DIPLOMA IN MECHATRONIC ENGINEERING
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ABOUT POLITEKNIK NILAI

The Nilai Polytechnic (PNS), Negeri Sembilan is the 23rd polytechnic set up under the Ministry of Higher Education Malaysia on 1 April 2007 under the 9th Malaysia Plan. PNS started operating on a temporary campus with the first intake of students in December 2007.

PNS moved to a permanent campus at the Enstek Town Education Complex in Negeri Sembilan in September 2011 on a 101.5 acre site comprising 37 administrative, academic, kamsis and staff building blocks. The campus is capable of accommodating 2,400 students with a capacity of 1,200 students.

PNS has a total of 67 staff members consisting of 48 lecturers and 19 support staff. It provides programs such as Diploma in Business Studies (e-Commerce), Diploma in Islamic Banking and Finance, Diploma in Logistics and Supply Chain Management, Diploma in Bio-technology, Diploma in Horticultural Landscape, Diploma in Mechanical Engineering and Diploma in Mechatronic Engineering

VISI
Politeknik Nilai, Negeri Sembilan to become TVET institute and Bio-industrial Technology Center.

MISI
Providing educational and technical & Vocational training (TVET) focusing knowledge, experience, skills and researches to produce quality, holistic, entrepreneur graduates that will strive to improve their nation.
PNS ORGANIZATION CHART

STRUKTUR ORGANISASI PNS

FENISARAH
LT. KO (PA) HJ. MOHAMD AMIN BIN HAMAT

RA FENISARAH
Drs. Asri Binti Abd Rashid

TIMBALAN FENISARAH AKADEMIK
DR. SITI JUNADIAH BINTI M. MUJRI

TIMBALAN FENISARAH SOKONGAN AKADEMIK
MOHAMD ISA BIN AZHARI

PETUGAS

WARAN

LANTIKAN DAIHAN

PENELITIAN

KETUA JABATAN
AGRIOTEKNOLOGI & BIO INDUSTRI
Misranah Binti bin Yusuf

KETUA JABATAN
KEJURPUAN MEKANIKAL
Fadah Binti Suboh

KETUA JABATAN
PENGAYAAN
Rahimah Binti Omar

KETUA JABATAN
PENGAYAAN AM
Mejar Ahmad Murad Bin Megat Baharuddin

KETUA JABATAN
MATHEMATIK, SAINS & KOMPUTER
Nor Uza Binti Kasim

KETUA UNIT
PERKESAN
Saruminda Binti Ahmad Zain

KETUA UNIT
PENELITIAN & LATHAN INDUSTRI
Yusriah Binti Yusop

KETUA UNIT
PENELITIAN INOVASI & TEKNOLOGI
Dr. Halimah Binti Che Hassan

KETUA UNIT
JAMIAN KUALITI
Cynthia Deta Binti Ishak

KETUA UNIT
E-LEARNING
Zaizal Binti Ahmad

KETUA UNIT
PEMBAKUAN & PEMESINGGARAN
Nor Shahrul Binti Kalibah

KETUA UNIT
PUJIT SUMBER
Noradzuan Binti Othman

KETUA UNIT
SUHAN & ACHIBULILUM
Kamalak Hanum Binti Sabili

KETUA UNIT
PENELITIAN PSIKOLOGI
Norhaziza Binti Jusoh & Mohd Nor

KETUA UNIT
LATIHAN & PENGESANAN
Zaibon Binti Yusof

KETUA UNIT
TEKNOLOGI MAKLUMAT
Zainos Binti Abdullah

KETUA UNIT
PEMBANGUNAN & PEMESINGGARAN
Nor Shahrul Binti Kalibah

KETUA UNIT
PUJIT SUMBER
Noradzuan Binti Othman

KETUA UNIT
CORPORATE INDUSTRIALISATION & EMPLOYABILITY CENTRE (CIEE)
Mohammad bin Azhari

KETUA UNIT
KOMUNIKASI KORPORAT
Dr Mohd Zuhir bin Abdul Rahman

KETUA UNIT
PEMBANGUNAN INSTRUMENTAL & MULTIMEDIA
Syahidah Binti Samii

KETUA UNIT
PUJIT SUMBER
Arifin Aujam Binti Noradin

KETUA UNIT
PEMBEBASAN
Asmila Binti Md.Saad
PNS FLOOR PLAN

Kompleks Pendidikan Bandar Enstek, 71760 Bandar Enstek, Negeri Sembilan. www.polinilai.edu.my  
e-mail: webmaster@polinilai.edu.my
OUTCOME-BASED EDUCATION (OBE)

Outcome-Based Education means clearly focusing and organizing everything in an educational system around what is essential for all students to be able to do successfully at the end of their learning experiences. This means starting with a clear picture of what is important for students to be able to do, then organizing the curriculum, instruction and assessment to make sure this learning ultimately happens “(Spady 1994, 1)

MISSION

Break through the border to build a transformative and creative learning environment to generate innovation-led economy.

