

# PROGRAMME STRUCTURE: BACHELOR OF MECHANICAL ENGINEERING

## CURRICULUM STRUCTURE SESSION 2020/2021 (SEPTEMBER INTAKE)

Course	Content	Credit Hours
<b>University Courses</b>	• Information Literacy	2
	• Philosophy & Current Issues (PIS)* /	2
	• Basic Malay Language**	
	• Ethics Appreciation & Civilization (PEP)	2
	• Basic Entrepreneurship Culture	2
	• Social Engagement	2
	• English for Communication Programme	6
	<b>Elective Course from Other Faculties</b>	4
<b>Co-Curriculum</b>	2	
	<b>Sub-Total Credit Hours</b>	<b>22</b>
<b>Faculty Courses</b>	• Faculty Core Courses	22
	• Faculty Elective Course	2
	<b>Sub-Total Credit Hours</b>	<b>24</b>
<b>Programme Courses</b>	• Programme Core Courses	79
	• Programme Elective Courses	18
	<b>Sub-Total Credit Hours</b>	<b>97</b>
<b>TOTAL CREDIT HOURS</b>		<b>143</b>

**Notes:**

\*Compulsory for Local students.

\*\* Compulsory for International students.

Students are required to take a minimum of 6 credits of English course based on English Proficiency qualification (MUET/IELTS/TOEFL).

# ACADEMIC PLANNER

## BACHELOR OF MECHANICAL ENGINEERING SESSION 2020/2021

YEAR 1						
CODE	COURSE	S1	S2	S3	TOTAL	PRE-REQUISITE
<b>UNIVERSITY COURSES</b>						
GIG1012 / GLT1017	Philosophy and Current Issues * / Basic Malay Language**	2				
GIG1013	Appreciation of Ethics and Civilizations		2			
GIG1004	Information Literacy		2			
GLT1XXX	English Communication Programme I	3				
GLT1XXX	English Communication Programme II		3			
	<b>Sub-total</b>	<b>5</b>	<b>7</b>		<b>12</b>	
<b>FACULTY CORE COURSES</b>						
KIX1001	Engineering Mathematics I	3				
KIX1002	Engineering Mathematics II		3			
	<b>Sub-total</b>	<b>3</b>	<b>3</b>		<b>6</b>	
<b>PROGRAMME CORE COURSES</b>						
KIG1001	Statics	3				
KIG1002	Fluid Mechanics I	3				
KIG1003	Mechanical Engineering Laboratory I and Communication	1				
KIG1004	Basic Materials for Mechanical Engineering		3			
KIG1005	Engineering Thermodynamics		3			
KIG1006	Engineering Design and Modelling	3				
KIG1007	Mechanics of Materials I		3			
KIG1008	Mechanical Engineering Laboratory II and Communication		1			
	<b>Sub-total</b>	<b>10</b>	<b>10</b>		<b>20</b>	
	<b>TOTAL</b>	<b>18</b>	<b>20</b>		<b>38</b>	

**Notes:**

\*Compulsory for Local students.

\*\* Compulsory for International students.

**BACHELOR OF MECHANICAL ENGINEERING  
SESSION 2020/2021**

<b>YEAR 2</b>						
<b>CODE</b>	<b>COURSE</b>	<b>S1</b>	<b>S2</b>	<b>S3</b>	<b>TOTAL</b>	<b>PRE-REQUISITE</b>
<b>UNIVERSITY COURSES</b>						
GIG1003	Basic Entrepreneurship Culture	2				
GIG1005	Social Engagement		2			
	<b>Sub-total</b>	<b>2</b>	<b>2</b>		<b>4</b>	
<b>FACULTY CORE COURSES</b>						
KIX1003	Thinking and Communication Skills		2			
	<b>Sub-total</b>		<b>2</b>		<b>2</b>	
<b>PROGRAMME CORE COURSES</b>						
KIG2001	Fundamental of Electrical Engineering	3				
KIG2002	Dynamics	3				KIG1001
KIG2003	Fluid Mechanics II	3				KIG1002
KIG2004	Mechanics of Materials II	3				KIG1007
KIG2005	Engineering Materials	3				KIG1004
KIG2006	Mechanical Engineering Laboratory III	1				
KIG2007	Computer Programming		3			
KIG2008	Manufacturing Technology		3			
KIG2009	Design of Machine Elements		3			KIG1007
KIG2010	Heat Transfer		3			KIG1005
KIG2011	Mechanical Engineering Laboratory IV		1			
	<b>Sub-total</b>	<b>16</b>	<b>13</b>		<b>29</b>	
	<b>TOTAL</b>	<b>18</b>	<b>17</b>		<b>35</b>	

