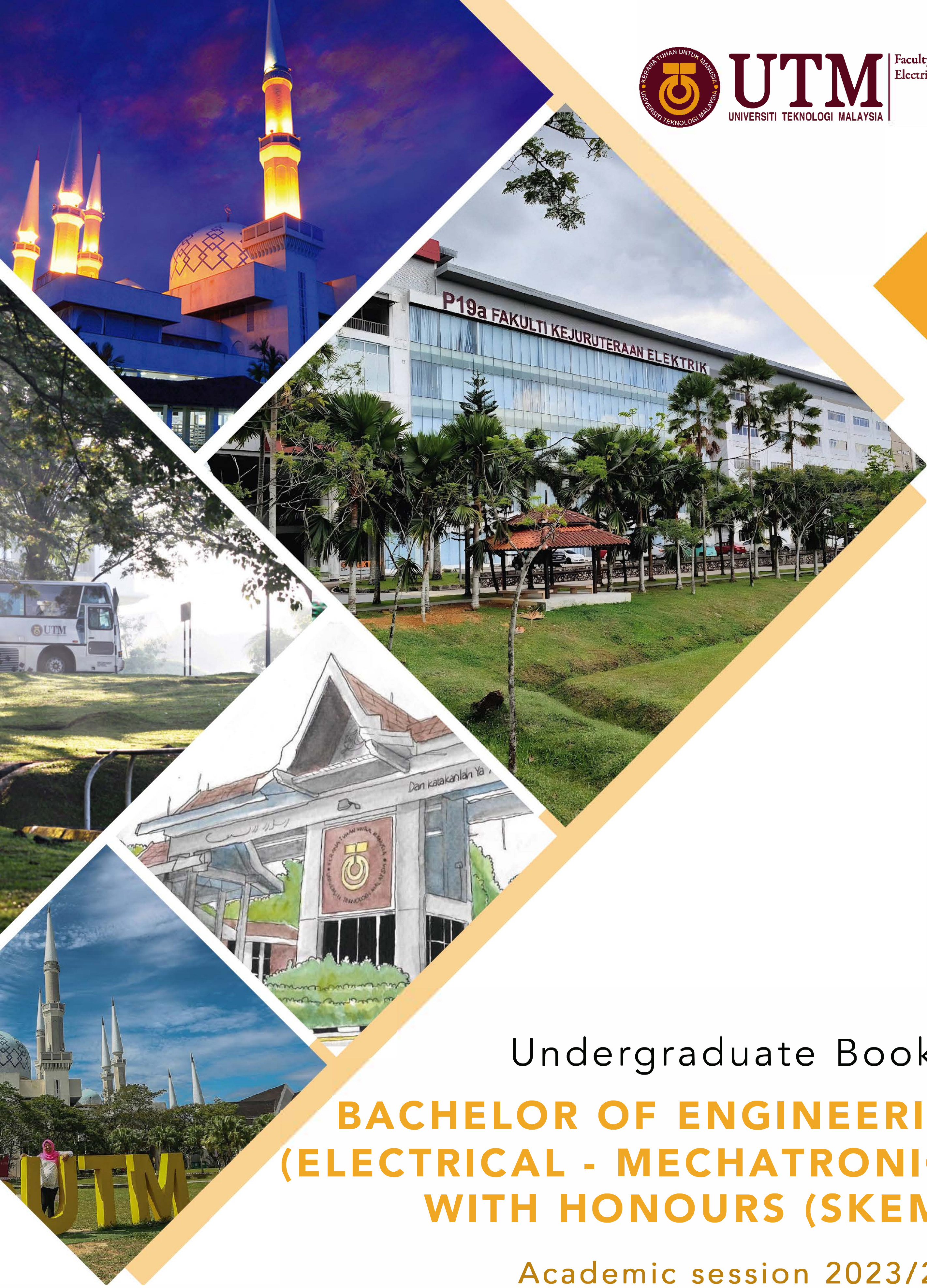
Faculty of Electrical Engineering
UTM UNIVERSITI TEKNOLOGI MALAYSIA



Undergraduate Booklet

BACHELOR OF ENGINEERING (ELECTRICAL - MECHATRONICS) WITH HONOURS (SKEMH)

Academic session 2023/2024

www.fke.utm.my

BACHELOR OF ENGINEERING (ELECTRICAL – MECHATRONICS) WITH HONOURS

(SKEMH)

STUDENT INFO

NAME	
MATRIC NO.	
PHONE NO.	
EMAIL	
ACADEMIC ADVISOR	

PROGRAMME GUIDELINES

The University adopts the semester system. The academic year is divided into two (2) normal semesters, namely Semester I and Semester II, and a short semester at the end of Semester II. Thus, intake of new undergraduate students is normally made during the semester I of an academic year. The minimum duration of the programmes is 4 years (8 semesters).