VISION

The major driver of innovation human capital through education and training to meet the needs of transformational global workforce by 2015

What is OBE?

OBE is an educational process that focuses on what student can do or the qualities they should develop from what they have learnt.

OBE involves the restructuring of curriculum, assessment and reporting practices in education to reflect the achievement of higher order learning.

It requires that them to learn the required skills and content.

Discourages traditional education approaches based on direct instruction of fact and standard methods.

Both structures and curriculum are designed to archive those capabilities or qualities.
Why OBE?

1. Transformation in education

   ![Conventional Education: Teacher Centered](Image)

   ![Outcome-Based Education: Students Centered](Image)

2. Teacher-centered Vs Student-Centered

<table>
<thead>
<tr>
<th>ELEMENTS</th>
<th>TEACHER-CENTERED</th>
<th>STUDENT-CENTERED</th>
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</thead>
<tbody>
<tr>
<td>Knowledge</td>
<td>Transmitted from instruction</td>
<td>Constructed by students</td>
</tr>
<tr>
<td>Student Participation</td>
<td>Passive</td>
<td>Active</td>
</tr>
<tr>
<td>Role of Lecturer</td>
<td>Leader/Authority</td>
<td>Facilitator/Partner in Learning</td>
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<tr>
<td>Role of Assessment</td>
<td>Few Test, Mainly for Grading</td>
<td>Many Tests, for Ongoing Feedback</td>
</tr>
<tr>
<td>Emphasis</td>
<td>Learning Correct Answers</td>
<td>Developing Deeper Understanding</td>
</tr>
<tr>
<td>Assessment Method</td>
<td>One-Dimensional testing</td>
<td>Multidimensional testing</td>
</tr>
<tr>
<td>Academic Culture</td>
<td>Competitive, Individualistic</td>
<td>Collaborative, Supportive</td>
</tr>
</tbody>
</table>
The element of OBE: Constructive element Process

Constructive Element Process

<table>
<thead>
<tr>
<th>Curriculum</th>
<th>Utilize OBE curriculum that outlines specific, measurable outcomes.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instruction</td>
<td>Method of curriculum design and teaching that focuses on what student can actually do after they are taught.</td>
</tr>
<tr>
<td>Assessment</td>
<td>The intended teaching outcome and the standard that they want to achieve is clearly stated.</td>
</tr>
</tbody>
</table>
The OBE impact

Students are expected to be able to do more challenging tasks other than memorizing and reproducing what has been taught.

Students should be able to conduct projects, analyze case studies, do presentations, able to think, asking questions and conduct research and make decisions based on the finding.

Student should be more creative, able to analyze and synthesize information.

Student are able to plan and organize tasks, able to work in a team as a community or in entrepreneurial service terms to propose solutions to the problem.
PEMBELAJARAN TERADUN (BLENDED LEARNING)

This teaching and learning method integrates a mixture of online mode and onsite mode of learning with a weightage of 30% - 80% course and activity content which is managed online. These teaching approach either facilitates or replace the face to face contact learning.

Percentage of minimum mode for Blended Learning

![Blended Learning Diagram]
PORTAL CIDOS E-LEARNING POLITEKNIK MALAYSIA

http://portal.cidos.edu.my
Diploma in Mechatronic Engineering

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 to 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 driving 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.

