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STUDENT'S STUDY GUIDE (Session II : 2023/2024)



Diploma in Information Technology (DIT)



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 II : 2023/2024.

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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 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 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
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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 38 academic staffs and 3 non-academic staffs. JTMK offers diploma programme known as **Diploma in Information 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



1	KAMALUL HAYAT BIN RAMAN	DH48
2	MOHD REDZUAN BIN ROSLY	DH48
3	WAN SALMIZI BIN WAN MAHMOOD	DH48
4	SUZIWATI BINTI YUSOF	DH48
5	RAMLAH BINTI MD. ZAIN	DH48
6	HAIRI BIN ALIAS	DH48
7	MURNIYATI BINTI ABDUL	DH48
8	MAZLINA BINTI MUSTAPHA	DH48
9	KAMARUDIN BIN RIPIN	DH48
10	SUZANA BINTI YUSOF	DH48
11	FAUZIAH BINTI BASOK	DH48
12	NOR HAYATI BINTI MOHAMMED SANI	DH48
13	ZUKIA ANIZA BINTI IBRAHIM	DH48 (M)
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)
25	NORHAYATI SA'ADAH BINTI CHE ABD RAZAK	DH48 (M)
26	ZAINAL FITRI BIN MOHD ZOLKIFLI	DH48 (M)
27	SYAHIEDA BINTI ZAKARIA	DH48 (M)
28	NUR SYARAFINA BINTI ABDUL RAHMAN	DH48 (M)
29	WAN NOOR AISHAH BINTI WAN CHEK	DH48 (M)
30	NAJMI WAHIDI B AB WAHAB	DH48(M)
31	RAJA INTAN SARIAH BINTI RAJA MAHMOOD	DH48
32	NURU MAZLIA BINTI MUSA	DH44
33	NORIAH BINTI RAZALI	DH44
34	NUR AISYAH BINTI MOHAMAD RAFIUDDIN	DH 44
35	NORHAMIZA BINTI MOHD NOR	DH44
36	LIYANA BINTI MAT RANI	DH44
37	SYAIFUL BACHTIAR BIN NEN @ SHAHINAN	DH41
38	ABDUL HAKIM BIN ABDUL AZIZ	DH41

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 integrated 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 growing 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), Google analytic, Data science, Machine learning with python, Python and Infosys Campus Connect program, 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.

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 significant demand in ICT 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. Technical Helpdesk / Support
- 11. System Programmer
- 12. Network Support Personnel
- 13. Network Administrator
- 14. IT Supports Engineer
- 15. Assistant Network Engineer
- 16. Assistant Game Programmer
- 17. Game Designer
- 18. Game Programmer
- 19. Assistant Security Analysis
- 20. Assistant Information Security Engineer
- 21. Assistant Game Developer
- 22. Assistant Data Analysis
- 23. Assistant Penetration Tester
- 24. Assistant Data Scientist
- 25. Assistant Data Analyst
- 26. Business Intelligence Analyst
- 27. Junior Data Visualization
- 28. Junior Statistician
- 29. Junior Data Insights And Visualization
- 30. Web Designer
- 31. 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 programme shall produce semi-professionals ICT practitioners who are capable to:

PEO1: Computer technicians have basic knowledge with numeracy and technical skill to solve well-defined and routine problems in computing in line with the industry requirements.

PEO2: Computer technicians have the supervisory ability and good interpersonal and communication skills to interact in various environments.

PEO3: Computer technicians have a commitment to lifelong learning and an entrepreneurial mindset for self and career development.

PEO4: Computer technicians who are committed to ethical conduct and professional practices in the organization and society.

PROGRAMME LEARNING OUTCOMES (PLO)

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

PLO1: Explain concepts, principles and theories relating to Information Technology.

PLO2: Apply design and architecture to Information Technology solutions using appropriate tools and techniques.

PLO3: Perform support and development tasks on Information Technology solutions related to job functions.

PLO4: Demonstrate effective interaction with stakeholders and society in a work-related environment.

PLO5: Exhibit effective communication with stakeholders and society in a work-related environment.

PLO6: Use appropriate digital tools on computing related to job functions.

PLO7: Apply appropriate numerical skills in computing related to job functions.

PLO8: Demonstrate supervisory skills and responsibility in executing instructions related to job functions.

PLO9: Commit to principles of lifelong learning in academic and career development.

