



Student's **STUDY GUIDE**



Diploma In Electronic Engineering (Communication)
Diploma In Electronic Engineering (Computer)
Diploma In Electrical And Electronics Engineering

**JABATAN KEJURUTERAAN ELEKTRIK
POLITEKNIK SULTAN MIZAN ZAINAL ABIDIN**



Endorsement

This Student's Study Guide for this programme has been prepared and approved to be used
by June 2025.

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The quality of this edition will be improved from time to time based on
feedback and new information received.

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only.

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Assalamualaikum Warahmatullahi Wabarakatuh

Firstly, let us express our sincere congratulations to all the students that have been selected to join the Diploma in Electronic Engineering (Communications), Diploma in Electronic Engineering (Computer) and Diploma in Electrical and Electronic Engineering at the Department of Electrical Engineering, Politeknik Sultan Mizan Zainal Abidin (PSMZA).

This little booklet, called Student Study Guide, is the main guide book to the students during the period of study here. It helps the students to understand the structure of the programme and allow the early preparation for the students to make proper planning in continuing their study in PSMZA session.

With the implementation of the Outcome Base Education (OBE) in PSMZA, I hope that the students can get involved and fully committed with any form of assessment that has been planned and they should take advantages and opportunities while in the classroom here as to complete their studies successfully.

I hope and believe that if students able to adapt to the campus life environment, focus on learning and active in all the activities planned, with the God willing, Polytechnic's dream to reach her vision and mission.

Good Luck!

Thank you,



Mohd Dasri Bin Che Mok@Adnan

Head of Department

Department of Electrical Engineering

Politeknik Sultan Mizan Zainal Abidin

Assalamualaikum Warahmatullahi Wabarakatuh

Firstly, I wish to congratulate all the junior students of Department in Electrical Engineering, Politeknik Sultan Mizan Zainal Abidin.

Student Study Guide contains all the important instruments in Diploma of Electronic Engineering (Communication), Diploma of Electronic Engineering (Computer) and Diploma of Electrical and Electronic Engineering such as Programme Learning Outcome (PLO), synopsis of each course and complete programme structure for students to plan and complete their studies successfully. This is important as PSMZA is on their way to implement the Outcome Base Education (OBE) and of course the students should know all the learning outcomes in their studies.

Finally, during 3 years of their studies, I hope the students are able to manage their time and grab the opportunities in order to obtain good results to help PSMZA to produce competitive human capital in generating economy led by innovation.

Congratulations and Good Luck!

Thank you,



Mohd Anuar Bin Mohd Bunyami
Program Leader of Electronic Engineering
Department of Electrical Engineering
Politeknik Sultan Mizan Zainal Abidin

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Vision of PSMZA

TVET institutions become premier-led industry by 2025

Mission of PSMZA

To provide access to quality and recognised TVET programme

To implement effective and relevant curriculum through collaborative industry.

To produce balanced and competitive graduates in entrepreneurship through dynamic and sustainable education.

To obtain external recognition through the cooperation and active participation in TVET community.

Vision of JKE

To be the nation's leading provider of semi professionals in electrical engineering through transformational education and training for the global workforce.

Mission of JKE

Providing quality education at diploma and advanced diploma levels in electrical engineering that meets international standards and fostering collaborations with industries and other institutions.

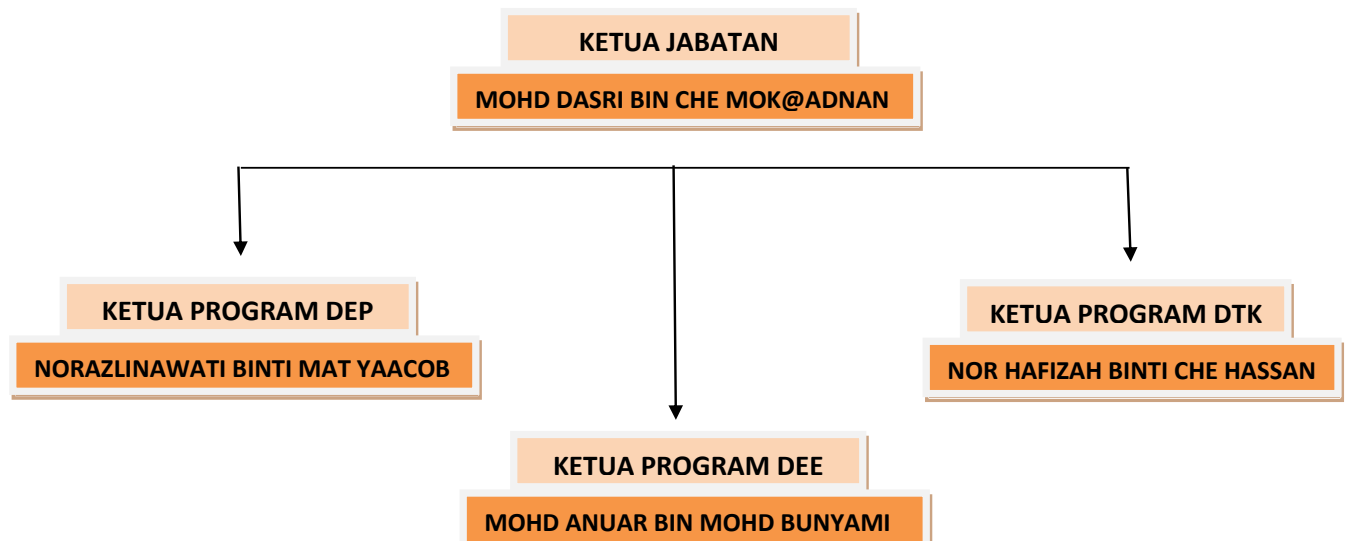
DEPARTMENT OF ELECTRICAL ENGINEERING (JKE)

Department of Electrical Engineering is one of the academic departments at the Sultan Mizan Zainal Abidin (PSMZA) Polytechnic, Dungun, Terengganu that has been established in 2001.

JKE aims to produce well-trained students, efficient, skilled and competent in electrical and electronic engineering field. The department is currently lead by En. Mohd Dasri bin Che Mok@Adnan as the Head of Department and assisted by Pn. Roslinda Binti Mohd Sidek, while Pn. Nor Hafizah Binti Che Hassan (DTK), Pn. Norazlinawati Binti Mat Yaacob (DEP) and En. Mohd Anuar Bin Mohd Bunyami (DEE) as Programme Leaders. JKE has 51 academic staff and 2 technicians, who manage and maintain the laboratory equipment and assist in administrative work

JKE offers three (3) diploma programs which are Diploma in Electronic Engineering (Communications) (DEP), Diploma in Electronic Engineering (Computer) (DTK) and Diploma Electrical and Electronic (DEE) that provide practical training and knowledge for students to prepare themselves with skills in electrical and electronic engineering field as well as to develop their skills of human capital.

ORGANIZATION CHART



PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

The engineering programme should produce balanced TVET graduates who are:

PEO1: practicing technician in electrical engineering related field

PEO2: contributing to society with professional ethic and responsibilities

PEO3: engaging in enterprising activities that apply engineering knowledge and technical skills

PEO4: engaging in continuous professional development in response to technological and social challenges

PROGRAMME LEARNING OUTCOMES (PLO)

Upon completion of the programme, students should be able to:

PLO1	apply knowledge of applied mathematics, applied science, computing and engineering fundamentals and an engineering specialisation as specified in DK1 to DK4 respectively to wide practical procedures and practices
PLO2	identify and analyse well-defined engineering problems reaching substantiated conclusions using codified methods of analysis specific to their field of activity (DK1 to DK4)
PLO3	design solutions for well-defined technical problems and assist with the design of systems, components or processes to meet specified needs with appropriate consideration for public health and safety, as well as cultural, societal, and environmental considerations as required (DK5)
PLO4	conduct investigations of well-defined problems; locate and search relevant codes and catalogues, conduct standard tests and measurements (DK8)
PLO5	apply appropriate techniques, resources, and modern engineering computing and IT tools to well-defined engineering problems, with an awareness of the limitations (DK2 and DK6)
PLO6	consider sustainable development impacts* to: society, the economy, sustainability, health and safety, legal frameworks, and the environment, in solving well-defined engineering problems (DK1, DK5, and DK7)
PLO7	understand and commit to professional ethics and responsibilities and norms of technician practice and including compliance with national and international laws. Demonstrate an understanding of the need for diversity and inclusion (DK9)
PLO8	function effectively as an individual, and as a member in diverse and inclusive teams in multidisciplinary, face-to-face, remote and distributed settings (DK9)
PLO9	communicate effectively and inclusively on well-defined engineering activities with the engineering community and with society at large, by being able to comprehend the work of others, document their own work, and give and receive clear instructions
PLO10	demonstrate awareness of engineering management principles as a member or leader in a technical team and to manage projects in multidisciplinary environments
PLO11	recognise the need for, and have the ability for i) independent and life-long learning and ii) critical thinking in the face of specialised technical knowledge (DK8)