All the courses offered by the Faculty have credits except for certain courses, as approved by the University Senate. One (1) credit is equivalent to 14 hours of lectures or 30 hours of practical sessions (studio/project) in a semester. The total number of credits for the Bachelor of Engineering (Electrical-Mechatronics) with Honours (SKEMH) programme is 136 credits.

All students' performance and achievements are assessed formally. Normally, every course is assessed based on the coursework, which constitutes not less than 50% of the overall marks, and a final exam paper, which constitutes another 50% of the overall marks. Coursework may be in the form of homework, quiz, test and presentation. Final examination is held at the end of each academic semester. Students' performance in a course is indicated by the letter grade. Generally, the passing grade for any course is a 'D+'. Students who fail a course (obtained a grade 'D' and below) are required to repeat the course the following semesters when it is offered. Students may improve the grade of any course with a 'B-' or lower grade. Subject to the Faculty and University's Academic Regulation, students may withdraw from a course. A student must pass all courses specified in his/her programme of study and fulfil all the requirements specified for his/her programme of study set by the Faculty and the University in order to be awarded with the Bachelor degree.

PROGRAMME LEARNING OUTCOMES (PLO)

All undergraduate programme offered in FKE share a common Programme Learning Outcomes (PLO). After having completed the Bachelor degree programme, graduates should be able to demonstrate the following competencies:

CODE	PROGRAMME LEARNING OUTCOMES
PLO1 *Engineering Knowledge*	Ability to apply knowledge of mathematics, science, and electrical engineering to the solution of complex engineering problems.
PLO2 *Problem Analysis*	Identify, formulate, and conduct research literature to analyse complex engineering problems using engineering knowledge.
PLO3 *Design*	Design solutions for complex engineering problems and design systems and processes that meet specified needs with appropriate consideration for public health and safety, culture, society, and environment.
PLO4 *Investigation*	Perform research-based analysis, conduct experiments, and interpret data for complex engineering problems.
PLO5 *Modern Tool Usage*	Apply engineering practice and use modern engineering, and IT tools for complex engineering problems with an understanding of the limitations of the technology.
PLO6 *Engineer & Society*	Comprehend the impact of global and contemporary issues, the role of engineers on society, including health, safety, legal and cultural issues, and the consequent responsibilities relevant to professional engineering practices and engineering problems.
PLO7 *Environment & Sustainability*	Comprehend and evaluate the sustainability and impact of professional engineering work in the solutions of complex engineering problems in societal and environmental contexts.
PLO8 *Ethics*	Grasp and execute responsibility professionally and ethically in professional engineering practices.
PLO9 *Individual & Teamwork*	Function effectively as an individual, and as a member or leader in diverse teams.
PO10 *Communcation*	Articulate ideas, communicate effectively, in writing and verbally, on complex engineering activities with the engineering community and with society at large.
PO11 *Project Management*	Demonstrate knowledge and understanding of engineering and management principles, and economic decision-making to manage projects in multidisciplinary environments.
PO12 *Life-Long Learning*	Recognise the need for and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROFESSIONAL SKILLS CERTIFICATE (PSC)

UTM has designed its own UTM Professional Skills Certificate (UTM PSC) programme managed by UTM Institute for Life Ready Graduate (UTM iLeague) to enhance the knowledge and skills of UTM students. It provides students with value-added courses so that they will have a competitive edge when they enter the employment market. Students will receive a Certificate of UTM Professional Skills Programme and the courses will appear in the student transcript. Students are required to undertake and must pass five (5) PSC courses as listed below:

NO.	PSC COURSE	CODE
Compulsory Courses (must take all THREE (3) courses)		
1	Design Thinking for Entrepreneur	GLRB 0010
2	Talent and Competency Management	GLRM 0010
3	English Communication Skills for Graduating Students	GLRL 0010
Elective Courses (must take any TWO (2) of these courses)		
1	Data Analytics For Organization	GLRT 0010
2	Professional Ethics and Integrity	GLRM 0020
3	Construction Measurement (Mechanical & Electrical)	GLRT 0020
4	OSHE For Engineering Industry and Laboratory	GLRT 0030
5	Quality Management For Built Environment and Engineering Professionals	GLRT 0050
6	Safety and Health Officer Introductory Course	GLRT 0060
7	Industrial Machinery and Lubrication	GLRT 0070

PRISMS (PROGRAM INTEGRASI SARJANA MUDA - SARJANA)

PRISMS is a newly introduced programme that integrates undergraduate high-level elective SK** 5**3 courses with the core courses of the Master degree programme. Under PRISMS, students have an opportunity to complete and receive two degrees which are Bachelor degree and Master degree within 5 years (4+1).

Requirements

Students who have completed third year second semester courses with a cumulative grade point average (CGPA) of 3.3 and above are eligible to apply for PRISMS. Students can apply using the PRISMS application form and must be recommended by the Academic Advisor, approved by the Program Director, and certified by the Dean of Faculty. Once the application to join PRISMS is approved, students can register for the SK** 5**3 courses during the course pre-registration or compulsory registration period.

