



**NBOS-TVET:
TALENT
DEVELOPMENT IN
DIGITAL
TECHNOLOGY/
MODULAR
DIPLOMA**



STUDENT's STUDY GUIDE (Session I : 2023/2024)

INDUSTRY ENGAGEMENT
TVET curriculum
co-developed by industry
(Oracle, Cisco,
InfoSys, ComPTIA, Mesin
Niaga, IBM, Cytron, Coders Trust,
Gates IT, Terap IOT).
Industry-based programme.
High Quality instructor train
by industry.

**DDT
DIPLOMA
IN DIGITAL
TECHNOLOGY**

Web System
& Technology

Hardware
Technologies &
Internet of Thing

Diploma in Information Technology (Digital Technology) ~ DDT ~



**Department of Information Technology
and Communication**

Endorsement

This Student's Study Guide for this programme has been prepared and approved to be used by Session I : 2023/2024.

Hajah Zamra Binti Derahman

Director

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This edition of Student's Study Guide is issued without going through the evaluation and editing process. The quality of this edition will be improved from time to time based on feedback and new information received.

Distribution of this Student's Study Guide is only allowed in the area or premises of PSMZA only.

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Assalamualaikum Warahmatullahi Wabarakatuh

I wish to welcome and congratulate all the junior students of Department in Information Technology and Communications, Polytechnic Sultan Mizan Zainal Abidin. Diploma in Information Technology (Digital Technology) provides practical training and knowledge for students to prepare themselves with skills in IT field to fulfill the nation's needs in public and private sectors. So, I hope all the students will use the opportunities wisely.

This booklet, *Student's Study Guide* is a primary reference for students during their studies in polytechnic. It helps students to plan and understand the programme structure in other way to allow early preparation for further their studies in the next semester.

With the implementation of the Outcome Base Education (OBE) in PSMZA, I hope the students can involve in all assessments that have been planned and grab the opportunities in order to complete their studies in polytechnic successfully.

I believe if the students are able to adapt themselves in the campus environment, always concentrate during lectures and active in all the activities planned, polytechnic's dream to produce quality graduates will become a reality.

Thank You.

Aida Azmila binti Azmi
Head of Department
Department of Information Technology and Communication
Polytechnic Sultan Mizan Zainal Abidin

Assalamualaikum Warahmatullahi Wabarakatuh

Firstly, I wish to congratulate all the junior students of Department in Information Technology and Communication, Politechnic Sultan Mizan Zainal Abidin.

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

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

Congratulations and Good Luck!

Thank you,

Nor Syahadataini binti Awang
Program Leader of Information Technology
Department of Information Technology and Communication
Polytechnic Sultan Mizan Zainal Abidin

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INTRODUCTION

Vision of PSMZA

To be the Leading-Edge TVET Institution

Mission of PSMZA

To provide wide access to quality and recognised TVET programmes.

To empower communities through lifelong learning.

To develop holistic, entrepreneurial and balanced graduates.

To capitalise on smart partnership with stakeholders.

Vision of JTMK

JTMK aspires to be a center of educational excellence in the field of information and communication technology to produce graduates who are competent, honorable and responsible in accordance with the *Falsafah Pendidikan Negara*.

Mission of JTMK

Aim to produce semi-professional workforce of competent and competitive, quality and able to meet the need of Malaysia current industry.

DEPARTMENT OF INFORMATION TECHNOLOGY AND COMMUNICATION (JTMK)

Department of Information Technology and Communication (JTMK) is one from four academic departments at the Polytechnic of Sultan Mizan Zainal Abidin (PSMZA), Dungun, Terengganu that has been established in July 2007.

JTMK aims to produce quality graduates to obtain positions in business, industry and government. We prepare graduates to communicate clearly and work in teams effectively. Beside that, we prepare graduates in pursuing their education to obtain a higher degree and well-trained student, efficient, skilled in information technology and communications.

The department were currently led by Mrs. Aida Azmila binti Azmi as a Head of Department and Mrs. Nor Syahadataini binti Awang as a Program Leader. JTMK have 40 academic staffs and 3 non-academic staffs. JTMK offers diploma programme known as **Diploma in Information Technology (Digital Technology)** - that provide practical training and knowledge for students to prepare themselves with skills in information technology to fulfill the nation's needs in public and private sectors.

ORGANIZATION CHART



**PN AIDA AZMILA
BINTI AZMI
HEAD OF
DEPARTMENT**

Carrer Duration:
22 Tahun

Academic Qualification:
Master in Computer
Science

Field of Study:
Computer Science



**EN KAMALUL HAYAT
BIN RAMAN
ASSISTANT HEAD OF
DEPARTMENT**

Carrer Duration :
18 Tahun

Academic Qualification :
Master in TVET
Educational

Field of Study :
Software Engineering



**PN NOR SYAHADATINI
BINTI AWANG
HEAD OF PROGRAM**

Carrer Duration :
13 Tahun

Academic Qualification :
Bachelor in Computer
Engineering

Field of Study :
Computer Engineering



**PN NURU MAZLIA
BINTI MUSA
ASSISTANT HEAD OF
PROGRAM**

Carrer Duration :
13 Tahun

Academic Qualification :
Master in TVET
Educational

Field of Study:
Multimedia

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9	KAMARUDIN BIN RIPIN	DH48
10	SUZANA BINTI YUSOF	DH48
11	FAUZIAH BINTI BASOK	DH48
12	NOR HAYATI BINTI MOHAMMED SANI	DH48
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14	NOR AZLINA BINTI IBRAHIM	DH48 (M)
15	ZURAINI BINTI ABDUL RAJAB	DH48 (M)
16	RISLAH BINTI ZAKRIA	DH48 (M)
17	EFEZA BINTI CHE APANDEY	DH48 (M)
18	ZARINA BINTI MUSA	DH48 (M)
19	NOR AZNIRA BINTI YUSOFF	DH48 (M)