Notes :

DK 1	A descriptive, formula-based understanding of the natural sciences applicable in a sub-Discipline and awareness of directly relevant social sciences
DK 2	Procedural mathematics, numerical analysis, statistics applicable in a subdiscipline
DK 3	A coherent procedural formulation of engineering fundamentals required in an accepted sub-discipline
DK 4	Engineering specialist knowledge that provides the body of knowledge for an accepted sub-discipline
DK 5	Knowledge that supports engineering design based on the techniques and procedures of a practice area
DK 6	Codified practical engineering knowledge in recognised practice area
DK 7	Knowledge of issues and approaches in engineering technician practice such as public safety and sustainable development
DK 8	Engagement with the current technological literature of the practice area
DK 9	Ethics, inclusive behaviour, and conduct. Knowledge of professional ethics, responsibilities, and norm of engineering practice. Awareness of the need for diversity by reason of ethnicity, gender, age, physical ability etc. with mutual understanding and respect, and of inclusive attitudes

DIPLOMA IN ELECTRONIC ENGINEERING (COMMUNICATION)



INTRODUCTION

The Electrical Engineering Diploma graduates of the polytechnic's Ministry of Higher Education are exposed to a comprehensive curriculum consisting of courses in personal development, mathematics, science, electrical engineering disciplines and workplace competencies requirements. The Diploma in Electronic Engineering (Communication) covers broad discipline of electronics engineering fundamentals, computer-based technology, and specialization. The computer-based technologies and specialization disciplines are comprised of software-hardware interfacing application through the internet, data networking, wired and wireless communication technology. Additionally, the program emphasizes practical skills essential for tasks such as system maintenance, installation, testing and troubleshooting.

The graduates of the programme will have the prospect of working in the electronics, telecommunications, and networking industry. The programme will produce balanced Technical and Vocational Education and Training (TVET) graduates who contribute to society ethically, engage in enterprising activities, continuously developing professionally and adapt to technology changes.

SYNOPSIS

The Diploma in Electronic Engineering (Communication) programme includes the discipline of electronics engineering fundamental courses, computer technologies-based courses and specialization courses. The engineering fundamental courses are electrical wiring, semiconductor devices, measurement, electronic circuits, digital electronics, electrical technology, programming fundamentals, computer aided electrical drawing, electronic computer aided design, electronic equipment repair and fundamental communication system. The computer technology-based courses are comprised of computer vision programming, and internet of things devices applications. The specialization courses are microwaves engineering, data communication and networking, cellular communication system, fiber optic communication system and final year project

JOB PROSPECT

This programme provides the knowledge and skills in communication engineering that can be applied to a broad range of careers in most electronic communication field. The knowledge and skills that the students acquire from the programme will enable them to participate in the job market as:

- a. Assistant Engineer
- b. Assistant Radio Frequency Engineer
- c. Engineer Technical Executive
- d. Marketing Executive
- e. Technical Supervisor
- f. Assistant Technical Designer
- g. Assistant Network Engineer
- h. Assistant Network Administrator
- i. Assistant Drive Test Engineer
- j. Assistant Drive Test Analyser Engineer
- k. Network planner
- l. Electrical/Electronic Technician
- m. Technopreneur
- n. Technical Officer
- o. Project Administrator

PROGRAMME AIM

This programme believes that all individuals have potential to be a resourceful and adaptable technician to support the nation's aspiration in providing engineering talent

PROGRAMME STRUCTURE

POLITEKNIK SULTAN MIZAN ZAINAL ABIDIN
ELECTRICAL ENGINEERING DEPARTMENT
PROGRAMME STRUCTURE

DIPLOMA IN ELECTRONIC ENGINEERING (COMMUNICATION)
Session_1_2024/2025

NO	CODE	COURSE	PREREQUISITE	CORE	HOUR					RE
					L	P	T	CREDIT		
1	DUE5082	TECHNICAL ENGLISH 3		COMPULSARY	1	0	2	2.0		
2	DEE40252	TECHNOPRENEUR IN ENGINEERING WORLD		COMMON	1	2	0	2.0		
3	DEC40252	INTERNET OF THINGS DEVICES APPLICATION		DISCIPLINE	1	2	0	2.0		
4	DEE30181	COMPUTER AIDED ELECTRICAL DRAWING		DISCIPLINE	0	2	0	1.0		
5	DEE40202	PROJECT 1		SPECIALIZATION	0	3	0	2.0		
6	DEP40103	DATA COMMUNICATION AND NETWORKING		SPECIALIZATION	2	2	0	3.0	*	
7	DEP40123	FIBRE OPTIC COMMUNICATION SYSTEM		SPECIALIZATION	2	2	0	3.0	*	
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					7	13	2	15.0	65.0	

NO	CODE	COURSE	PREREQUISITE	CORE	HOUR					RE
					L	P	T	CREDIT		
1	DUE10042	TECHNICAL ENGLISH 1		COMPULSARY	1	0	2	2.0		
2	MPU24031	SUKAN 1		COMPULSARY	0	2	0	1.0		
3	MPU24041	KELAB/ PERSATUAN 1		COMMON	2	0	0	2.0		
4	MPU24041	KELAB/ PERSATUAN 1		COMMON	2	0	2	3.0	*	
5	DRS10042	ENGINEERING MATHEMATICS 1		COMMON	2	1	0	2.0	*	
6	DRE10133	MEASUREMENT DEVICES		DISCIPLINE	2	2	0	3.0	*	
7	DET10103	ELECTRICAL CIRCUITS 1		DISCIPLINE	2	2	0	3.0	*	
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					11	7	4	16.0	16.0	

NO	CODE	COURSE	PREREQUISITE	CORE	HOUR					RE
					L	P	T	CREDIT		
1	MPU23182/	SAINS TEKNOLOGI DAN KEURUTERAAN ISLAM #		COMPULSARY	1	0	2	2.0		
2	MPU23172	NILAI MASYARAKAT MALAYSIA #		DISCIPLINE	1	4	0	3.0		
3	DEC40213	COMPUTER VISION PROGRAMMING	DEC20162	DISCIPLINE	0	4	0	3.0		
4	DEE20233	PROJECT 2	DEE40202	SPECIALIZATION	0	4	0	3.0		
5	DEP50113	MICROWAVE ENGINEERING		SPECIALIZATION	2	2	0	3.0	*	
6	DEP50133	CELLULAR COMMUNICATION		SPECIALIZATION	2	2	0	3.0	*	
7	DXXXXXX2	ELECTIVE 1		ELECTIVE				2.0		
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					6	12	2	16.0	81.0	

NO	CODE	COURSE	PREREQUISITE	CORE	HOUR					RE
					L	P	T	CREDIT		
1	MPU24051	SUKAN 2	MPU24031	COMPULSARY	0	2	0	1.0		
2	MPU24061	KELAB/ PERSATUAN 2	MPU24041	COMPULSARY	0	2	0	1.0		
3	MPU24071	PENGHAJATAN ETIKA DAN PERADABAN	MPU24041	COMPULSARY	1	0	2	2.0		
4	DEE20163	ENGINEERING MATHEMATICS 2	DRM10163	COMMON	2	0	2	3.0	*	
5	DET10112	ELECTRICAL WIRING		DISCIPLINE	1	3	0	2.0		
6	DEE20143	SEMICONDUCTOR DEVICES		DISCIPLINE	2	2	0	3.0	*	
7	DEE20153	DIGITAL ELECTRONICS		DISCIPLINE	2	2	0	3.0	*	
8	DET20123	ELECTRICAL CIRCUITS 2	DET10103	DISCIPLINE	2	2	0	3.0	*	
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					10	11	4	17.0	33.0	

NO	CODE	COURSE	PREREQUISITE	CORE	HOUR					RE
					L	P	T	CREDIT		
1	DUE50910	ENGINEERING INDUSTRIAL TRAINING		INDUSTRIAL TRAINING				10.0		
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					0	0	0	10.0	91.0	

NO	CODE	COURSE	PREREQUISITE	CORE	HOUR					RE
					L	P	T	CREDIT		
1	DUE30072	TECHNICAL ENGLISH 2		COMPULSARY	1	0	2	2.0		
2	MPU2071	KURSUS INTEGRITI DAN ANTIRASUAH		COMPULSARY	0	0	2	1.0		
3	DMB30193	ELECTRICAL ENGINEERING MATHS		COMMON	2	0	2	3.0	*	
4	DEC20162	PROGRAMMING FUNDAMENTALS		DISCIPLINE	1	2	0	2.0		
5	DEE20163	ELECTRONIC CIRCUITS		DISCIPLINE	2	2	0	3.0	*	
6	DEE30172	ELECTRONIC EQUIPMENT DIAGNOSTIC	DEE20163	DISCIPLINE	1	3	0	2.0		
7	DEE30191	ELECTRONIC COMPUTER AIDED DESIGN		DISCIPLINE	0	2	0	1.0		
8	DEP30093	COMMUNICATION SYSTEM FUNDAMENTALS		DISCIPLINE	2	2	0	3.0		
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					9	11	6	17.0	50.0	

NOTES :
 RE : Remark
 * : Course with final examination
 # : For Muslim Students
 ## : For Non Muslim Students
 L : Lecture
 P : Practical
 T : Tutorial
 C : Credit
 Co-curriculum pathway:
 Path 1 : Sukan
 Path 2 : Kelab/ Persatuan
 Path 3 : Unit benih/born

Prepared by:
Curriculum Unit,
Department of Electrical Engineering.

