

PROGRAMME DESCRIPTION

Programme Name : Master of Science (Mechanical Engineering)

Programme Code : MEMM

The Master programme by Taught Course extends the knowledge gained from undergraduate and develops new professional skills in a particular area of mechanical engineering discipline. The programme comprises a combination of compulsory courses, electives, and a Master's Project. This programme offers twelve (12) tracks which give more options to the students to choose specific area or specialization in the mechanical engineering field. The aim of this program is to provide an opportunity to pursue an in-depth study in the broadly based mechanical engineering disciplines, thus enhancing the technological developments.

PROGRAMME STRUCTURE

This programme comprises a combination of program core courses, university general course, electives, and a Master's Project. Three (3) core courses of the program must be taken by each student, which are Research Methodology, Emerging technologies and management, and Product Innovation and Development. Students need to choose one track from twelve (12) available tracks prior to the study. Each track requires students to take five (5) electives and one (1) free elective along with a master project relevant to the track specialization.

University General Course	
UXXX xxx3	University general course
Programme Core Courses	
MEMM1903	Research Methodology
MEMM1013	Emerging technologies and management
MEMM1023	Product innovation and development
Track Elective Courses	
MEMx xxxx3	- Select 5 courses from 12 available tracks.
	1. General mechanical
	2. Structural health and monitoring
	3. Sustainable engineering
	4. Computational mechanics
	5. Manufacturing engineering
	6. Materials engineering
	7. Future generation vehicle
	8. Energy efficient vehicle
	9. Industrial aerodynamics
	10. Advanced aerospace engineering
	11. Ship technology
	12. Offshore technology
Free Elective	
MXXX xxx3	Any 1 course, cross discipline/area/track/school
Master Project	
MEMM1914	Master Project I
MEMM2926	Master Project II

A minimum of five (5) students is required in order to offer specific track or course. In addition, this requirement could also depend on the coordination between the program coordinator and students prior to the commencement of the semester. Five elective courses under each track will be planned in the first semester. The program coordinator will discuss with students the list of courses that will be offered throughout their study period. The elective courses can be changed depending on the lecturer availability and student's demand. During the study period, changing track is not advisable. However, if changing or switching track is inevitable, program coordinator may discuss and propose alternative track to students.

STUDY PLAN

The completion of a master taught course programme typically requires three normal 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 is 8 normal semesters (or 4 years). Each student is allowed to take a maximum of 20 credits in a normal semester and 10 credits in a short semester. For weekend program, which also known as PESISIR, students are advised to take a maximum of 12 credits in a normal semester and 6 credits in a short semester. Student must register a minimum of one course in the normal semester.

September Intake

COURSE	SEMESTER 1 (Normal)	SEMESTER 2 (Normal)	SEMESTER 3 (Short)	Total Credit
University General Course	UXXX xxx3			3
Programme Core Course	MEMM1903 MEMM1013 MEMM1023			9
Track Elective Course (Select 5 only)	MEMx xxx3	MEMx xxx3 MEMx xxx3 MEMx xxx3 MEMx xxx3		15
Free Elective (Select 1 only)	Any 1 course cross discipline XXXX xxx3			3
Master Project 1		MEMM1914		4
Master Project 2			MEMM2926	6
Total Credit	18	16	6	40

February Intake

COURSE	SEMESTER 1 (Normal)	SEMESTER 2 (Short)	SEMESTER 3 (Normal)	Toal Credit
University General Course	UXXX xxx3			3
Programme Core Course	MEMM1903		MEMM1013 MEMM1023	9
Track Elective Course (Select 5 only)	MEMx xxx3 MEMx xxx3 MEMx xxx3		MEMx xxx3 MEMx xxx3	15
Free Elective (Select 1 only)	Any 1 course cross discipline XXXX xxx3			3
Master Project 1		MEMM1914		4
Master Project 2			MEMM2926	6
Total Credit	18	4	18	40

LIST OF COURSES

Compulsory Courses:

