



STUDENT HANDBOOK

DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)



Politeknik Port Dickson
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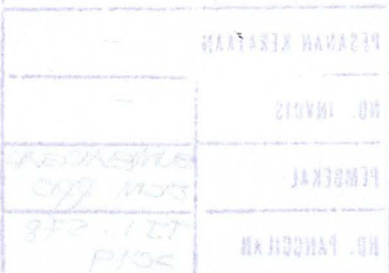
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STUDENT HANDBOOK- DIPLOMA IN MECHANICAL ENGINEERING (MANUFACTURING)

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Encik Roslee bin Yahya

Director of Politeknik Port Dickson

Assalamualaikum w.b.t and Greetings to All

Welcome to Polytechnic Port Dickson. Congratulation to the Department of Mechanical Engineering (Manufacturing) editorial committee members for successfully comes out with this Programme Handbook as one of mechanism to promote Outcome Based Education (OBE) towards the accreditation from Engineering Technology Accreditation Council (ETAC). It is hope that this Programme Handbook became the source of information on programmes offered at the department of Mechanical Engineering, Polytechnic Port Dickson.

As we know, towards the transformation of the polytechnic, we are in the process of obtaining accreditation from ETAC. Therefore, we need to implement the education system that is based on Outcome Based Education (OBE).

I hope that this Programme Handbook can provide early exposure with information on the program followed by student in the Department of Mechanical Engineering (Manufacturing). This includes the information on Programme Educational Objectives (PEO), Programme Learning Outcome (PLO) and Course Learning Outcome (CLO) for each Programme. Other than students, the lectures also can use this Programme Handbook to improve existing information.

I am assured that all the editorial committee members have been work together in producing this Programme Handbook as a mechanism to transmit information. I applaud and congratulate you once again.

Thank You

1.0 BACKGROUND OF POLYTECHNIC PORT DICKSON (PPD)



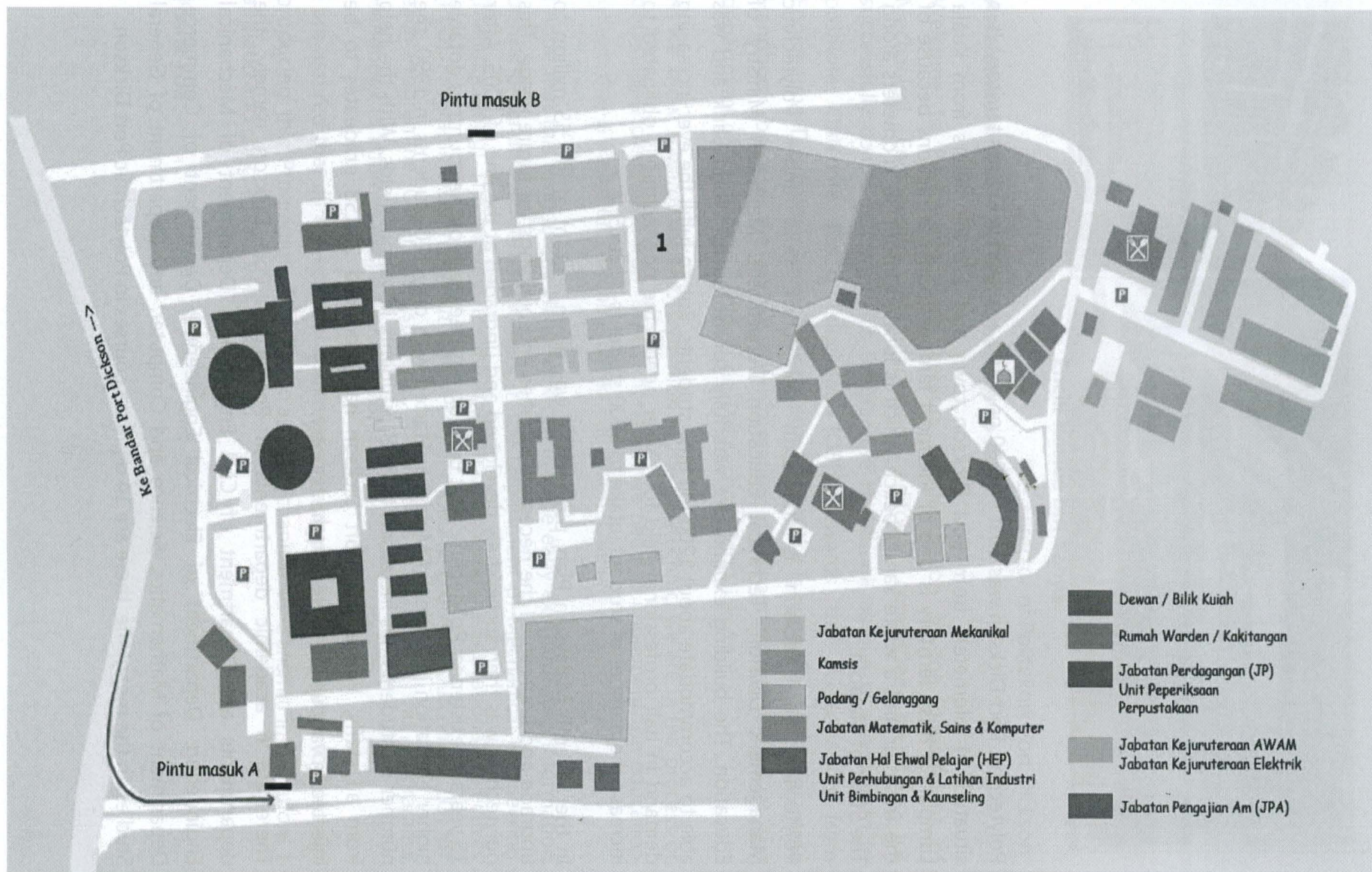
Polytechnic Port Dickson was built in 1990 on a 100 acre land in Si Rusa territory. It is situated 14 kilometers from Port Dickson town and 120 kilometers from Kuala Lumpur. Si Rusa territory is one of the most famous tourist attractions because of the fresh air and a white sandy beach which is located about 30 kilometers along The Strait of Malacca.

Polytechnic Port Dickson is the sixth polytechnic built under Polytechnic Management Division, Technical Education Department, Malaysian Ministry of Education. The building expenditure was fully sponsored by World Bank and was able to accommodate about 1200 full time students. But, to fulfill the ever increasing demand in half professional field for career needs, the polytechnic is obligated to increase the number of student intake to 5000 students by 2005.

In the Seventh Malaysian Plan, polytechnic was given a grant of RM 55 million to upgrade and improve all the necessary facilities and buildings for future usage. This polytechnic was then successfully developed and upgraded at the end of 2005. After 15 years of existence, Polytechnic Port Dickson has been one of the country's notable higher education institutes in Malaysia. Started with only 120 students in 1990, the number of students has increased to 5,781 students in various fields. With the help from all staffs, Polytechnic Port Dickson has produced 26,158 graduates to be injected in various job sectors in the country.

There are 6 academic departments in Polytechnic Port Dickson namely; the departments are Department of Civil Engineering, Department of Mechanical Engineering, Department of Electrical Engineering, Department of Commerce, Department of Mathematics, Science and Computer, and Department of General Studies. In the meantime, there are 14 diploma courses in Polytechnic Port Dickson.

2.0 POLITEKNIK PORT DICKSON FLOOR PLAN



3.0 VISION AND MISSION

3.1 JPPKK Vision AND Mission

HALA TUJU STRATEGIK



VISI

MENJADI PENERAJU INSTITUSI TVET YANG UNGGUL
To be the leading-edge TVET institution

MISI

Menyediakan akses yang meluas kepada program TVET berkualiti dan diiktiraf
To provide wide access to quality and recognized TVET programmes

Memperkasa komuniti melalui pembelajaran sepanjang hayat
To empower communities through lifelong learning

Melahirkan graduan holistik, berciri keusahawanan dan seimbang
To develop holistic, entrepreneurial and balanced graduates

Memanfaatkan sepenuhnya perkongsian pintar dengan pihak berkepentingan
To capitalise on smart partnership with stakeholders

3.2 PPD Vision and Mission

VISION

To be a towering TVET institution globally

MISSION

Producing quality, holistic and well-balanced TVET graduates with entrepreneurship in order to fulfill the needs of the nation.

Developing and sustaining smart partnerships with relevant parties locally and internationally.
To benefit society through education, research and innovation.

3.3 Quality Objectives

- Pass rate per program not less than 90% per semester.
- Achieve at least 25% of current students who pass for each program (degree and diploma) for each semester to achieve PNM 3.00 or more.
- Achieve at least 3.80 levels of employer satisfaction towards working Polytechnic graduates.
- Achieve at least 90% of graduates getting a job during the convocation
- Achieve at least 17 graduates who venture into business or entrepreneurship within 1 year after graduation.
- Achieve at least 10% of students who achieve at least Band 4 results in the MUET exam.
- Achieving at least 10% of students can communicate in English well among Polytechnic students.
- Achieve at least 70% of students graduating by cohort.
- Achieve at least 20% of student involvement in national / international level student activities.
- Achieve at least 80% of the programs that achieve interaction hours involving industry visitor lecturers (PPI).
- Achieve at least 70% of the courses of study at Polytechnic in Blended Learning Mod.
- Develop at least one (1) MOOC - Massive Open Learning Courses.
- Develop at least five (5) teaching and learning videos for a minimum duration of 5 to 15 minutes.
- Achieve 100% of the overall program that has External Assessment (at least one meeting per year).
- Achieve 100% of the overall program with Industrial Advisors (at least one meeting per year).
- Ensuring that 100% eligible students undergo Industrial Training get training and monitored.
- Ensure that at least 45% of Industrial Training students get excellent grade in every semester.
- Ensure that at least one (1) award is given by an outside party received by a graduate.