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

Diploma in Mechanical Engineering for polytechnic is developed to give balanced emphasis on theoretical and practical aspects. The programme will take six semesters to complete, relatively three academic semesters at their respective polytechnics and one semester of industrial training at relevant industries during the fourth semester. Students are required to return to their respective institutions for the completion of the programme in the fifth and sixth semester.
PROGRAMME
EDUCATIONAL
OBJECTIVES (PEO)

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

1. Knowledgeable and skilled in the field of mechanical engineering in accordance with industry requirements.

2. Aware and able to solve problems practically and ethically in mechanical engineering.

3. Able to communicate effectively and demonstrate leadership qualities with the characteristics of good teamwork in the industrial environment

4. Able to demonstrate entrepreneurial skills and pursue lifelong learning in line with the national vision.
PROGRAMME LEARNING OUTCOMES (PLO)

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

1. Apply knowledge of mathematics, science and engineering fundamentals to well-defined mechatronic engineering procedures and practice;

2. Analyses well-defined mechatronic engineering problems with respect to operation and troubleshooting;

3. Conduct investigations and assist in the design of solutions for mechatronic engineering systems;

4. Apply appropriate techniques, resources, and engineering tools to well-defined mechatronic 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 and entrepreneurship;

10. Demonstrate an understanding of the impact of engineering practices, taking into account the needs for sustainable development;

11. Recognise the needs for professional development and to engage in independent and lifelong learning.
## PROGRAMME STRUCTURE FOR DIPLOMA IN MECHATRONIC ENGINEERING

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<tr>
<th>COMPONENTS</th>
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### SEMESTER 6

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<td>v. Industrial Training</td>
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### Legend / Notes:
- L: Lecture, P: Practical/Lab, T: Tutorial, C: Credit
- (The numbers indicated under L, P & T represent the contact hours per week, to be used as a guide for time table preparation)

* For Muslim Students
** For Non Muslim Students
*** Students are required to complete a minimum of four credits of elective course

For Co-curriculum,
1. Path 1: Sport and Club
2. Path 2: Uniform Unit

**Uniform Unit** (Students who choose Uniform Unit are required to complete 5 modules for commissioning)
1. DRB1XXX (Asas Unit Beruniform) is a prerequisite to DRB2XXX (Unit Beruniform 1).
2. DRB2XXX1 and DRB3XXX2 are graded.
3. DRB3XXX and DRB4XXX are optional, non-graded and audited courses with full assessment. Upon completion, students are entitled for commissioning.
POLYTECHNIC’S
GENERAL COURSES

General studies department was established with the objective to help Politeknik Nilai introduce students to the importance and value of spiritual, human and universal human values of purity in a dignified living as well as emphasizing the importance of using the English oral skills (speaking and communication) and writing skills. This will enable students functioning effectively in the context of his future. In daily life every human being cannot prevent himself from human contact and interaction with each other. Thus, human relations through inter-personal aspects and intra-personal skills are an art which can assess the humanitarian in a person. Behaviour and actions cannot be taught through a technical education and professional skill only without spiritual and human values. Advanced nations in science and technology, but disregards the aspect of human behaviour will be considered as no glory and goodness of these people even seen as a nation who are not civilized and dignified. Therefore, the general education department serves as a complement to all departments in Polytechnic Sultan Haji Ahmad Shah in helping the students fill in the spiritual and human values.

The courses offered in this department are general courses which include modules in Islamic Education, Moral Education, Islamic Civilization, Communicative English, Co-Curricular, Soft Skills and Occupational Safety and Health (OSH).
COURSE SYNOPSIS

DJJ1012 ENGINEERING DRAWING

The ENGINEERING DRAWING course provides the students with the fundamentals 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.

DUE 1012 COMMUNICATIVE ENGLISH 1

COMMUNICATIVE ENGLISH 1 focuses on developing students’ 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.

DRB1XX0 ASAS UNIT BERUNIFORM

ASAS UNIT BERUNIFORM memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus asas unit beruniform secara holistik. Kursus ini dapat mengukuhkan pembentukan kemahiran insaniah yang positif dalam ilmu asas unit beruniform. Ianya akan melahirkan golongan siswi yang berdisiplin, berkaliber, peka, berwibawa dan berketrampilan demi kepentingan nusa, bangsa dan negara.

DUB1012 PENGAJIAN MALAYSIA

DBM1013 ENGINEERING MATHEMATICS 1

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 introduced to the theory of complex number and matrices method to solve simultaneous equation. This course also introduces students to concept of vector and scalar.

DBS 1012 ENGINEERING SCIENCE

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.

DJM1012 MECHATRONIC WORKSHOP PRACTICE 1

MECHATRONIC WORKSHOP PRACTICE 1 exposes the students to basic works in an engineering workshop with emphasis on safety practices. Students are exposed to fitting, welding and machining.

DJM1022 C PROGRAMMING

C PROGRAMMING course provides an introduction to programme design and development. Student will learn to design, code, debug, test and document well-structured programs based on technical and engineering problem. Topic covered; software development principle, programming language basic, data types, input and output operation, the use of selection, loops, arrays and function structure.