PLO10: Demonstrate an entrepreneurial mindset in performing tasks.

PLO11: Commit to professional and ethical practices in executing instructions related to the job and organizational functions.

PROGRAMME STRUCTURE

CLASSIFICATION	COURSE CODE	COURSE NAME	CONTACT HOURS				CREDIT VALUES	PRE REQUISITE / CO-REQUISITE
			L	P	T	O		
Semester 1								
Compulsory	MPU24031	Sukan 1	0	2	0	0	1	
	MPU24041	Kelab/Persatuan 1						
	MPU24XX1	Unit Beruniform 1						
		MPU22153	English for Digital Technology	2	0	2	0	3
Core Computing	DBM10143	Calculus and Algebra	2	0	2	0	3	
	DFC10263	Computer Architecture	2	2	0	0	3	
	DFC10273	Operating System	2	2	0	0	3	
Discipline Core	DFC10252	Problem Solving and Program Design	2	1	0	0	2	
	DFT10173	Introduction to Computer System	2	2	0	0	3	
TOTAL							18	
Semester 2								
Compulsory	MPU23162	Pengajian Islam*	1	0	2	0	2	
	MPU23272	Pendidikan Moral**						
	MPU24051	Sukan 2	0	2	0	0	1	MPU24031
	MPU24061	Kelab/Persatuan 2						MPU24041
	MPU24XX1	Unit Beruniform 2						MPU24XX1
Core Computing	DBM20153	Discrete Mathematics	2	0	2	0	3	
	DFC20283	Database Fundamentals	2	2	0	0	3	
	DFC20293	Network and Data Communication	2	3	0	0	3	
	DFC20303	Programming Fundamentals	2	2	0	0	3	DFC10252 PSPD
	DFC20313	Cybersecurity Fundamentals	2	3	0	0	3	
TOTAL							18	

Semester 3								
Compulsory	MPU21072	Penghayatan Etika dan Peradaban	1	0	2	0	2	
Core Computing	DFC30323	Statistics and Probability	2	2	0	0	3	
	DFC30333	Ethics in Computing	2	3	0	0	3	
Discipline Core	DFT30183	Cyberpreneurship	1	4	0	0	3	
	DFP30313	Digital Multimedia	1	4	0	0	3	
	DFP30323	Object Oriented Programming	2	3	0	0	3	DFC20303 PF
TOTAL							17	
Semester 4								
Core Computing	DFC40343	System Analysis and Design Fundamentals	2	2	0	0	3	
Discipline Core	DFP40333	Full Stack Web Development	1	4	0	0	3	DFC20283 DF
	DFP40343	Visual Basic Programming	1	4	0	0	3	
	DFP40353	Mobile Application Development	1	3	0	0	3	DFP30323 OOP
	DFP40362	Business Intelligence	1	2	0	0	2	DFC20283 DF
	DFP40373	Database Administration	1	3	0	0	3	DFC20283 DF
TOTAL							17	
Semester 5								
Compulsory	MPU22071	Kursus Integriti dan Anti Rasuah (KIAR)	0	0	2	0	1	
Discipline Core	DFP50383	Integrative Programming Technologies	1	4	0	0	3	DFP30323 OOP
	DFP50393	Python Programming	2	3	0	0	3	DFC20303 PF
	DFP50403	Java Web Development	1	4	0	0	3	DFC20283 DF, DFP30323 OOP
	DFT50194	Integrated Project	2	3	0	0	4	ALL CORE COMPUTING COURSES
TOTAL							14	

Semester 6								
Industrial Training	DUT60019	Industrial Training	0	0	0	0	9	
TOTAL			0			9		
TOTAL CREDIT VALUE							93	

FREE ELECTIVE	DUD10012	Design Thinking	1	0	0	1	2	
	DUG30032	Green Technology Compliance	1	2	0	0	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 Department of Polytechnic & College Community Education (DPCCE) Free Electives Guidelines.

	Total	%
i. Compulsory	10	11%
ii. Core Computing	33	35%
iii. Discipline Core	37	40%
iv. Project	4	4%
v. Industrial Training	9	10%
TOTAL	93	100%

	Total	%
i. Lecture	45	36%
ii. Practical	69	54%
iii. Tutorial	12	10%
iv. Others	0	0%
TOTAL	126	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 time table preparation)

*For Muslim Students

**For Non Muslim Students

Notes: 1. *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 Department of Polytechnic & College Community Education (DPCCE) Free Electives Guidelines.