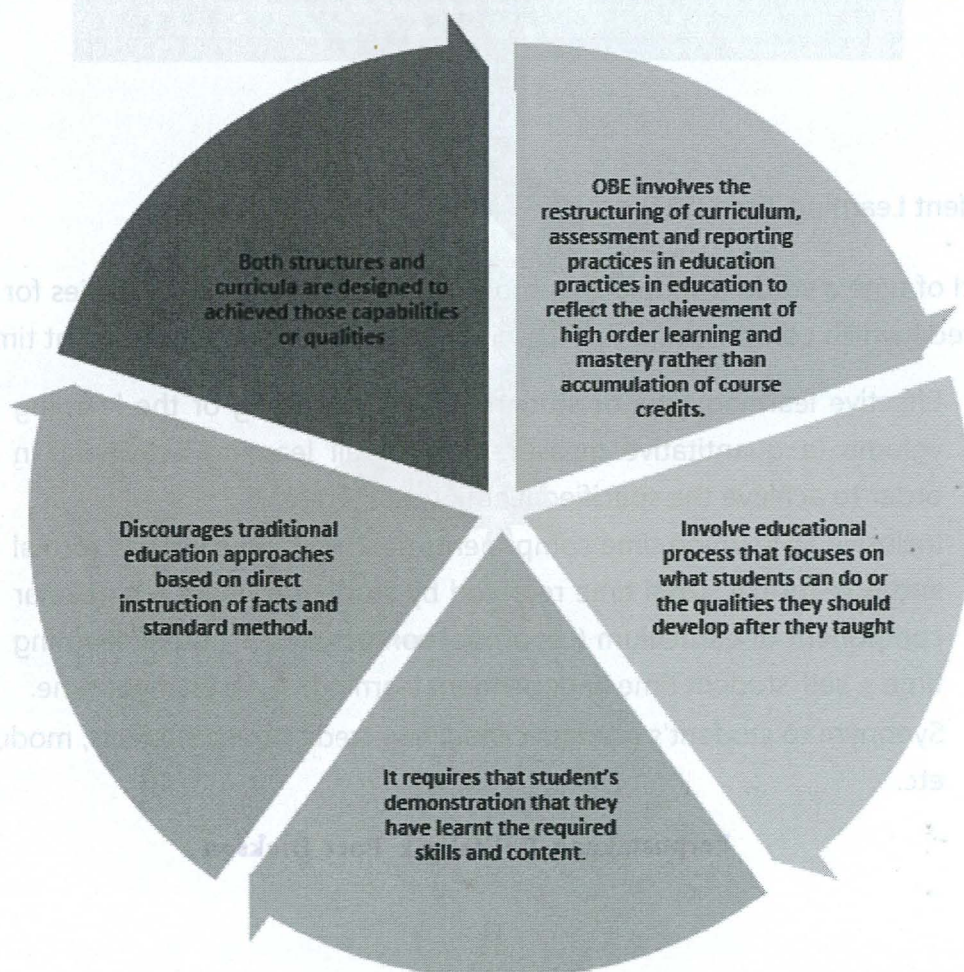
4.0 OUTCOME BASED EDUCATION (OBE)

4.1 Outcome Based Education (Introduction)

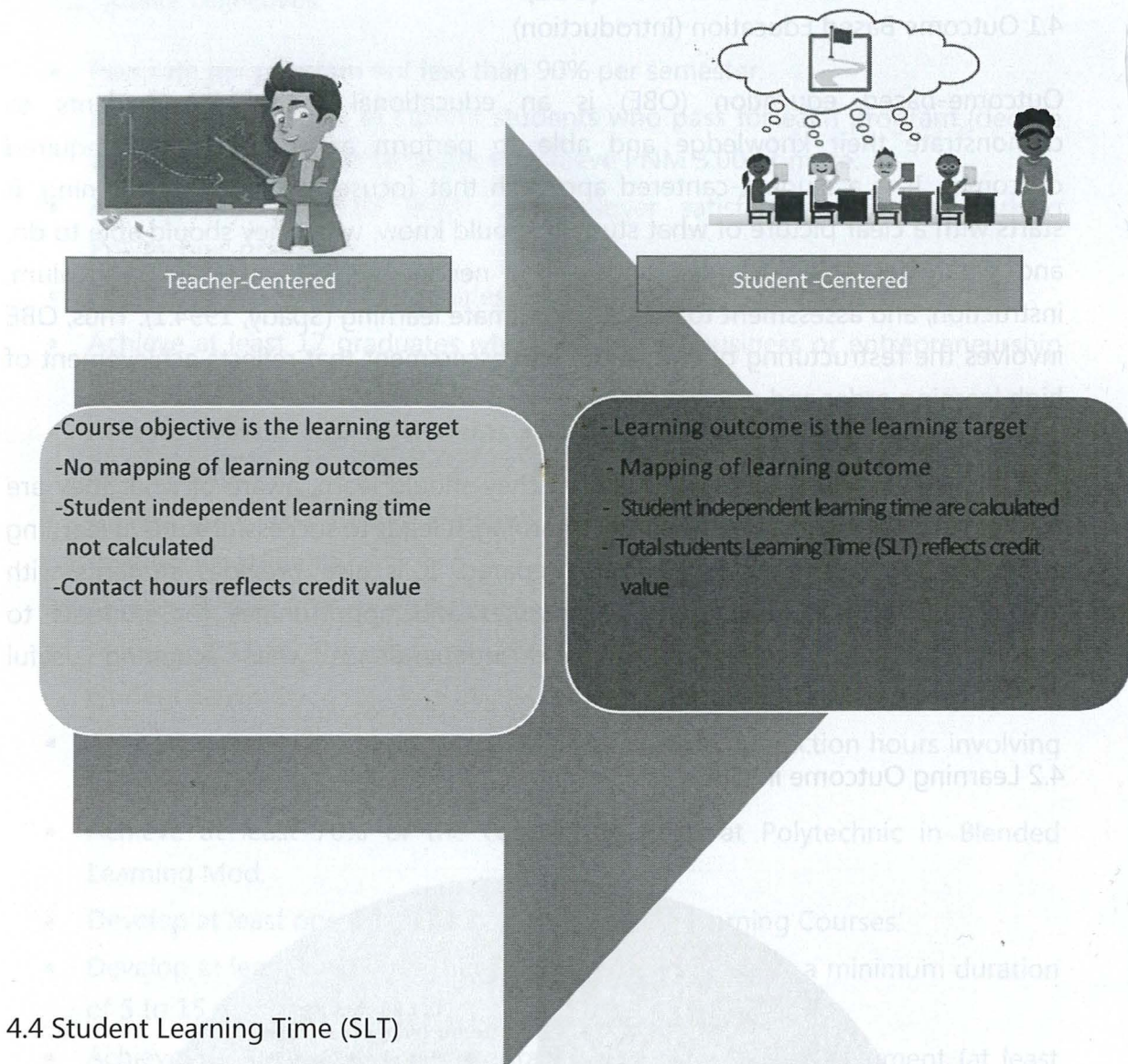
Outcome-based education (OBE) is an educational model for students to demonstrate their knowledge and able to perform according to the required outcomes. It is a student-cantered approach that focuses on student's learning. It starts with a clear picture of what student should know, what they should able to do, and what desirable attitudes and values needed to organize the curriculum, instruction, and assessment to ensure an ultimate learning (Spady, 1994:1). Thus, OBE involves the restructuring of curriculum and assessment that reflects achievement of high learning order and mastery learning.

OBE helps students to be aware of what they should learn, aware of what they are learning and the control over their own learning. It leads to successful student learning and encourages lecturer to be well prepared. It is also provides students with appropriate, purposeful learning experiences and opportunities for students to develop originality, self-motivation and independence while acquiring useful knowledge and skills.

4.2 Learning Outcome in OBE



4.3 How Does OBE Effect Teaching-Learning



4.4 Student Learning Time (SLT)

A period of time a student should spend on the learning-teaching activities for a given credit which comprises guided learning, independent and assessment time.

- Effective learning time or student effort in learning or the learning volume (a quantitative measurement of all learning activities), in order to achieve the specified learning outcomes.
- Inclusive all learning time components (learning activities), i.e. formal and non-formal. Total time required by student to learn a particular component of curriculum (i.e. official contact time + guided learning time + self-student time (independent learning) + Assessment time.
- Synonym to student's academic load, e.g. credit hours; subjects, modules; etc.

4.5 Expectation on Student

Be more creative, able to analyse and synthesize information

Student should be able to write project proposal, complete projects, analyse case studies, give presentations, show their abilities to think, question, research and make decision based on findings.

Student are expected to be able to do more challenging tasks other than memorize and reproduce what was taught.

Able to plan and organize tasks, able to work in a team as a community or entrepreneurial service teams to propose solutions to problems and market their solutions.



5.0 DEPARTMENT OF MECHANICAL ENGINEERING

5.1 The Department of Mechanical Engineering

Department of Mechanical Engineering (JKM) was established in June 1990 with 7 lectures. There were 110 students registered in two certificates at that time which were Certificate in Mechanical Engineering (Construction) and Certificate in Mechanical Engineering (Automotive). Now, total lectures has increase to 84 while student to 1200.

Parallel to time past, there are increased number of workshops and labs, variety of course and student intake. The growing number of courses, classes and labs enable the student intake. JKM has its own proud compare to other department involving in curriculum and co curriculum.

In addition, in line with MQA's requirements and meeting KPI's KPI targets, it also organizes activities such as: -

1. Interaction of Industry-Visitor Lecturers with each student's program
2. Lifelong Learning Course (Collaboration with Advanced Training and Education Unit)
 - i. Short Term Courses with the community
 - ii. Part Time Course
 - iii. Customized Course
3. Active Collaboration with Industry and Agencies
4. Research and Innovation by Lecturers (Collaboration with Research and Innovation Unit)
5. Entrepreneurship Program for Students (Cooperation with Entrepreneurship Unit)
6. Programs on Marketability to students (Collaboration with CISEC Unit)
7. Staff Training (Collaboration with Training and Continuing Education Unit)