**BACHELOR OF MECHANICAL ENGINEERING  
SESSION 2020/2021**

<b>YEAR 3</b>						
CODE	COURSE	S1	S2	S3	TOTAL	PRE-REQUISITE
<b>UNIVERSITY COURSES</b>						
	Other Faculty Elective Course	2				
	Other Faculty Elective Course		2			
	Co- Curriculum		2			
	<b>Sub-total</b>	<b>2</b>	<b>4</b>		<b>6</b>	
<b>FACULTY CORE COURSES</b>						
KIX2002	Engineering Economics Analysis	3				
KIX2003	Law and Ethics in Engineering	2				
KIX2004	Engineering Project Management	3				
KIX2001	Integrated Design I	2				
KIX3001	Integrated Design II		4			KIX2001
	<b>Sub-total</b>	<b>10</b>	<b>4</b>		<b>14</b>	
<b>FACULTY ELECTIVE COURSE</b>						
KIX30xx	Faculty Elective Course		2			
	<b>Sub-total</b>		<b>2</b>		<b>2</b>	
<b>PROGRAMME CORE COURSES</b>						
KIG3001	Instrumentation and Measurement Techniques	3				
KIG3002	Thermal Engineering Systems	3				KIG1005
KIG3003	Mechanics of Machines and Vibration		3			KIG2002
KIG3004	Mechanical Engineering Laboratory V		1			
KIG3005	Energy and Environment		3			
KIG3006	Industrial Training			5		
	<b>Sub-total</b>	<b>6</b>	<b>7</b>	<b>5</b>	<b>18</b>	
	<b>TOTAL</b>	<b>18</b>	<b>17</b>	<b>5</b>	<b>40</b>	
	<b>TOTAL</b>	<b>15</b>	<b>15</b>		<b>30</b>	

**BACHELOR OF MECHANICAL ENGINEERING  
SESSION 2020/2021**

<b>YEAR 4</b>						
CODE	COURSE	S1	S2	S3	TOTAL	PRE-REQUISITE
<b>UNIVERSITY COURSES</b>						
	-					
<b>FACULTY CORE COURSES</b>						
	-					
<b>PROGRAMME CORE COURSES</b>						
KIG4001	Control Engineering	3				
KIG4002	Final Year Project I	2				KIG3006
KIG4003	Numerical Methods in Engineering		3			KIG2007
KIG4004	Final Year Project II		4			KIG4002
	<b>Sub-total</b>	<b>5</b>	<b>7</b>		<b>12</b>	
<b>PROGRAMME ELECTIVE COURSES</b>						
KIG4XXX	Electives 1	2				
KIG4XXX	Electives 2	2				
KIG4XXX	Electives 3	2				
KIG4XXX	Electives 4	2				
KIG4XXX	Electives 5	2				
KIG4XXX	Electives 6		2			
KIG4XXX	Electives 7		2			
KIG4XXX	Electives 8		2			
KIG4XXX	Electives 9		2			
	<b>Sub-total</b>	<b>10</b>	<b>8</b>		<b>18</b>	
	<b>TOTAL</b>	<b>15</b>	<b>15</b>		<b>30</b>	