2. ^bMPU22042 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.

3. Co-curriculum pathways:

a. Path 1: Sukan

b. Path 2: Kelab/Persatuan

c. Path 3: Unit Beruniform

4. Clusters:

CLS1: Knowledge & Understanding

CLS2: Cognitive Skills

CLS3a: Practical Skills

CLS3b: Interpersonal Skills

CLS3c: Communication Skills

CLS3d: Digital Skills

CLS3e: Numeracy Skills

CLS3f: Leadership, Autonomy & Responsibility

CLS4a: Personal Skills

CLS4b: Entrepreneurial Skills

CLS5: Ethics & Professionalism

COURSE SYNOPSIS

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
PENGHAYATAN ETIKA DAN PERADABAN MPU 21072	<p>PENGHAYATAN ETIKA DAN PERADABAN ini menjelaskan tentang konsep etika daripada perspektif peradaban yang berbeza. Ia bertujuan bagi mengenal pasti sistem, tahap perkembangan, kemajuan dan kebudayaan merentas bangsa dalam mengukuhkan kesepaduan sosial. Selain itu, perbincangan dan perbincangan berkaitan isu-isu kontemporari dalam aspek ekonomi, politik, sosial, budaya dan alam sekitar daripada perspektif etika dan peradaban dapat melahirkan pelajar yang bermoral dan profesional. Penerapan amalan pendidikan berimpak tinggi (HIEPs) yang bersesuaian digunakan dalam penyampaian kursus ini</p> <p>CREDITS: 2 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Menerangkan konsep etika dan kepelbagaian tamadun (A2, CLS 3B) 2. Menerangkan proses pemeraksanaan kepada kesepaduan sosial merentas bangsa di Malaysia (A2, CLS 5) 3. Mencadangkan sikap yang positif terhadap isu dan cabaran kontemporari dari perspektif etika dan peradaban (A3, CLS 3F)
ENGLISH FOR DIGITAL TECHNOLOGY MPU 22153	<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)
KURSUS INTEGRITI DAN ANTI RASUAH (KIAR) MPU22071	<p>KURSUS INTEGRITI DAN ANTI RASUAH (KIAR) merangkumi konsep asas tentang nilai integriti, bentuk perbuatan rasuah dan salah guna kuasa dalam kehidupan seharian serta dalam organisasi dan langkah-langkah pencegahan rasuah.</p> <p>CREDITS: 1 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Membincangkan hubungan nilai integriti dan antirasuah dengan isu semasa. (A2, CLS 5) 2. Menilai bentuk perlakuan rasuah dan salah guna kuasa dalam aktiviti seharian dan organisasi. (A3, CLS 3F)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
PENGAJIAN ISLAM MPU 23162	<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 amalan Islam dengan betul dalam kehidupan seharian. (A2, CLS 3B) 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 3F)
PENDIDIKAN MORAL MPU 23272	<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 3B) 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 3F)
SUKAN 1 MPU 24031	<p>SUKAN 1 adalah aktiviti yang mengandungi latihan kemahiran berguna secara rekreasi dan peraturan-peraturan tertentu dalam mengejar kecemerlangan bagi penguasaan pengetahuan dan kemahiran khusus secara holistik. Ia bertujuan 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 sukan berkaitan (P2, CLS3A) 2. Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif (A3, CLS3f)
KELAB / PERSATUAN 1 MPU 24041	<p>KELAB/PERSATUAN 1 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 kelab/persatuan berkaitan (P2, CLS3A) 2. Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan amalan positif (A3, CLS3F)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
MPU 24051 SUKAN 2	<p>SUKAN 2 adalah aktiviti yang mengandungi latihan kemahiran berguna secara rekreasi dan peraturan-peraturan tertentu dalam mengejar kecemerlangan bagi penguasaan pengetahuan dan kemahiran khusus secara holistik. Ia bertujuan bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif</p> <p>CREDITS: 1 PREREQUISITES: MPU24031 - SUKAN 1</p>	<ol style="list-style-type: none"> 1. Mempamerkan kemahiran khusus bagi sukan berkaitan (P2, CLS3A) 2. Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan arnalan positif (A3, CLS3f)
MPU 24061 KELAB/PERSATUAN 2	<p>KELAB/ PERSATUAN 2 memfokuskan kepada penguasaan pengetahuan dan kemahiran khusus secara holistik bagi mengukuhkan pembentukan kemahiran insaniah pelajar yang positif</p> <p>CREDITS: 1 PREREQUISITES: MPU24041 - KELAB/ PERSATUAN 1</p>	<ol style="list-style-type: none"> 1. Mempamerkan kemahiran khusus bagi sukan berkaitan (P2, CLS3A) 2. Menunjukkan kepimpinan dan kerja berpasukan berdasarkan penguasaan kemahiran dan arnalan positif (A3, CLS3f)
DBM10143 CALCULUS AND ALGEBRA	<p>CALCULUS AND ALGEBRA course introduces students to computational mathematics. This course focuses on applied number theory in practical computing scenarios. This course also determines solutions of graphical examples using geometry and vector methods and evaluates problems concerning differential and integral calculus.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Explain the concepts, formulas and theories of computational mathematics in relevant areas (C2, PLO1) 2. Demonstrate appropriate concepts, formulas or theories of computational mathematics in mathematical problem-solving (P3, PLO7)