20	SHAIFATUL 'AIN BINTI MOHAMAD	DH48 (M)
21	SITI NASRAH BINTI MUKHTAR	DH48 (M)
22	MAZIDAH BINTI MUSA	DH48 (M)
23	NOR AIDAWATI BINTI ABDILLAH	DH48 (M)
24	NOR ZILAILA BINTI JAAFAR	DH48 (M)
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27	SYAHIEDA BINTI ZAKARIA	DH48 (M)
28	NUR SYARAFINA BINTI ABDUL RAHMAN	DH48 (M)
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PROGRAMME OVERVIEW

INTRODUCTION

In order to keep abreast with rapid technological advancements and evolving requirements in industries today, Department of Polytechnic & College Community Education (DPCCE) has worked collaboratively with the nation's key industry players in developing and reviewing the curriculum of Information and Communication Technology (ICT) programme. This collaboration aims to equip students with timely knowledge and relevant skills to meet the global challenges and the requirements of the ICT industries. In achieving blended learning, this aim pedagogy that blends classroom instructions with structured simulated real-life working experience is fully utilised to prepare students for the competitive edge in today's workplace.

The growly demand for highly skilled and technically savvy workplace drives the need to produce area for qualified men power in this industry to remain competitive in the world market. To address these issues the Curriculum Division (CD), DPCCE cooperates with the industries, Private Higher Learning Institutions and Public Higher Learning Institutions to develop and review the curriculum of the ICT programme. This curriculum integrates with the curriculum of professional certification and industry-led curriculum such as Computer Technology Industry Association (CompTIA A+), Oracle Java Certification, Microsoft Computer System Administrator (MCSA) and Microsoft Certified Desktop Service Technician (MCDST), Cisco Certified Network Associates (CCNA), EC-Council Network Security (ENSA), Certified Ethical Hacker (CEH) and Infosys Campus Connect programme, so as to give the opportunities for the students to sit for professional certificate examinations by the end of the final semester. This will give the students an added value and ensure that the knowledge and skills acquired through this programme are relevant with the needs of the ICT industries specifically.

SYNOPSIS

This programme provides education and training in Computing field with a specific emphasis on Information Technology area. The courses provide opportunities for students to get into a broad range of careers in a variety of ICT sectors. This programme also provides the students with transferable skills and multiskilling which enable them to adapt to new technologies. In addition to the technical courses, students are also taught English for Digital Technology, Penghayatan Etika dan Peradaban, Pengajian Islam or Pendidikan Moral and Co-Curriculum, to enhance their competencies in soft skills. As the programme emphasizes self-initiated learning and hands-on competencies, graduates of this programme should be ready to take the challenges in the world of computing technologies.

JOB PROSPECT

Research by Malaysian Digital Economy Corporation (MDEC) shows a globally. Thus, graduates from this programme are equipped with the knowledge, skills, attitude and abilities that can be applied to a broad range of careers in the ICT industrial worlds and businesses. The knowledge and skills that the students acquire from the programme will enable them to participate in the job market such as:

- 1. Computer Application Programmer
- 2. Internet Programmer
- 3. Web Programmer
- 4. Database Programmer
- 5. System Analysts Assistant
- 6. Software Developer
- 7. Database Administrator
- 8. Software Tester
- 9. System Support Personnel
- 10. System Programmer
- 11. Network Support Personnel
- 12. Network Administrator
- 13. IT Supporting Engineer
- 14. Assistant Network Engineer
- 15. Technical Helpdesk / Support
- 16. Assistant Game Programmer
- 17. Game Designer
- 18. 3D Animator
- 19. Storyboard Artist
- 20. 2D Concept Artist
- 21. 3D Artist
- 22. Assistant Security Analysis
- 23. Assistant Information Security Engineer
- 24. Assistant Game Developer
- 25. Assistant Data Analysis
- 26. Assistant Penetration Tester
- 27. Assistant Data Scientist
- 28. Assistant Data Analyst
- 29. Business Intelligence Analyst
- 30. Junior Data Visualization
- 31. Junior Statistician
- 32. Junior Data Insights And Visualization
- 33. Web Designer
- 34. Web Developer

PROGRAMME AIM

The programme believes that every individual has potential to foster adaptable and responsible Information and Communication Technology (ICT) Assistant with new technological advancement in supporting the national digital initiative transformation agenda.

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

The Diploma In Information Technology (Digital Technology) programme shall produce semi-professionals ICT practitioners who are capable to:

- PEO1:** apply basic knowledge, understanding and operational principles of Information and Communication Technology (ICT) in assisting to provide solution in adapting to new technological advancement
- PEO2:** apply a specific level of practical skills, essential tools, methods and procedures to perform required routine or non-routine tasks
- PEO3:** alternately adopt the roles of a leader and a team member, and communicate effectively in assisting and providing solution for Information and Communication Technology (ICT)
- PEO4:** use variety of digital applications to seek, process and interpret routine and complex data
- PEO5:** enterprisingly acquire new knowledge and skills for career advancement and assist to manage resources and information ethically

PROGRAMME LEARNING OUTCOMES (PLO)

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

- PLO1:** practice Information and Communication Technology (ICT) skill in performing diagnostic and documenting processes in ICT related fields.
- PLO2:** analyse issues and provide solutions in Information and Communication Technology (ICT) by implementing appropriate scientific approaches and reasoning.
- PLO3:** display Information and Communication Technology (ICT) skill in performing diagnostic and documenting processes in ICT related fields.
- PLO4:** demonstrate effective communication both orally and in writing to others including peers, experts and non-experts.
- PLO5:** demonstrate social skills and responsibilities by taking alternate role as a leader or member of a diverse team.
- PLO6:** demonstrate ability to use Information and Communication Technology (ICT) in quantitative skills to support work and studies.
- PLO7:** demonstrate entrepreneurial and good managerial skills in working environment
- PLO8:** demonstrate positive values, ethics and accountability in engaging with society.