**LIST OF FACULTY ELECTIVE COURSE#:**

<b>LIST OF FACULTY ELECTIVE COURSE#</b>			
NO	CODE	COURSE	CREDIT
1	KIX3002	Engineering Entrepreneurship	2
2	KIX3003	Sustainable Engineering	2

**LIST OF PROGRAMME ELECTIVE COURSES#:**

<b>LIST OF PROGRAMME ELECTIVE COURSE#</b>			
NO	CODE	COURSE	CREDIT
1	KIG4020	Internal Combustion engine	2
2	KIG4021	Renewable and non-renewable energy	2
3	KIG4022	Material and Process in Semiconductor manufacturing	2
4	KIG4023	Tribology	2
5	KIG4024	Production Technology	2
6	KIG4025	Computer Integrated manufacturing	2
7	KIG4026	industrial Engineering	2
8	KIG4027	Principles of Metal Working	2
9	KIG4028	Manufacturing planning and control	2
10	KIG4029	Acoustic and Noise Control	2
11	KIG4030	Operations Management	2
12	KIG4031	Precision Engineering	2
13	KIG4032	Phase Transformation	2
14	KIG4033	Modelling of Materials Behaviour	2
15	KIG4034	Human Factors Design	2
16	KIG4035	Design for Manufacturability	2
17	KIG4036	Reverse Engineering	2

18	KIG4037	Computational Fluid Dynamics	2
19	KIG4038	Finite Element Analysis	2
20	KIG4039	Mold and Die Design	2
21	KIG4040	Automation and Robotics	2
22	KIG4041	Corrosion Engineering	2
23	KIG4042	Material Selection	2
24	KIG4043	Heating Ventilation and Air Conditioning	2
25	KIG4044	Plant Engineering	2
26	KIG4045	Nanotechnology in Green and sustainable energy	2
27	KIG4046	Material Characterization	2
28	KIG4047	Mechanical Behaviour and Failure of Materials	2
29	KIG4048	Advanced innovation Design Approach	2
30	KIG4049	Machine Tool Engineering	2
31	KIG4050	Energy Conversion and Efficiency	2
32	KIG4051	Composite Materials	2

**Important Notes:**

- **A student is required to complete 18 credits of elective courses comprising of 10 credits in Sem 1 Year 4 and 8 credits in Sem 2 Year 4.**
- **Specialization Track Option**
  - **Students meeting a specific combination of courses (to be determined by the Department for each intake cohort) will lead to a Specialized Study Track. Eg. Manufacturing, Energy, Material, Product Design etc. Please refer to the Specialization Track Coordinator for further details on available tracks and requirements.**