DFC 10263 COMPUTER ARCHITECTURE	<p>COMPUTER ARCHITECTURE is an introduction to overall of a computer system, computer systems organization, low level programming and the hardware/ software interfaces. The organisation of the components in the computer architecture which make up a computer system and the meaning of the operations which guide its function. It defines what is seen on the machine interface, which is targeted by programming languages and their compilers. It is the basic computer machinery skills needed to progress to the next level of computer system. Continuation of foundational knowledge in computer system and technology which is a part of the</p>	<ol style="list-style-type: none"> 1. Explain the relationships between hardware components and the subsystems used in a computer system effectively (C2,PLO1) 2. Discuss collaboratively the problem of computer architecture using appropriate operating system, computer network, and assembly language. (A2,PLO4)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
	<p>requirement in the body of knowledge in Information Technology field.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	
OPERATING SYSTEM DFC 10273	<p>OPERATING SYSTEM introduces system software that manages computer hardware, software resources, and provides services for computer programs. This course will cover briefly the evolution and major components of operating system. It emphasis based on four major subsystems; memory management, processes management, file systems and mobile devices operating system to run applications and programs</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Explain the environment, process, techniques and technologies in operating system. (C2,PLO1) 2. Practice effective communication with peers in managing operating system. (A3,PLO5)
PROBLEM SOLVING & DFC 10252	<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 fundamentals of computer programming languages in several scenarios.(C2,PLO1) 2. Demonstrate effective communication skills to solve problem using different types of programming tools for the given scenarios. (A3,PLO5)
INTRODUCTION TO COMPUTER SYSTEM DFT 10173	<p>INTRODUCTION TO COMPUTER SYSTEM introduces students to the hardware, software and fundamental of Information Technology (IT) knowledge and skills necessary for ICT professionals. This course covers the study of personal computer (PC) and mobile devices hardware including PC and mobile devices assembly, installing and connecting peripherals. Student will learn hardware troubleshooting techniques to identify and rectify computer faults using appropriate devices.</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 personal computer assembly process, maintenance and troubleshooting that comply with computing standard procedure. (P3, PLO 3)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
DBM 20153 DISCRETE MATHEMATICS	<p>DISCRETE MATHEMATICS course introduces students to computational mathematics. This course focuses on examining set theory and functions applicable to software engineering, as well as analyzing mathematical structures of objects using graph theory. This course also investigates solutions to problem situations using the application of Boolean algebra and explores applicable concepts within abstract algebra that are related to the information technology programmed.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. apply the concepts, formulas, and theories of computational mathematics in relevant areas. (C3, PLO1) 2. demonstrate appropriate concepts, formulas, or theories of computational mathematics in mathematical problem-solving. (P3, PLO7)
DFC 20283 DATABASE FUNDAMENTALS	<p>DATABASE FUNDAMENTALS course engages students to apply business scenarios and create a data model - 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 mini project that challenges students to design, implement, and demonstrate a database solution for a business or organization.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Apply fundamental of Database Management System (DBMS), relational data model and normalization (C3,PLO2) 2. Show a well-structured database using the database query to manipulate a database with an requirements. (P3,PLO3)
DFC 20293 NETWORK AND DATA COMMUNICATION	<p>NETWORK AND DATA COMMUNICATION introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. This course also explains the principles and structure of IP addressing and the fundamentals of Ethernet concepts, media, and operations are introduced to provide a foundation for the curriculum. Students will be able to design simple Local Area Networks (LAN), perform basic configurations for routers and switches, troubleshoot connectivity issue and implement IP addressing schemes</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Explain the basic communication principles and protocols of a computer network. (C2,PLO1) 2. Builds small network with an appropriate network devices for a given situation. (P3,PLO3) 3. Demonstrate leadership and responsibilities skills in applying sustainable practices to implement basic network configuration. (A3,PLO8)