* For list of elective courses refer to Course Inventory. Students are required to take 2 credits of elective course.

DIPLOMA IN ELECTRONIC ENGINEERING (COMPUTER)



INTRODUCTION

The Electrical Engineering Diploma graduates of the polytechnic's Ministry of Higher Education are exposed to a comprehensive curriculum consisting of courses in personal development, mathematics, science, electrical engineering disciplines and workplace competencies requirements. The Diploma in Electronic Engineering (Computer) programme covers broad discipline of electronics engineering fundamentals, computer-based technologies and specialization. The computer-based technologies and specialization disciplines are comprised of computer system components which support the Industry Revolution 4.0, such as open-source software and programming tools, software-hardware interfacing application through the internet, computer system, computer vision, networking and integrated circuits design, fabrication and testing.

The graduates of the programme have the prospect of working in the electronics industry, computer-based technology industry and integrated circuit design, fabrication and packaging industry. The programme will produce balanced Technical and Vocational Education and Training (TVET) graduates who contribute to society ethically, engage in enterprising activities, continuously developing professionally and adapt to technology changes.

SYNOPSIS

The Diploma in Electronic Engineering (Computer) programme includes the discipline of electronics engineering fundamental courses, computer technologies-based courses and specialization courses. The engineering fundamental courses are semiconductor devices, electronic circuits, digital electronics, electrical circuit, electrical wiring, programming fundamentals, computer aided electrical drawing, and electronic computer aided design. The computer technology-based courses are comprised of embedded system applications, microprocessor, computer networking fundamentals, CMOS integrated circuit design and fabrication, computer vision programming, and internet of things devices applications. The specialization courses are database system, operating systems, computer system diagnosis and maintenance, computer vision programming, and final year project

JOB PROSPECT

This programme provides the knowledge and skills in communication engineering that can be applied to a broad range of careers in most electronic communication field. The knowledge and skills that the students acquire from the programme will enable them to participate in the job market as:

- a. Electrical / Electronic Engineering Technician/ Assistant Engineer
- b. Computer Systems and Information Technology Technician / Assistant Engineer
- c. Technical Support Technician / Assistant Engineer
- d. Embedded System Technician / Assistant Engineer
- e. Computer Network Technician / Assistant Engineer
- f. Semiconductor Technician / Assistant Engineer
- g. Integrated Circuit Layout Designer Technician / Assistant Engineer
- h. System Administrator

PROGRAMME AIM

This programme believes that all individuals have potential to be a resourceful and adaptable technician to support the nation's aspiration in providing engineering talent.

PROGRAMME STRUCTURE

POLITEKNIK SULTAN MIZAN ZAINAL ABIDIN
ELECTRICAL ENGINEERING DEPARTMENT
PROGRAMME STRUCTURE
DIPLOMA IN ELECTRONIC ENGINEERING (COMPUTER)
Session_L_2024/2025

NO	CODE	COURSE	PREREQUISITE	CORE	HOUR					RE
					L	P	T	C	TOTAL	
1	DUE0082	TECHNICAL ENGLISH 3		COMPULSARY	1	0	2			2.0
2	DEC0252	TECHNOPRENEUR IN ENGINEERING WORLD		COMMON	1	2	0			2.0
3	DEC0213	COMPUTER VISION PROGRAMMING	DEC20162	DISCIPLINE	1	4	0			3.0
4	DEE0181	COMPUTER AIDED ELECTRICAL DRAWING		DISCIPLINE	0	2	0			1.0
5	DEC0283	MICROPROCESSOR		SPECIALIZATION	2	2	0			3.0
6	DEC0193	DATABASE SYSTEM		SPECIALIZATION	2	2	0			3.0
7	DEC0202	PROJECT 1		SPECIALIZATION	0	3	0			2.0
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					7	15	2			16.0

NO	CODE	COURSE	PREREQUISITE	CORE	HOUR					RE
					L	P	T	C	TOTAL	
1	DUE1062	TECHNICAL ENGLISH 1		COMPULSARY	1	0	2			2.0
2	MPU24031	SUKAN 1		COMPULSARY	0	2	0			1.0
3	MPU24041	KELAB/PERSATUAN 1		COMPULSARY	0	2	0			1.0
4	MPU24041	UNIT BERHIFORMA 1		COMPULSARY	1	0	2			2.0
5	DUIW1042	PENGHAYATAN ETIKA DAN PERADABAN		COMMON	2	0	0			2.0
6	DBM10163	OCCUPATIONAL SAFETY AND HEALTH FOR ENGINEERING		COMMON	2	0	2			3.0
7	DBS10042	ENGINEERING MATHEMATICS 1		COMMON	2	1	0			2.0
8	DET10112	ELECTRICAL WIRING		DISCIPLINE	1	3	0			2.0
9	DET10103	ELECTRICAL CIRCUITS 1		DISCIPLINE	2	2	0			3.0
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					11	8	6			17.0

NO	CODE	COURSE	PREREQUISITE	CORE	HOUR					RE
					L	P	T	C	TOTAL	
1	MPU22071	KURSUS INTEGRITI DAN ANTRASUJAH		COMPULSARY	0	0	2			1.0
2	DEC0283	CMOS INTEGRATED CIRCUIT DESIGN AND FABRICATION	DEE20143 DEE20153	DISCIPLINE	2	2	0			3.0
3	DEC0233	OPERATING SYSTEM		SPECIALIZATION	2	2	0			3.0
4	DEC0233	COMPUTER SYSTEM DIAGNOSIS AND MAINTENANCE		SPECIALIZATION	2	2	0			3.0
5	DEE0202	PROJECT 2	DEE40202	SPECIALIZATION	0	4	0			3.0
6	DXXXXX2	ELECTIVE 1		ELECTIVE	0	0	2			2.0
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					6	10	2			15.0

NO	CODE	COURSE	PREREQUISITE	CORE	HOUR					RE
					L	P	T	C	TOTAL	
1	MPU24051	SUKAN 2	MPU24031 MPU24041 MPU24041	COMPULSARY	0	2	0			1.0
2	MPU24051	SAJANG TEKNOLOGI DAN KELUJUTERAAN ISLAM #		COMPULSARY	1	0	2			2.0
3	DBM10163	INIAI MASTARAKAT MALAYSIA #		COMMON	2	0	2			3.0
4	DBM10163	ENGINEERING MATHEMATICS 2		DISCIPLINE	1	2	0			2.0
5	URE20143	PROGRAMMING FUNDAMENTALS		DISCIPLINE	2	2	0			3.0
6	URE20153	SEMICONDUCTOR DEVICES		DISCIPLINE	2	2	0			3.0
7	DET20123	DIGITAL ELECTRONICS		DISCIPLINE	2	2	0			3.0
8	DET20123	ELECTRICAL CIRCUITS 2		DISCIPLINE	2	2	0			3.0
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					10	10	4			17.0

NO	CODE	COURSE	PREREQUISITE	CORE	HOUR					RE
					L	P	T	C	TOTAL	
1	DUIF00910	ENGINEERING INDUSTRIAL TRAINING		INDUSTRIAL TRAINING						10.0
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					0	0	0			10.0

NO	CODE	COURSE	PREREQUISITE	CORE	HOUR					RE
					L	P	T	C	TOTAL	
1	DUE10072	TECHNICAL ENGLISH 2		COMPULSARY	1	0	2			2.0
2	DBM30189	ELECTRICAL ENGINEERING MATHEMATICS		COMMON	2	0	2			3.0
3	DEC0182	EMBEDDED SYSTEM APPLICATION	DEC0162	DISCIPLINE	1	2	0			2.0
4	DEC0163	ELECTRONIC CIRCUITS		DISCIPLINE	2	2	0			3.0
5	DEC0173	COMPUTER NETWORKING FUNDAMENTALS		DISCIPLINE	1	2	0			3.0
6	DEC0252	INTERNET OF THINGS DEVICES APPLICATION		DISCIPLINE	1	2	0			2.0
7	DEE0191	ELECTRONIC COMPUTER AIDED DESIGN		DISCIPLINE	0	2	0			1.0
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					9	10	4			16.0

* For list of elective courses refer to Course Inventory. Students are required to take 2 credits of elective courses.