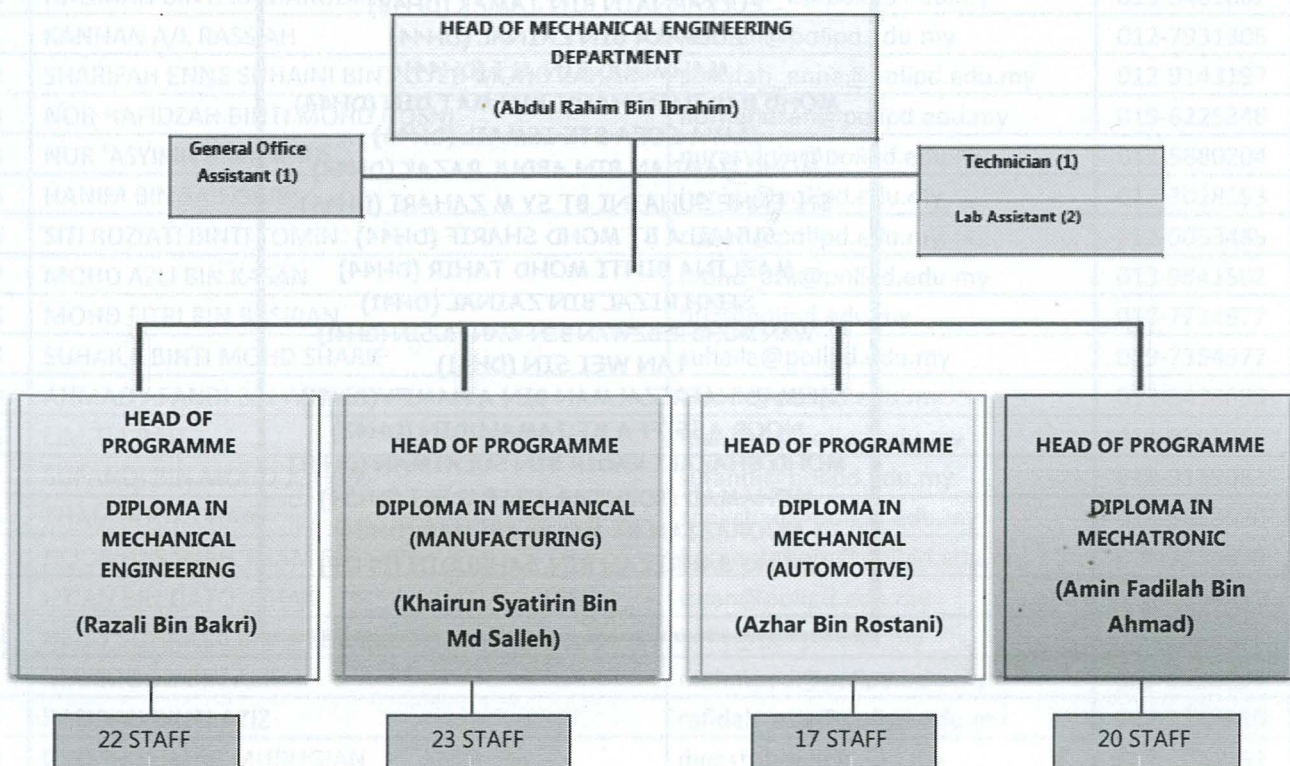
Programme Offered

- i. Diploma in Mechanical Engineering (DKM)
- ii. Diploma in Mechanical Engineering (Manufacturing) (DTP)
- iii. Diploma in Mechatronics Engineering (DEM)
- iv. Diploma in Mechanical Engineering (Automotive) (DAD)

- 5.1 Programme overview
- 5.2 Programme synopsis
- 5.3 Job Prospect
- 5.4 Programme Aims
- 5.5 Programme Education Objectives
- 5.6 Programme Learning Outcomes (PLO)
- 5.7 Matrix of PEO vs PLO
- 5.8 Programme Structure for DTP
- 5.9 Duration of study
- 5.10 Matrix of Courses vs PLO

5.2 The Organisational Chart of Mechanical Engineering Department

DKM programme has been offered at JKM since the year of 1990. This programme is led by a Head of Programme and supported by 22 competent staff. Chart below show the general information and organisational chart of DKM programme. The implementation of the teaching and learning process is divided into two sessions namely June and December Session.



DTP PROGRAMME ORGANISATION CHART

KETUA JABATAN

**ABDUL RAHIM BIN IBRAHIM
(DH 48)**

KETUA PROGRAM PEMBUATAN (DH 44)

KHAIRUN SYATIRIN BIN MD SALLEH

PENSYARAH

JAMALIAH BT M SALLEH (DH52)
AHMAD AFANDI BIN ABD KHALIL (DH48)
ZAINAL ABIDIN BIN AB. KASIM (DH48)
KANNAN A/L RASSIAH (DH48)
NOOR HAPIZAH BINTI ABDULLAH (DH48)
ZULKARNAIN BIN JAMAK (DH48)
ZULFAKA BIN ZAINAL (DH44)
MAHMOOD BIN ALI (DH44)
MOHD RADZUAN HAIRI BIN MAT DIN (DH44)
MAYA SOFA BTE ISMAIL (DH44)
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SUHAILA BT MOHD SHARIF (DH44)
MAZLINA BINTI MOHD TAHIR (DH44)
SHAH RIZAL BIN ZAINAL (DH41)
WAN MOHD RIDZWAN BIN WAN HUSIN (DH41)
TAN WEI SIN (DH41)
AHMAD HAFRIZALMAN BIN A HAMID (DH41)
NOOR ASSIFFA BT JAMALUDIN (DH42)
MOHD GHAZALI KADIR BIN SULAIMAN (DH41)
MOHAMAD MOKHTAR BIN PADELI (DH34)
NOORAZIAN BT MOHD ARSHAD (DH34)
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(23)

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DTP PROGRAMME ORGANISATION CHART

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6.0 PROGRAMME OVERVIEW FOR MECHANICAL (MANUFACTURING)

6.1 Programme Overview

For the past few decades, industries have evolved and progressed rapidly. The Ninth Malaysia Plan was drawn in response to the current global needs and to enable Malaysia stay competitive in the world market. Thus, to keep abreast with rapid technological advancements and evolving requirements in industries today, Department of Polytechnic Education (DPE) constantly collaborates with major industry players in the country in developing the respective curriculum. One of the most important factors towards the growth of productivity is by having a qualified and talented manpower in order for the industry to develop and remain competitive in the world market. This is equally true in industries where there is a rapidly growing demand for highly competent and technically savvy workforce. The activities of many industries require increasingly competent technician in engineering field, particularly in mechanical engineering and manufacturing.

In response to these issues, Curriculum Development and Evaluation Division of the Department of Polytechnic Education has developed and introduced Diploma in Mechanical Engineering (Manufacturing) for polytechnic. This programme aims to prepare students with knowledge, skills and abilities necessary in the manufacturing industries. To ensure the curriculum content fulfils the industrial requirements, several key players from related industries have been involved in the curriculum development process.

Diploma in Mechanical Engineering (Manufacturing) for polytechnic is developed to give balanced emphasis on theoretical and practical aspects. The programme will take six semesters to complete, relatively five academic semesters at their respective polytechnics and one semester of industrial training at relevant industries during the final semester.

6.2 Programme Synopsis

Diploma in Mechanical Engineering (Manufacturing) is designed as a part of mechanical engineering discipline focusing in manufacturing field. The core discipline courses include Engineering Drawing, Computer Aided Design, and Electrical Technology enhances the student knowledge and capabilities. In order to enrich student manufacturing knowledge, the specialized courses such as Manufacturing system, Manufacturing Workshop Practice, Computer Aided Manufacturing Design, Industrial Robotics, Manufacturing Control, Quality Control, Jigs, Fixtures & Tooling Design, Material Technology and Manufacturing Economy are introduced.

6.3 Job Prospect

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

- *Assistant Engineer (Pembantu Jurutera)*
- *Production / Process Executive (Eksekutif Proses / Pengeluaran)*
- *Procurement Executive (Eksekutif Perolehan)*
- *Quality Officer (pegawai Kualiti)*
- *CNC Programmer (Pengaturcara CNC)*
- *Product Designer (Pereka Produk)*
- *Technical Specialist (Pakar Teknikal)*
- *Production / Process Supervisor (Penyelia Proses / pengeluaran)*
- *Technical Assistant (Pembantu Teknikal)*
- *Precision Machinist (Pakar PemesinanJitu)*

6.4 Programme Aims

Graduates of diploma in mechanical engineering programme at Polytechnics will have knowledge, technical and generic skills to adapt themselves with new technological advancement and challenges in the mechanical and manufacturing engineering field.

6.5 Programme Educational Objectives

The Diploma in Mechanical Engineering (Manufacturing) programme shall produce semi-professionals who are:

1. Competent in knowledge and skills in the field of mechanical and manufacturing engineering according to industry requirements.
2. Effective in communication and contribute effectively as a team member with the capability of being a leader.
3. Ethically and socially responsible towards developing the community and the nation.
4. Able to demonstrate entrepreneurship skills and recognize the need of Lifelong learning for a successful career advancement and able to adapt themselves with new technological challenges in mechanical and manufacturing field.

6.6 Programme Learning Outcome

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

1. Apply knowledge of mathematics, science, engineering fundamentals and social science to well-defined mechanical engineering procedures and practices with specialisation in manufacturing.
2. Analyse well-defined mechanical engineering specializing in manufacturing problems with respect to operation and maintenance including troubleshooting.
3. Conduct investigations and assist in the design of solutions for mechanical specializing in manufacturing engineering systems.
4. Apply appropriate techniques, resources, and engineering tools to well-defined mechanical specializing in manufacturing engineering activities, with an awareness of the limitations.
5. Demonstrate an awareness and consideration for societal, health, safety, legal and cultural issues and their consequent responsibilities.
6. Communicate effectively with the engineering community and society at large
7. Function effectively as an individual and as a member in diverse technical teams
8. Demonstrate an understanding of professional ethics, responsibilities and norms of engineering practices
9. Demonstrate an awareness of management, business practices and entrepreneurship
10. Demonstrate an understanding of the impact of engineering practices, taking into account the needs for sustainable development
11. Recognise the need for professional development and engage in independent and lifelong learning

6.7 Matrix of PEO vs PLO

The Diploma in Mechanical Engineering (Manufacturing) programme shall produce semi professionals who are:

PEO		PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
		LD 1	LD1	LD4	LD2	LD5	LD3	LD9	LD8	LD7	LD5	LD6
1	Competent in knowledge and skills in the field of mechanical and manufacturing engineering according to industry requirements.	✓	✓	✓	✓							
2	Effective in communication and contribute effectively as a team member with the capability of being a leader.						✓	✓				
3	Ethically and socially responsible towards developing the country and the community.					✓			✓		✓	
4	Able to demonstrate entrepreneurship skills and recognize the need of lifelong learning for a successful career advancement and able to adapt themselves with new technological challenges in mechanical fields.									✓		✓