DUA2012 SAINS, TEKNOLOGI DAN KEJURUTERAAN DALAM ISLAM 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, pencapaianannya dalam tamadun Islam, prinsip serta peranan syariah dan etika Islam, peranan kaedah fiqh serta aplikasinya.
DUB2012 NILAI MASYARAKAT MALAYSIA

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.

DRB2XX1 UNIT BERUNIFORM 1

UNIT BERUNIFORM memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.

DRK3XX2 SUKAN

SUKAN memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.

DJJ2022 ELECTRICAL TECHNOLOGY

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. Exposes the students to practical laboratory experiments in Electrical Technology.

DBM2023 DISCRETE MATHEMATICS

DISCRETE MATHEMATICS course introduces students to logical and mathematical thinking. This course focuses on providing basic logic, sets, relations and functions, as well as graphs and trees which integrate symbolic tools, graphical concepts and numerical Calculations. This course also addresses the counting principle as well as induction and recursion which are related to the information technology programme.
DBM2013 ENGINEERING MATHEMATICS 2

ENGINEERING MATHEMATICS 2 exposes students to the basic laws of exponents and logarithms. This course also introduces the basic rules of differentiation concept to solve problems that relate maximum, minimum and calculate the rates of changes. This course also discuss integration concept in order to strengthen student knowledge for solving area and volume bounded region problems. In addition, students also will learn application of both techniques of differentiation and integration.

DPB2012 ENTREPRENEURSHIP

ENTREPRENEURSHIP focuses the principles and concept of entrepreneurship. This course concentrates on the systematic methods of getting business ideas. This course also prepares the students on ways to conduct and control the business including fundamental of management, marketing and financing. It also emphasizes on the preparation of business plan, thus developing their entrepreneurial skills.

DJJ 2062 COMPUTER AIDED DESIGN 1

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.

DJM2012 MECHATRONIC WORKSHOP PRATICE 2

MECHATRONICS WORKSHOP PRACTICE 2 enhances knowledge on CNC and EDM and also enables students to carry out related job specification. This course also emphasizes on how to operate CNC and EDM machines properly.
DJM2032 ELECTRONIC SYSTEM

ELECTRONIC SYSTEM covers knowledge on basics of electronic concepts and digital systems. The course emphasizes on the electrical characteristics and properties of semiconductor materials, operation of linear DC power supplies, amplifier circuits and sinusoidal wave oscillator circuits. This course also discusses number systems, code systems, logic gates, Boolean operations and combinational logic circuits.

DJM2043 THERMOFLUIDS

THERMOFLUIDS provides students to the basic concepts of thermodynamics and fluids mechanics into one integrated course. This course emphasizes on concepts of conceptual principles in thermos fluids, fluids applications, properties of pure substances, first and second law of thermodynamics, and heat transfer. This course also provides knowledge and understanding of theory, concepts and application of principles to solve problems related to thermos fluids processes.

DUE3012 COMMUNICATIVE ENGLISH 2

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.

DRK3XX2 KELAB

KELAB memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajaryang positif.

DRK3XX2 SUKAN

SUKAN memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.
DRK3XX2 UNIT BERUNIFORM

UNIT BERUNIFORM memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.

DBM3013 ENGINEERING MATHEMATICS 3

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 addition, 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.

DUE5012 COMMUNICATIVE ENGLISH 3

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 to present data through the use of graphs and charts. 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.

DJJ 3053 ENGINEERING MECHANICS

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 rigid body and structural analysis. This course also covers an introduction to dynamics, kinematics and kinetics of particles. This course also exposes the students to the demonstration of experiments in Engineering Mechanics.
DJM3052 INDUSTRIAL ELECTRONIC

INDUSTRIAL ELECTRONIC provides exposure to mechanical, electrical and electronic devices. This course discusses structures of circuits, switches, relays, solenoids, thyristors, sensors and converters.

DJM3063 DIGITAL SYSTEM

DIGITAL SYSTEM provides the knowledge on the concepts and basic principles of digital circuits used in computer systems. This course focuses on sequential logic circuits, counters and registers. This course also covers the topics on the methods of signal conversion in electronic circuits.

DJM3072 PROGRAMMABLE LOGIC CONTROLLER

PROGRAMMABLE LOGIC CONTROLLER (PLC) provides knowledge regarding the concept and basic principle of automation systems as well as PLC. This course emphasizes on the use, design process, programming and maintenance method of automation systems as well as PLC. This course also provides knowledge and skill training to construct automation systems based on the use of PLC systems.