Prepared by:
Curriculum Unit,
Department of Electrical Engineering.

NOTES:
: Remark
* : Course with final examination
: For Muslim Students
: For Non Muslim Students
I : Lecture
P : Practical
T : Tutorial
C : Credit
Co-curriculum pathways:
Path 1 : Sukran
Path 2 : Kelab/Persatuan
Path 3 : Unit Beruniform

DIPLOMA IN ELECTRICAL AND ELECTRONIC ENGINEERING



INTRODUCTION

The Electrical Engineering Diploma graduates of the polytechnic's Ministry of Higher Education are Exposed to a comprehensive curriculum consisting of courses in personal development, mathematics, science, electrical engineering disciplines and workplace competencies requirements. The Diploma in Electrical and Electronic Engineering programme covers broad discipline of electrical and electronics engineering fundamental courses, computer technologies-based courses and specialization courses. The electrical and electronic engineering is the field of study which generally deals with the application of electrical and electronics towards designing, testing and development of circuitry and equipment for well-defined engineering activities. It requires the application of scientific and engineering knowledge and methods combined with practical skills in supporting well-defined engineering activities to prepare students for their future role in the industry.

The Diploma in Electrical and Electronic Engineering graduates of the programme have the prospect of working in the electric and electronic industries, computer-based technology industry and integrated circuit design, fabrication and packaging industry. The programme will produce balanced Technical and Vocational Education and Training (TVET) graduates who contribute to society ethically, engage in enterprising activities, continuously developing professionally and adapt to technology changes

SYNOPSIS

The Diploma in Electrical and Electronic Engineering programme includes the discipline of electrical and electronics engineering fundamental courses, computer technologies based courses and specialization courses. The engineering fundamental courses are electrical wiring, semiconductor devices, electronic circuits, digital electronics, electrical circuit 1 and 2 . The computer technology-based courses are comprised of programming fundamentals, computer aided design and embedded system applications. The specialization courses are renewable energy, programable logic control, power electronic, power system and final year project. The green technology elements are also incorporate in the curriculum to provide awareness towards the importance of the sustainable energy.

JOB PROSPECT

This programme provides the knowledge and skills in electrical engineering that can be applied to a broad range of careers in most power generation provider and manufacturing industries. The knowledge and skills that the students acquire from the programme will enable them to participate in the job market as:

- a. Electrical/Electronic Technician
- b. Electrical Engineering Service Advisor
- c. Technical Assistant
- d. Electrical/Electronic Engineering Supervisor
- e. Assistant Engineer
- f. Maintenance technician

PROGRAMME AIM

This programme believes that all individuals have potential to be a resourceful and adaptable technician to support the nation's aspiration in providing engineering talent

PROGRAMME STRUCTURE

POLITEKNIK SULTAN MIZAN ZAINAL ABIDIN
ELECTRICAL ENGINEERING DEPARTMENT
PROGRAMME STRUCTURE
Session...L_2024/2025
DIPLOMA IN ELECTRICAL AND ELECTRONIC ENGINEERING

SEMESTER 4									
NO	CODE	COURSE	PREREQUISITE	CORE	COMPULSORY	L	P	T	RE
1	DUE0002	TECHNICAL ENGLISH 3		COMPULSORY	1	0	2	2.0	
2	MPU2071	KURSUS INTEGRITI DAN ANTI-RASIAH		COMPULSORY	0	0	2	1.0	
3	DIE0022	TECHNOPRENEUR IN ENGINEERING WORLD		COMMON	1	2	0	2.0	
4	DIE0022	PROJECT 1		DISCIPLINE	0	3	0	2.0	
5	DEE0093	PROGRAMMABLE LOGIC CONTROLLER (PLC) AND AUTOMATION		DISCIPLINE	2	2	0	3.0	*
6	DEF00145	POWER SYSTEMS	DEE0022	DISCIPLINE	2	2	0	3.0	*
7	DEE00169	POWER ELECTRONICS	DEE0022	DISCIPLINE	2	2	0	3.0	*
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					8	11	4	16.0	66.0

SEMESTER 1									
NO	CODE	COURSE	PREREQUISITE	CORE	COMPULSORY	L	P	T	RE
1	DUE0002	TECHNICAL ENGLISH 1		COMPULSORY	1	0	2	2.0	
2	MPU2001	SUKAN 1		COMPULSORY	0	2	0	1.0	
3	DUE0002	TECHNICAL ENGLISH 2		COMMON	2	0	0	2.0	
4	DUE0002	TECHNICAL ENGLISH 3		COMMON	2	0	0	2.0	*
5	DUE0002	TECHNICAL ENGLISH 4		COMMON	2	1	0	2.0	*
6	DUE0002	TECHNICAL ENGLISH 5		DISCIPLINE	2	2	0	3.0	*
7	DUE0002	TECHNICAL ENGLISH 6		DISCIPLINE	2	2	0	3.0	*
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					11	7	4	16.0	16.0

SEMESTER 5									
NO	CODE	COURSE	PREREQUISITE	CORE	COMPULSORY	L	P	T	RE
1	MPU2072	PENGHAYATAN ETIKA DAN PERADABAN		COMPULSORY	1	0	2	2.0	
2	MPU2072	SAINS TEKNOLOGI DAN KEURUTERAHAN ISLAM #		COMPULSORY	1	0	2	2.0	
3	MPU2072	NILAI MASYARAKAT MALAYSIA #		DISCIPLINE	2	2	0	3.0	*
4	DIE0022	PROJECT 2	DEE0022	DISCIPLINE	0	4	0	3.0	*
5	DEE0022	PROJECT 2	DEE0022	DISCIPLINE	2	2	0	3.0	*
6	DEF00133	ELECTRICAL MACHINE	DEE0022	DISCIPLINE	2	2	0	3.0	*
7	DEE00169	ELECTIVE 1		ELECTIVE	2	2	0	2.0	
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					6	8	4	15.0	61.0

SEMESTER 2									
NO	CODE	COURSE	PREREQUISITE	CORE	COMPULSORY	L	P	T	RE
1	MPU2001	SUKAN 2		COMPULSORY	0	2	0	1.0	
2	MPU2001	RELAU/ PERAKSIAN 1		COMMON	2	0	2	3.0	*
3	MPU2001	RELAU/ PERAKSIAN 2		COMMON	1	3	0	2.0	
4	DEE0002	ENGINEERING MATHEMATICS 2		DISCIPLINE	2	2	0	2.0	
5	DEE0002	ENGINEERING MATHEMATICS 1		DISCIPLINE	2	2	0	2.0	
6	DEE0002	ENGINEERING MATHEMATICS 3		DISCIPLINE	2	2	0	2.0	
7	DEE0002	ENGINEERING MATHEMATICS 4		DISCIPLINE	2	2	0	2.0	
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					10	13	2	17.0	33.0

SEMESTER 6									
NO	CODE	COURSE	PREREQUISITE	CORE	INDUSTRIAL TRAINING	L	P	T	RE
1	DUE00910	ENGINEERING INDUSTRIAL TRAINING		INDUSTRIAL TRAINING	0	0	0	0	10.0
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					0.0	0	0	0	10.0

SEMESTER 3									
NO	CODE	COURSE	PREREQUISITE	CORE	COMPULSORY	L	P	T	RE
1	DUE0002	TECHNICAL ENGLISH 2		COMMON	1	0	2	2.0	*
2	DUE0002	TECHNICAL ENGLISH 3		COMMON	1	0	2	2.0	*
3	DUE0002	TECHNICAL ENGLISH 4		DISCIPLINE	1	2	0	2.0	
4	DUE0002	TECHNICAL ENGLISH 5		DISCIPLINE	2	2	0	3.0	*
5	DUE0002	TECHNICAL ENGLISH 6		DISCIPLINE	2	2	0	3.0	*
6	DUE0002	TECHNICAL ENGLISH 7		DISCIPLINE	0	2	0	1.0	
7	DUE0002	TECHNICAL ENGLISH 8		DISCIPLINE	0	2	0	1.0	
8	DUE0002	TECHNICAL ENGLISH 9		DISCIPLINE	2	2	0	3.0	*
TOTAL OF CONTACT HOURS/CREDIT/CUMULATIVE					9	13	4	17.0	50.0

* For list of elective courses refer to Course Inventory. Students are required to take 2 credits of elective course.