# The list of courses offered is subject to change.

## GRADUATION REQUIREMENT CHART

### BACHELOR OF MECHANICAL ENGINEERING

CODE	COURSE	CREDIT	PASSING GRADE	MARKING SCHEME			
<b>UNIVERSITY COURSES</b>							
GIG 1012	Philosophy and Current Issues*	2	C				
GLT 1017	Basic Malay Language**						
GIG 1013	Appreciation of Ethics and Civilizations	2	C	<b>MARKS</b>	<b>GRADE</b>	<b>GRADE POINTS</b>	<b>MEANING</b>
GIG1003	Basic of Entrepreneurship Culture	2	C	90-100	A+	4.00	HIGH DISTINCTION
GIG 1004	Information Literacy	2	C	80-89	A	4.00	DISTINCTION
GIG1005	Social Engagement	2	C	75-79	A-	3.70	DISTINCTION
GLT 10XX	English for Communication Programme	6	C	70-74	B+	3.30	GOOD
	Elective Course from Other Faculties	4	C	65-69	B	3.00	GOOD
	Co-Curriculum	2	c	60-64	B-	2.70	GOOD
	<b>Sub-total Credit Hours</b>	<b>22</b>		55-59	C+	2.30	PASS
				50-54	C	2.00	PASS
<b>FACULTY CORE COURSES</b>				45-49	C-	1.70	FAIL
KIX 1001	Engineering Mathematics I	3	C	40-44	D+	1.30	FAIL
KIX 1002	Engineering Mathematics II	3	C	35-39	D	1.00	FAIL
KIX 1003	Thinking and Communication Skills	2	C	0-34	F	0.00	FAIL
KIX 2001	Integrated Design I	2	C				
KIX 2002	Engineering Economic Analysis	3	C				
KIX 2003	Law and Ethics in Engineering	2	C				
KIX 2004	Engineering Project Management	3	C				
KIX 3001	Integrated Design II	4	C				
	<b>Sub-total Credit Hours</b>	<b>22</b>					
<b>FACULTY ELECTIVE COURSES</b>							
	<b>List of Faculty Elective Courses#:</b> KIX3002 Engineering Entrepreneurship	2	C				
	<i>#subject to change.</i>						
	<b>Sub-total Credit Hours</b>	<b>2</b>					
<b>PROGRAMME CORE COURSES</b>							
KIG1001	Statics	3	C				
KIG1002	Fluid Mechanics I	3	C				
KIG1003	Mechanical Engineering Laboratory I and Communication	1	C				
KIG1004	Basic Materials for Mechanical Engineering	3	C				
KIG1005	Engineering Thermodynamics	3	C				
KIG1006	Engineering Design and Modelling	3	C				
KIG1007	Mechanics of Materials I	3	C				