PROGRAMME STRUCTURE

CLASSIFICATION	COURSE CODE	COURSE NAME	CONTACT HOURS				CREDIT VALUES	PREREQUISITE / CO-REQUISITE
			L	P	T	O		
Semester 1								
Compulsory	MPU24011	Sukan	0	2	0	0	1	
	MPU24XX1	Unit Beruniform 1						
		MPU22053	English for Digital Technology	2	0	2	0	3
Common Core	DBM10063	Mathematical Computing	2	0	2	0	3	
	DFC10033	Introduction to Computer System	2	3	0	0	3	
	DFC10212	Problem Solving and Program Design	2	2	0	0	2	
	DFC10223	Computer System Architecture	3	1	0	0	3	
	DFC10103	Operating System	2	3	0	0	3	
TOTAL			28				18	

Semester 2								
Compulsory	MPU23032	Pengajian Islam*	1	0	2	0	2	
	MPU23142	Pendidikan Moral**						
	MPU24021	Kelab/Persatuan	0	2	0	0	1	MPU24XX1
	MPU24XX1	Unit Beruniform 2						
Common Core	DBM20083	Discrete Mathematics	2	0	2	0	3	
	DFC20203	Database Design	2	3	0	0	3	
	DFC20143	Introduction to Networks	2	3	0	0	3	
	DFC20113	Programming Fundamentals	2	3	0	0	3	DFC10212
	DFT20083	Security Basics and IT Professional	3	2	0	0	3	
TOTAL			29				18	

Semester 3								
Compulsory	MPU21032	Penghayatan Etika dan Peradaban	1	0	2	0	2	
Common Core	DFC30233	Data Structures	3	1	0	0	3	DFC20113
	DFP30033	Human Computer Interaction	3	1	0	0	3	
Specialisation	DFT30103	Cyberpreneurship	2	3	0	0	3	
	DFT30153	Digital Multimedia	1	4	0	0	3	
	DFP30243	Object Oriented Programming	2	4	0	0	3	DFC10212
TOTAL			27				17	

Semester 4								
Common Core	DFC40243	System Analysis and Design	3	1	0	0	3	
Specialisation	DFT40163	Web Design Technologies	1	4	0	0	3	
	DFP40233	Visual Basic Programming	1	4	0	0	3	DFP30243
	DFP40263	Secure Mobile Computing	2	3	0	0	3	DFT20083
Electives	DFP40182	Software Requirement & Design	1	2	0	0	2	
	DFP40053 / DFP40203	Database Administration / Phyton Programming	2	3	0	0	3	DFC20203
TOTAL			27				17	

Semester 5							
Specialisation	DFP50273	Integrative Programming and Technologies	2	3	0	0	3
	DFP50293	Mobile Application Development	2	3	0	0	3
	DFT50114	Integrated Project	2	3	0	0	4
Electives	DFP50193	Web Programming	2	3	0	0	3
TOTAL			20				13

Semester 6								
Industrial Training	DUT60019	Industrial Training	0	0	0	0	9	
TOTAL			0				9	
TOTAL CREDIT VALUE							92	

	Total Credit	%
i. Compulsory	9	10%
ii. Common Core	38	41%
iii. Specialization	28	30%
iv. Elective Courses	8	9%
v. Industrial Training	9	10%
TOTAL	92	100%

	Total Credit	%
i. Lecture	54	41%
ii. Practical	67	51%
iii. Tutorial	10	8%
TOTAL	125	100%

Legend:

L: Lecture, **P:** Practical / Lab, **T:** Tutorial, **O:** Others

(The numbers indicated under L, P, T & O represent the contact hours per week, to be used as a guide for timetable preparation)

*For Muslim Students

**For Non-Muslim Students

Notes:

1. The minimum and maximum credit value of Electives must be referred to the programme standard or professional bodies.
2. **Free Elective** are course which are not included in any programme structure but if taken, will contribute towards students' CGPA, provided that institutions adhere to the Jabatan Pendidikan Politeknik & Kolej Komuniti Free Electives Guidelines.
3. **MPU22042 Bahasa Kebangsaan A** is **COMPULSORY** for students who did not attain credit in Bahasa Melayu at Sijil Pelajaran Malaysia (SPM) level and will contribute to students' CGPA.
4. Co-curriculum pathways:
 - a. Path 1: Sport and Club
 - b. Path 2: Uniform Unit (Students are required to **PASS** Uniform Unit 1 as a prerequisite to Uniform Unit 2)
5. Clusters:
 - a. CLS1: Knowledge & Understanding
 - b. CLS2: Cognitive Skills
 - c. CLS3a: Practical Skills
 - d. CLS3b: Interpersonal & Communication Skills
 - e. CLS3c: Digital & Numeracy Skills
 - f. CLS3d: Leadership, Autonomy & Responsibility
 - g. CLS4: Personal & Entrepreneurial Skills
 - h. CLS5: Ethics & Professionalism