Learning Dominion

LD 1 Knowledge

LD 2 Practical Skills

LD 3 Communication Skills

LD 4 Critical Thinking and Problem Solving Skills

LD 5 Social Skills and Responsibilities

LD 6 Continuous Learning and Information Management Skills

LD 7 Management and Entrepreneurial Skills

LD 8 Professionalism, Ethics and Moral

LD 9 Leadership and Teamwork Skills

6.8 Programme Structure for Diploma in Mechanical Engineering (Manufacturing)

Semester 1	BIL	KOD KURSUS	NAMA KURSUS	STATUS	JAM KREDIT
	1	DUB 1012	PENGAJIAN MALAYSIA	C	2
	2	DUE 1012	COMMUNICATIVE ENGLISH 1	C	2
	3	DRB 1XX0	ASAS UNIT BERUNIFORM	C	0
	4	DBM 1013	ENGINEERING MATHEMATICS 1	CC	3
	5	DBS 1012	ENGINEERING SCIENCE	CC	2
	6	DUW 1012	OCCUPATIONAL, SAFETY & HEALTH	CC	2
	7	DJJ 1012	ENGINEERING DRAWING	DC	2
	8	DJJ 1032	MECHANICAL WORKSHOP PRACTICE 1	DC	2
	9	DJJ 1043	WORKSHOP TECHNOLOGY	DC	3
Jumlah Jam Kredit					18
Semester 2	BIL	KOD	NAMA KURSUS	STATUS	JAM KREDIT
	1	DUA 2012	SAINS, TEKNOLOGI DAN KEJURUTERAAN DALAM ISLAM*	C	2
	2	DUB 2012	NILAI MASYARAKAT MALAYSIA**	C	
	3	DRS 2XX1	SUKAN	C	
	4	DRB 2XX1	UNIT BERUNIFORM 1 & 2	C	1
	5	DBM 2013	ENGINEERING MATHEMATICS 2	CC	3
	6	DJJ 2022	ELECTRICAL TECHNOLOGY	DC	2
	7	DJJ 2062	COMPUTER AIDED DESIGN 1	DC	2
	8	DJJ3053	ENGINEERING MECHANICS	DC	3
	9	DJJ 2093	FLUID MECHANICS	DC	3
	10	DJF 2012	MANUFACTURING WORKSHOP PRACTICE 1	S	2
Jumlah Jam Kredit					18
Semester 3	BIL	KOD KURSUS	NAMA KURSUS	STATUS	JAM KREDIT
	1	DUE3012	COMMUNICATIVE ENGLISH 2	C	2
	2	DRK3XX2	KELAB/ PERSATUAN	C	
	3	DRB3XX2	UNIT BERUNIFORM 2	C	
	4	DBM3013	ENGINEERING MATHEMATICS 3	CC	3
	5	DJJ 2073	THERMODYNAMICS	DC	3
	6	DJJ3103	STRENGTH OF MATERIALS	DC	3
	7	DJJ3213	MATERIAL SCIENCE	DC	3
	8	DJF3012	MANUFACTURING WORKSHOP PRACTICE 2- TIG	S	2
Jumlah Jam Kredit					18
Semester 4	BIL	KOD KURSUS	NAMA KURSUS	STATUS	JAM KREDIT
	1	DUE5012	COMMUNICATIVE ENGLISH 3	C	2
	2	DJJ5123	PNEUMATICS & HYDRAULICS	DC	3
	3	DJJ5141	PROJECT 1	S	1
	4	DJF5022	MANUFACTURING SYSTEM	S	2
	5	DJF5032	CADCAM	S	2
	6	DJF5042	INDUSTRIAL ROBOTICS	S	2
	7	DJF5053	JIGS, FIXTURES AND TOOLING DESIGN	S	3
	8	DJF5062	MATERIAL TECHNOLOGY	E	2
Jumlah Jam Kredit					17

	BIL	KOD KURSUS	NAMA KURSUS	STATUS	JAM KREDIT
Semester 5	1	DUA6022	KOMUNIKASI DAN PENYIARAN ISLAM	C	2
	2	DPB2012	ENTREPRENEURSHIP	CC	2
	3	DJF6081	MANUFACTURING ENGINEERING LABORATORY-RAPID	S	1
	4	DJF6092	MANUFACTURING CONTROL	S	2
	5	DJJ6143	PROJECT 2	S	3
	6	DJF6102	QUALITY CONTROL	S	2
	7	DJJ5133	ENGINEERING DESIGN	E	3
			Jumlah Jam Kredit		15
Semester 6					
	BIL	KOD KURSUS	NAMA KURSUS	STATUS	JAM KREDIT
	1	DUT40110	INDUSTRIAL TRAINING		10
			Jumlah Jam Kredit		10
			total Credit hours		96

6.9 Duration of Study

For Diploma in Mechanical Engineering (Manufacturing) will be study from semester 1 until semester 6, its equivalence with 3 year and 95 credit hours. All students have to undergo 20 weeks of industrial training at semester 6.

No	COURSE CLASSIFICATION	CREDIT	%
1	Compulsory	15	15.79
2	Common core	15	15.79
3	Discipline Core	29	30.52
4	Specialization	22	23.16
5	Elective	4	4.21
6	Industrial Training	10	10.53
	TOTAL	95	100%

6.10 Matrix Courses Vs Programme Learning Outcome

NO	CODE	COURSES	PROGRAMME LEARNING OUTCOME (PLO)										
			PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
			LD1	LD1	LD4	LD2	LD5	LD3	LD9	LD8	LD7	LD5	LD6
COMPULSORY													
1	DUA	2012	Sains Teknologi Dan Kejuruteraan Dalam Islam*	1									1
2	DUA	6012	Komunikasi dan Penyiaran Islam	1				1					1
3	DUB	1012	Pengajian Malaysia	1									1
4	DUB	2012	Nilai Masyarakat Malaysia**	1									1
5	DUE	1012	Communicative English 1	1					1				
6	DUE	3012	Communicative English 2	1					1				
7	DUE	5012	Communicative English 3	1					1				
8	DRB	1XX0	Asas Unit Beruniform			1	1			1			
9	DRB	2XX1	Unit Beruniform 1			1	1			1			
10	DRB	3XX1	Unit Beruniform 2			1	1			1			
11	DRK	3XX2	Kelab/Persatuan			1	1			1			
12	DRS	2XX1	Sukan			1	1			1			
13	DUT	40110	Industrial Training				1		1	1	1		1
COMMON CORE													
14	DUW	1012	Occupational Safety and Health	1		1					1		
15	DPB	2012	Entrepreneurship	1			1		1			1	
16	DBM	1013	Engineering Mathematics 1	1									
17	DBM	2013	Engineering Mathematics 2	1									
18	DBM	3013	Engineering Mathematics 3	1									
19	DBS	1012	Engineering Science	1			1						
DISCIPLINE CORE													
20	DJJ	1012	Engineering Drawing	1			1				1		
21	DJJ	2022	Electrical Technology	1			1						1
22	DJJ	1032	Mechanical Workshop Practice 1				1	1			1		
23	DJJ	2032	Mechanical Workshop Practice 2				1			1	1		
24	DJJ	3032	Mechanical Workshop Practice 3				1	1				1	
25	DJJ	5032	Mechanical Workshop Practice 4				1			1			1
26	DJJ	1043	Workshop Technology	1									1
27	DJJ	3053	Engineering Mechanics		1		1			1			
28	DJJ	2062	Computer Aided Design 1	1			1						1
29	DJJ	2073	Thermodynamics 1	1			1			1			
30	DJJ	2093	Fluid Mechanics	1			1			1			
31	DJJ	3103	Strength of Materials		1		1			1			
32	DJJ	3213	Material Science	1			1			1			
SPECIALIZATION													
33	DJF	2012	Manufacturing Workshop Practice 1		1	1	1				1		
34	DJF	3012	Manufacturing Workshop Practice 2										
35	DJF	5022	Manufacturing System										
36	DJF	5032	Cadcam										
37	DJF	5042	Industrial Robotics										
38	DJF	5053	Jigs, Fixture And Tooling Design										
39	DJJ	5141	Project 1			1			1				1
40	DJF	6081	Manufacturing Engineering Laboratory										
41	DJF	8092	Manufacturing Control										
42	DJF	6102	Quality Control	1		1				1			
43	DJJ	6143	Project 2			1	1		1	1		1	1
ELECTIVE													
44	DJJ	5133	Engineering Design		1	1			1				
45	DJF	5062	Material Technology										

7.0 COURSES, SYNOPSIS & CLO

7.1 List of Courses Synopsis for Semester 1

COURSE	DUB 1012 – PENGAJIAN MALAYSIA
CREDIT	2
PRE REQUISITE	None
SYNOPSIS	
PENGAJIAN MALAYSIA memupuk penghayatan ke arah melahirkan generasi yang cintakan negara. Kursus ini juga dapat mendidik kelompok masyarakat yang mempunyai daya juang yang tinggi dan mampu menghadapi cabaran di peringkat antarabangsa. Kursus ini memberi penghayatan tentang sejarah dan politik, perlembagaan Malaysia, kemasyarakatan dan perpaduan, pembangunan negara dan isu-isu keprihatinan negara. Objektif kursus ini adalah untuk melahirkan warganegara yang setia dan cintakan negara, berwawasan serta bangga menjadi rakyat Malaysia	
COURSE LEARNING OUTCOME (CLO)	
1. Menerangkan dengan baik sejarah bangsa dan negara (C2, LD1) 2. Menjelaskan Perlembagaan Malaysia dan sistem pemerintahan negara (C2, LD1) 3. Melaksanakan aktiviti berkaitan kenegaraan kearah peningkatan patriotisme pelajar (C3, LD1 : A3, LD6)	

COURSE	DUE 1012 – COMMUNICATIVE ENGLISH 1
CREDIT	2
PRE REQUISITE	None
SYNOPSIS	
COMMUNICATIVE ENGLISH 1 focuses on developing student's speaking skills to enable them to communicate effectively and confidently in group discussions and in a variety of social interactions. It is designed to provide students with appropriate reading skills to comprehend a variety of texts. It is also aimed to equip students with effective presentation skills	
COURSE LEARNING OUTCOME (CLO)	
1. Apply appropriate language and communication skills in discussions and conversations. (C3) 2. Apply effective listening skills to demonstrate comprehension of audio recordings in a variety of situations. (C3) 3. Comprehend a variety of reading texts by applying effective reading skills. (C2) 4. write in response to a stimulus using appropriate visual aids, verbal and non-verbal communication skills (C3, A3)	

COURSE	DBM 1013 ENGINEERING MATHEMATICS 1
CREDIT	2
PRE REQUISITE	None
SYNOPSIS	
ENGINEERING MATHEMATICS 1 expose students to the basic algebra including perform partial fractions. This course also exposes the concept of trigonometry and the method to solve trigonometry problems by using basic identities, compound angle and double angle formulae. Students also will be introduces students to concept of vector and scalar.	
COURSE LEARNING OUTCOME (CLO)	
1. Identify mathematical methods in solving the mathematical problems. (C2, LD1). (C2, LD1). 2. Solve the mathematical problems by using appropriate techniques and solutions. (C3, LD1) 3. Practice mathematical knowledge and skills in different mathematics problem. (C3, LD1)	

COURSE	DBS 1012 ENGINEERING SCIENCE
CREDIT	2
PRE REQUISITE	None
SYNOPSIS	
ENGINEERING SCIENCE is an applied science with theoretical concepts and practical learning sessions that can be applied in the engineering fields. This course focuses on the Physical Quantities, Measurement, Linear Motion, Force, Work, Energy, Power, Solid, Fluid, Temperature and Heat.	
COURSE LEARNING OUTCOME(CLO)	
1. Solve the basic engineering science problem by using related concept. (C3,LD1) 2. Organise an appropriate experiments to prove related physic principles. (P3,LD2) 3. Apply related physic principles in various situations to enhance knowledge. (C3,LD1)	

