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

We provide excellent facilities for the undergraduate and postgraduate teachings. Most of these facilities are also developed and designed for postgraduate-level research activities.

- Production Laboratory
- Material Science Laboratory
- Machine Shop and Foundry
- Mechanics of Materials Laboratory
- Computer & IT Laboratory
- Metrology Laboratory
- Centre for Composites
- Materials/Metallurgy Laboratory
- Materials/Structure Laboratory

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UTM UNIVERSITI TEKNOLOGI MALAYSIA | Faculty of Mechanical Engineering

Master of Science

Materials Engineering

innovative • entrepreneurial • global

Programme Objective

The objectives of the Master of Science programme in Materials Engineering are to enhance participants with related knowledge and skills in Materials Engineering and to expose participants with application-based materials engineering problems. After completion of the programme, the participants should be well prepared for their professional task and responsibilities. Students are required to complete 40 credits inclusive of a Master Project.

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 required to complete a total of 40 credits. For the award of Master of Science (Materials 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

Materials Engineering programme offers a broad and diverse subject that focus on understanding, designing, and producing technology-enabling materials by analyzing the relationships among the synthesis and processing of materials, their properties, and their detailed structure. Throughout the period of study, students will be exposed to the Advanced Materials Engineering related courses covering testing, quality control and selection of materials, corrosion and materials degradation control, coating technology and surface modification, advanced and nanostructured materials and many more. The breadth of the materials engineering discipline allows students a variety of career options.

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
Programme Core MKMB 1603 Advanced Techniques of Materials Characterisation MKMB 1613 Processing and Fabrication of Materials MKMB 1623 Microstructure and Mechanical Properties of Materials MKMB 1903 Research Methodology	12
Programme Electives (5 courses only)* MKMB 2603 Materials Testing and Quality Control MKMB 2613 Corrosion I MKMB 2623 Foundry Engineering MKMB 2633 Advanced Materials MKMB 2643 Materials Selection MKMB 2653 Corrosion II MKMB 2663 Surface Engineering MKMB 2673 Nanomaterials MKMB 2683 Modelling in Materials Engineering MKMB 2003 Special Topic 1 (depend on current research areas, subjected to Faculty approval) MKMB 2013 Special Topic 2 (depend on current research areas, subjected to Faculty approval) MKxx xxx3 Option (any approved engineering course)	15
Master Projects MKMB 1914 Master Project 1 MKMB 2926 Master Project 2	10
Total Credits	40

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

List of Academic Staff

Esah bt Hamzah
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Jamaliah bt Hj Idris
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Tuty Asma bt Abu Bakar
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Dr. Uday M. Basheer Al-Naib
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Area of Expertise: Ceramic & Metal Composites, Thermoelectric Nano-Ceramic Materials, and Friction Welding.
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Course Description

CORE COURSES

MKMB 1603 – Advanced Techniques for Materials Characterisation
This course provides the students with an understanding of the basic principles of advanced techniques of materials characterisation which include X-Ray Diffraction, Electron Microscopy, qualitative and quantitative analysis of materials, thermal analysis.

MKMB 1613 – Processing and Fabrication Techniques
This course introduces various manufacturing and processing techniques used to produce engineering components from metallic, ceramic and polymeric materials and provides the students with an understanding of the principles and operation of the various fabrication processes.

MKMB 1623 – Microstructure and Mechanical Properties of Materials
By taking this course, students will be able to relate materials microstructure variables to the properties of materials which include metals, polymers, ceramics and composites. The course also provides an understanding of the causes of failure in engineering components and structures, and to introduce methods of fracture control and testing.

ELECTIVE COURSES

MKMB 2603 – Materials Testing and Quality Control
This course introduces students to the fundamentals of mechanical testing of metallic materials and determines their mechanical properties. It also provides a comprehensive coverage of the various non-destructive testing techniques used to assess the integrity of engineering components and quality of production. The concepts and techniques used in quality control and quality management will be covered.

MKMB 2613 – Corrosion I
The course introduces students to the basic principles of electrochemical corrosion and different forms of corrosion. It provides the students with an understanding of the tools to analyse corrosion problems. The course will also introduce various methods of protection against corrosion.

MKMB 2623 – Foundry Engineering
This course provides an understanding on the principles of solidification of liquid metals and alloys during casting. The course will also provide an understanding of the effect of melt treatment on the structure and properties of cast products.

MKMB 2633 – Advanced Materials
The learning objectives of this course is to provide students an understanding and exposure to the latest development in advanced materials such as special metal alloys, advanced ceramics, composite materials, biomaterials and electronic materials, their properties, processes and applications

MKMB 2643 – Materials Selection
The course provides students with an understanding of the relationship between the principles of materials engineering and the use of these materials in modern engineering designs and applications. This course will also describe the interaction between the manufacturing process and material selection and the need to adopt

MKMB 2653 – Corrosion II
After taking Corrosion I, in this course students will be exposed to the various techniques used in corrosion testing and how to successfully manage corrosion in applications such as oil and gas, petroleum and automotive industries.

MKMB 2663 – Surface Engineering
This course gives an appreciation of the importance of materials surfaces in service and to introduce the students to the various techniques of coating and surface modification, the structure and properties produced and their applications. The course will also provide an understanding on the principles of surface modification for better use of engineering materials

MKMB 2673 – Nanomaterials
This course introduces students to the fundamental aspects of nanomaterials, the importance of the nanoscale materials and their improved properties compare to conventional materials. The course will provide the principles and relative merits of a range of techniques for the production of nanostructures including ultra-thin films and multilayers. The analytical and imaging characterization techniques and the recent applications of nanomaterials in electronics and biomaterials will be briefly discussed.

MKMB 2683 – Modelling in Materials Engineering
The course introduces students to the basic concepts of computer modelling in materials science and engineering. This course covers basic principle in establishing numerical simulation for the evaluation of material properties and phenomena during material processing. It will emphasise on atomistic and microscopic evaluation of material properties and behaviour by computer simulations. In detail, molecular dynamic method will be given as an example of atomistic evaluation method, whereas phase-field method will be introduced as an example of microscopic evaluation method. At the end of the course students should be able to construct simple numerical modelling both in atomistic and microscopic scale.