DFC 20303 PROGRAMMING NG	<p>PROGRAMMING FUNDAMENTALS course introduces the fundamental concepts of structured programming and provides a comprehensive introduction to programming</p>	<ol style="list-style-type: none"> 1. Apply programming elements and articulate how they are used to achieve a working program(C3, PLO2)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
	<p>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: DFC10252 PROBLEM SOLVING AND PROGRAM DESIGN</p>	<ol style="list-style-type: none"> 2. Demonstrate appropriate algorithm based on well-defined problem using C++ programming language. (P3, PLO3)
CYBERSECURITY FUNDAMENTALS DFC 20313	<p>CYBERSECURITY FUNDAMENTALS introduces students to the current cybersecurity threats and hazards. This course provides students with a foundational understanding of information security theory, basic principles, and techniques for designing secure systems. Students will explore principles and best practices in environmentally sustainable secure computing and learn to utilize appropriate tools and technologies for managing information system environments</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Explain cybersecurity threats and hazard using appropriate tools and techniques for secured environment in organizations. (C3.PLO2) 2. Perform a proper techniques and procedures to mitigate security issues. (A2,PLO9) 3. Practice professional codes of ethics to adapt the real challenges in security environment. (A3, PLO11)
STATISTICS AND PROBABILITY DFC30323	<p>STATISTICS AND PROBABILITY course introduces students to basic statistical concepts such as organizing data, numerical descriptive measures, probability and its applications, probability distributions, sampling, estimation and hypothesis testing. This course involves techniques to summarize and make sense of data, often using measures like mean, median, and standard deviation. Students will also explore the foundation to utilize appropriate statistical tools and probability models for decision-making.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. Apply basic concepts of statistical and probability methods to solve statistical problems.(C3, PLO2) 2. Construct data analysis using appropriate statistical methods to estimate mean, proportion and standard deviation. (P2, PLO3) 3. Build a hypothesis testing to make accurate decisions based on the given samples. (P3PLO7)
ETHICS IN COMPUTING DFC30333	<p>ETHICS IN COMPUTING course provides students with the knowledge of philosophical bases for computer ethics and social issues. This course explains the reliability and safety of computer systems, protecting software and other intellectual property. The course describes privacy and information issues and strategies on the impact and control of computer technology. Upon completion,</p>	<ol style="list-style-type: none"> 1. Explain Philosophical bases for computer ethics and social issues in computing. (C3, PLO2) 2. Perform good leadership and management skills in various issues related to ethics when working with computers and the internet. (A2, PLO8)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
	<p>students should be able to apply professional codes of ethics.</p> <p>CREDITS: 3 PREREQUISITES: DFC20113 PROGRAMMING FUNDAMENTALS</p>	<p>3. Practice professional codes of ethics in facing challenges on the impact and control of computer technical. (A2, PLO11)</p>
<p>CYBERPRENEURSHIP</p> <p>DFT 30183</p>	<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. Build a business idea using appropriate analysis method for effective business plan. (P3, PLO3) 2. Practice good leadership and management skills in delivering business plan for future expansion. (A2, PLO8) 3. Demonstrate entrepreneur skills that related to entrepreneurship activities. (A3, PLO10)
<p>DIGITAL MULTIMEDIA</p> <p>DFP 30313</p>	<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 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, PLO3) 2. demonstrate multimedia authoring skills by creating a comprehensive multimedia product using appropriate multimedia tools (P3, PLO6) 3. demonstrate entrepreneurial and good managerial skills in developing multimedia interactive application (A3, PLO10)
<p>OBJECT ORIENTED PROGRAMMING</p> <p>DFP30323</p>	<p>OBJECT ORIENTED PROGRAMMING (OOP) course introduces students to the principles and concepts behind the paradigm of OOP and features in Java. This course introduces students on how 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 along with the use of exception handling.</p> <p>CREDITS: 3 PREREQUISITES: DFC20303 PROGRAMMING FUNDAMENTALS</p>	<ol style="list-style-type: none"> 1. explain the concepts of Object Oriented Programming in application development. (C2, PLO1) 2. construct Object Oriented Programming concept in Java programming. (P4, PLO3) 3. follow the professional ethics in group to develop a solution for a given scenario (A3, PLO11)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