COURSE SYNOPSIS

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
PENGAJIAN MALAYSIA MPU 21022	PENGAJIAN MALAYSIA membincangkan sejarah dan politik, perlembagaan Malaysia dan sistem pemerintahan negara, kemasyarakatan dan perpaduan, pembangunan negara dan isu-isu keperihatinan negara. Kursus ini adalah bertujuan untuk melahirkan graduan yang mempunyai identiti kebangsaan dan semangat patriotisme yang unggul	<ol style="list-style-type: none">1. Menerangkan sejarah bangsa dan Negara di Malaysia (A3, CLS 5)2. Menghubunkait sikap dan tanggungjawab yang signifikan dengan sistem pemerintahan negara (A4, CLS 5)3. Membentuk minda ingin tahu menerusi aktiviti kemasyarakatan atau patriotisme dalam kalangan pelajar (A3, CLS 4)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
	CREDITS: 2 PREREQUISITES: NONE	
ENGLISH FOR DIGITAL TECHNOLOGY MPU 22053	<p>ENGLISH FOR DIGITAL TECHNOLOGY emphasises the skills required at the workplace to describe products or services as well as processes or procedures related to Digital Technology. This course will also enable students to make and reply to enquiries and complaints related to the field of Digital Technology.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Describe products and services related to Digital Technology effectively through presentations by highlighting its features and characteristics that appeal to specific audience (A3, CLS3b) 2. Describe processes, procedures and instructions related to Digital Technology clearly by highlighting information of concern (A3, CLS4) 3. Demonstrate effective communication and social skills in handling enquiries and complaints related to Digital Technology amicably and professionally (A3, CLS3b)
PENGAJIAN ISLAM MPU 23032	<p>PENGAJIAN ISLAM disediakan untuk melahirkan warganegara yang faham tasawwur (konsep) Islam sebagai satu cara hidup yang bersepadu dan seimbang serta berupaya menghadapi pelbagai masalah dan cabaran. Perbincangan berasaskan kepada konsep-konsep asas Islam, Islam sebagai cara hidup, institusi Islam dan cabaran semasa</p> <p>CREDITS: 2 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Melaksanakan dengan yakin amalan Islam dalam kehidupan seharian. (A2, CLS 4) 2. Menerangkan etika dan profesionalisme berkaitan Syariah dan Institusi Islam dalam membentuk pembangunan ummah. (A3, CLS 5) 3. Menghubunkait minda ingin tahu dengan Islam dan cabaran semasa di Malaysia. (A4, CLS 4)
PENDIDIKAN MORAL MPU 23142	<p>PENDIDIKAN MORAL memberi pengetahuan tentang konsep asas moral untuk diamalkan. Selain itu, kursus ini juga menjelaskan etika individu yang bermoral dan bertanggungjawab serta isu-isu moral yang mempengaruhi pembentukan negara dan Masyarakat.</p> <p>CREDITS: 2 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Mengamalkan nilai moral yang baik dalam kehidupan seharian. (A2, CLS 4) 2. Menjelaskan etika dan profesionalisme individu yang bermoral dan bertanggungjawab terhadap Negara (A3, CLS 5) 3. Menghubunkait minda ingin tahu terhadap isu dan cabaran dalam membentuk negara dan masyarakat (A4, CLS 4)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
MPU 24011 SUKAN	<p>SUKAN adalah aktiviti yang mengandungi latihan kemahiran berguna secara rekreasi dan peraturan-peraturan tertentu dalam mengejar kecemerlangan bagi penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.</p> <p>CREDITS: 1 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. mempamerkan kemahiran khusus bagi kursus berkaitan (P2, CLS4) 2. Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif. (A3, CLS 3d)
MPU 24021 KELAB	<p>KELAB memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif.</p> <p>CREDITS: 1 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Mempamerkan kemahiran khusus bagi kursus berkaitan (P2, CLS 4) 2. Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif (A3, CLS 3d)
DFC 10033 INTRODUCTION TO COMPUTER SYSTEM	<p>INTRODUCTION TO COMPUTER SYSTEM introduces students to the hardware, software and foundation of the basic Information Technology (IT) knowledge and skills necessary for ICT professionals. This course covers the study of personal computer (PC) hardware including PC assembly, installing and connecting peripherals. Student will learn hardware troubleshooting techniques used to identify and rectify computer faults. Student are exposed to the principles and good practices in environmentally sustainable computing and the use of appropriate technologies, methodologies in managing IT environment.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Classify the hardware devices on personal computer and mobile devices related to current information technologies (C2, PLO 1) 2. Demonstrate process of personal computer assembly and the computer maintenance and troubleshooting that comply with computing standard (P3, PLO 3)
DFC 10223 COMPUTER SYSTEM ARCHITECTURE	<p>This course is a continuation of foundational knowledge in computer system and technology which is a part of the requirement in the body of knowledge in Information Technology field. It is the basic computer machinery skills needed to progress to the next level.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Explain computer function in central processing unit, arithmetic, logic and assembly language in computer system (C2, PLO 1) 2. Discuss among group members in explaining the assembly language solutions. (A2, PLO 4)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
OPERATING SYSTEM DFC 10103	<p>OPERATING SYSTEM introduces the design and implementation of operating systems. This course will cover briefly the evolution and major components of operating system. Particular emphasis will be given to three major OS subsystems; memory management, processes management, file systems and operating systems in mobile devices today that supporting distributed systems.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Explain the operating system environment, the concept of memory, process and file management in operating systems. (C2, PLO 1) 2. Practice effective interactions with peers in managing setting of computer and mobile operating system. (A2, PLO 4)