COURSE	DUW 1012 – OCCUPATIONAL, SAFETY & HEALTH
CREDIT	2
PRE REQUISITE	None
SYNOPSIS	
OCCUPATIONAL SAFETY AND HEALTH course is designed to impart understanding of the self-regulatory concepts and provisions under the Occupational Safety & Health Act (OSHA). This course presents the responsibilities of employers in implementing and complying with the safety procedures at work. This course provide an understanding of the key issues in OSH management, incident prevention, Emergency Preparedness and Response (EPR), fire safety, occupational first aid, Hazard Identification, Risk Assessment and Risk Control (HIRARC) and guide the students gradually into this multi-disciplinary science.	
COURSE LEARNING OUTCOME (CLO)	
1. Identify the OSH legislation and its compliance in Malaysia. (C2, LD1) 2. Explain briefly incident hazards, risks and safe work practices in order to maintain health and safe work environment. (C2, LD1) 3. Discuss cooperatively in responding to an accident action at workplace.(C3, LD1 : A2, LD4 4. Adhere to the safety procedures in respective fields. (A3,LD8)	

COURSE	DJJ 1012 - ENGINEERING DRAWING
CREDIT	2
PRE REQUISITE	None
SYNOPSIS	
ENGINEERING DRAWING course provides the student with the fundamental of engineering drawings. It emphasizes on the practical knowledge of drawing instruments and drawing techniques that will be applied in workshop practical activities and in Computer Aided Design courses.	
COURSE LEARNING OUTCOME (CLO)	
1. Apply the basic fundamentals of engineering drawing in comply to telated problems (C3, PLO1) 2. Construct engineering drawings according to the required standards (P4, PLO4) 3. Demonstrate the understanding of engineering norms and practices in engineering drawing (A3, PLO8)	

COURSE	DJJ1032 - MECHANICAL WORKSHOP PRACTICE 1
CREDIT	2
PRE REQUISITE	None
SYNOPSIS	
MECHANICAL WORKSHOP PRACTICE 1 exposes the students to welding, machining and fitting which involves the use of arc and gas welding machine, lathe machine, drilling machine, grinding, hand tools, marking out tools, measuring and testing tools. Students are also taught to emphasize on safety procedures and cleanliness in the workshop.	
COURSE LEARNING OUTCOME (CLO)	
1. Perform fitting, machining and welding works according to Standard Operation Procedure (SOP) (P4, PLO4) 2. Demonstrate the awareness of social responsibility and safety in practical work procedures and practices (A3, PLO5) 3. Demonstrate an understanding of professional ethics, responsibilities and norms of engineering practices according to the workshop safety regulation. (A3, PLO8)	
COURSE	DJJ1043 - WORKSHOP TECHNOLOGY
CREDIT	3
PRE REQUISITE	None
SYNOPSIS	
WORKSHOP TECHNOLOGY provides exposure and knowledge in using hand tools, machine operation such as drilling, lathe, milling and computer numerical control. It also covers on gear measurement and inspection welding process in oxy acetylene, Shielded Metal Arc Welding (SMAW), Gas Tungsten Arc Welding (GTAW) and Gas Metal Arc Welding (GMAW).	
COURSE LEARNING OUTCOME (CLO)	
1. Apply the knowledge of basic mechanical components and equipment, hand tools and measuring equipment in workshop technology (C3, PLO1) 2. Explain the types of the removal and joining process in mechanical engineering. (C3, PLO1) 3. Demonstrate continuous learning and information management skills to complete assigned task. (A3, PLO11)	
COURSE	DRB 1XX0- ASAS UNIT BERUNIFORM
CREDIT	0
PRE REQUISITE	None
Kursus ini hanya perlu di daftarkan sekiranya pelajar memilih laluan 1 iaitu memilih untuk menyertai badan beruniform. Pilihan badan beruniform: 1. Pengakap 2. RELASIS 3. PISPA 4. Askar Wataniah 5. (Rujuk pada 3.7 untuk maklumat berkaitan kursus yang ditawarkan bagi Unit beruniform)	

COURSE LEARNING OUTCOME (CLO)

1. Identify mathematical methods in solving the mathematical problems (C3, PLO1)
2. Solve the mathematical problems by using appropriate mathematical solutions (C3, PLO1)
3. Practice mathematical knowledge and skills in different contexts (C3, PLO1)

7.2 List of Courses Synopsis for Semester 2

COURSE CREDIT	DUA 2012 – SAINS TEKNOLOGI DAN KEJURUTERAAN DALAM ISLAM
PRE REQUISITE	2
SYNOPSIS	NONE
SAINS, TEKNOLOGI DAN KEJURUTERAAN DALAM ISLAM memberi pengetahuan tentang konsep Islam sebagai al-Din dan seterusnya membincangkan konsep sains, teknologi dan kejuruteraan dalam Islam serta impaknya, pencapaiannya dalam tamadun Islam, prinsip serta peranan syariah dan etika Islam, peranan kaedah fiqh serta aplikasinya.	
COURSE LEARNING OUTCOME (CLO)	
1. Menghuraikan konsep Islam sebagai cara hidup. (C2,LD1 : P2,LD2) 2. Menjelaskan konsep sains, teknologi dan kejuruteraan dalam Islam. (C2,LD1) 3. Membincangkan prinsip syariah dan kaedah fiqh dalam sains, teknologi dan kejuruteraan. (C3,LD1 :A3,LD6)	
COURSE CREDIT	DUB 2012 – NILAI MASYARAKAT MALAYSIA
PRE REQUISITE	2
SYNOPSIS	NONE
NILAI MASYARAKAT MALAYSIA membincangkan aspek sejarah pembentukan masyarakat Malaysia, nilai-nilai agama serta adat resam dan budaya masyarakat majmuk. Selain itu, pelajar diberi kefahaman mengenai tanggungjawab individu dalam kehidupan dan cabaran-cabaran dalam membangunkan masyarakat Malaysia.	
COURSE LEARNING OUTCOME (CLO)	
1. Menerangkan sejarah pembentukan masyarakat dan nilai agama di Malaysia. (C2,LD1) 2. Menghubung kait tnggungjawab individu dalam kehidupan masyarakat dan negara. (C3,LD1 :A2,LD5) 3. Membincangkan cabaran-cabaran dalam membangunkan masyarakat Malaysia. (C3,LD1 :A3,LD6)	
Course Credit	DJJ2022 - Electrical Technology
Pre requisite	2
SYNOPSIS	None
ELECTRICAL TECHNOLOGY exposes students to the basic electrical circuit concepts, the application of electromagnetism in electrical machines and transformers. The course focuses on the different types of electrical circuits, the relationship between current and voltage including the resistance. It also provides the skills on the methods of constructing basic circuits and operation of electrical machines and transformers. This course also exposes the students to the demonstration of experiments in Electrical Technology.	
COURSE LEARNING OUTCOME (CLO)	
1. Apply the principles of electrical circuits, electromagnetism, transformers and electrical machines to solve related problems. (C3, PLO1) 2. Organize appropriately experiments in groups according to the Standard Operating Procedures. (P4, PLO4) 3. Demonstrate continuous learning and information management skills while engaging in independent acquisition of new knowledge and skills in laboratory report. (A3, PLO11)	

Course	DJJ2062 - Computer Aided Design 1
Credit	2
Pre requisite	None
SYNOPSIS	
COMPUTER AIDED DESIGN 1 provides a comprehensive introduction to Computer-Aided Design software. It is an introductory level where the students will learn to navigate and use the software to create two-dimensional design in engineering. Students shall be able to demonstrate competency in using some standard available features of a CAD application to create and manipulate objects or elements and to modify them. They should be able to change object properties and to undertake printing or plotting activity associated with the delivery outputs. In addition, students are required to use some advanced features of CAD software, such as inserting objects from other applications.	
COURSE LEARNING OUTCOME (CLO)	
1. Apply the fundamental features of CAD software in producing engineering drawing. (C3, PLO1) 2. Construct 2D drawing using fundamental features of CAD software. (P4, PLO4) 3. Demonstrate continuous learning and information management skill while engaging in independent acquisition of new knowledge and skill to solve assigned task. (A3, PLO11)	

Course	DJJ3053 - Engineering Mechanics
Credit	3
Pre requisite	None
SYNOPSIS	
ENGINEERING MECHANICS focuses on theoretical knowledge in statics and dynamics. This course provides students with fundamental understanding of forces and equilibrium, resultants, equilibrium of a particles and structural analysis. This course also covers kinematics and kinetics of particles. This course also exposes the students to the demonstration of experiments in Engineering Mechanics.	
COURSE LEARNING OUTCOME (CLO)	
1. Analyse problems related to statics and dynamics based on the concept and principles of engineering mechanics. (C4, PLO2) 2. Organize appropriately experiments in groups according to the Standard Operating Procedures. (P4, PLO4) 3. Demonstrate ability to work in team to complete assigned tasks during practical work sessions. (A3, PLO7)	

Course	DJJ2093 - Fluid Mechanics
Credit	3
Pre requisite	None
SYNOPSIS	
FLUID MECHANICS provides students with a strong understanding of the fundamentals of fluid mechanics principles related to the fluid properties and behaviour in static and dynamic situations. This course also exposes the students to the demonstration at the real equipment of fluid mechanics.	
COURSE LEARNING OUTCOME (CLO)	
1. Apply the fundamentals of fluid mechanics to solve related problems. (C3, PLO1) 2. Organize appropriately experiments in groups according to the Standard Operating Procedures. (P4, PLO4) 3. Demonstrate ability to work in team to complete assigned tasks during practical work sessions. (A3, PLO7)	

Course	DJF2012 - MANUFACTURING WORKSHOP PRACTICE 1
Credit	2
Pre requisite	None
SYNOPSIS	
MANUFACTURING WORKSHOP PRACTICE 1 exposes the students to the basic principles of manufacturing processes, industrial environment, and hands on experiences. This course enables student to apply knowledge and develop required technical skills on plastic processing, sand casting, conventional machining and TIG/MIG welding. The workshop practice helps the students to practice appropriate safety procedures and standard operation on completing a project. The practical skill also covers the planning skills, supervising the design, inspecting and testing the welding task in order to meet the quality requirement.	
COURSE LEARNING OUTCOME (CLO)	
1. Make a simple project using casting, plastic, TIG/MIG welding and conventional machine process based on standard operational procedures. (P4, PLO 4) 2. Demonstrate safety awareness in practical work procedures and practices. 3. (A3, PLO 5) 4. Demonstrate an understanding of professional ethics, responsibilities, norms and practices in manufacturing processes during practical work session. (A3, PLO8)	

COURSE CREDIT	DRB 2XX0- UNIT BERUNIFORM 1 & 2
PRE REQUISITE	0
(Mengikut badan beruniform yang dipilih pada semester 1)	
Kursus ini hanya boleh dipilih sekiranya pelajar telah mengambil dan lulus KOKO 1 (DRB 1xxx0). Kursus yang ditawarkan juga mempunyai syarat kemasukan dari kursus yang diambil pada semester Rujuk 3.7 untuk senarai kursus yang ditawarkan. Penawaran kursus adalah mengikut ketetapan Unit Sukan Politeknik	

atau

COURSE CREDIT	DRS 2XX1- SUKAN
PRE REQUISITE	0
NONE	
Kursus ini wajib diambil oleh pelajar yang tidak memilih untuk menyertai badan beruniform pada semsester 1. Rujuk 3.7 untuk senarai kursus yang ditawarkan. Penawaran kursus adalah mengikut ketetapan Unit Sukan Politeknik.	