PRISMS Credit Transfer

Students must obtain grade B and above of the high-level elective SK** 5**3 courses for vertical credit transfer into the Master degree program that students plan to enrol. Maximum unit allowed for the credit transfer is twelve (12) credits.

BACHELOR OF ENGINEERING (ELECTRICAL - MECHATRONICS) WITH HONOURS (SKEMH)

INTRODUCTION

Mechatronic Engineering is a branch of engineering that combines elements of mechanical engineering, electronic engineering, computer science, and control engineering. The curriculum for SKEMH programme is designed with a strong emphasis on preparing students for successful engineering careers in this fast-paced and ever-changing field. In view of this, the programme will equip the students with the knowledge of embedded systems, robotics, automation, control engineering, and artificial intelligence.

Mechatronic engineering focuses on the design, development, and maintenance of intelligent and automated systems, blending mechanical components with electronic and software solutions to create innovative products and processes. Mechatronic engineers work on a wide range of applications, including robotics, automotive systems, industrial automation, consumer electronics, and more. They integrate sensors, actuators, microcontrollers, and software algorithms to enable machines to perform tasks autonomously, respond to environmental changes, and communicate with humans and other systems. This multidisciplinary field aims to create efficient, reliable, and versatile systems that enhance automation, improve efficiency, and advance technology across various industries. Those whose expertise revolves around these areas are extremely needed by the existing industries and have an immense advantage in employment.

PROGRAMME SPECIFICATIONS

The Bachelor of Engineering (Electrical-Mechatronics) with Honours is a program has been offered for more than two decades by UTM. The program is a four-year program completed with a final year project. The programme is offered only at the UTM Main Campus in Johor Bahru. The duration of study is subject to the student's entry qualifications and can be completed within four (4) years to a maximum of six (6) years.

The programme is offered on a full-time basis and is based on a 2-Semester per academic session. Generally, students are expected to undertake courses equivalent to fifteen (15) to eighteen (18) credits per semester. Assessments are based on coursework given throughout the semester and final examinations.

GENERAL INFORMATION

Awarding Institution	Universiti Teknologi Malaysia
Teaching Institution	Universiti Teknologi Malaysia
Programme Name	Bachelor of Engineering (Electrical - Mechatronics) with Honours
Final Award	Bachelor of Engineering (Electrical - Mechatronics) with Honours
Programme Code	SKEMH
Professional or Statutory Body of Accreditation	Board of Engineers Malaysia (BEM)
Language(s) of Instruction	English and Bahasa Melayu
Mode of Study	Conventional
Mode of operation	Self-governing
Study Scheme	Full Time
Study Duration	Minimum: 4 years (8 semesters) Maximum: 6 years (12 semesters)

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

After having exposed to 3 to 5 years of working experience, our graduates should become professionals who demonstrate the following competencies:

CODE	PROGRAMME EDUCATIONAL OBJECTIVES (PEO)
PEO1	Become mechatronic engineers who are competent, innovative, and productive in addressing stakeholders' needs.
PEO2	Grow professionally with proficient soft skills.
PEO3	Demonstrate high standards of ethical conduct, positive attitude, and societal responsibilities.

AWARD REQUIREMENTS

To graduate, students must:

- Attain a total of 136 credit hours with a minimum CGPA of 2.0
- Complete Professional Skills Certificates (PSC).

COURSE CLASSIFICATION

NO.	CLASSIFICATION	CREDIT	%
1.	University General Courses	16	12 %
2.	Mathematics	15	11 %
3.	Programme Core	96	71 %
4.	Programme Electives	6	4 %
5.	Free Electives	3	2 %
	Total	**136**	**100 %**
A	Engineering Courses a) Lecture/Project/Laboratory b) Workshop/Field/Design Studio c) Industrial Training d) Final Year Project	 91 - 5 6	75 %
Total Credits for Part A		**102**	
B	Related Courses a) Applied Science/Mathematic/Computer b) Management/Law/Humanities/Ethics/Economy c) Language d) Co-Curriculum e) Free Electives	 15 8 6 2 3	25%
Total Credits for Part B		**34**	
Total Credits for Part A and B		**136**	**100%**
Total Credits to Graduate		**136**	

STUDY PLAN FOR SKEM

YEAR 1

CODE	COURSE	CREDIT	PRE-REQUISITE	TOTAL CREDIT
SEMESTER 1				
ULRS 1032	Integrity and Anti-corruption Course	2		**16**
SSCE 1693	Engineering Mathematics I	3		
SKEE 1012	Introduction to Electrical Engineering	2		
SKEE 1013	Electrical Circuit Analysis	3		
SKEE 1033	Scientific Programming	3		
SKEE 1233	Digital Electronic Systems	3		
SEMESTER 2				
ULRS 1182	Appreciation of Ethics and Civilizations (Local Students)	2		**17**
UHLM 1012	Malay Language for Communication 2 (International Students)			
SSCE 1793	Differential Equations	3		
SKEM 1113	Engineering Mechanics	3		
SKEE 1103	C Programming for Engineers	3		
SKEE 1073	Electronic Devices and Circuits	3	SKEE 1013	
SKEM 1503	Computer Aided Engineering Design	3		