Prepared By:
Curriculum Unit,
Department of Electrical Engineering.

Co-curriculum pathway:
Path 1: Sukun
Path 2: Relau/ Perakian
Path 3: Unit Berasidam

NOTES:
L : Lecture
P : Practical
: Course with final examination
: For Muslim Students

COURSE SYNOPSIS

COURSE	SYNOPSIS	COURSE LEARNING OUTCOME
SEMESTER 1		
DUW10042 OCCUPATIONAL SAFETY AND HEALTH FOR ENGINEERING	<p>Occupational Safety And Health For Engineering course is designed to impart understanding of the self-regulatory concepts and provisions under the Occupational Safety & Health Act (OSHA) in Malaysia. This course presents the responsibilities of workers in implementing and complying with the safety procedures at work. Understanding of notifications of accidents, dangerous occurrences, poisoning and diseases and liability for offences will be imparted to students. This course will also provide an understanding of the key issues in OSH Management, Incident Prevention, Hazard Identification Risk Control and Risk Assessment (HIRARC), Fire Safety and First Aid, Workplace Environment and Ergonomics and guide the students gradually into this multi-disciplinary science</p>	<p>CLO 1: explain briefly occupational safety and health (OSH) procedures, regulation and its compliance in Malaysia</p> <p>CLO 2: describe hazards, risks and safe work practices in order to maintain health and safe work environment</p> <p>CLO 3: justify the factor that can lead to accident in workplace</p>

<p style="text-align: center;">DEE10133 MEASUREMENT DEVICES</p>	<p>Measurement Devices introduces students to the basic concept of electrical instruments and measurement. It covers the basic principles of measurement, safety precautions and meter calibration. Students will also use measurement devices such as analogue meters, DC meters, analogue and digital multimeters, oscilloscopes, signal generators and power meters during the practical sessions. This course also covers the basic concept and simple application of the DC Brid</p>	<p>CLO1: apply the concept of measurement in electrical and electronic equipment using appropriate theorem.</p> <p>CLO2: perform meter calibrating and measuring technique using the correct measuring equipment.</p> <p>CLO3: demonstrate good communication skill in oral presentation within a stipulated time frame.</p>
<p style="text-align: center;">DET10103 ELECTRICAL CIRCUITS 1</p>	<p>Electrical Circuits 1 course introduces students to the principles related to DC electrical circuits. It covers the fundamental laws, theorems, and circuit techniques of the electrical technology fundamentals. This course also covers inductor, capacitor, magnet, and electromagnetic circuits.</p>	<p>CLO1: apply the concepts and principles of related electrical circuit theorems and laws to DC electrical circuits using various methods and approaches</p> <p>CLO2: construct DC circuits to measure related electrical parameters using appropriate electrical equipment.</p> <p>CLO3: demonstrate ability to work in team to complete assigned tasks within the stipulated time frame.</p>

<p style="text-align: center;">DET10112</p> <p style="text-align: center;">ELECTRICAL WIRING</p>	<p>Electrical Wiring exposes students to the various aspects of wiring installation according to the Electricity Supply Act 1990 and Electricity Regulation 1994. Students will be able to relate the theoretical aspects to practical work on electrical wiring during workshop sessions. This course also provides students with the knowledge and skills in doing different types of wiring installation, wiring protection, wiring inspection, wiring testing and instill a commitment to decent work practices in electrical wiring for achieving sustainable development.</p>	<p>CLO1:</p> <p>apply the concept and principle of electrical safety in performing electrical wiring according to the Electricity Supply Act 1990, Electricity Regulation 1994 and MS IEC 60364 Standard</p> <p>CLO2:</p> <p>construct single-phase domestic wiring according to the Electricity Supply Act 1990, Electricity Regulation 1994 and MS IEC 60364 Standard.</p> <p>CLO3:</p> <p>demonstrate understanding and commitment to professional ethics, responsibilities, and engineering norms while performing practical work in single-phase domestic wiring</p>
<p>SEMESTER 2</p>		
<p style="text-align: center;">DEE20143</p> <p style="text-align: center;">SEMICONDUCTOR DEVICES</p>	<p>Semiconductor Devices introduces students to basic electronic theories and devices. It covers the fundamentals of electronic devices which include diodes, bipolar junction transistors and field effect transistors. The content encompasses device structure to biasing basic applications.</p>	<p>CLO1:</p> <p>apply the theoretical characteristics and electrical properties of semiconductor by using appropriate measuring operations and theorem.</p> <p>CLO2:</p> <p>construct the various applications of semiconductor devices circuits by using schematic diagrams.</p> <p>CLO3:</p> <p>demonstrate good communication skills in oral presentation on assigned topics within a stipulated time frame</p>

<p style="text-align: center;">DEE20153</p> <p style="text-align: center;">DIGITAL ELECTRONICS</p>	<p>Digital Electronics introduces the theories on the basics of digital systems. This course emphasizes digital system fundamentals and applications. This course mainly covers number systems, code systems, logic gates, Boolean operations, data processing, flip-flops, counters, and registers</p>	<p>CLO1:</p> <p>apply the knowledge of logic operations using Boolean Algebra or Karnaugh Map in digital logic circuit.</p> <p>CLO2:</p> <p>construct the logic diagrams, truth tables and timing diagrams using logic gates and flip-flop.</p> <p>CLO3:</p> <p>demonstrate ability to work as individual and collaborative in team to complete assigned task during practical work sessions</p>
<p style="text-align: center;">DET20123</p> <p style="text-align: center;">ELECTRICAL CIRCUITS 2</p>	<p>Electrical Circuits 2 is designed to provide students with the knowledge related to Alternating Current (AC) of electrical circuits. It focuses on the principles of an alternating current AC waveform and sinusoidal steady state circuit analysis. This course also covers the operations of various types of transformers and applications of three phase system.</p>	<p>CLO1:</p> <p>apply the concept and principles in solving problems of electrical circuits using the appropriate AC electrical laws and theorem.</p> <p>CLO2:</p> <p>construct an AC electrical circuit to measure related electrical parameters using appropriate electrical equipment.</p> <p>CLO3:</p> <p>demonstrate the ability to effectively collaborate within a team and accomplish assigned tasks within a specified time frame during practical work.</p>

<p style="text-align: center;">DEC20162</p> <p style="text-align: center;">PROGRAMMING FUNDAMENTALS</p>	<p>Programming Fundamentals provides the skills necessary for the effective application of computation and computer programming in engineering applications. Students develop their programming skills through a variety of assignments and labs and by reviewing case studies and example programs. The learning outcome is proficiency in writing small to medium programs in a procedural programming language.</p>	<p>CLO1:</p> <p>apply knowledge of basic concepts and fundamentals of structured programming in solving a variety of engineering and scientific problems using a high level C programming language.</p> <p>CLO2:</p> <p>build programs written in C language by using C standard revision.</p> <p>CLO3:</p> <p>Demonstrate continuous learning skill in independent acquisition of new knowledge and skill in a mini project through a written report.</p>
<p>SEMESTER 3</p>		
<p style="text-align: center;">DEE30163</p> <p style="text-align: center;">ELECTRONIC CIRCUITS</p>	<p>Electronic Circuits emphasize the concept of electronic device applications. The course covers the fundamentals of electronic circuit application which include power supply units, oscillators, operational amplifiers, timers, filters and AD/DA converters. The content covers circuit configurations, operation, and application of the electronic circuits</p>	<p>CLO1:</p> <p>apply the principles of electronic circuits devices by using block diagram or circuit diagram.</p> <p>CLO2:</p> <p>construct the various applications of electronic circuits based on the theory and principle operation of the circuits.</p> <p>CLO3:</p> <p>Demonstrate good written communication skills through assigned topic within a stipulated time frame.</p>