PROBLEM SOLVING & PROGRAM DESIGN DFC 10212	<p>PROBLEM SOLVING AND PROGRAM DESIGN introduces the techniques in problem solving and program design. The concepts learned in this course can be applied to many of the real-life problems which can be solved by writing computer programs. A multiphase program development life cycle and two basic phases of problem solving, and program design are emphasized. Problem analysis and the stepwise specification of the algorithms, pseudo code and flow chart are also defined.</p> <p>CREDITS: 2 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Explain the basic computer and fundamentals of programming languages in each scenario. (C2, PLO 1) 2. Demonstrate effective communication both on orally and in writing about problem solving skills by using different types of programming tools to solve a given problem. (A3, PLO 4)
SECURITY BASICS AND IT PROFESSIONAL DFT 20083	<p>SECURITY BASICS AND IT PROFESSIONAL course introduces students the common threats and attacks faced today. This course provides student with foundational theory behind information security, the basic principles and techniques when designing a secure system. Students are exposed to the principles and good practices in environmentally sustainable secured computing and the use of appropriate tools and technology in managing information system environment.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Explain common threats and attacks using various tools and techniques for secured environment in organization. (C3, PLO2) 2. Perform personal skills with proposed documentation in troubleshooting and solving on security issues. (A2, PLO7) 3. Practice professional codes of ethics and humanistic values to adapt the real challenges in professional environment. (A2, PLO8)
INTRODUCTION TO NETWORKS DFC 20143	<p>Introductions to networks is an introductory computer networks subject and it aims to provide a wide overview of networking and its technologies such as the seven layers of OSI and TCP/ IP model, This course also provides students with the knowledge in wireless networking device and network troubleshooting. Students will get an experience in troubleshooting and configuration by using networking tools.</p> <p>CREDITS: 3</p>	<ol style="list-style-type: none"> 1. Explain the communication principles of a computer network. (C2, PLO1) 2. Build a network with appropriate network devices for a given situation successfully. (P3, PLO3) 3. Demonstrate ethical values in applying sustainable practices to implement basic network configuration. (A3, PLO5)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
	PREREQUISITES: NONE	
MATHEMATICAL COMPUTING DBM 10063	<p>MATHEMATICAL COMPUTING course introduces students to numbering system, basic algebra and complex numbers. Calculus covers the simple techniques of differentiation and integration. In addition, this course also exposes to basic concept of matrices and linear algebra to help them in solving mathematical problem in organizing data through theoretically.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Execute mathematical concepts in the areas of number systems, complex numbers, matrices, algebra and differentiation & integration. (C3, CLS 1) 2. Show mathematical solutions using the appropriate techniques in mathematics. (C3, CLS 1) 3. Explain theoretical and solutions to others in solving mathematical related problems. (P2, CLS 3c)
PROGRAMMING FUNDAMENTALS DFC 20113	<p>PROGRAMMING FUNDAMENTALS course introduces the fundamental concepts of structured programming and provides a comprehensive introduction to programming for Information Technology majors. Topics include data types, control structures, pointer, structure, functions, arrays and the mechanics of running, testing and debugging. Practical lab sessions will help to develop the skills required to identify the best data and program constructs to solve well-defined problems.</p> <p>CREDITS: 3 PREREQUISITES: DFC 10212 PROBLEM SOLVING AND PROGRAM DESIGN</p>	<ol style="list-style-type: none"> 1. Implement programming element and articulate how they are used to achieve a working program. (C3, PLO2) 2. Show simple programs by developing code to solve problems in a computer using C++ programming language. (P2, PLO3)
DISCRETE MATHEMATICS DBM 20083	<p>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 Boolean Algebra which are related to the information technology programmed.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Carry out basic terminology precisely in the areas of logic, algebra, graphs theory, set theory and combinatory. (C3, CLS 2) 2. Apply standard operations precisely in the areas of logic, algebra, graphs theory, set theory and combinatory. (C3, CLS 2) 3. Construct mathematical problems using appropriate concepts, formulas and techniques. (P3, CLS 3c)
DATABASE DESIGN DFC 20203	<p>DATABASE DESIGN course engages students to analyze business scenarios and create a data model - a conceptual representation of an organization's information. Students implement their database design by creating a physical database using SQL (Structured Query Language). Basic SQL syntax and the rules for constructing valid SQL statements are reviewed. This course culminates with a</p>	<ol style="list-style-type: none"> 1. Apply fundamental of DBMS, relational data model and normalization concepts in database development process. (C3, PLO2) 2. Show a well-structured database using the database query to manipulate a database with an appropriate commercial Database Management System (DBMS) in solving an organization's requirements. (P2, PLO3)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
	<p>case study that challenges students to design, implement, and demonstrate a database solution for a business or organization.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	