YEAR 2

CODE	COURSE	CREDIT	PRE-REQUISITE	TOTAL CREDIT
SEMESTER 1				
SSCE 1993	Engineering Mathematics II	3	SSCE 1693	**17**
SKEE 2073	Signals and Systems	3		
SKEE 2133	Electronic Instrumentation and Measurement	3		
SKEE 2433	Principles of Electrical Power Systems	3	SEEE1013	
SKEE 2752	Electronic Design Laboratory	2		
SKEE 3223	Microprocessor	3	SKEE 1233	
SEMESTER 2				
ULRS 1022	Philosophy and Current Issues (Local Students)	2		**18**
ULRS 1182	Appreciation of Ethics and Civilizations (International Students)			
ULRF 2**2	Elective of Service Learning and Community Engagement	2		
UHLB 2122	Professional Communication Skills 1	2		
SSCE 2193	Engineering Statistics	3		
SKEE 2523	Electromagnetic Field Theory	3	SSCE 1993	
SSCE 2393	Numerical Methods	3		
SKEM 2013	Mechanics of Materials	3	SKEM 1113 SKEM 1503	

YEAR 3

CODE	COURSE	CREDIT	PRE-REQUISITE	TOTAL CREDIT
SEMESTER 1				
UHL* 1112	Elective of Foreign Language for Communication	2		**18**
UHLB 3132	Professional Communication Skills 2	2		
SKEM 3143	Mechanical System Design	3		
SKEE 3133	System Modeling & Analysis	3	SKEE 2073	
SKEE 3533	Communication Principles	3	SKEE 2073	
SKEE 3732	Common 3rd Year Laboratory	2	SKEE 2752	
SKEE 3263	Electronic Systems	3	SKEE 1073	
SEMESTER 2				
ULRS 3032	Entrepreneurship & Innovation	2		**17**
SKEE 3143	Control System Design	3	SKEE 3133	
SKEM 3133	Electrical Motors and Drives	3		
SKEE 3733	Integrated Design Project	3	SKEE 3732	
SKEL 3233	Digital Signal Processing	3	SKEE 2073	
S*** ***3	Free Elective	3		
SEMESTER 3				
SKEE 3925	Industrial Training	5		**5**

YEAR 4

CODE	COURSE	CREDIT	PRE-REQUISITE	TOTAL CREDIT
SEMESTER 1				
SKEE 4542	Engineering Management Principles	2		**17**
SKEM 4143	Robotics	3	SSCE 1993	
SKEE 4813	Methodology of Research and Development	3		
SKEM 3123	Hydraulic and Pneumatic Systems	3	SKEM 1113	
SKEM 4333	Mechatronics System Design	3		
SKE* 4**3 / 5**3	Field Elective 1 / PRISMS Elective 1 / Faculty Free Elective[1]	3		
SEMESTER 2				
SKEE 4826	Final Year Project	6	SKEE 4813	**11**
SKEE 4012	Professional Engineering Practice	2		
SKE* 4**3 / 5**3	Field Elective 2 / PRISMS Elective 2 / Faculty Free Elective[1]	3		
			CUMULATIVE CREDITS	**136**

[1] For Free Faculty Elective, students can only take one course only – either in Semester 1 of Year 4 OR Semester 2 of Year 4.

ELECTIVE COURSES

CODE	COURSE	CREDIT	PRE-REQUISITE
SKEM 4133	Machine Vision Systems	3	
SKEM 4153	Robot Technology for Automation	3	SKEM 4143
SKEM 4173	Artificial Intelligence	3	
SKEM 4223	Embedded Systems	3	SKEE 3223
SKEE 4173	Industrial Process Control	3	
SKEM 4313	PLC and SCADA System Design	3	SKEE 3143
SKEM 4113	Modern Control Theory	3	SKEE 3143
SKEE 4153	Digital Control Systems	3	SKEE 3143
SKEE 3433	Power Electronic and Drives	3	SKEE 2433
SKEM 4183	Industrial Instrumentations and Applications	3	SKEE 2133
SKEM 4193	Advanced Transducers and Sensors	3	SKEE 2133
SKEM 4243	BioMEMS and Microanalytical Systems	3	SKEE 2133
SKEM 4233	Nanotechnology and Application	3	
SKEM 4323	Advanced Control Theory	3	SKEE 3143
SKEM 4343	System Identification and Estimation	3	SKEE 3143
SKEM 4163	Autonomous Robot	3	SKEM 4143
SKEM 4123	Industrial Engineering	3	
SKEL 4213	Software Engineering	3	SKEE 1103