DUT40110 INDUSTRIAL TRAINING

INDUSTRIAL TRAINING exposes students to related workplace competencies demanded by industries. This course provides exposure to students in terms of technology literacy, effective communication, practice social skills and teamwork, policies, procedures and regulations, professional ethics and reporting. It also equips students with real work experience, thus helping students to perform as novice workers.

DJF5042 INDUSTRIAL ROBOTICS

INDUSTRIAL ROBOTICS explains the advantages and disadvantages of using robots along with a description of the classification systems used with robots. Robotics components such as actuators, tooling, robot sensors, robot end effectors and control systems are examined. Robot programming operations and robot application are also discussed. The course ends with an explanation of the ANSI robotics safety standard and maintenance process.
DJJ5123 PNEUMATIC & HYDRAULICS

PNEUMATICS & HYDRAULICS provides knowledge and understanding to the importance of pneumatics and hydraulics circuits, equipment and design along with its usage in the industry.

DJJ5141 PROJECT 1

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

DJM5082 MICROPROCESSOR

MICROPROCESSOR covers the concept of microprocessor system based on Intel 8086 microprocessor. Student will learn concept of microprocessor 8086, microprocessor architecture, the memory system, interfacing, interrupt, microprocessor’s programming and its applications.

DJM5092 CONTROL SYSTEM

CONTROL SYSTEM provides knowledge regarding various concepts of feedback control system and the required mathematical methods. The emphasis of the course is on control action, pneumatic control, hydraulic control and frequency response. This course also provides knowledge in analyzing and designing stability and performance test.

DJM5103 POWER ELECTRONICS

POWER ELECTRONICS provides knowledge on widely used motor control concepts especially those in high power industry. The course focuses on basic concepts of Power Electronic and applications with DC and AC motor control covering construction of DC and AC electrical drives.
DUA6022 KOMUNIKASI DAN PENYIARAN ISLAM

KOMUNIKASI DAN PENYIARAN ISLAM memfokuskan kepada penguasaan konsep, kemahiran komunikasi dan penyiaran islam bagi meningkatkan kefahaman pelajar secara holistik terhadap kursus ini.

DJJ6143 PROJECT 2

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.

DJJ6192 INDUSTRIAL MANAGEMENT

INDUSTRIAL MANAGEMENT provides students with a strong fundamental understanding of industrial management prospect and production system planning such as inventory, scheduling, production system operation, facilities, plan location, layout and line balancing. This course also provides knowledge in quality control and human resource management.

DJJ6202 DIAGNOSIS AND TROUBLESHOOTING FOR MECHANICAL COMPONENTS

Mechanical components are subjected to deterioration once commissioned. This deterioration may be in many forms, for example, vibration and misalignment, friction and wear, under or over lubrication. If this deterioration left uncorrected it will lead to component failure. This course provides knowledge and skills on diagnosis and troubleshooting lubrication, bearing, shaft alignment and pump.

DJM6113 INDUSTRIAL AUTOMATION

THE INDUSTRIAL AUTOMATION explains advantages and disadvantages of using robots along with a description of the classification systems. It also gives students an understanding of modern industrial automation technology.
DJM6122 POWER TRANSMISSION MECHANISM

POWER TRANSMISSION MECHANISM introduces and reveals element of mechanism movement power and commonly used converter common use. This module includes chain, bearing, gear, cam, followers, coupling, clutch and brake. This module gives knowledge on the working principle of elements power transmission mechanism and students should be able to choose and form power transmission mechanism.

DJM 6132 EMBEDDED SYSTEM APPLICATION

EMBEDDED SYSTEM covers the basic concept and application of microcontroller system. Students will learn software and hardware development on microcontroller development system and understand how to interface.
JOB PROSPECTS

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

- Technical Assistant
- Production Technician
- Test & Reliability Technician
- Maintenance Engineer
- Sales Engineer
- Application Engineer
- Controller System Supervisor
- Automation and Robotic Supervisor
- Mechanical and Electrical System Designer
Unit Peperiksaan

PENGENALAN

Setiap Politeknik Kementerian Pendidikan Malaysia adalah bertanggungjawab memberi panduan mengenai pembelajaran, penilaian, pengawalan dan perjalanan peperiksaan. Penganugerahan Sijil dan Diploma kepada pelajar masing-masing adalah tertakluk kepada kelulusan dan pengesahan Lembaga Peperiksaan dan Penganugerahan Sijil/Diploma Politeknik setelah pelajar lulus semua peperiksaan serta memenuhi semua kehendak kursus. Bagi sebarang politeknik, Unit Peperiksaan adalah unit yang dipertanggungjawabkan untuk merancang, mengurus dan melaksanakan segala aktiviti yang berkaitan dengan penilaian pelajar berpanduan kepada garis panduan dan peraturan penilaian yang telah ditetapkan.