<p style="text-align: center;">DEE30172</p> <p style="text-align: center;">ELECTRONIC EQUIPMENT DIAGNOSTIC</p>	<p>Electronic Equipment Diagnostic provides the fundamental knowledge and hands-on skills to diagnose and troubleshooting electronics equipment. This course focuses on common faults in regulated dc power supply, audio equipment and television system. This course also provides knowledge and skills on troubleshooting broken cell phones.</p>	<p>CLO1:</p> <p>diagnose fault of electronic equipment related to electronic equipment repair using the correct diagnosis technique.</p> <p>CLO2:</p> <p>measure the characteristics and performances of faulty electronic repair using suitable diagnosis technique.</p> <p>CLO3:</p> <p>fix the post-consumer's electronic equipment fault using the correct diagnosis technique.</p> <p>CLO4:</p> <p>demonstrate good social responsibility in solving well defined engineering problems during performing electronic system and appliances maintenance task.</p>
<p style="text-align: center;">DEE30191</p> <p style="text-align: center;">ELECTRONIC COMPUTER AIDED DESIGN</p>	<p>Electronic Computer Aided Design covers the basic concepts and fundamentals of electronic circuit simulation. It also covers the applications of electronic packages for electronic circuit simulation at the circuit level and the logic level. Emphasis is given to the simulation for analogue, digital logic and mixed-signal circuits using various types of simulation analysis. A printed Circuit Board (PCB) layout is then produced for the circuits. The simulation and the PCB layout are done using electronic software packages such as Protel/Altium Designer, ORCAD, Pspice, Circuit Maker, Electronic Workbench, NI Multisim or Proteus.</p>	<p>CLO1:</p> <p>perform analysis circuit and produce PCB layout by using Electronic Computer Aided Design (ECAD) software.</p> <p>CLO2:</p> <p>demonstrate good written communication skills through assign topic within a stipulated time frame.</p>

<p style="text-align: center;">DEP30093</p> <p style="text-align: center;">COMMUNICATION SYSTEM FUNDAMENTALS</p>	<p>Communication System Fundamentals introduces the students to the concepts of communication systems. This course covers the principles of communications, analog and digital modulation techniques, multiplexing, and transmission medium. The concepts of sampling, quantization, and line coding techniques in rendering an information signal to be compatible with digital systems are explained before the study of pulse code modulation (PCM). It also exposes the students to the basics of data transmission and communication codes in communication systems.</p>	<p>CLO1:</p> <p>apply the concept of the communication system with the aid of an appropriate diagram.</p> <p>CLO2:</p> <p>perform the related communication system practices using suitable equipment.</p> <p>CLO3:</p> <p>demonstrate good verbal communication skills on assigned End of Chapter question</p>
<p style="text-align: center;">DEC30182</p> <p style="text-align: center;">EMBEDDED SYSTEM APPLICATION</p>	<p>Embedded System Applications covers the basic concept and application of microcontroller systems based on ATmega328. Students learn software and hardware development on ATmega328 microcontrollers. Students are exposed to Arduino Programming Framework during software development and understand how to interface the Microcontroller Unit (MCU) with external devices using suitable peripheral features.</p>	<p>CLO1:</p> <p>design embedded system applications to solve the element of real/practical engineering demonstrated in the given problem using an ATmega328P microcontroller.</p> <p>CLO2:</p> <p>investigate peripheral features and typical application circuits to interface between MCU and external devices based on ATmega328P</p> <p>CLO3:</p> <p>demonstrate knowledge of engineering project management and finance principles based on an assigned mini project through a written report.</p>

<p style="text-align: center;">DEC30173</p> <p style="text-align: center;">COMPUTER NETWORKING FUNDAMENTALS</p>	<p>Computer Networking Fundamentals introduce students to the concepts and principles of data transmission and computer networks. This course enables students to correctly use standard terminology in describing the main Local Area Network (LAN) topologies, hardware and software components used in networking. This course provides students with the knowledge and skills to build a network infrastructure using copper cabling, and wireless devices wisely. Students also learn to troubleshoot and secure the network.</p>	<p>CLO1:</p> <p>evaluate a computer network structure to determine the network protocol, network services, network problem and network security when implementing specific networking requirements.</p> <p>CLO2:</p> <p>construct network cabling and simple LAN/WLAN in accordance to IEEE 802 networking standards and network troubleshooting plan.</p> <p>CLO3:</p> <p>demonstrate awareness of the norm practice of professional bodies such as IEEE or TIA/EIA-568 during practical work session.</p>
<p style="text-align: center;">DEC30252</p> <p style="text-align: center;">INTERNET OF THINGS DEVICES APPLICATION</p>	<p>Internet of Things Devices Applications provides knowledge and exposure in advanced technology such as Internet of Things (IoT) platform, basic concept of cloud computing and real time monitoring and controlling. The course focuses on the basic knowledge of hardware, software and connectivity encompasses public safety and sustainable development to construct the IoT applications as a key technology of Industry Revolution 4.0 (IR4.0).</p>	<p>CLO1:</p> <p>apply knowledge on communication between devices, platforms and user applications based on IoT protocols and standards.</p> <p>CLO2:</p> <p>construct various types of input/output applications, data acquisition and communication using the IoT platform.</p> <p>CLO3:</p> <p>demonstrate awareness of public safety and sustainable development through IoT application in mini project</p>

<p style="text-align: center;">DEE30181</p> <p style="text-align: center;">COMPUTER AIDED ELECTRICAL DRAWING</p>	<p>Computer Aided Electrical Drawing provides knowledge and exposure on the usage of AutoCAD software. The course focuses on the application of the software to produce drawings of graphics, electrical / electronic component symbols, circuit schematics and electrical wiring layout diagram. The skills acquired from this course will also equip students with the ability to learn and use other similar software.</p>	<p>CLO1:</p> <p>construct complex technical drawing, electrical wiring and electronic schematic diagrams using AutoCAD software based on American/British standard.</p> <p>CLO2:</p> <p>follow professionalism and ethics in drawing electrical consumer wiring diagram in practical work according to latest standard</p>
<p style="text-align: center;">DEG30073</p> <p style="text-align: center;">RENEWABLE ENERGY SYSTEMS</p>	<p>Renewable Energy Systems course covers the fundamental principles and practical applications of different Renewable Energy Power Systems. Its focuses on Solar Photovoltaic, Wind Energy, Hydroelectric, Bioenergy and Other Renewable Energy Power System, emphasizing the significance of Renewable Energy usage. The environmental impact of these systems are also be discussed.</p>	<p>CLO1:</p> <p>analyse the concept, principle, system configurations and functionality in various Renewable Energy Systems.</p> <p>CLO2:</p> <p>construct various Renewable Energy Systems using appropriate methods to assemble, operate and troubleshoot.</p> <p>CLO3:</p> <p>Display awareness of the sustainability and environmental impact of Renewable Energy Systems to society.</p>

SEMESTER 4

<p align="center">DEE40252</p> <p align="center">TECHNOPRENEUR IN ENGINEERING WORLD</p>	<p>Technopreneur in the Engineering World course explores the role of technicians in modern society, with a particular emphasis on reverse engineering, entrepreneurial skills, and social entrepreneurship. It offers a comprehensive approach that combines theoretical knowledge with practical skills for technopreneurship, empowering students to develop innovative solutions that address both commercial and social challenges. This course can help students become technopreneurs and encourage them to pursue this career path while also fostering an awareness of socially responsible business practices. It allows students to generate creative and innovative business ideas through developed technical business plans, investigative skills in existing technical products, and financial planning that students have learned. In addition, this course also equips students to plan strategically in marketing technical products using digital marketing trends.</p>	<p>CLO1: analyse existing technical products by adhering to relevant regulatory compliance and standards.</p> <p>CLO2: demonstrate effective communication skills in social business by using digital trend marketing.</p> <p>CLO3: propose financial planning skills for an existing product or system through a technical business plan report.</p>
<p align="center">DEC30252</p> <p align="center">INTERNET OF THINGS DEVICES APPLICATION</p>	<p>Internet of Things Devices Applications provides knowledge and exposure in advanced technology such as Internet of Things (IoT) platform, basic concept of cloud computing and real time monitoring and controlling. The course focuses on the basic knowledge of hardware, software and connectivity encompasses public safety and sustainable development to construct the IoT applications as a key technology of Industry Revolution 4.0 (IR4.0).</p>	<p>CLO1: apply knowledge on communication between devices, platforms and user applications based on IoT protocols and standards.</p> <p>CLO2: construct various types of input/output applications, data acquisition and communication using the IoT platform.</p> <p>CLO3: demonstrate awareness of public safety and sustainable development through IoT application in mini project.</p>