SKEMH ELECTIVE COURSES FOR PRISMS			
Code	**Course**	**Credit**	**Pre-requisite**
SKEM 5753	Advanced Instrumentation and Measurement	3	
SKEM 5713	Artificial Intelligence and Applications	3	
SKEM 5703	Control Systems Engineering	3	

STUDY PLAN FOR SKEM (INTAKE SEMESTER 2)

YEAR 1

CODE	COURSE	CREDIT	PRE-REQUISITE	TOTAL CREDIT
SEMESTER 1				
SSCE 1693	Engineering Mathematics I	3		**17**
SKEM 1113	Engineering Mechanics	3		
SKEE 1103	C Programming for Engineers	3		
SKEE 1013	Electrical Circuit Analysis	3		
SKEE 2133	Electronic Instrumentation and Measurement	3		
ULRS 1182	Appreciation of Ethics and Civilizations (Local Students)	2		
UHLM 1012	Malay Language for Communication 2 (International Students)			
SEMESTER 2				
SSCE 1993	Engineering Mathematics II	3	SSCE 1693	**18**
SKEE 1033	Scientific Programming	3		
SKEE 1233	Digital Electronic Systems	3		
SKEE 1012	Introduction to Electrical Engineering	2		
SKEE 2752	Electronic Design Laboratory	2		
SKEE 1073	Electronic Devices and Circuits	3	SKEE 1013	
ULRS 1032	Integrity and Anti-Corruption Course	2		

YEAR 2

CODE	COURSE	CREDIT	PRE-REQUISITE	TOTAL CREDIT
SEMESTER 1				
SSCE 2193	Engineering Statistics	3		**18**
SKEE 2073	Signals and Systems	3		
SSCE 1793	Differential Equations	3		
SKEM 1503	Computer Aided Engineering Design	3		
ULRF 2**2	Elective of Service Learning and Community Engagement	2		
UHLB 2122	Professional Communication Skills 1	2		
ULRS 1182	Appreciation of Ethics and Civilizations (International Students)	2		
ULRS 1022	Philosophy and Current Issues (Local Students)			
SEMESTER 2				
SKEM 2013	Mechanics of Materials	3	SKEM 1113 SKEM 1503	**18**
SKEE 2523	Electromagnetic Field Theory	3	SSCE 1993	
SKEE 3223	Microprocessor	3	SKEE 1233	
SKEE 3732	Common 3rd Year Laboratory	2		
UHL* 1112	Elective of Foreign Language for Communication	2		
UHLB 3132	Professional Communication Skills 2	2		
SKEE 2433	Principles of Electrical Power Systems	3	SEEE1013	

YEAR 3

CODE	COURSE	CREDIT	PRE-REQUISITE	TOTAL CREDIT
SEMESTER 1				
SKEE 3733	Integrated Design Project	3	SKEE 3732	**17**
SKEM 3143	Mechanical System Design	3		
SKEE 3133	System Modeling & Analysis	3	SKEE 2073	
SKEE 3533	Communication Principles	3	SKEE 2073	
ULRS 3032	Entrepreneurship & Innovation	2		
SKEE 3263	Electronic Systems	3	SKEE 1073	
SEMESTER 2				
SSCE 2393	Numerical Methods	3		**18**
SKEE 3143	Control System Design	3	SKEE 3133	
SKEM 3133	Electrical Motors and Drives	3		
SKEM 4333	Mechatronics System Design	3		
SKEL 3233	Digital Signal Processing	3	SKEE 2073	
S*** ***3	Free Elective	3		
SEMESTER 3				
SKEE 3925	Industrial Training	5		**5**

YEAR 4

CODE	COURSE	CREDIT	PRE-REQUISITE	TOTAL CREDIT
SEMESTER 1				
SKEE 4542	Engineering Management Principles	2		**14**
SKEM 4143	Robotics	3	SSCE 1993	
SKEE 4813	Methodology of Research and Development	3		
SKEM 3123	Hydraulic and Pneumatic Systems	3	SKEM 1113	
SKE* 4**3 / 5**3	Field Elective 1 / PRISMS Elective 1 / Faculty Free Elective[1]	3		
SEMESTER 2				
SKEE 4826	Final Year Project	6	SKEE 4813	**11**
SKEE 4012	Professional Engineering Practice	2		
SKE* 4**3 / 5**3	Field Elective 2 / PRISMS Elective 2 / Faculty Free Elective[1]	3		
			CUMULATIVE CREDITS	**136**

[1] For Free Faculty Elective, students can only take one course only – either in Semester 1 of Year 4 OR Semester 2 of Year 4

TRACKS (for Electives)