Unit Peperiksaan diketuai oleh seorang Pegawai Peperiksaan yang dilantik oleh Bahagian Pengurusan Politeknik, Jabatan Pendidikan Teknikal dan dibantu oleh beberapa penyelaras yang dilantik dari setiap Jabatan Akademik. Segala urusan yang berkaitan dengan penilaian dan juga peperiksaan pelajar diselaraskan oleh unit ini. Di antara tanggungjawab unit ini ialah:

SISTEM NILAI MATA

Sistem penilaian Politeknik Kementerian Pendidikan Malaysia adalah berdasarkan kaedah penilaian kuantitatif prestasi Pelajar di dalam sesuatu kursus dan dikenali sebagai Sistem Nilaian Mata (SNM).

Mengikut sistem ini, prestasi Pelajar bagi sesuatu modul dibahagikan kepada beberapa kumpulan markah atau gred. Satu ukuran prestasi akan digunakan bagi menetapkan Purata Nilaian Mata (PNM) atau Grade Point Average (GPA) dan Himpunan Purata Nilaian Mata (HPNM) atau Cumulative Grade Point Average (CGPA). PNM menunjukkan prestasi Pelajar bagi semester semasa manakala HPMN pula menunjukkan prestasi Pelajar di dalam beberapa semester sehingga kini.
SISTEM GRED

Markah yang diperolehi oleh Pelajar di dalam sesuatu modul akan diberi nilai mata dan gred mengikut kumpulan seperti jadual di bawah.

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KEPUTUSAN LULUS BERSYARAT

- Pelajar dibenarkan mengulang kursus dengan tujuan untuk memperbaiki gred kursus. Hanya pelajar yang mendapat gred pencapaian minimum (C-, D+ dan D) dibenarkan untuk mengulang kursus.
- Pelajar yang mendapat gred pencapaian minimum (C-, D+ dan D) dibenarkan membaiki gred kursus hanya sekali sahaja sepanjang pengajian.
- Pelajar yang mengulang kursus wajib mengikuti semula kuliah dan semua penilaian kursus (PA & PB) sepenuhnya sepanjang semester.
- Pelajar yang mendapat gred pencapaian minimum (C-, D+ dan D) yang ingin memperbaiki kursus perlu mengambil kursus tersebut pada semester berikutnya termasuk semester pendek.
- Keputusan bagi pelajar yang memperbaiki gred kursus akan diambil dari gred terbaik.
- Bagi pelajar semester akhir yang mendapat HPNM dibawah 2.00 dibenarkan untuk mengulang kursus yang Lulus Bersyarat.
- Pelajar yang mendapat keputusan KS digalakkan mengulang kursus yang Lulus Bersyarat.
PENILAIAN DALAM SISTEM SEMESTER

Semua modul (matapelajaran) akan dinilai secara berterusan sebelum Peperiksaan Akhir Semester bermula. Modul Am dan modul-modul yang tidak melibatkan Peperiksaan Akhir akan dinilai secara 100% Penilaian Berterusan. Modul yang melibatkan Peperiksaan Akhir akan dinilai berdasarkan kepada 50% Penilaian Berterusan (PB) dan 50% Peperiksaan Akhir (PA).

PERATURAN AM KAEDAH PENILAIAN

Pelajar hendaklah memenuhi syarat-syarat berikut sebelum layak untuk dinilai prestasi akademiknya:

• Telah mendaftar pengajian;
• Telah mendaftar modul berkenaan; dan
• Telah mencapai tahap kehadiran 80% seperti yang ditetapkan bagi aktiviti pembelajaran yang diwajibkan bagi sesuatu modul.

PENENTUAN JUMLAH JAM KREDIT

• Jumlah jam kredit yang perlu diambil oleh Pelajar bagi sesuatu semester adalah di antara 12 hingga 18. Pendaftaran atau pengambilan Jumlah Jam Kredit yang kurang atau melebihi daripada yang ditetapkan perlu mendapat sokongan Penasihat Akademik dan kelulusan Ketua Jabatan.