7.3 List of Courses Synopsis for Semester 3

Course	DUE3012 – Communicative English 2
Credit	2
Pre requisite	DUE1012 – Communicative English 1
SYNOPSIS	
COMMUNICATIVE ENGLISH 2 emphasises the skills required at the workplace to describe products or services as well as processes or procedures. It also focuses on the skills to give and respond to instructions. This course will also enable students to make and reply to enquiries and complaints.	
COURSE LEARNING OUTCOME (CLO)	
1. Describe products or services related to their field of studies using appropriate language. (C3,A3, LD3) 2. Transfer information of a process or procedure accurately from linear to non-linear form and vice versa. (C3, LD1) 3. Listen and respond to enquiries using appropriate language. (C3,LD1) 4. Make and respond to complaints using appropriate language. (C3,LD3)	

Course	DBM3013 – Engineering Mathematics 3
Credit	3
Pre requisite	DBM2013 – Engineering Mathematics 2
SYNOPSIS	
ENGINEERING MATHEMATICS 3 exposes students to the statistical and probability concepts and their applications in interpreting data. The course also introduces numerical methods concept to solve simultaneous equations by using Gaussian Elimination method, LU Decomposition using Doolittle and Crout methods, polynomial problems using Simple Fixed Point Iteration and Newton-Raphson methods. In additional, the course also discusses optimization problems by using Linear Programming. In order to strengthen the students in solving advanced engineering problems, Ordinary Differential Equation (ODE) is also included.	
COURSE LEARNING OUTCOME (CLO)	
1. Solve the mathematical problem by using appropriate techniques and solution. (C3,LD1) 2. Show the solution for statistics and probability problems and linear programming by using appropriate mathematical methods. (C3, LD1) 3. Practice mathematical knowledge and skills in different mathematical problem. (C3,LD1)	

Course	DJJ2073 - Thermodynamics
Credit	3
Pre requisite	None
SYNOPSIS	
THERMODYNAMICS provides knowledge of theory, concept and application of principles to solve problems related to thermodynamics. It emphasizes on concept of non-flow process and flow process, properties of steam, Carnot cycle and Rankine cycle. This course also exposes the students to the demonstration of experiments in Thermodynamics by using the real equipment.	
COURSE LEARNING OUTCOME (CLO)	
1. Apply the fundamentals of thermodynamics to solve related problems. (C3, PLO1) 2. Organize appropriately experiments in groups according to the Standard Operating Procedures. (P4, PLO4) 3. Demonstrate the ability to work in team to complete assigned tasks during practical work sessions. (A3, PLO7)	

Course	DJJ3103 – Strength of Material
Credit	3
Pre requisite	None

SYNOPSIS

STRENGTH OF MATERIALS provides knowledge on concepts and calculation of forces on materials, thermal stress, shear force and bending moment, bending stress, shear stress and torsion in shafts. It also deals with the experiments conducted on tensile test, bending moment, shearing force and torsion and deflection.

COURSE LEARNING OUTCOME (CLO)

1. Apply the concepts of strength of materials to solve related problems. (C3, PLO1)
2. Organize appropriately experiments in groups according to the Standard Operating Procedures. (P4, PLO4)
3. Demonstrate ability to work in team to complete assigned tasks. (A3, PLO7)

Course	DJJ3213 – Material Science
Credit	3
Pre requisite	None

SYNOPSIS

MATERIAL SCIENCE provides students with an understanding of material science and engineering which emphasizes on atomic and crystal structure, material properties and behaviour including material classification and its application in the engineering field. The topic also covers the processes of metal work used to produce engineering components and apply basic principles of material testing and processing through practical.

COURSE LEARNING OUTCOME (CLO)

1. Explain the fundamental of material science including identification of various types of materials, mechanical behaviour, metal production processes, and various principles of material testing. (C3, PLO1)
2. Organize appropriately experiments in groups according to the Standard Operating Procedures. (P4, PLO4)
3. Demonstrate ability to work in team to complete assigned tasks during practical work sessions. (A3, PLO7)

Course	DJF3012 MANUFACTURING WORKSHOP PRACTICE 2
Credit	2
Pre requisite	None

SYNOPSIS

MANUFACTURING WORKSHOP PRACTICES 2 develop student's knowledge and skills on welding, conventional and advanced machining. The conventional machining emphasis on handling of milling and grinding while advanced machining exposes the student to EDM, CNC lathe and CNC milling. This module also covers TIG and MIG welding for 3G position and pipe welding.

COURSE LEARNING OUTCOME (CLO)

1. Make a project using TIG and MIG welding, conventional machine, EDM, CNC machine based on standard operational procedures. (P4, PLO 4)
2. Demonstrate safety awareness in practical work procedures and practices (A3, PLO 5)
3. Demonstrate an understanding of professional ethics, responsibilities, norms and practices in manufacturing processes during practical work session. (A3, PLO8)

COURSE CREDIT	DRB 3XX0- UNIT BERUNIFORM 2 0
PRE REQUISITE	(Mengikut badan beruniform yang dipilih pada semester 1)
Kursus ini hanya boleh dipilih sekiranya pelajar telah mengambil dan lulus KOKO 1 (DRB 1xxx0). Kursus yang ditawarkan juga mempunyai syarat kemasukan dari kursus yang diambil pada semester Rujuk 3.7 untuk senarai kursus yang ditawarkan. Penawaran kursus adalah mengikut ketetapan Unit Sukan Politeknik	

COURSE CREDIT	DRK 3XX1- KELAB / PERSATUAN 0
PRE REQUISITE	NONE
Kursus ini wajib diambil oleh pelajar yang tidak memilih untuk menyertai badan beruniform pada semester 1. Rujuk 3.7 untuk senarai kursus yang ditawarkan. Penawaran kursus adalah mengikut ketetapan Unit Sukan Politeknik.	

7.4 List of Courses Synopsis for Semester 4

Course Credit	DUE5012 – Communicative English 3 2
Pre requisite	DUE3012 – Communicative English 2
SYNOPSIS	
COMMUNICATIVE ENGLISH 3 aims to develop the necessary skills in students to analyse and interpret graphs and charts from data collected as well as job hunting mechanics. Students will learn the process of job hunting which includes job search strategies and making enquiries. They will also learn to write resumes and cover letters. The students will develop skills to introduce themselves, highlight their strengths and abilities, present ideas, express opinions and respond appropriately during job interviews.	
COURSE LEARNING OUTCOME (CLO)	
1. Describe and analyse information contained in graphs and charts clearly and accurately based on a mini project. (C4,LD1 : A3,LD3) 2. Write an effective resume and a supporting cover letter for a relevant job opening. (C3,LD1) 3. Handle a job interview effectively and confidently. (C3,LD3)	

Course Credit	DJJ5123 – Pneumatics & Hydraulics 3
Pre requisite	None
SYNOPSIS	
PNEUMATICS & HYDRAULICS provides knowledge and understanding to the importance of pneumatics and hydraulics circuits, equipment and design along with its usage in the industry.	
COURSE LEARNING OUTCOME (CLO)	
1. Analyse the basic concept and function of pneumatics and hydraulics system.(C4,PLO2) 2. Construct pneumatic, electro-pneumatic and hydraulic circuit according to assigned tasks.(C5, PLO3 & P4, PLO4) 3. Demonstrate understanding of engineering norm and practices in pneumatics and hydraulics during practical work sessions. (A3, PLO8)	

Course	DJJ5141 – Project 1
Credit	1
Pre requisite	None

SYNOPSIS

PROJECT 1 provides students with solid foundation on knowledge and skills in preparing project proposal, writing and presentation of proposal.

COURSE LEARNING OUTCOME (CLO)

1. Organize research or project systematically. (C4, PLO3)
2. Demonstrate good communication skill of oral presentation in group. (A3, PLO6)
3. Demonstrate continuous learning and information management skills while engaging in independent acquisition of new knowledge and skill to develop a project.
4. (A3, PLO11)

Course	DJF5022 MANUFACTURING SYSTEM
Credit	2
Pre requisite	None

SYNOPSIS

MANUFACTURING SYSTEM explains the terminologies and concepts that are necessary in the learning of manufacturing system. It provides knowledge regarding fundamental of manufacturing system, process analysis, process layout, scheduling, lean systems and material handling system. It also emphasizes on systematic way to analyse processes, the important of group technology, flexible manufacturing system and scheduling the job shop.

COURSE LEARNING OUTCOME (CLO)

1. Apply the basic concept of manufacturing system, process analysis, process layout, scheduling and material handling system. (C3, PLO 1)
2. Organize one of lean systems approach (C5, PLO 3)
3. Demonstrate good communication skill in group oral presentation, on assigned topics within a stipulated time frame. (A3, PLO 6)

Course	DJF5032 - CAD/CAM
Credit	2
Pre requisite	None

SYNOPSIS

CAD/CAM explains the theory and basic of coding languages, structures and the use of CAD/CAM systems for generating and verifying tool path. The students will learn how to use CAD/CAM software to design an object, produce a code and simulate machining. Besides, students will also be exposed to modern manufacturing system as well as Flexible Manufacturing System (FMS), Computer Integrated Manufacturing (CIM) and Reverse Engineering (RE).