Robotics	Smart Manufacturing	Control Systems	Instrumentation
Robot Technology for Automation	PLC and SCADA System Design	Artificial Intelligence	Artificial Intelligence
Autonomous Robot	Industrial Process Control	Modern Control Theory	BioMEMS and Microanalytical Systems
Machine Vision System	Machine Vision System	Advanced Control Theory	Advance Transducers and Sensors
Embedded Systems	Digital Control System	System Identification and Estimation	Industrial Instrumentation and Applications
Artificial Intelligence	Industrial Engineering	Power Electronics and Drives	Embedded Systems
Industrial Instrumentation and Applications	Industrial Instrumentation and Applications	Control System Engineering (PRISM)	Nanotechnology and Application
Advance Transducers and Sensors	Advance Transducers and Sensors	Industrial Process Control	Advanced Instrumentation and Measurement (PRISM)
Software Engineering	Advanced Instrumentation and Measurement (PRISM)	PLC and SCADA System Design	
	Artificial Intelligence	Digital Control System	

UTM Faculty of Electrical Engineering
UNIVERSITI TEKNOLOGI MALAYSIA

ROADMAP TO YOUR GRADUATION

Bachelor of Engineering (Electrical-Mechatronics) with Honours (SKEMH)

Cohort 2023/2024 ONWARDS

Year 1

Semester 1 — 16 credit

- SKEE 1013 Electrical Circuit Analysis
- SKEE 1012 Intro to Elect. Eng.
- SKEE 1033 Scientific Programming
- SKEE 1233 Digital Electronic Systems
- SSCE 1693 Engineering Mathematics I
- ULRS 1032 Integrity & Anti-corruption Course

Semester 2 — 17 credit

- SKEE 1073 Electronic Devices and Circuits
- SKEE 1103 C Programming for Engineers
- SSCE 1793 Differential Equations
- SKEM 1503 Computer Aided Eng. Design
- SKEM 1113 Engineering Mechanics
- ULRS 1182 Appreciation of Ethics and Civilizations
- UHLM 1012 Malay Language for Communication 2

Year 2

Semester 1 — 17 credit

- SKEE 2073 Signals & Systems
- SKEE 2433 Principles of Electrical Power Systems
- SKEE 2133 Electronic Instrumentation and Measurement
- SSCE 1993 Engineering Mathematics II
- SKEE 2752 Electronic Design Laboratory
- SKEE 3223 Microprocessor

Semester 2 — 18 credit

- SKEE 2523 Electromagnetic Field Theory
- SKEM 2013 Mechanics of Materials
- SSCE 2193 Engineering Statistics
- SSCE 2393 Numerical Method
- ULRS 1022 Philosophy and Current Issues
- ULRS 1182 Appreciation of Ethics and Civilizations
- UHLB 2122 Professional Com-munication Skills 1
- ULRF 2**2 Elective of Service Learning & Commu-nity Engagement

Year 3

Semester 1 — 18 credit

- SKEE 3533 Communication Principles
- SKEE 3133 System Modeling & Analysis
- SKEE 3263 Electronic Systems
- SKEM 3143 Mechanical System Design
- SKEE 3732 Common 3rd Year Lab
- UHL* 1112 Elective of Foreign Language for Communication
- UHLB 3132 Professional Communication Skills 2

Semester 2 — 17 credit

- SKEL 3233 Digital Signal Processing
- SKEE 3143 Control System Design
- SKEM 3133 Electrical Motors and Drives
- SKEE 3733 Integrated Design Project
- S*** ***3 Free Elective

Semester 3 — 5 credit

- SKEE 3925 Practical Training

Year 4

Semester 1 — 17 credit

- SKEM 4333 Mechatronics System Design
- SKEE 4813 Methodology of Research and Development
- SKEM 3123 Hydraulic and Pneumatic Systems
- SKEM 4143 Robotics
- SKE* 4**3/5**3 Field Elective 1 / PRISMS Elective 1
- SKEE 4542 Engineering Management Principles

Semester 2 — 11 credit

- SKEE 4012 Proffesional Engineering Practice
- SKEE 4826 Final Year Project
- SKE* 4**3/5**3 Field Elective 2 /PRISMS Elective 2

Electrical Engineering Core Courses
Mathematics Courses
University General Courses
Mechatronics courses
For local students
For international students
Hands-on courses
Industrial/Community-based courses

Total Credit Hours : 136
Total No. of Courses: 50

Department of Control and Mechatronics Engineering (CMED)

UTM Faculty of Electrical Engineering
UNIVERSITI TEKNOLOGI MALAYSIA

ROADMAP TO YOUR GRADUATION

Bachelor of Engineering (Electrical-Mechatronics) with Honours (SKEMH)