• Pelajar hendaklah mencukupkan jumlah jam kredit minimum bagi setiap semester dengan mengambil modul-modul elektif yang ditawarkan pada semester berkenaan atau modul-modul lain dengan kebenaran Ketua Jabatan.

MENDAFTAR DAN MENDAFTAR MODUL

Pendaftaran modul akan dilaksanakan pada setiap awal semester di mana Pelajar hendaklah mendaftar semua modul yang akan diambil atau yang diwajibkan pada semester berkenaan dan modul ulangan (carry) daripada semester sebelumnya. Pelajar perlu mendapat nasihat daripada Penasihat Akademik dan juga pengesahan Ketua Jabatan masing-masing sebelum mendaftar.

Jika Pelajar tidak mendaftar modul ulangan atau yang wajib diambil pada semester berkenaan:

• Segala penilaian bagi modul tersebut tidak akan diambil kira; dan
• Pelajar akan diberi gred F dengan nilai mata 0.00 bagi modul berkenaan; dan
Pelajar dianggap telah menduduki modul berkenaan dan gagal satu kali.

Pelajar yang telah mendaftar untuk mengambil sesuatu modul itu hendaklah mengikuti sepenuhnya aktiviti pembelajaran bagi modul tersebut. Kegagalan pelajar menghadiri apa-apa aktiviti pembelajaran dengan memuaskan bagi sesuatu modul boleh menyebabkan pelajar tidak layak untuk menduduki peperiksaan bagi modul tersebut.

MENGUGUR MODUL & MENAMBAH MODUL

- Pelajar yang telah mendaftar sesuatu modul itu boleh menggugur atau menambah modul dengan syarat jumlah jam kredit bagi semester berkenaan tidak kurang atau tidak melebihi daripada jumlah jam kredit yang ditetapkan.
- Pengguguran dan Penambahan Modul hendaklah dibuat dalam tempoh yang ditetapkan dan Pelajar hendaklah terlebih dahulu mendapatkan nasihat dan sokongan daripada Penasihat Akademik serta mendapat kelulusan Ketua Jabatan.
- Jika Pengguguran Modul tersebut menyebabkan berlakunya kekurangan jumlah jam kredit bagi semester berkenaan, Pelajar dikehendaki mencukupkan jam kredit dengan menambah mana-mana modul yang lain dan membuat semula pendaftaran modul berkenaan dalam tempoh yang ditetapkan.
- Selepas daripada tempoh yang ditetapkan ini Pelajar tidak dibenarkan membuat sebarang Pengguguran dan/atau Penambahan Modul.

MENGULANG MODUL (CARRY)

- Mengulang Modul (Carry) adalah keadaan apabila Pelajar dikehendaki mengambil semula modul yang gagal pada semester sebelumnya yang nilai matanya adalah 1.67 ke bawah (mendapat markah 49 ke bawah)

Syarat - syarat yang membolehkan Pelajar itu untuk Mengulang Modul ialah:

- Mendapat Kedudukan Baik (KB) atau Kedudukan Bersyarat (KS) pada Keputusan Peperiksaan Akhir Semester; dan
- Gagal tidak melebihi 50% modul teknikal pada semester berkenaan.

- Pelajar yang mengulang modul hendaklah mengikuti semula aktiviti-aktiviti pembelajaran bagi modul berkenaan sepenuhnya.
Pelajar perlu mendaftar untuk Mengulang Modul bersama-sama dengan modul yang ditetapkan bagi semester semasa setelah mendapat nasihat daripada Penasihat Akademik dan kelulusan Ketua Jabatan.

Kaedah Mengulang Modul ini adalah tertakluk kepada syarat jumlah jam kredit yang telah ditetapkan bagi satu-satu semester.

Kaedah Mengulang Modul ini juga adalah tertakluk kepada sama ada modul itu ditawarkan atau tidak pada semester berkenaan.

Pelajar dikehendaki Mengulang Modul bagi mana-mana modul yang disyaratkan ke atasnya pada semester berikut sekiranya modul itu ditawarkan kecuali pada keadaan-keadaan yang tidak memungkinkan Pelajar berbuat demikian dan mendapat kelulusan mengena

PINDAHAN KREDIT

Pindahan Kredit bagi mana-mana modul adalah tertakluk kepada syarat-syarat dan garis panduan yang ditetapkan.

Pelajar boleh memohon kelulusan Pindahan Kredit bagi mana-mana modul daripada Ketua Jabatan masing-masing.