Type	Code	Courses
University General Course (Select one only)	UHMS 6013 UHS 6013 UECS 6023 UBSE 1123 UBSS 6023 UECS 6013 UHLM 6013 UHMZ 6023 UHPS 6013 URTS 6013	Seminar on global development, economic and social issues Philosophy of science and civilization Introduction to Technopreneurship Organization behaviour and development Business ethics, responsibility and sustainability IT Project Management Bahasa Melayu Penulisan Ilmiah Malaysian society and culture Dynamics of leadership Environmental ethics
Programme Core	MEMM1903 MEMM1013 MEMM1023	Research Methodology Emerging technologies and management Product innovation and development
Master Project	MEMM1914 MEMM2926	Master Project I Master Project II

Elective Courses:

Track	Code	Elective Courses
1. General Mechanical	MEMM1133 MEMM1143 MEMM1223 MEMM1233 MEMM2213 MEMM1253 MEMM1273 MEMM1283 MEMM1313 MEMM1323 MEMM1423 MEMM1453 MEMM2413 MEMM2423 MEMM1533 MEMM1553	-Select 5 courses from any track (1 to 12) Elasticity and Plasticity Plates, Shell and Pressure Vessels Adaptive control and Intelligent System Robotic System and Control Advanced Control System Acoustics Vibration measurement and control Structural Dynamics Viscous fluid flow Compressible Flows Thermo Fluid Measurement and Diagnostic Indoor environmental quality Advanced Engineering Thermodynamics Advanced Combustion Virtual Reality for Engineers Creative Design Engineering
2. Structural Health and monitoring	MEMM1213 MEMM1263 MEMM1463 MEMM1123 MEMM1343 MEMB1633 MEMM1113	-Select 5 courses from this track Automatic control & instrumentation Condition monitoring Conduction and convection heat transfer Computational method in solid mechanics Friction, wear & lubrication Assets Integrity & Management Fatigue & fracture mechanics
3. Sustainable Engineering	MEMM1213 MEMM1413 MEMM1433 MEMM2113 MEMM1543 MEMP1723	-Select 5 courses from this track Automatic control & instrumentation Energy management Sustainable energy system and technology Advanced mechanics of composite structure Engineering design and reliability Green manufacturing technology
4. Computational Mechanics	MEMM1913 MEMM1123 MEMM1333 MEMM1513 MEMM2223 MEMM1523	-Select 5 courses from this track Advance Engineering Mathematics Computational method in solid mechanics Computational Fluid Dynamics CAD and It's Applications Advanced Industrial Automation Optimization in Engineering design
5. Manufacturing Engineering	MEMP1733 MEMP2733 MEMP1713 MEMP2703 MEMP1723 MEMP2763 MEMP2773 MEMP2713 MEMP2723 MEMP1753	-Select 5 courses from this track Digital Manufacturing IT for Manufacturing Statistical Quality Engineering Automation systems and robotics Green Manufacturing Technology Advanced Manufacturing Processes Machining and Machine Tools Technology Welding technologies and Applications Smart Manufacturing Manufacturing Science
6. Materials Engineering	MEMB1613 MEMB1623	-Select 5 courses from this track Advanced Materials Processing Smart Materials