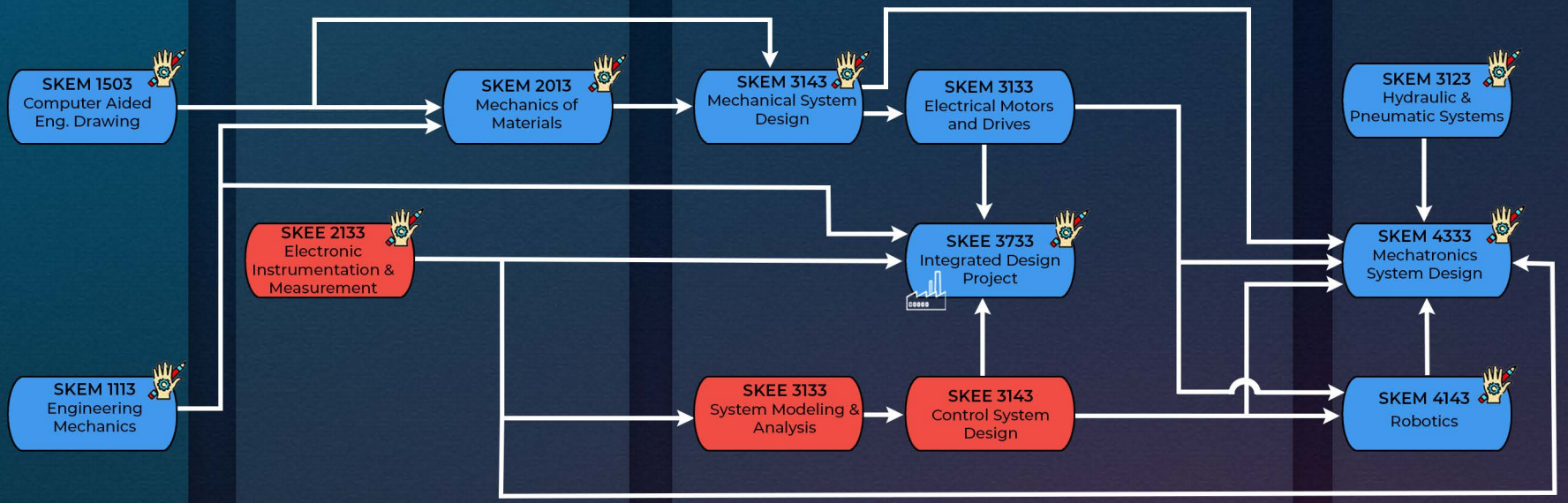
Session 2023/2024 ONWARDS

Year 1		Year 2		Year 3			Year 4	
Semester 1	Semester 2	Semester 1	Semester 2	Semester 1	Semester 2	Semester 3	Semester 1	Semester 2

Electrical / Electronics /Communication / Computing

Industrial Training

Engineering Management & Professional Practice



Department of Control and Mechatronics Engineering (CMED)

Electrical Engineering Core Courses

Mechatronics courses

Hands-on courses

Industrial/Community-based courses

Total Credit Hours : 136
Total No. of Courses: 50

UTM
UNIVERSITI TEKNOLOGI MALAYSIA

SEEM/SKEMH ENABLING TECHNOLOGY FOR IR 4.0

★ CAREER EXCELLENCE
★ ALUMNI NETWORKING
★ GLOBAL CITIZEN

Three SEEM/SKEMH Technical DNA

1. Highly Competent in Embedded System Design
2. Proficient in Robotics and Automation System Integration
3. Excellent in Computing Skill

CORPORATE BEHAVIORS

IQ
- Project Design
- Problem-based Learning
- Integrated Design Project

EQ
- Counselling
- Extra Curriculum
- Experiential Learning
- Career Fair

SQ
- Cooperative/Collaborative Learning
- Community Service

TEAMWORKING SKILLS

YEAR 4

- Lifelong Learning
- Communication skills
- Management
- Professional Engineering Practice

PERSONAL SKILLS

YEAR 2 & 3

- Communication skills
- Responsibility
- Adaptability
- Teamworking
- Leadership
- Entrepreneurship
- Community Service

YEAR 1

- Lifelong Learning
- Design Thinking
- Positive Attitude & Behaviors
- Critical Thinking
- Problem Solving

Bachelor of Engineering (Electrical - Mechatronics) with Honours (SEEM/SKEMH)
Department of Control and Mechatronic Engineering (CMED)
Faculty of Electrical Engineering (FKE)

GRADUATION CHECKLIST

To graduate, students must pass all the stated courses in this checklist. It is the responsibility of the students to ensure that all courses are taken and passed. Students who do not complete any of the courses are not allowed to graduate.

Bachelor of Engineering (Electrical - Mechatronics) with Honours - SKEM

NO.	CODE	COURSE	CREDITS EARNED	CREDITS COUNTED	TICK (√) IF PASSED
1.	SKEE 1012	Introduction to Electrical Engineering	2	2	
2.	SKEE 1013	Electrical Circuit Analysis	3	3	
3.	SKEE 1033	Scientific Programming	3	3	
4.	SKEE 1233	Digital Electronic Systems	3	3	
5.	SKEM 1113	Engineering Mechanics	3	3	
6.	SKEE 1103	C Programming for Engineers	3	3	
7.	SKEE 1073	Electronic Devices and Circuits	3	3	
8.	SKEM 1503	Computer Aided Engineering Design	3	3	
9.	SKEE 2073	Signals and Systems	3	3	
10.	SKEE 2133	Electronic Instrumentation and Measurement	3	3	
11.	SKEE 2433	Principles of Electrical Power Systems	3	3	
12.	SKEE 2752	Electronic Design Laboratory	2	2	
13.	SKEE 3223	Microprocessor	3	3	
14.	SKEE 2523	Electromagnetic Field Theory	3	3	
15.	SKEM 2013	Mechanics of Materials	3	3	
16.	SKEM 3143	Mechanical System Design	3	3	
17.	SKEE 3133	System Modeling & Analysis	3	3	

