Programme Learning Outcomes (PLO)

Upon graduating from this programme, the students are able to:

1. Apply knowledge of mathematics, natural science, computing and engineering fundamentals, and an engineering specialization as specified in WK1 to WK4 respectively to develop solutions to complex mechanical engineering problems (WK1-WK4).

2. Identify, formulate, research literature and analyze complex mechanical engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences with holistic considerations for sustainable development (WK1 to WK4).

3. Design creative solutions for complex mechanical engineering problems and design systems, components or processes to meet identified needs with appropriate consideration for public health and safety, whole-life cost, net zero carbon as well as resource, cultural, societal, and environmental considerations as required (WK5);

4. Conduct investigation of complex mechanical engineering problems using research methods including research-based knowledge, including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions (WK8).

5. Create, select and apply, and recognize limitation of appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to complex mechanical engineering problems, (WK2 and WK6).

6. Analyze and evaluate sustainable development impacts to society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving complex mechanical engineering problems (WK1, WK5, and WK7)

7. Apply ethical principles and commit to professional ethics and norms of mechanical engineering practice and adhere to relevant national and international laws. Demonstrate an understanding of the need for diversity and inclusion (WK9);

8. Function effectively as an individual, and as a member or leader in diverse and inclusive teams and in multidisciplinary, face-to-face, remote and distributed settings (WK9).

9. Communicate effectively and inclusively on complex mechanical 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, taking into account cultural, language, and learning differences.

10. Apply 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, and to manage projects in multidisciplinary environments.

11. Recognise the need for and have the preparation and ability for i) independent and life-long learning ii) adaptability to new and emerging technologies and iii) critical thinking in the broadest context of technological change (WK8).

PLO Mapping Standard

PLO	PLO Statement	WK	WP/EA	SDG
1	**Engineering Knowledge**	1-4		If WP2 is selected, SDG 1-17
2	**Problem Analysis**	1-4		SDG 1-17
3	**Design/Development of Solutions**	5	WP1 and some or all of WP2 to WP7:	SDG 1-17
4	**Investigation**	8		If WP2 is selected, SDG 1-17
5	**Tool Usage**	2 & 6		If WP2 is selected, SDG 1-17
6	**The Engineer and the World**	1, 5 & 7		SDG 1-17
7	**Ethics**	9		
8	**Individual and Collaborative Teamwork**	9		
9	**Communication**	-	Activities or projects that have some or all of the following characteristics: **EA 1-5 (2 or more)**	
10	**Project Management and Finance**	-		
11	**Lifelong Learning**	8		

PLO Mapping MQF 2.0

No	Sem	Course Code and Title	Cre dit	Malaysian Qualification Framework										
				MQF 1	MQF 2	MQF 3A	MQF 3E	MQF 3D	MQF 3F	MQF 5	MQF 3B	MQF 3C	MQF 4B	MQF 4A
				1	2	3	4	5	6	7	8	9	10	11
Faculty Core														
1	Y1 S1	KNJ 1083 Engineering Mathematics I	3											
2	Y1 S2	KNJ 1103 Engineering Mathematics II	3											
3	Y2 S1	KNJ 2053 Engineering Mathematics III	3											
		Subtotal	9		0	0	0	0	0	0	0	0	0
4	Y1 S1	KNJ1013 Statics	3											
5	Y1 S2	KNJ1033 Thermodynamics I	3											

No	Sem	Course Code and Title	Cre dit	Malaysian Qualification Framework										
				MQF 1	MQF 2	MQF 3A	MQF 3E	MQF 3D	MQF 3F	MQF 5	MQF 3B	MQF 3C	MQF 4B	MQF 4A
				Programme Learning Outcome										
				1	2	3	4	5	6	7	8	9	10	11
6	Y1 S1	KNJ1072 Engineering Drawing	2											
7	Y1 S1	KNJ1433 Engineering Materials	3											
8	Y1 S1	KNP1091 Workshop Practice	1											
9	Y1 S2	KNJ1023 Dynamics	3											
10	Y2 S1	KNJ2023 Fluid Mechanics I	3											
11	Y2 S1	KNJ2013 Solid Mechanics I	3											
12	Y1 S2	KNJ1231 Engineering Laboratory I	1											
13	Y2 S1	KNJ2093 Thermodynamics II	3											
14	Y2 S2	KNJ2133 Solid Mechanics II	3											