<p style="text-align: center;">DEE40202 PROJECT 1</p>	<p>Project 1 provides knowledge regarding the implementation and development methods of a project based on hardware or software or a combination of hardware and software. This course provides exposure to project management and finance, techniques to develop project and proposal preparation. The students are allowed to do an individual or group project but will be assessed individually through the project assessment tasks throughout the course.</p>	<p>CLO1:</p> <p>evaluate well defined engineering problems on a chosen project.</p> <p>CLO2:</p> <p>organise investigation to find suitable methods from selected technical literature.</p> <p>CLO3:</p> <p>perform the testing procedure by using appropriate tools.</p> <p>CLO4:</p> <p>display written communication skills through a proposal.</p> <p>CLO5:</p> <p>display good project management and finance during the development of project.</p>
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<p style="text-align: center;">DEP40103</p> <p style="text-align: center;">DATA COMMUNICATION AND NETWORKING</p>	<p>Data Communication and Networking introduces students to the fundamentals of data communications and computer networking technologies such as the concepts, models, protocols and standards, transmission medium, and error detection during data transmission. The course equips students with the knowledge and skills necessary for managing the operations and ensuring the security of data communication networks, with a particular focus on Local Area Network (LAN).</p>	<p>CLO1 :</p> <p>analyse the concept of data and computer networks related to data communication and networking protocol.</p> <p>CLO2 :</p> <p>perform configuring of networking devices using appropriate networking tools and techniques in accordance with IEEE 802 standards.</p> <p>CLO3:</p> <p>demonstrate an awareness of the normative practice of professional ethics based on IEEE 802 standards during practical work sessions.</p>
<p style="text-align: center;">DEP40123</p> <p style="text-align: center;">FIBRE OPTIC COMMUNICATION SYSTEM</p>	<p>Fiber Optic Communication System introduces students to the basic concept of fiber optics in communication systems. This course covers fiber optic characteristics, components in fiber optic systems, losses in fiber optic cable, and the fundamental concept of optical measurement and testing. This course also provides knowledge in splicing techniques with safety awareness, multiplexing techniques, and design considerations in fiber optic communication links.</p>	<p>CLO1:</p> <p>design a fiber optic link system according to the designated performance requirements.</p> <p>CLO2:</p> <p>perform measurement techniques on fiber optic connections according to safety procedures.</p> <p>CLO3:</p> <p>demonstrate teamwork when carrying out fiber optic installations during practical work.</p>

DEC40213

COMPUTER VISION PROGRAMMING

Computer Vision Programming covers the processing of image using a Python language, image, and video capture basic, followed by image and video capture filtering, color spaces, ending with image and video capture detection. These parts are essential to students in mastering fundamental of image processing. It will help them to understand the flow from capturing of image or video to detect of objects in the image or video source.

CLO1:

design image processing instruction for assigned projects during practical work session using OpenCV libraries and Python language

CLO2:

assemble the concept and principle of computer vision and image processing problems using OpenCV libraries and Python language.

CLO3:

Demonstrates continuous learning and information management skill in independent acquisition of new knowledge and skill to develop a mini project.

<p style="text-align: center;">DEC40283</p> <p style="text-align: center;">MICROPROCESSOR</p>	<p>Microprocessor introduces the students to the basic processor application of ARM processor and principle of microcontroller hardware system. Students will learn the fundamental concepts and techniques to apply ARM Development Tools in assembly and C language. This course also provides the skills to control external peripherals using digital input and output peripherals.</p>	<p>CLO1:</p> <p>analyse the function of microprocessor system related to the internal register, the memory management and the input/output of ARM Processor application board</p> <p>CLO2:</p> <p>build program to control features of various peripherals in the ARM processor.</p> <p>CLO3:</p> <p>demonstrate continuous and independent learning in enhancing programming skill through an assigned case study.</p>
<p style="text-align: center;">DEC40193</p> <p style="text-align: center;">DATABASE SYSTEM</p>	<p>Database System course offers a comprehensive coverage of basic concept and application of data manipulation. Students will learn the fundamental concepts and techniques for designing and developing database and manipulating data using Structured Query Language (SQL).</p>	<p>CLO1:</p> <p>analyse the concept and application of database system using Data Model</p> <p>CLO2:</p> <p>perform Structured Query Language (SQL) for database using a database management system</p> <p>CLO3:</p> <p>demonstrate good ability in managing a well-defined Structured Query Language (SQL) project in a cost effective manner.</p>

<p style="text-align: center;">DEJ40093</p> <p style="text-align: center;">PROGRAMMABLE LOGIC CONTROLLER (PLC) AND AUTOMATION</p>	<p>Programmable Logic Controller (PLC) and Automation provides a basic understanding of the concept and principle of automation system. This course emphasises the relationship between conventional/hardwired/relay ladder logic (RLL) and PLC system, application of various industrial input and output devices of PLC, designing process, programming and constructing method. This course also provides knowledge and skills in designing environmentally-friendly automation control system based on conventional/hardwired/relay ladder logic (RLL) and PLC.</p>	<p>CLO1 :</p> <p>create environmentally-friendly automation control system using electromechanical devices and PLC.</p> <p>CLO2 :</p> <p>perform the ability to construct of hardwired and PLC systems using appropriate equipment.</p> <p>CLO3 :</p> <p>demonstrate an understanding of automation systems by following PLC IEC standards during practical work sessions.</p>
<p style="text-align: center;">DET30143</p> <p style="text-align: center;">POWER SYSTEM</p>	<p>Power System will provide the students with knowledge of the generation of electrical energy by using non-renewable and renewable energy concepts and environmental control systems that are used in power plants. This course focuses on the concepts of transmission, including exposure to the short-line model and distributed voltage at network string calculation. This course also introduces the students to distribution systems and the consumption of electrical power by the consumer.</p>	<p>CLO1:</p> <p>analyse the concepts of generation, transmission and distribution system using engineering fundamentals to improve the quality of electrical power system.</p> <p>CLO2:</p> <p>perform the practical works on electrical power generation, transmission and distribution system using an appropriate energy efficiency equipment.</p> <p>CLO3:</p> <p>demonstrate the ability for independent updating in the face of specialised technical knowledge in implementing a case study for the sustainability and environmental control system at the generation system.</p>

<p style="text-align: center;">DET40163</p> <p style="text-align: center;">POWER ELECTRONICS</p>	<p>Power Electronics course is aimed to equip students with the knowledge and skills related to power electronic devices and its application in power conversion. This course also focuses on the operational principle of rectifiers, choppers, inverters and AC to AC converter circuits. Emphasis is given more on producing the output voltage waveforms of the converters.</p>	<p>CLO1 :</p> <p>analyse the well-defined operational behaviors, principles and fundamental concepts of power electronics through the utilization of schematics circuits.</p> <p>CLO2 :</p> <p>construct the converter circuits to observe the display waveforms using appropriate methods and equipment.</p> <p>CLO3 :</p> <p>demonstrate the ability to effectively collaborate within a team and successfully accomplish assigned tasks while conducting practical work.</p>
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SEMESTER 5

<p align="center">DEP50113</p> <p align="center">MICROWAVE ENGINEERING</p>	<p>Microwave Engineering introduces the fundamental principles of microwave theory and the analysis of transmission lines and antennas utilized in microwave systems. It commences by</p> <p>exploring the basics of microwave engineering, transmission line theory, passive and active</p> <p>microwave devices, microwave components, and systems. Additionally, it encompasses the</p> <p>study of RADAR systems functionality and various applications.</p>	<p>CLO1 :</p> <p>evaluate the performance of microwave transmission by using standard method</p> <p>CLO2 :</p> <p>assemble the related microwave communication equipment using appropriate tools</p> <p>CLO3 :</p> <p>demonstrate continuous learning ability while engaging new technical knowledge on assigned essay question</p>
<p align="center">DEP50133</p> <p align="center">CELLULAR</p>	<p>Cellular Communication introduces to students the basics of wireless communication, the technology and evolution of cellular communication systems according to The International Telecommunication Union (ITU) standards, cellular network channels, techniques used to enhance capacity and speed, interferences, radio wave propagation, and multiple access techniques. This course also exposes the students to the awareness of cellular technology to the public safety and environment-friendly related to the Sustainable Development Goals (SDGs).</p>	<p>CLO1:</p> <p>analyze the principle of cellular communication using the designated formula and suitable techniques.</p> <p>CLO2:</p> <p>measure the signal strength performance in a cellular communication network according to ITU standards.</p> <p>CLO3:</p> <p>explain public safety and environmental-friendly issues in cellular communication related to the SDGs.</p>