18.	SKEE 3533	Communication Principles	3	3	
19.	SKEE 3732	Common 3rd Year Laboratory	2	2	
20.	SKEE 3263	Electronic Systems	3	3	
21.	SKEE 3143	Control System Design	3	3	
22.	SKEM 3133	Electrical Motors and Drives	3	3	
23.	SKEE 3733	Integrated Design Project	3	3	
24.	SKEL 3233	Digital Signal Processing	3	3	
25.	SKEE 3925	Industrial Training	5	HL	
26.	SKEE 4542	Engineering Management Principles	2	2	
27.	SKEM 4143	Robotics	3	3	
28.	SKEE 4813	Methodology of Research and Development	3	3	
29.	SKEM 3123	Hydraulic and Pneumatic Systems	3	3	
30.	SKEM 4333	Mechatronics System Design	3	3	
31.	SKE* 4**3 / 5**3	Field Elective 1 / PRISMS Elective 1 / Faculty Free Elective	3	3	
32.	SKEE 4826	Final Year Project	6	6	
33.	SKEE 4012	Professional Engineering Practice	2	2	
34.	SKE* 4**3 / 5**3	Field Elective 2 / PRISMS Elective 2 / Faculty Free Elective	3	3	
		TOTAL CREDITS OF ENGINEERING COURSES (A)	**102**	**97**	
MATHEMATICS COURSES (Faculty of Science)					
1.	SSCE 1693	Engineering Mathematics I	3	3	
2.	SSCE 1793	Differential Equations	3	3	
3.	SSCE 1993	Engineering Mathematics II	3	3	
4.	SSCE 2193	Engineering Statistics	3	3	
5.	SSCE 2393	Numerical Methods	3	3	
		TOTAL CREDITS OF MATHEMATICS COURSES (B)	**15**	**15**	

UNIVERSITY GENERAL COURSES					
Cluster 1: Malaysia Core Value					
1.	ULRS 1182	Appreciation of Ethics and Civilizations (Local Students)	2	2	
	UHLM 1012	Malay Language for Communication 2 (International Students)			
2.	ULRS 1022	Philosophy and Current Issues (Local Students)	2	2	
	ULRS 1182	Appreciation of Ethics and Civilizations (International Students)			
Cluster 2: Value and Identity					
1.	ULRS 1032	Integrity and Anti-corruption Course	2	2	
Cluster 3: Global Citizen					
1.	ULRF 2**2	Elective of Service Learning and Community Engagement	2	2	
Cluster 4: Communication Skills					
1.	UHLB 2122	Professional Communication Skills 1	2	2	
2.	UHLB 3132	Professional Communication Skills 2	2	2	
3.	UHL* 1112	Elective of Foreign Language for Communication	2	2	
Cluster 5: Enterprising Skills					
1.	ULRS 3032	Entrepreneurship & Innovation	2	2	
Free Elective Courses					
1.	S*** ***3	Free Elective	3	3	
		TOTAL CREDITS of UNIVERSITY GENERAL COURSES (C)	**19**	**19**	
		TOTAL CREDITS TO GRADUATE (A + B + C)	**136**	**131**	

OTHER COMPULSORY COURSES - PROFESSIONAL SKILLS CERTIFICATE (PSC). Students are required to enroll and pass FIVE (5) PSC courses to graduate.			
COMPULSORY PSC COURSES (must take all THREE (3) courses)			
1.	GLRB 0010	Design Thinking for Entrepreneur	
2.	GLRM 0010	Talent and Competency Management	
3.	GLRL 0010	English Communication Skills for Graduating Students	
ELECTIVE PSC COURSE (must take any TWO (2) of these courses)			
1.	GLRT 0010	Data Analytics for Organisation	
2.	GLRM 0020	Professional Ethics and Integrity	
3.	GLRT 0020	Construction Measurement (Mechanical & Electrical)	
4.	GLRT 0030	OSHE for Engineering Industry and Laboratory	
5.	GLRT 0050	Quality Management for Built Environment and Engineering Professionals	
6.	GLRT 0060	Safety and Health Officer Introductory Course	
7.	GLRT 0070	Industrial Machinery and Lubrication	

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9 to 12 credits

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APPROVAL FOR 19 AND 20 CREDITS

19 & 20 credits

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APPROVAL FOR 12-18 CREDITS (ACADEMIC ADVISOR)

Note: KS status, 9 -12 credits

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