KIG1008	Mechanical Engineering Laboratory II and Communication	1	C	<table border="1"> <thead> <tr> <th>GRADE</th> <th>REMARKS</th> </tr> </thead> <tbody> <tr> <td>P</td> <td>Progressive</td> </tr> <tr> <td>K</td> <td>Transfer of credit without grade</td> </tr> <tr> <td>K1</td> <td>Exemption of course</td> </tr> <tr> <td>I</td> <td>Maybe given when: a) a student has not taken the final examination for any course in any semester due to medical reasons/compassionate grounds and/or; b) a student has not fulfilled a part of the course requirement in a semester due to medical/compassionate grounds or by reasons beyond the control of the student which is acceptable to the Committee of Examiners concerned.</td> </tr> <tr> <td>R</td> <td>Given for a course which is audited that fulfils the minimum 80% attendance requirement. No credit is given for this grade</td> </tr> <tr> <td>UR</td> <td>Given for a course which is audited but does not fulfil the minimum 80% attendance requirement. No credit is given for this grade.</td> </tr> <tr> <td>W</td> <td>Given for a course from which a student has withdrawn officially during a particular semester.</td> </tr> <tr> <td>W1</td> <td>Given for all courses where a student has officially withdrawn from a semester.</td> </tr> <tr> <td>W2</td> <td>Given for all courses where a student has withdrawn officially from the University.</td> </tr> </tbody> </table>	GRADE	REMARKS	P	Progressive	K	Transfer of credit without grade	K1	Exemption of course	I	Maybe given when: a) a student has not taken the final examination for any course in any semester due to medical reasons/compassionate grounds and/or; b) a student has not fulfilled a part of the course requirement in a semester due to medical/compassionate grounds or by reasons beyond the control of the student which is acceptable to the Committee of Examiners concerned.	R	Given for a course which is audited that fulfils the minimum 80% attendance requirement. No credit is given for this grade	UR	Given for a course which is audited but does not fulfil the minimum 80% attendance requirement. No credit is given for this grade.	W	Given for a course from which a student has withdrawn officially during a particular semester.	W1	Given for all courses where a student has officially withdrawn from a semester.	W2	Given for all courses where a student has withdrawn officially from the University.
GRADE	REMARKS																							
P	Progressive																							
K	Transfer of credit without grade																							
K1	Exemption of course																							
I	Maybe given when: a) a student has not taken the final examination for any course in any semester due to medical reasons/compassionate grounds and/or; b) a student has not fulfilled a part of the course requirement in a semester due to medical/compassionate grounds or by reasons beyond the control of the student which is acceptable to the Committee of Examiners concerned.																							
R	Given for a course which is audited that fulfils the minimum 80% attendance requirement. No credit is given for this grade																							
UR	Given for a course which is audited but does not fulfil the minimum 80% attendance requirement. No credit is given for this grade.																							
W	Given for a course from which a student has withdrawn officially during a particular semester.																							
W1	Given for all courses where a student has officially withdrawn from a semester.																							
W2	Given for all courses where a student has withdrawn officially from the University.																							
KIG2001	Fundamental of Electrical Engineering	3	C																					
KIG2002	Dynamics	3	C																					
KIG2003	Fluid Mechanics II	3	C																					
KIG2004	Mechanics of Materials II	3	C																					
KIG2005	Engineering Materials	3	C																					
KIG2006	Mechanical Engineering Laboratory III	1	C																					
KIG2007	Computer Programming	3	C																					
KIG2008	Manufacturing Technology	3	C																					
KIG2009	Design of Machine Elements	3	C																					
KIG2010	Heat Transfer	3	C																					
KIG2011	Mechanical Engineering Laboratory IV	1	C																					
KIG3001	Instrumentation and Measurement Techniques	3	C																					
KIG3002	Thermal Engineering Systems	3	C																					
KIG3003	Mechanics of Machines and Vibration	3	C																					
KIG3004	Mechanical Engineering Laboratory V	1	C																					
KIG3005	Energy and Environment	3	C																					
KIG3006	Industrial Training	5	C																					
KIG4001	Control Engineering	3	C																					
KIG4002	Final Year Project I	2	C																					
KIG4003	Numerical Methods in Engineering	3	C																					
KIG4004	Final Year Project II	4	C																					
<b>Sub-total Credit Hours</b>		<b>79</b>																						
<b>PROGRAMME ELECTIVE COURSES</b>																								
KIG4xxx	Elective Course 1	2	C																					
KIG4xxx	Elective Course 2	2	C																					
KIG4xxx	Elective Course 3	2	C																					
KIG4xxx	Elective Course 4	2	C																					
KIG4xxx	Elective Course 5	2	C																					
KIG4xxx	Elective Course 6	2	C																					
KIG4xxx	Elective Course 7	2	C																					
KIG4xxx	Elective Course 8	2	C																					
KIG4xxx	Elective Course 9	2	C																					
<b>Sub-total Credit Hours</b>		<b>18</b>																						
<b>TOTAL CREDIT</b>		<b>143</b>																						



## MARKING SCHEME

MARKS	GRADE	GRADE POINTS	MEANING
90-100	A+	4.00	HIGH DISTINCTION
80-89	A	4.00	DISTINCTION
75-79	A-	3.70	DISTINCTION
70-74	B+	3.30	GOOD
65-69	B	3.00	GOOD
60-64	B-	2.70	GOOD
55-59	C+	2.30	PASS
50-54	C	2.00	PASS
45-49	C-	1.70	FAIL
40-44	D+	1.30	FAIL
35-39	D	1.00	FAIL
0-34	F	0.00	FAIL

GRADE	REMARKS
P	Progressive
K	Transfer of credit without grade
K1	Exemption of course
I	Maybe given when: a student has not taken the final examination for any course in any semester due to medical reasons/compassionate grounds and/or; a student has not fulfill a part of the course requirement in a semester due to medical/compassionate grounds or by reasons beyond the control of the student which is acceptable to the Committee of Examiners concerned.
R	Given for a course which is audited that fulfils the minimum 80% attendance requirement. No credit is given for this grade.
UR	Given for a course which is audited but does not fulfil the minimum 80% attendance requirement. No credit is given for this grade.
W	Given for a course from which a student has withdrawn officially during a particular semester.
W1	Given for all courses where a student has officially withdrawn from a semester.
W2	Given for all courses where a student has withdrawn officially from the University.