<p style="text-align: center;">DEC50263</p> <p style="text-align: center;">CMOS INTEGRATED CIRCUIT DESIGN AND FABRICATION</p>	<p>CMOS Integrated Circuit Design and Fabrication exposes the students to the basic integrated circuit (IC) and CMOS IC fabrication processes which include oxidation, doping, photolithography, metallization and etching. This course also covers IC testing, reliability and failure analysis. The students will be equipped with the knowledge of inverter design and simple to complex CMOS logic gates. The students will experience developing the physical layout of integrated circuit based on specific transistor feature size and using CAD tools while adhering to specific design rules. Finally, this course also covers the topic on design methodology used in designing integrated circuits.</p>	<p>CLO1:</p> <p>design the basic logic gates, digital circuits from Boolean function and integrated circuit layout based on the knowledge of integrated circuit design methodology.</p> <p>CLO2:</p> <p>construct the layout design of CMOS circuits using layout design software based on specific CMOS layout design rules.</p> <p>CLO3:</p> <p>demonstrate elements of sustainable development implementing reduce and reuse techniques in design parameters and design consideration through practical work.</p>
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<p style="text-align: center;">DEE50233</p> <p style="text-align: center;">PROJECT 2</p>	<p>Project 2 is the continuation of DEE40202 Project 1 course. The course focuses on methods of circuit construction, testing, troubleshooting, debugging, repair and also completion of the project which was planned during the previous semester. This course also requires students to manage an economical engineering based project, prepare a project report in a given format and deliver a project presentation at the end of the semester. The students are allowed to do an individual or group project but will be assessed individually through the project assessment tasks throughout the course.</p>	<p>CLO1:</p> <p>design systematically projects with a well-defined technical problem solving skill</p> <p>CLO2:</p> <p>perform appropriate techniques to solve technical problems using suitable tools.</p> <p>CLO3:</p> <p>demonstrate sustainable impacts on the final product</p> <p>CLO4:</p> <p>demonstrate effective communication skills to help others comprehend the completed product.</p> <p>CLO5:</p> <p>display good project management and finance during the development of project.</p> <p>CLO6:</p> <p>demonstrate Lifelong Learning Skill during the development of the project.</p>
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<p style="text-align: center;">DEC50233</p> <p style="text-align: center;">COMPUTER SYSTEM DIAGNOSIS AND MAINTENANCE</p>	<p>The Computer System Diagnosis and Maintenance course provides knowledge on the general concept of computer system diagnosis and maintenance. Students are exposed to computer system hardware, laptop systems, computer peripherals and security. The course focuses on the methods of operation, installation, diagnostic, troubleshooting and maintenance of computer hardware.</p>	<p>CLO1:</p> <p>evaluate fault in personal computer, laptop, printer and computer peripherals using diagnostic procedure.</p> <p>CLO2:</p> <p>construct systematically the installation, configuration, optimization, upgrade and preventive maintenance on personal computer, laptop, computer peripherals and security system.</p> <p>CLO3:</p> <p>demonstrate awareness of social responsibility of safety and health in practical work during computer troubleshooting and maintenance using proper troubleshooting procedures.</p>
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<p style="text-align: center;">DET30133 ELECTRICAL MACHINE</p>	<p>Electrical Machine course exposes students to the basic construction, principle of operation and control of various types of motors and generators. This course provides students with the basic knowledge and skills to solve various problems related to motors and generators.</p>	<p>CLO1 :</p> <p>apply the concept and principles of operation and motor control of electrical machine to solve the related problems using standard formula.</p> <p>CLO2 :</p> <p>measure electrical and mechanical parameters related to AC and DC electrical machine using appropriate equipments.</p> <p>CLO3 :</p> <p>demonstrate ability to work in team to complete assigned tasks.</p>
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RELATED REFERENCES

Student support services and facilities

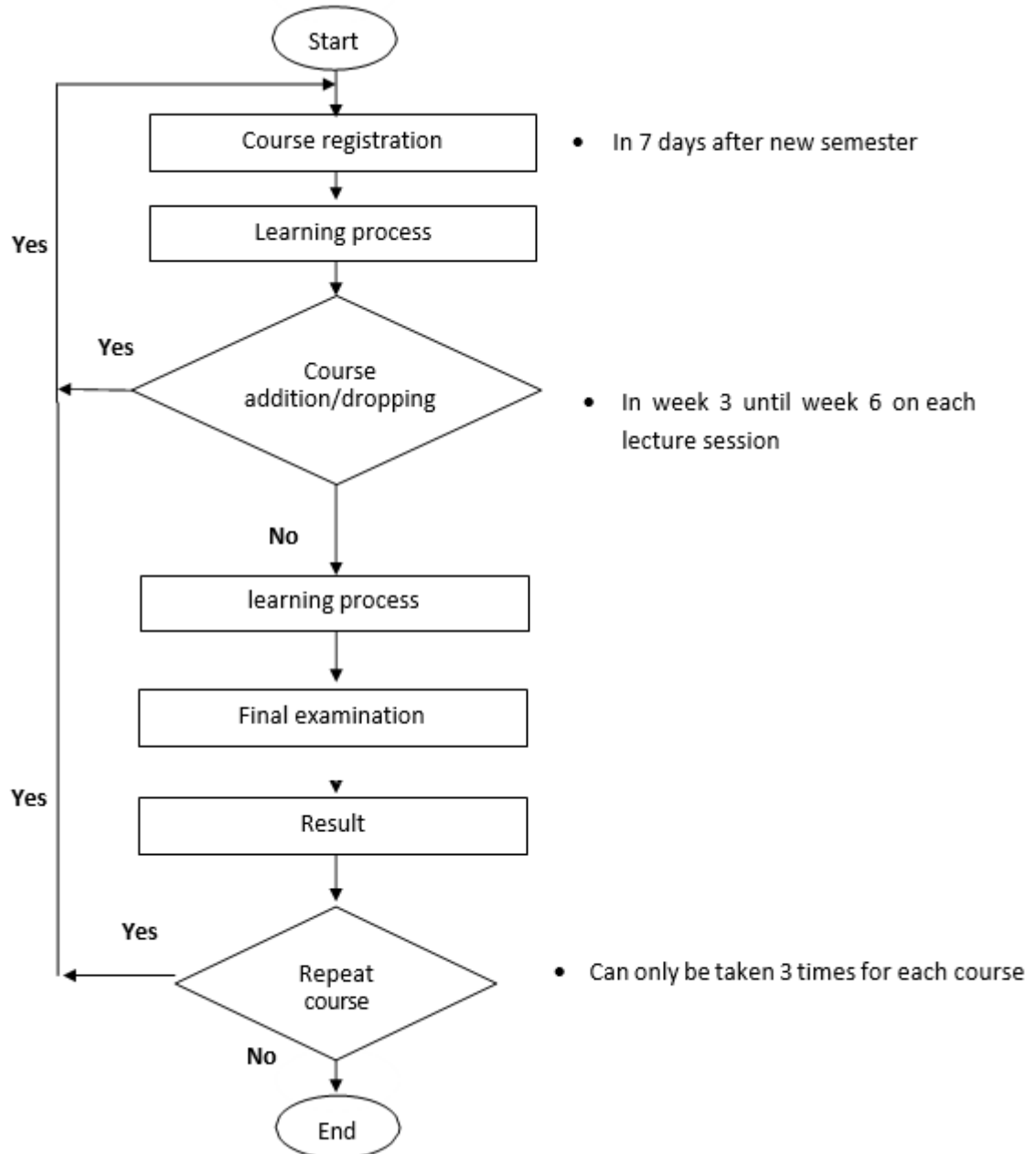
1. Hostel
2. Health service
3. Insurance
4. Financial aid
5. Sport Facilities
6. Library
7. Canteen / Cafeteria
8. Pusat Islam
9. Lecture Hall
10. Koperasi
11. Alumni
12. Counseling Unit, Career and Entrepreneurship Unit
13. Customer Feedback Form, suggestion box and website
14. ICT facilities (Cyber Cafe Center, Local Area Network (LAN) system, Wireless, etc)

Student's Act

Refer "Buku Panduan dan Peraturan Am Pelajar Politeknik, Jabatan Pengajian Politeknik" for further information.

Teaching and Learning Process

Student in Diploma in Electronic Engineering (Communications), Diploma in Electronic Engineering (Computer) and Diploma in Electrical and Electronic Engineering should accomplish 6 semesters for teaching and learning process and for each semester, the steps are as below :-



Examination

Refer “ Arahan-arahan Peperiksaan dan Kaedah Penilaian” for further information.

Academic Advisory System

Academic Advisory System (AAS) is a systematic communication system for student to get guidance, advice and information from the reliable source. AAS help students determine the direction towards academic excellence and generic student attribute.

Refer “Garis Panduan Kecemerlangan Sistem Penasihat Akademik Politeknik, Jabatan Pengajian Politeknik” for further information.

Industrial Training

Industrial Training is a MUST to all students under Diploma Program. Students have to pass industrial training before being recommended for the graduates of Diploma in Polytechnic Ministry of Higher Education.

*Please refer to Industrial Training and Liaison Unit for further information

REFERENCES

1. Buku Panduan dan Peraturan AM Pelajar Politeknik, Jabatan Pengajian Politeknik
2. Arahan-arahan Peperiksaan dan Kaedah Penilaian
3. Garis Panduan Kecemerlangan Sistem Penasihat Akademik Politeknik, Jabatan Pengajian Politeknik
4. Garis Panduan Pengurusan dan Kaedah Penilaian Latihan Industri Politeknik, Jabatan Pengajian Politeknik

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