DATA STRUCTURES DFC 30233	<p>DATA STRUCTURE course is designed to focus on the basic data structures. Among the specific data structures covered are linked list, stacks, queues, trees, sorting and searching. The emphasis is on choosing appropriate data structures and designing correct and efficient algorithms to operate on these data structures.</p> <p>CREDITS: 3 PREREQUISITES: DFC20113 PROGRAMMING FUNDAMENTALS</p>	<ol style="list-style-type: none"> 1. Demonstrate the basic concepts of data structure in a way of collecting and organizing data appropriately. (C3, PLO 2) 2. Construct appropriate concepts of data structures and designing efficient algorithms in problem solving. (P3, PLO 3) 3. Use different types of data structures in problem solving by conducting a good ethics and professionalism. (A1, PLO 8)
CYBERPRENEURSHIP DFT 30103	<p>CYBERPRENEURSHIP course provides a broad overview of the role of entrepreneurial thinking and innovation in advancing IT-focused businesses. This student will examine how these skills can be leveraged to create new IT-driven businesses as well as to create competitive advantage for existing businesses via new IT products and services. Students will be introduced to concepts, tools, and principles of business management including business strategy, finance, marketing, human resources, and leadership within the context of IT business models.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Discover the basics of cyberpreneurial management, financing and marketing in various social media mix used in order to be a successful cyberpreneur. (C2, PLO1) 2. Practice good leadership and management skills in delivering business plan for future expansion (A2, PLO5) 3. Demonstrate entrepreneur skills that related to entrepreneurship activities. (A3, PLO7)
HUMAN COMPUTER INTERACTION DFP 30033	<p>HUMAN COMPUTER INTERACTION course aims to provide students with fundamental knowledge of HCI, including areas such as user and task analysis, human factors, ergonomics, accessibility standards and universal design. The course focuses on awareness in computer technology and how usability plays a major part in achieving effective implementation of designs and interactivity. This provides a new dimension that will enrich the lives of people who are ICT savvy.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Explain the concept of user interface design to elevate technical complexity for usable product that accepted by user. (C3, PLO 2) 2. Display responsibilities attitude to perform the suitable evaluation techniques for an interactive system in real life (A3, PLO 5) 3. Demonstrate professional codes of ethics and humanistic values in applying the design rules for interactive system (A3, PLO 8)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
OBJECT ORIENTED PROGRAMMING DF9 30243	<p>OBJECT ORIENTED PROGRAMMING (OOP) course introduces students to the principles and concepts behind the paradigm of OOP. This course introduces students to write, compile and run programs, make effective use of some of the standard packages, write object-oriented code using classes and objects, inheritance and polymorphism.</p> <p>CREDITS: 3 PREREQUISITES: DFC10212 PROBLEM SOLVING AND PROGRAM DESIGN</p>	<ol style="list-style-type: none"> 1. Construct Object Oriented Programming concept and exception handling in Java programming (P4, PLO 3) 2. Display skills to use graphical/ visual data to visualize the concept of OOP (P4, PLO 6) 3. Follow the professional ethics in group to develop a solution for a given scenario (A3, PLO 8)
DIGITAL MULTIMEDIA DFT 30153	<p>DIGITAL MULTIMEDIA course covers multimedia concepts and applications utilizing text, graphics, animation, sound, video, and various multimedia applications in the design, development, and creation of multimedia presentations and publications within an interactive environment. Students will explore the use of multimedia tools in designing and authoring of interactive digital media.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Follow various aspects of Multimedia Development Model in relation to appropriate and acceptable design techniques used to produce multimedia products (P3, PLO 3) 2. Practice the ability to lead a multimedia development team to complete assigned multimedia project within a stipulated time (A2, PLO 5) 3. Demonstrate entrepreneurial and good managerial skills in developing multimedia interactive application (A3, PLO 7)
WEB DESIGN TECHNOLOGIES DFT 40163	<p>WEB DESIGN TECHNOLOGIES introduces students to basic web design using HTML (Hypertext Markup Language), CSS (Cascading Style Sheets) and JavaScript. Throughout the course students are introduced to planning and designing effective web pages; implementing web pages by writing HTML, CSS code and JavaScript; enhancing web pages with the use of page layout techniques, text formatting, graphics, images, and multimedia; and producing a functional, multi-page website.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Construct the HTML, CSS, JavaScript and jQuery in developing an interactive web page that can be published on web browser. (P4, PLO 3) 2. Practices good managerial skills and entrepreneurial mind set in developing interactive web page (A2, PLO 7) 3. Demonstrate positive value and ethics in designing interactive web application interface that can be view in web browser (A3, PLO 8)
SYSTEM ANALYSIS AND DESIGN DFC 40243	<p>SYSTEM ANALYSIS AND DESIGN course is an introduction to the concept and the development of information system. The course is designed to acquire the knowledge of system development life cycle. It covers all activities in planning, analyzing, designing and developing information systems including techniques used in software maintenance. Systems analysis is the process of turning a</p>	<ol style="list-style-type: none"> 1. Implement the appropriate model, tools and techniques concept of System Analysis and Design for developing project (C3, PLO 2) 2. Prepare the appropriate key deliverables of each phase in System Development Life Cycle (SDLC) activities (P2, PLO 3) 3. Perform a good personal skill with peers in proposing