1 5	Y2 S1	KNJ2222 Analysis of Mechanics and Machines	2											
1 6	Y1 S2	KNJ1062 Electrical Engineering Technology	2											
1 7	Y2 S1	KNJ2511 Engineering Laboratory II	1											
1 8	Y2 S2	KNJ2103 Fluid Mechanics II	3											
1 9	Y2 S2	KNJ2251 Engineering Laboratory III	1											
2 0	Y1 S1	KNJ1052 Engineering Programming	2											
2 1	Y2 S2	KNJ2463 Electronics and Microprocessors	3											
2 2	Y3 S2	KNJ3023 Heat Transfer	3											
2 3	Y3 S1	KNP3013 Manufacturing Technology	3											
2 4	Y3 S1	KNF3102 Engineering Ethics	2											
2 5	Y2 S2	KNJ2033 Engineering Economy and Finance	3											
2 6	Y3 S1	KNJ3531 Engineering Laboratory IV	1											
2 7	Y3 S1	KNJ3543 Instrumentation and Measurement	3											
2 8	Y3 S2	KNP3062 Manufacturing Systems 1	2											
2 9	Y3 S1	KNP3483 Engineering Design 1	3											
3 0	Y3 S2	KNJ3373 Finite Element Analysis	3											
3 1	Y4 S1	KNJ4063 Mechanical Vibration	3											
3 2	Y2 S2	KNJ2042 Numerical Methods	2											
3 3	Y3 S2	KNP3063 Robotics and Automation	3											
3 4	Y3 S2	KNP3493 Engineering Design 2	3											
3 5	Y3 S3	KNF3065 Industrial Training	5											
3 6	Y4 S1	KNJ4192 Final Year Project I	2											
3 7	Y4 S1	KNJ4302 Computational Fluid Dynamics	2											
3 8	Y4 S1	KNJ4392 Polymer and Composites	2											
3 9	Y4 S1	KNJ4573 Control Engineering	3											
4 0	Y4 S1	KNJ4012 Engineering Statistics	2											
4 1	Y3 S2	KNP3042 Energy Resources and Management	2											
4 2	Y4 S1	KNP4073 Advanced Manufacturing Systems	3											
4 3	Y4 S1	KNP4414 Integrated Design	4											
4 4	Y4 S1	KNP4582 Manufacturing Modeling and Simulation	2											
4 5	Y4 S2	KNJ4214 Final Year Project II	4											
4 6	Y3 S2	KNJ3052 Tribology	2											
4 7	Y4 S2	KNJ4322 Internal Combustion Engine	2											
4 8	Y4 S2	KNP4083 Quality Control and Reliability	3											

No	Y/S	Course	Credit											
49	Y3 S2	KNP3032 Operations Research	2											
50	Y4 S2	KNP4443 Engineering Management	3											
51	Y4 S2	KNP4602 Manufacturing Systems Analysis	2											
52	Y4 S2	KNP4612 Remanufacturing Operations and Management	2											
53	Y3 S2	KNJ3072 Material Characterization	2											
54	Y4 S1	KNP4022 Manufacturing System 2	2											
55	Y4 S2	KNP4032 Manufacturing System Design	2											
56	Y4 S2	KNJ 4042 Corrosion and Prevention	2											
57	Y4 S2	KNP4052 Lean Manufacturing	2											
58	Y1 S1	KNJ 1041 Introduction to Mechanical Engineering	1											
		Subtotal												
		Total												