COURSE LEARNING OUTCOME (CLO)

1. Explain briefly CAD, NC, CAM and various type of modern manufacturing system. (C4, PLO2)
2. Create NC code for a particular product design by utilizing related CAD/CAM simulation software. (P7, PLO4)
3. Demonstrate continuous learning and information management skill while engaging in independent acquisition of new knowledge and skill to develop a project. (A3, PLO11)

Course	DJF5042 - INDUSTRIAL ROBOTICS
Credit	2
Pre requisite	None
SYNOPSIS	
INDUSTRIAL ROBOTICS introduces to the robotic system which emphasize on industrial robot components such as actuators, robot sensors, robot end effectors and control system. Topics also discuss on industrial robot application including the advantages and disadvantages of using robots. The course complete with an explanation of the robot classification, robot programming operations, ANSI robotics safety standard and maintenance process.	
COURSE LEARNING OUTCOME (CLO)	
1. Explain the application of industrial robot in manufacturing process including robot configurations and components. (C4, PLO2) 2. Prepare the robot programming and maintenance operations that comply with the standard of industrial robotics safety requirements. (C3, PLO1) 3. Demonstrate good communication skills in oral presentation in a group, on the assigned topics within a stipulated time frame. (A3, PLO6)	

Course	DJF5053 - JIG, FIXTURE AND TOOLING DESIGN 3
Credit	None
Pre requisite	
SYNOPSIS	
JIG, FIXTURE AND TOOLING DESIGN exposes the students to the knowledge of datum concept, geometric tolerances and fundamentals to build the tooling based on clamping and locating principle. The topics are also covering the principle of tooling applications in metal and non-metal process. All the topics discussed will help the students to understand, able to plan and identified the use of tooling. Students will also be exposed to the application of tooling in related industries	
COURSE LEARNING OUTCOME (CLO)	
1. Apply the concepts of tool design method, tooling material, jig and fixture. (C3, PLO 1) 2. Perform the simulation of mould, tool and die design. (P4, PLO 4) 3. Demonstrate ability to work in team to complete the assigned practical task. (A3, PLO 7)	

Course	DJF5062 - MATERIAL TECHNOLOGY 3
Credit	2
Pre requisite	None
SYNOPSIS	
MATERIAL TECHNOLOGY exposed students on several types of metal, alloy and other non-metal materials that are commonly used in the engineering field. Varieties of components will be covered such as stainless steel, non-ferrous alloy, polymers, environmental effect and electrical features of materials.	
COURSE LEARNING OUTCOME (CLO)	
1. Relate the characteristics of stainless steel, nonferrous alloy and polymer materials and electrical features in material engineering (C3,PLO1) 2. Analyse the environmental effects of mechanic features materials. (C4,PLO2) 3. Demonstrate ability to work in team to complete assigned topic for case study. (A3,PLO7)	

7.5 List of Courses Synopsis for Semester 5

Course	DUA6022 – KOMUNIKASI DAN PENYIARAN ISLAM
Credit	2
Pre requisite	None
SYNOPSIS	
KOMUNIKASI DAN PENYIARAN ISLAM memfokuskan kepada penguasaan konsep, kemahiran komunikasi dan penyiaran Islam bagi meningkatkan kefahaman pelajar secara holistic terhadap kursus ini	
COURSE LEARNING OUTCOME (CLO)	
1. Menjelaskan konsep, bentuk komunikasi dan hubungannya dalam Islam (C2,LD1) 2. Menunjukkan kemahiran pengurusan komunikasi dalam bidang penyiaran Islam (C3, LD1 : A4,LD5) 3. Menghubung kait isu-isu semasa dalam komunikasi dan penyiaran Islam. (C3,LD1 : A3,LD6)	
Course	DPB2012 – ENTREPRENEURSHIP
Credit	2
Pre requisite	None
SYNOPSIS	
ENTREPRENEURSHIP focuses the principles and concept of entrepreneurship. This course concentrates on the systematic methods of getting business ideas. This course also prepare the students on conducting business using social media marketing. It also emphasizes a preparation of business plan, thus developing their entrepreneurial skills.	
COURSE LEARNING OUTCOME (CLO)	
1. Explain clearly the concept of entrepreneurship and process of developing an effective business. (C2,LD1) 2. Prepare completely a business plan according to standard format. (P2, LD2) 3. Build the online business presence using the social media marketing. (P3, LD2 : A4,LD7)	
Course	DJF6081- MANUFACTURING ENGINEERING LABORATORY
Credit	1
Pre requisite	NONE
SYNOPSIS	
MANUFACTURING ENGINEERING LABORATORY 2 aims to enable the learners to develop knowledge and skills in Industrial Robot Application, Programmable Logic Control, Statistical Process Control (SPC) and Inventory Control. In Robot Application, learners will learn about programming, hands on training and robot application while in PLC, they will learn about creating a simple program using PLC which is used in manufacturing and mechanical processes. Statistical Process Control (SPC) however, uses statistical tools to observe the performance of the production process in order to predict significant deviations that may later result in rejected product. The inventory control will focus on understanding the quantity discounts and controlling the inventory while rapid prototyping is used in designing complex design shapes which involves in modifying and completing design of a prototype.	
COURSE LEARNING OUTCOME (CLO)	
1. Organize data and graph control charts in observing the performance of a production process along with appropriate quality improvement tools such as MRP, Pareto Diagram, Cause and Effect diagram and control chart. (C5, PLO3) 2. Manipulate robot programming, PLC programming and rapid prototyping design process to complete a specific task based on standard operating procedure.(P2, PLO4) 3. Demonstrate ability to work in team to complete assigned tasks during practical work sessions. (A3, PLO7)	

Course	DJJ6143 – Project 2
Credit	3
Pre requisite	DJJ5141 – Project 1
SYNOPSIS	
PROJECT 2 introduces the students to the concepts of conducting a design or case study. The students select a project, list the project's needs, the processes involved, cost estimation, project schedule by applying appropriate methodology in the project planning. It also involves project implementation, project report and presentation.	
COURSE LEARNING OUTCOME (CLO)	
1. Develop creative solution to solve the problems in the project design or case study (C5, PLO3) 2. Organize the selected design or case study based on the project planning (P5, PLO4). 3. Demonstrate good communication skills of presentation in group. (A3, PLO6) 4. Demonstrate ability to lead a team to complete assigned project during practical work sessions. (A3, PLO7) 5. Demonstrate awareness of management, business practices and entrepreneurship related to product of project. (A3, PLO9) 6. Demonstrate awareness of social responsibility in practical work procedure and practices. (A3, PLO10)	

Course	DJF6102– QUALITY CONTROL
Credit	2
Pre requisite	NONE
SYNOPSIS	
QUALITY CONTROL provides knowledge on basic principle and concept of quality including statistical method in controlling products quality or services. This course also emphasises on the application of Control Chart and Quality Control tools and also explains the importance of International Standard of Quality Assurance Standard, ISO 9000 for an organization.	
COURSE LEARNING OUTCOME (CLO)	
1. Apply the relation of statistics and quality management system in understanding of quality control and their application tools. (C3, PLO1). 2. Propose the related quality tools and techniques to control the quality of products or services based on case study. (C5, PLO 3). 3. Demonstrate ability to work in team to complete the assigned tasks. (A3, PLO7).	

Course	DJJ5133 - ENGINEERING DESIGN
Credit	3
Pre requisite	NONE
SYNOPSIS	
ENGINEERING DESIGN provides knowledge on basic engineering design. It emphasizes on mathematical analysis for simple component designs in engineering such as key, rivet and welding joint. It also provides knowledge on gear design and selection of bearing.	
COURSE LEARNING OUTCOME (CLO)	
1. Analyse well-defined the concept of design process and stress in an engineering product or component. (C4, PLO2) 2. Conduct investigations in the design of simple engineering components by using mathematical analysis, taking into consideration the safe load limitation. (C5, PLO3) 3. Demonstrate good written communication skills of case study in group, on assigned topic. (A3,PLO6)	

7.6 List of Courses Information for Semester 6

Course	DUT 40110 – INDUSTRIAL TRAINING
Credit	10
Pre requisite	KHIDMAT MASYARAKAT
SYNOPSIS	
INDUSTRIAL TRAINING exposes students to related work competencies demanded by industries. This course provides exposure to students in term of technology literacy, effective communication, practice social skills and teamwork, policies, procedures and regulations, professional ethics and reporting. It also equips student with real work experiences, thus helping students to perform as novice workers.	
COURSE LEARNING OUTCOME (CLO)	
1. Apply related knowledge and skills at workplace (C3, P2) 2. Communicate effectively with others (A3) 3. Practice teamwork (A5) 4. professional and ethically comply with policies, procedures, and rules of organization, (A5) 5. Explain the tasks assigned (during the industrial training) according to the prescribed format (P2, A4)	

7.7 List of Courses Synopsis Offered for Co-Curriculum

COURSE	DRB1060 – PENGAKAP KELANA
CREDIT	0
PRE REQUISITE	None
SYNOPSIS	
PENGAKAP KELANA memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	
COURSE LEARNING OUTCOME	
1. Menunjukkan kemahiran khusus yang dipelajari (P2, LD2) 2. Melaksanakan aktiviti-aktiviti berdasarkan penguasaan kemahiran yang dipelajari (A2, LD4, LD9)	

COURSE	DRB 1090 - RELASIS
CREDIT	0
PRE REQUISITE	None
SYNOPSIS	
RELASIS memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	
COURSE LEARNING OUTCOME	
1. Menunjukkan kemahiran khusus yang dipelajari (P2, LD2) 2. Melaksanakan aktiviti-aktiviti berdasarkan penguasaan kemahiran yang dipelajari (A2, LD4, LD9)	

COURSE	DRB 1050 - PISPA
CREDIT	0
PRE REQUISITE	None
SYNOPSIS	
PISPA memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	
COURSE LEARNING OUTCOME	
1. Menunjukkan kemahiran khusus yang dipelajari (P2, LD2) 2. Melaksanakan aktiviti-aktiviti berdasarkan penguasaan kemahiran yang dipelajari (A2, LD4, LD9)	
COURSE	DRB 1010 – ASKAR WATANIAH
CREDIT	0
PRE REQUISITE	None
SYNOPSIS	
ASKAR WATANIAH memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif	
COURSE LEARNING OUTCOME	
1. Menunjukkan kemahiran khusus yang dipelajari (P2, LD2) 2. Melaksanakan aktiviti-aktiviti berdasarkan penguasaan kemahiran yang dipelajari (A2, LD4, LD9)	
COURSE	DRB2061 – PENGAKAP KELANA 1 1
CREDIT	DRB1060 – PENGAKAP KELANA
PRE REQUISITE	
SYNOPSIS	
PENGAKAP KELANA 1 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif .	
COURSE LEARNING OUTCOME	
1. Mempamerkan kompetensi kemahiran khusus yang dipelajari (P2, LD2) 2. Melaksanakan aktiviti-aktiviti berdasarkan penguasaan kemahiran yang dipelajari (A2, LD4, LD9)	
COURSE	DRB3061 – PENGAKAP KELANA 2
CREDIT	2
PRE REQUISITE	DRB2061 – PENGAKAP KELANA 1
SYNOPSIS	
PENGAKAP KELANA 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	
COURSE LEARNING OUTCOME	
1. Mempamerkan kompetensi kemahiran khusus yang dipelajari (P3, LD2) 2. Melaksanakan aktiviti-aktiviti berdasarkan penguasaan kemahiran yang dipelajari (A3, LD4, LD9)	

COURSE	DRS2131 – MEMANAH
CREDIT	1
PRE REQUISITE	TIADA
SYNOPSIS	
MEMANAH memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	
COURSE LEARNING OUTCOME	
1. Mempamerkan kompetensi kemahiran khusus yang dipelajari (P3, LD2) 2. Melaksanakan aktiviti-aktiviti berdasarkan penguasaan kemahiran yang dipelajari (A3, LD4, LD9)	