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
	<p>set of user requirements into a logical system specification. Systems design takes the logical specification and converts it into a set of designs that can then be implemented to create a working application. It includes expanded coverage of data flow diagrams, data dictionary, and process specifications.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<p>a project development (A2, PLO 7)</p>
<p>VISUAL BASIC PROGRAMMING DFP 40233</p>	<p>Visual Basic Programming (VB Programming) course provides students with the knowledge and skills needed to develop applications in Microsoft Visual Basic .NET for the Microsoft .NET platform. The course focuses on user interfaces programming structure, language syntax, and integration of VB.NET application development. This course introduces computer programming using the VB Programming language with object-oriented programming principles. Emphasis is on event-driven programming methods, including creating and manipulating objects, classes, and using objectoriented tools such as the class debugger. Upon completion, students should be able to design, code, test and debug at a beginning level.</p> <p>CREDITS: 3 PREREQUISITES: DFP30243 OBJECT ORIENTED PROGRAMMING</p>	<ol style="list-style-type: none"> 1. Construct the visual basic program by using .NET frameworks in developing windows Application. (P4, PLO 3) 2. Integrate effective interpersonal and communication with peers in developing windows Application. (A4, PLO 4) 3. Demonstrate effective leadership with peer in developing Visual Basic programs. (A3, PLO 5)
<p>MOBILE APPLICATION DEVELOPMENT DFP 50293</p>	<p>MOBILE APPLICATION DEVELOPMENT introduces mobile application development for the Android platform. Android is a software stack for mobile devices that includes an operating system, middleware and key applications. The Android SDK provides the tools and APIs necessary to begin developing applications on the Android platform using the Java programming language. Students will learn skills for creating and deploying Android applications, with particular emphasis on software engineering topics including software architecture, software process, usability, and deployment. Topics will include Android Development Environment, user interfaces, audio, persistence, SQLite databases, location, sensors, and graphics.</p> <p>CREDITS: 3 PREREQUISITES: DFP30243 OBJECT ORIENTED PROGRAMMING</p>	<ol style="list-style-type: none"> 1. Construct mobile application components, APIs and libraries by using Android Development Tools. (P4, PLO3) 2. Display the ability to visualize the data and graphics using Android Technologies. (P4, PLO6) 3. Initiate Android Development Package that can be distributed via digital platform. (A3, PLO7)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
SOFTWARE REQUIREMENT AND DESIGN FP40182	<p>SOFTWARE REQUIREMENT AND DESIGN introduces the engineering discipline that is concerned with all aspects of software product from the early stages of development, which is system requirement, software development, software design and implementation process.</p> <p>CREDITS: 2 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Apply the concepts and practices of software engineering process in developing system application (C3, PLO 2) 2. Construct modelling of software requirement, design and development using CASE tool in process of system development (P4, PLO 3)
DATABASE ADMINISTRATION DFP40303	<p>DATABASE ADMINISTRATION course will help students to develop the database administration capabilities and will discuss how to create and manage database, users, roles and resources. It also gives them in depth knowledge of important features of Oracle database administrator.</p> <p>CREDITS: 2 PREREQUISITES: DFC20203 DATABASE DESIGN DFT40163 WEB DESIGN TECHNOLOGY</p>	<ol style="list-style-type: none"> 1. Construct the Oracle Database Administrator task using Oracle database structure to practices database administration process (P3, PLO 3) 2. Demonstrate effective communication both on orally or in writing about database administration roles and operations by using Oracle database system (A3, PLO 4) 3. Performs ability to use graphical or visual tools in performing backup and recovery operations (P4, PLO 6)
SECURE MOBILE COMPUTING DFP 40263	<p>SECURE MOBILE COMPUTING course appraises vulnerabilities and threat vector associated with Mobile Computing devices. This course contains a specific emphasis on mitigation techniques including security configurations as well as security software.</p> <p>CREDITS: 3 PREREQUISITES: DFT20083 SECURITY BASICS AND IT PROFESSIONAL</p>	<ol style="list-style-type: none"> 1. Manipulate the aspect of mobile computing, model and security principles using mobile computing technology to develop applications (P3, PLO 3) 2. Develop effective leadership and teamwork related to mobile secure environment (A4, PLO 5) 3. Demonstrate best practices in developing mobile security computing in context of social environment (A3, PLO 8)
INTEGRATIVE PROGRAMMING AND TECHNOLOGIES DFP 50273	<p>INTEGRATIVE PROGRAMMING AND TECHNOLOGIES course introduces students to the knowledge of GUI programming in Java. This course addresses the creation of interactive GUIs through standalone front-end applications. This course primarily focuses on the Swing library, Abstract Window Toolkit (AWT) and also equips students with knowledge in the development of database applications solutions.</p>	<ol style="list-style-type: none"> 1. Construct the elements of GUI from java package that integrates database for an interactive GUI application (P4, PLO 3) 2. Perform the use of digital application that show eventbased GUI handling principles in Java program (P4, PLO 6) 3. Demonstrate positive value and ethics in designing GUI applications to solve real world problems based on Java programming environment (A3, PLO 8)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
	CREDITS: 3 PREREQUISITES: DFP30243 OBJECT ORIENTED PROGRAMMING	
DFP50193 WEB PROGRAMMING	<p>WEB PROGRAMMING course will provide a basic understanding of the methods and techniques of developing a simple to moderately complex web site. Using the current standard web page language, students will be instructed on creating and maintaining a simple web site. After the foundation language has been established, the aid of a web editor will be introduced. A second web-based language will be included to further enhance the web sites. Throughout the course, students will learn proper techniques to develop web based applications starting from designing interfaces to publishing application to a production server.</p> <p>CREDITS: 3 PREREQUISITES: DFC20203 DATABASE DESIGN DFT40163 WEB DESIGN TECHNOLOGY</p>	<ol style="list-style-type: none"> 1. Construct the PHP program structure, file and directory handling, database connectivity appropriately in developing dynamic web page that connected to MySQL database (P4, PLO 3) 2. Demonstrate effective communication both orally or writing in developing secured dynamic web application (A3, PLO 4) 3. Display the ability to visualize the development process web application (P3, PLO 6)
DFT 50114 INTEGRATED PROJECT	<p>INTEGRATED PROJECT course will give students the practical and design experience of carrying out an independent application software or technical project from project requirements, implementation, testing to delivery and presentation of the project. The course requires students to learn new technologies and encourage student to develop their generic skills such as developing teamwork, project management, communication skills, problem solving skills and technical writing skills. This will inculcate independent and life-long learning</p> <p>CREDITS: 4 PREREQUISITES: ALL COMMON CORE SUBJECT</p>	<ol style="list-style-type: none"> 1. Construct an end product to be used in the project's maintenance and future expansion. (P4, PLO3) 2. Demonstrate a high level of communication, interaction and proficiency to achieve a productive project. (A3, PLO4) 3. Perform leadership and team management skills effectively to manage issues in project development cycle. (A2, PLO5) 4. Relate professional career goals in project development that lead to local or region wide communities building. (A4, PLO6)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
INDUSTRIAL TRAINING DUT 60019	<p>INDUSTRIAL TRAINING prepares students with employability skills and current industrial technologies in actual working environment. This course allows students to experience the work culture of the workplace as well as provides a platform for students to put into practice the skills and knowledge learnt. The desired attributes include organizational orientation and professional ethics, effective communication, leadership and teamwork, continuous learning and information management, as well as self-management and entrepreneurial mind at the workplace.</p> <p>CREDITS: 9 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Perform duties in accordance with job requirements at the workplace. (P4, CLS3a) 2. Practise effective social skills & responsibilities at the workplace. (A5, CLS3d) 3. Integrate values, attitudes and professionalism effectively at the workplace. (A4, CLS5) 4. Display effective communication and take role as a leader and team member at the workplace. (P5, C L S 3 b) 5. Demonstrate information management and lifelong learning skills at the workplace. (A3, CLS4) 6. Integrate managerial skills and entrepreneurial mind at the workplace. (A4, CLS4)