	MEMB1633 MEMB1643 MEMB2613 MEMB2623 MEMB2633 MEMB2643 MEMB2653 MEMB2663	Assets Integrity and Management Structural composites Advanced Materials Characterization Advanced Surface Modification for metallic materials Electron Microscopy for Nanomaterials Mechanical Behavior of Materials Corrosion and Materials Degradation Advanced Ceramic Processing
7. Future generation vehicle	MEMV2213 MEMV1313 MEMV1613 MEMV1203 MEMV1623 MEMV1013	<i>-Select 5 courses from this track</i> Automotive Noise, Vibration and Harshness Advanced Vehicle Dynamics Future Mobility Solution Automotive Electronics & Control Vehicle Connectivity Advanced Automotive Technology
8. Energy efficient vehicle	MEMV2213 MEMV1403 MEMV1503 MEMV2413 MEMV2513 MEMV1013	<i>-Select 5 courses from this track</i> Automotive Noise, Vibration and Harshness Internal Combustion Engine & Boosting system Advanced Vehicle Powertrain Low Carbon Fuel Automotive Tribology Advanced Automotive Technology
9. Industrial Aerodynamics	MEMF1313 MEMF2323 MEMF2343 MEMF2353 MEMF2213	<i>-Select all 5 courses from this track</i> Advanced Aerodynamics Computational Aerodynamics Industrial Aerodynamic and Wind Engineering Experimental Aerodynamics Advanced Aircraft Dynamics and Control
10. Advanced Aerospace Engineering	MEMF1313 MEMF2213 MEMF2013 MEMF2113 MEMF2423 MEMF2433 MEMF2443 MEMF2513 MEMF2613 MEMF2223	<i>-Select 5 courses from this track</i> Advanced Aerodynamics Advanced Aircraft Dynamics and Control Computational Method for Aerostructures Advanced Aircraft Structures and Materials Jet Propulsion Rocket Technology Gas Turbine Technology Helicopter System and Performance Aviation Management and Airworthiness Aircraft Instrumentation and Avionics
11. Ship technology	MEMO1213 MEMO2813 MEMO2113 MEMO2003 MEMO1713 MEMO2313 MEMO1413 MEMO2833 MEMO3843 MEMO2513	<i>-Select 3 compulsory courses & any 2 courses from this track</i> Dynamic of Marine Structures (compulsory) Safety, Risk and Reliability in Marine Operation (compulsory) Strength and Vibration of Marine Structures (compulsory) Marine Environment and Renewable Energy Ship Repair, Survey and Inspection Ship Powering and Propulsion Dynamic of Marine Power Plant Marine Transport System Maritime Management and Law Design for Advance Marine Vehicles

12. Offshore technology	MEMO1213 MEMO2813 MEMO2113 MEMO2003 MEMO2123 MEMO2223 MEMO2723	-Select 3 compulsory courses & any 2 courses from this track Dynamic of Marine Structures (compulsory) Safety, Risk and Reliability in Marine Operation (compulsory) Strength and Vibration of Marine Structures (compulsory) Marine Environment and Renewable Energy Decommissioning and Recycling of Marine Structures Mooring and Riser Analysis Unmanned Underwater Vehicles for Offshore Operations
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ACADEMIC STANDING & GRADUATION

Students must obtain a minimum grade of B- (60%) for passing each course. The academic standing is determined at the end of each semester using the Overall Grade Average (CGPA). Students are required to complete a total of 40 credits for this programme (9 credits of the core courses; 18 credits of the elective courses; 10 credits of the mater project and 3 credits of the university compulsory courses). For the award of Master of Science (Mechanical Engineering), the students should achieve a total minimum of 40 credits hours with minimum CGPA of 3.0.

UTM Academic Standing for Graduate Studies in Coursework

Kedudukan Akademik Academic Standing	Gred Penyelidikan Research Grade	Syarat Meneruskan Pengajian Condition to Proceed with the Study	Pengurniaan Ijazah Award of the Degree
Kedudukan Baik (KB) Good Pass (KB)	CGPA \geq 3.00	Layak Qualified	Layak Qualified
Kedudukan Bersyarat (KS) Conditional Pass (KS)	$2.67 \leq$ CGPA $<$ 3.00	Layak Qualified	Tidak layak Not Qualified
Kedudukan Gagal (KG) Fail (KG)	CGPA $<$ 2.67	Diberhentikan Terminated	Tidak layak Not Qualified

UTM Grading System for Graduate Studies

Marks	Grade	Points	Level of Achievement
90 – 100	A+	4.00	Excellent Pass
80 – 89	A	4.00	
75 – 79	A-	3.67	
70 – 74	B+	3.33	Good Pass
65 – 69	B	3.00	
60 – 64	B-	2.67	Pass
55 – 59	C+	2.33	Fail
50 – 54	C	2.00	
45 – 49	C-	1.67	
40 – 44	D+	1.33	
35 – 39	D	1.00	
30 – 34	D-	0.67	
0 – 29	E	0.00	

For further information related to the academic rules in postgraduate studies please go to <https://sps.utm.my/policy-guidelines-v2/>