Mata Kredit yang diperolehi bagi modul yang berjaya mendapat pindahan kredit tidak akan diambil kira dalam pengiraan HPNM.

Jumlah jam kredit bagi modul tersebut hanya diambil kira bagi menentukan Jumlah Jam Kredit Terkumpul untuk tujuan penamatan kursus.

MENERUSKAN PENGAJIAN KE BERIKUTNYA

Pelajar yang mendapat keputusan Kedudukan Baik (KB) dan Kedudukan Bersyarat (KS) adalah layak meneruskan pengajian ke semester berikutnya.
KATEGORI KEPUTUSAN PEPERIKSAAN

Keputusan Peperiksaan bagi setiap semester akan dikategorikan kepada:

i) **Kedudukan Baik (KB)**
   Pelajar mendapat HPNM bersamaan atau lebih 2.00

ii) **Kedudukan Bersyarat (KS)**
    Pelajar mendapat HPNM bersamaan atau lebih 1.60 dan kurang daripada 2.00

iii) **Mengulang Semester (MS)**
    Pelajar mendapat HPNM bersamaan atau lebih 1.60 dan gagal melebihi 50% modul teknikal.

iv) **Gagal Berhenti (GB)**
    - Pelajar mendapat HPNM kurang daripada 1.60
    - Pelajar mendapat PNM kurang daripada 1.00

TEMPOH PENGAJIAN

Tempoh pengajian bagi sesuatu kursus adalah seperti berikut:

i) Diploma:
   - Minimum : 5 semester
   - Maksimum : 9 semester

PENGANUGERAHAN SIJIL / DIPLOMA

Pelajar adalah layak dianugerahkan Sijil/Diploma setelah:

i) lulus semua modul yang disyaratkan; dan
ii) mencapai jumlah jam kredit yang ditetapkan bagi sesuatu kursus; dan
iii) telah menamatkan Latihan Industri dan memenuhi syarat-syarat yang ditetapkan berhubung dengannya; dan
iv) memuaskan Lembaga Peperiksaan dan memenuhi semua kehendak kursus.
CONTOH PENGIRAAN PNM DAN HPNM

<table>
<thead>
<tr>
<th>KOD</th>
<th>NAMA KURSUS</th>
<th>JAM KREDIT</th>
<th>GRED</th>
<th>NILAI MATA</th>
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<tr>
<td>DUB1012</td>
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<td>DVV1013</td>
<td>FUNDAMENTAL OF DRAWING</td>
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<td>C</td>
<td>2.00</td>
<td>6.00</td>
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<tr>
<td>DVV1022</td>
<td>SCRIPT WRITING</td>
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<td>A-</td>
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<td>7.34</td>
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**KEPUTUSAN : KEDUDUKAN BAIK**

PNM : 3.09
HPNM : 3.09

| Jam Kredit Diambil : 18.0 |
| Jam Kredit Diambilkira : 18.0 |
| Jam Kredit Terkumpul : 18.0 |
| Jam Kredit Minimum : 91.0 |

Jam Kredit untuk setiap kursus berbeza dan telah ditetapkan oleh pihak pengajian tiggi.

Nilai Mata, seperti gred tetapi ditonjolkan dalam bentuk nombor dan perpuluhan.

**Mata Kredit** adalah:

$\text{Jam Kredit} \times \text{Nilai Mata} = \text{Mata Kredit}$

Contoh bagi subjek Pengajian Malaysia, $2.00 \times 4.00 = 8.00$

**Formula pengiraan PNM/GPA**

Formulanya adalah $(\text{Jumlah Mata Kredit bagi semua subjek}) / (\text{Jumlah Jam Kredit})$

$\text{Jumlah Mata Kredit} = 8.00 + 8.00 + 3.34 + 9.00 + 7.34 + 6.66 + 6.00 + 7.34$

$= 55.68$
Jumlah Jam Kredit = 18
PNM /GPA = 55.68 / 18
= 3.093

Pengiraan HPNM/CGPA:

HPNM = (Jumlah Mata Kredit Semester 2 + Jumlah Mata Kredit Semester 1)

Jumlah Jam Kredit Terkumpul

HPNM = ((8.00 + 4.00 + 7.34 + 9.00 + 7.34 + 9.99 + 9.99 + 7.34) + 55.68) / (18 + 18)

HPNM = (63 + 55.68) / 36

HPNM = 118.68 / 36

HPNM = 3.296 atau 3.30