RELATED REFERENCES

Student support services and facilities

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

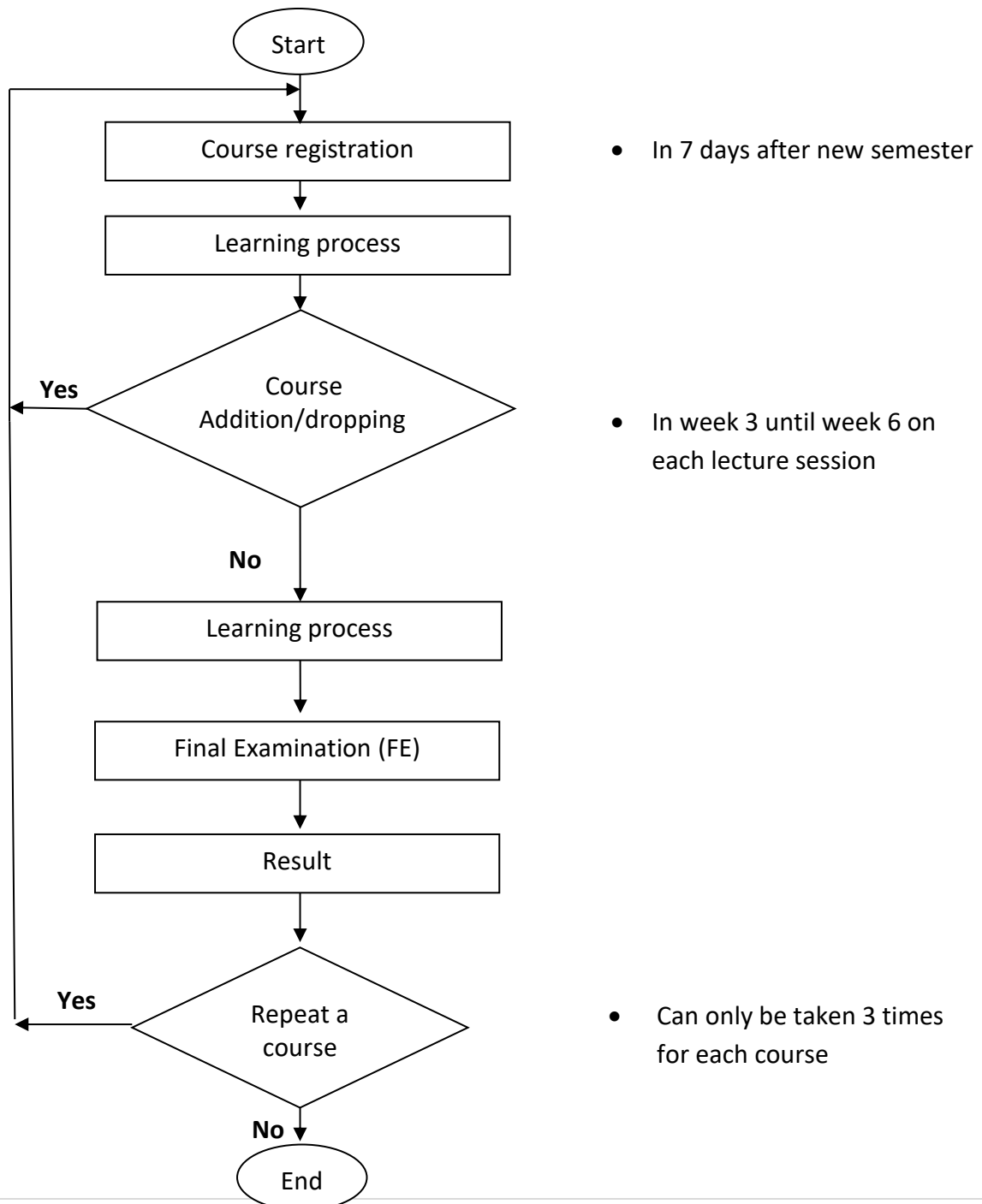
Student's Act

Refer “Buku Panduan dan Peraturan AM Pelajar Politeknik, Jabatan Pengajian Politeknik dan Kolej Komuniti” for further information.

Teaching and Learning Process

Student in *Diploma in Information Technology (Digital technology)* should accomplish 6 semesters for teaching and learning process and for each semester, the steps are as below: -

a) Teaching and Learning process conducted in 14 weeks



Examination

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

Academic Advisory System

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

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

Industrial Training

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

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

REFERENCES

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

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