COURSE	DRK3052 – FOTOGRAFI
CREDIT	2
PRE REQUISITE	TIADA
SYNOPSIS	
FOTOGRAFI memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.	
COURSE LEARNING OUTCOME	
3. Mempamerkan kompetensi kemahiran khusus yang dipelajari (P3, LD2) 4. Melaksanakan aktiviti-aktiviti berdasarkan penguasaan kemahiran yang dipelajari (A3, LD4, LD9)	

Senarai kursus kokurikulum yang ditawarkan boleh di rujuk dengan Jabatan Sukan kebudayaan dan Kokurikulum

KURSUS DRS		KURSUS DRK		KURSUS DRB
Badminton	Futsal	Kembara	Bahasa Inggeris	PISPA
Bola keranjang	Softbol	Nasyid	Audio Visual	
Sepaktakraw	Golf	Amalan 5S	Inovasi & Rekacipta	WATANIAH
Bola Jaring	Ragbi	Fotografi	Study Circle	
Bola Tampar	Silat	Kompang	Mesra Alam	PENGAKAP KELANASISWA
Memamah	Bowling	Komputer	Tarian Tradisional	
Tae Kwan Do	Tenis	Kaunseling	Keusahawanan	RELASIS
Skuasy	Hoki	Pengguna		

8.0 ACADEMIC SUPPORT DEPARTMENT / UNIT

8.1 Department Of Mathematics, Science & Computer (JMSK)

Department of Mathematics, Science & Computer (JMSK), which was originally known as the Mathematics and Science Unit, was established in 1993. JMSK plays an important role in coordinating the teaching of Engineering Mathematics and Engineering in all departments and is also responsible for the Pre-Diploma Science program. JMSK is also responsible for coordinating the use of Science Laboratory and Lecture Hall 4 so that its usage schedule is more systematic for all departments.

Currently, JMSK has 29 teaching staff that has skills in various disciplines such as Mathematics and Science, Information Technology, Computer Science, Mechanical Engineering, Civil Engineering and Electrical Engineering as well as a laboratory assistant. In January 2017 session, a total of 3308 students enrolled for all courses under JMSK.

8.2 Department of General Studies (JPA)

Department of General Studies (JPA) is another academic department that supports the main academic departments, in order to balance student needs to become better in academic, attitude and moral. It offers courses that cover topics and discussion of the elements of life such as values, principles, morals and skills base on mastery of the history of human civilization.

JPA is divided into two units which are English Unit and Islamic Studies Unit. Both units have their own responsibilities. English Unit is responsible in Technical English subject for technical stream students and Commerce stream students. While Islamic Studies unit is responsible in three subjects which are Islamic Studies, Islamic Civilization and Moral Education for Muslims and non-Muslims.

8.3 Examination Unit

Examination Unit Politeknik Port Dickson is responsible to handle all affairs related to examination. Among main activities carried out by Examination Unit are:

- Preparing examination Paper
- Administer Final Examination
- Handling Certification and Students Achievement Award
- Enforcement of Assessment Rules
- Administration

Student qualification to sit on final exam

Students must meet the following requirements before qualifying for the final examination:

- have registered the course as the course registration rules
- has attended 80% or more lectures / tutorials / practices for the specified period; and

$$\% \text{ Attendance} = \frac{\text{Total attendance (hour)}}{\text{Total attendance should be (hour)}} \times 100\%$$

If student has health problems and does not meet required attendance:

1. Students must submit medical certificate letter from doctors. The private doctor's medical certificate letter is limited to TWO (2) consecutive days and does not exceed EIGHT (8) days of a semester;
2. Students are not eligible to sit for the final examination;
3. The entire student assessment is void;
4. Students will need to repeat the course, as taking the course for the first time; or
5. In certain circumstances, PPD Director may give his consideration to matter 1,2 and 3.

Appeal for Review of the Final Examination Paper

A student who is not satisfied with the marking result of his/her semester final examination script might lodge an appeal for review through the re-examination of the final examination paper within fourteen days (14) upon the official exam result announcement. Appeals should be accompanied by reasonable excuse and relevant evidence.

Students will be charged RM50.00 for each appeal submitted and should be made in the form of Money/ Money Order on behalf of the name "PENGARAH POLITEKNIK PORT DICKSON".

Appeal Result

- Final Semester Students

Appeal Result will be informed to the student by the Politeknik Examination Committee within fourteen (14) days from the date of receipt of the appeal result from the Examination Board. The appeal decision is final.

- Non Final Semester Students

Appeal result will be notified to the student by the Examination Officer within fourteen (14) days from the date of receipt of the appeal result from the Polytechnic Examination Committee. The appeal decision is final.

8.4 Student Affairs Department (HEP)

Student Affairs Department plays a very important role in the administrative and managing the activities of student affairs in Politeknik Port Dickson. The Student Affairs Department is responsible for managing student admission and registration, financial assistance and scholarships, students' welfare and discipline and The Student Representative Committee.

It also functions to control and help to organize and monitor the students' activities in Politeknik Port Dickson. The motto of the Student Affairs Department is Courteous, Efficient and Effective. The department consists of three units namely; the Intake and Data Unit, the Welfare and Discipline Unit and starting August 2009, the Graduates and Alumni Unit is introduced under the department.

8.5 Hostel Unit

Politeknik Port Dickson provides various facilities for students who study here. Among the facilities provided is accommodation in PPD hostels. PPD can accommodate students over 3000 people. PPD hostels only have the capacity to accommodate 1580 which 692 places for male students (seven blocks) and 888 places for female students (nine blocks).

The end of 2017, the Si Rusa Residential College building was completed, and start to operations in the session of December 2017. The residential college can accommodate 1000 students and is reserved only for female students.

8.6 Sports And Co-Curricular Unit

The main function of the Sports, Co-curricular & Culture Department is to coordinate and conduct all academic activities (co-curriculum) for semester 1 to 5 semester consisting of uniformed bodies (DRB), Sports (DRS) and Clubs Association (DRK) and non-academic activities (sports & culture) for all students in every semester. This

activity is an essential element in shaping a skilled and active human capital in shaping the self and at the end of the study.

The main objective of the Sports, Co-Curriculum & Culture Department is to co-ordinate all academic and non-academic activities throughout the semester. The main objectives can be divided into two:

Iktisas

- Provide opportunities for students to acquire knowledge, experience, basic skills, ability to manage, leadership skills and trainability.
- Provide exposure to entrepreneurial aspects in order to develop a comprehensive, competent mind, talent and potential
- Increase capability in terms of leadership and identity
- Student attendance in co-curricular activities exceeds 90%

Society

- As a future preparation of students break into community activities
- Awareness and encourage students to engage in social, cultural and community service activities that can help achieve the goal of national unity
- Helping to create a democratic, moral, healthy, disciplined, dedicated society, in addition to having an attitude of tolerance and tolerance.

8.7 Liaison & Industrial Training Unit

The main role of Training and Advance Unit is to coordinate the student's industrial training program and communicate issues related to student's practical training with the firm and departments. The establishment of this unit is intended to regulate and operate training site applications, identify appropriate training sites, monitoring of training and assessment of industrial training during training.

This unit is assisted by the Industrial Training Coordinator at each department. Nowadays, there are more than 2,200 companies across the country are listed in the

Training and Advance Education Unit. Industrial training is part of the polytechnic, Ministry of Higher Education Malaysia curriculum requirement which must be fulfilled by all students before they are awarded with the diploma. Training period is for 20 weeks, and students are sent through training in various types of firms and departments throughout the country. Politeknik Port Dickson will try to accommodate students at suitable training sites and near student residences and which may benefit students.

8.8 Psychology And Career Unit (UPK)

The Psychology & Career Unit (UPK) provides a variety of facilities that help students utilize their potential to a maximum level and also create a good mental health condition among Port Dickson Polytechnic students. Students can meet their respective Polytechnic Psychology Officers or Psychological Coordinator Officers to discuss and share objective information on educational, academic, vocational and technical issues, personal, emotional, and mental, social and health issues that are relevant to the achievements of Polytechnics.

The main purpose of the UPK is to help students understand themselves so that they can solve the problems they face and can be used as guidance for future problem solving. In order to further strengthen the development of communication skills, interacting, managing, managing and administering, the activities of the cluster are carried out from time to time.

Through this approach, it is hoped that a positive awareness and responsible nature will arise among the students. On career, psychologist will assist students in obtaining career information and arrange interviews in and outside of their special polytechnics for final semester students. Counseling sessions are also carried out in this career guidance. Students are encouraged to explore their abilities and use them to advance their respective career fields. UPK provides such services:

- Individual and group counseling services
- Career counseling services

8.9 Instructional Development And Multimedia Unit

Unit for Instructional Development and Multimedia (UIDM) functions as a supporting unit in providing teaching and learning aids. Besides that, UIDM also provides audio, video, photo and graphics facilities for PPD staff to enable them to conduct curricular activities as well as other official programs within or outside the campus

8.10 Library Unit

Library unit started at the same time Politeknik Port Dickson was built in the year 1990. It started its operation on 1991. Services offered by the Library Unit:

- Borrowable collection
- Limited Borrowable collection
- Reference book collection
- Magazine and Paper collection
- Examination question collection
- Internet

8.11 Information Technology Unit (ICT)

The Information Technology Unit is responsible for managing all Information Technology facilities at Port Dickson Polytechnic. This unit is fully responsible for almost 1000 computers in terms of technical and maintenance. Each lab is supplied with network services. Ease of sign-in and data storage is provided on the domain child. Each laboratory user is allocated a 3GB storage space. In addition, the Information Technology Unit also provides poliPD wi-fi services to residents of Port Dickson Polytechnic consisting of academic and non-academic staff at several locations around the campus. This service has also been extended to students up to the student's residential college to facilitate internet access

8.12 Corporate Industrial Services & Employability Unit (CISEC)

The CISEC Unit was established in July 2010 to support one of the Polytechnic Transformation agendas that improving job marketability and employment rates among polytechnic graduates. Therefore, CISEC will be the intermediary of polytechnics and industry and will also coordinate career development and graduateship graduate program.

CISEC function:

- Career counseling and advanced education
- Career planning
- Industrial relations and placement
- Tracking and alumni studies

8.13 Research, Innovation & Entrepreneurship Unit

Research, Innovation & Entrepreneurship unit, Politeknik Port Dickson was establishing in line with the thrust of the Third Strategic Plan Department of Polytechnic, which implemented policies and develop research, innovation and entrepreneurship. The activities to inculcate the culture of innovation among student and staff, conducting research, the establishment club entrepreneurs and cultivating research and published scientific literature is among the responsibilities that must be performed by this unit.

With the tagline "Inovasi Pencetus Minda Kreatif", the establishment of this Unit is officially on January 2010, all plans are made for purpose of driving the direction of the program as well as research and innovation in the PPD and provide an opportunity for the officers to carry out the duties and responsibilities better and more effective

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