UR6521001

Bachelor of Mechanical Engineering with Honours

Programme Educational Objective (PEO)

PEO 1 Graduates who have demonstrated career advancement in the field of Mechanical Engineering or related engineering field

PEO 2 Graduates who are involved in a professional body or society

PEO 3 Graduates who pursue lifelong learning

Programme Outcomes (PO)

PO1	Engineering Knowledge: Apply knowledge of mathematics, natural science, engineering fundamentals and an engineering specialization as specified in WK1 to WK4 respectively to the solution of complex engineering problems.
PO2	Problem Analysis: Identify, formulate, research literature and analyse complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences. (WK1 to WK4)
PO3	Design/ development of solutions: Design solutions for complex engineering problems and design systems, components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal, and environmental considerations. (WK5)

PO4 Investigation: Conduct investigations of complex problems using research-based knowledge (WK8) and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.

PO5 Modern Tool Usage: Create, select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex engineering problems, with an understanding of the limitations. (WK6)

PO6 The Engineer and Society: Apply reasoning informed by contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice and solutions to complex engineering problems. (WK7)

PO7 Environment and Sustainability: Understand and evaluate the sustainability and impact of professional engineering work in the solution of complex engineering problems in societal and environmental contexts. (WK7)

PO8 Ethics: Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice. (WK7)

PO9 Individual and Team Work: Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.

PO10 Communications: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11 Project Management and Finance: Demonstrate knowledge and understanding of engineering management principles and economic decision-making and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12 Life-Long Learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Curriculum Structure UR6521001 Bachelor of Mechanical Engineering with Honours Session 2022/2023

YEAR	FIRST		SECOND		THIRD			FOURTH	
SEMESTER	**I**	**II**	**III**	**IV**	**V**	**VI**		**VII**	**VIII**
Engineering Core (102)	MMJ10103 Engineering Statics	MMJ10203 Engineering Dynamics	MMJ10303 Solid Mechanics I	MMJ22103 Solid Mechanics II	MMJ32103 Mechanisms & Machines	MMJ32903 Control Engineering		MMJ40202 Final Year Project I	MMJ40304 Final Year Project II
	MMJ12202 Engineering Materials	MMJ12403 Manufacturing Processes	MMJ22203 Materials in Design	MMJ22303 Component Design	MMJ32503 Engineering Design Process	MMJ32402 Integrated Design Project I		MMJ42503 Integrated Design Project II	MMJ42602 Production & Operations
	MMJ12302 Mechanical Workshop		MMJ20103 Fluid Mechanics I	MMJ22503 Fluid Mechanics II	MMJ32203 Finite Element Analysis	MMJ32603 Heat Transfer		MMJ42103 Vibration Mechanics	MMJ4XX03 Elective II

	MMJ12102 Computer Aided Drafting	MMJ10403 Thermodynamics I	MMJ22403 Thermodynamics II		MMJ32703 Fluid Machinery	MMJ32303 Parametric Modelling & Analysis		MMJ4XX03 Elective I	MMJ4XX03 Elective III
	MMJ12503 Computer Programming	MMJ12603 Electrical Circuit & Machines		MMJ22603 Instrumentations & Measurements		MMJ32803 Electronics & Microprocessors			
Non Engineering Core (17)	SMQ10103 Engineering Mathematics I	SMQ10203 Engineering Mathematics II	SMQ20303 Engineering Mathematics III	SMQ27103 Engineering Statistics				MMJ40102 Professional Engineers	MMJ30103 Management for Engineers
University Required (16)	SMU13102 Appreciation of Ethics and civilization	**SMB20102 English for General Communication or SMB1XX02/ SMU1XX02 Option	SMU13002 Philosophy and Current Issues	SMB31202 English for Technical Communication	SMB41002 University Malay Language ***SMB11002 Basic Malay Language	SMU12202 Communication Skills and Technology			
	*SMB10102 Preparatory English				SMU22402 Engineering Entrepreneurship				
	SMZXXXX1 Co-Curriculum 1	SMZXXXX1 Co-Curriculum 2							
	18	**18**	**17**	**17**	**16**	**16**	**5**	**13**	**15**

Total Units for Graduation 135

Elective:	MMJ42203 Fracture Mechanics / MMJ42303 Mechanics of Composite Materials / MMJ42403 Acoustic & Noise Control / MMJ42803 Additive Manufacturing / MMJ42703 Design Optimization / MMJ42903 Refrigeration & Air Conditioning / MMJ43103 Renewable Energy / MMJ43303 Computational Fluid Dynamics / MMJ43203 Internal Combustion Engine *Uncredited. Compulsory to Students with MUET Band 1 and 2 only. This Course is a prerequisite to SMB20102 English for General Communication. **Compulsory to students with MUET Band 3 or less. This course is a prerequisite to SMB31202 English for Technical Communication. ***For International Students only