepts of environmental safety elements, hazardous waste control, environmental impact assessment, impact and cause of global warning, green design and manufacturing, sustainable energy and design for environment. It also includes hazard identification, risk assessment and control, planning and implementing an effective safety program, and assessment of the effectiveness of safety program.

MKMI 2853 – Safety Management

This course provides students with the issues related to safety management industry, the principles in hazard identification, risk assessment & control, planning & implementing an effective safety program, and assessment of the effectiveness of safety program.

MKMI 2863 – Quality Management

The course covers the application of quality management concepts, principles, and philosophy. It also covers the Total Quality Management (TQM) in organization, and develops a strategy for the development of the TQM in an organization. It also applies the problem-solving processes and relevant tools for organizational improvement, and using the continuous improvement process for establishing a quality organization.

MKMI 2873 – Industrial Measurement

This course covers industrial measurement system for achieving quality in manufacturing and operations. It focuses on the concepts and principles on how to measure quality, selection and design of measurement systems, and interpretation of quality data. Related research issues are highlighted

MKMI 2883 – Advanced Design of Experiments

This course is an extension of quality engineering where it focuses on engineering design of experiment technique for process and quality improvement. Involves application of Factorial Design, 2-level Fractional Factorial design, Fold Over and Plackett-Burman and and design optimisation technique such as response surface methodology. Linear Regression and Taguchi Method for quality and process improvement will also be discussed.

MKMI 2893 – Reliability Engineering

The course applies relevant statistical tools to solve reliability engineering problems, and conducts statistical data analysis to estimate reliability of component and system. The course also applies related reliability engineering knowledge to improve product quality.

MKMI 3803 – Modeling and Simulation

This course provides students with the concepts and tools to model manufacturing or service systems efficiently using practical Simulation software. Topics under Discrete-Event Simulation that span from basic modeling concepts, types of discrete-event approaches, analysis of input data, goodness-of-fit tests, model verification and validation, to full model experimentation and analysis of outputs are covered.

MKMI 3813 – Information Technology for Industrial Engineering

The course covers Business System of project and Product Based, Information Security, Knowledge Management and Knowledge Management Infrastructure are the main contents. The course is supplemented with the real data mapping and development of real database information system. Students are guided through the real-life problem that requires to be assembled into real data for database design. Students are also guided to form a database information system using computer programme.