SYSTEM ANALYSIS AND DESIGN DFC 40343	<p>SYSTEM ANALYSIS AND DESIGN FUNDAMENTALS 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 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>	<ol style="list-style-type: none"> 1. Implement the appropriate model, tools and techniques concept of System Analysis and Design for project development. (C3, PLO2) 2. Prepare the appropriate key deliverable's of each phase in System Development Life Cycle (SDLC) (P3,PLO3) 3. Perform a good personal skills with peers in proposing a project development. (A3,PLO9)
FULL STACK WEB DEVELOPMENT DFP 40333	<p>FULL STACK WEB DEVELOPMENT course is designed to equipped students with the essential skills needed to create dynamic, interactive, and responsive websites and web applications. Students will learn the fundamentals of HTML, CSS, JavaScript, MySQL and PHP while harnessing the power of Bootstrap, a popular front-end framework. Throughout the course, they will master the art of crafting modern and visually appealing web interfaces, implementing interactive elements, and seamlessly integrating back-end functionality. By the end of the course, students will have the confidence to design, develop, and deploy feature-rich web projects efficiently, making them proficient in the fast-paced world of web development.</p> <p>CREDITS: 3 PREREQUISITES: DFC20283 DATABASE FUNDAMENTALS</p>	<ol style="list-style-type: none"> 1. integrate PHP and MySQL with Bootstrap to build database-driven web applications projects. (P4, PLO3) 2. demonstrate positive leadership in developing interactive dynamic web application that can be view in web browser (A3, PLO8) 3. demonstrate entrepreneur skills that related to web application development activities (A2, PLO10)
VISUAL BASIC PROGRAMMING DFP 40343	<p>VISUAL BASIC PROGRAMMING (VB Programming) course provides students with the knowledge and skills needed to develop applications in Microsoft Visual Studio for the IDE platform. The course focuses on Graphical User Interface (GUI), programming structure, language syntax, and integration database with ADO.NET in VB.NET application development. This course introduces computer programming using the VB</p>	<ol style="list-style-type: none"> 1. construct the Visual Basic program by using .NET frameworks in developing windows application. (P4, PLO3) 2. integrate effective interpersonal skills with peers in developing windows application. (A3, PLO4) 3. demonstrate effective leadership with peer in developing Visual Basic programs (A2, PLO8)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
	<p>Programming language with object-oriented programming principles. Emphasis is on event-driven programming methods, including creating and manipulating objects, classes, and using object-oriented tools such as the class debugger. Upon completion, students should be able to design, code, test, debug and secure coding in Visual Basic program.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	
MOBILE APPLICATION DEVELOPMENT DFP 40353	<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 or Kotlin programming languages. Students will learn how to create Android applications using Android Studio modules and deploy the developed apps appropriately. Topics will include Android Development Environment, user interfaces, audio, graphics, data persistence, local and remote storage and apps deployment.</p> <p>CREDITS: 3 PREREQUISITES: NONE</p>	<ol style="list-style-type: none"> 1. construct mobile application components, APIs and libraries by using Android Development Tools. (P4,PLO3) 2. demonstrate mobile apps development that able to store local and remote data using data persistence. (A2, PLO) 3. perform mobile apps publishing and distribution using appropriate procedure (A3, PLO11)
BUSINESS INTELLIGENCE DFP 40362	<p>BUSINESS INTELLIGENCE course is designed to emphasize the classification of specific technologies for collecting, storing, analyzing and giving the best option for enterprise users to make better decisions. It consists of Extract, Transform and Load (ETL), data manipulation, data visualization and reporting useful to help enterprise users to make the best decision for their business.</p> <p>CREDITS: 3 PREREQUISITES: DFC20283 DATABASE FUNDAMENTALS</p>	<ol style="list-style-type: none"> 1. discover the Business Intelligence and fundamental concepts of data manipulation to support decision making. (C3,PLO2) 2. design a dashboard that suits business enterprise to support decision making. (P4,PLO3)
DATABASE ADMINISTRATION DFP 40373	<p>DATABASE ADMINISTRATION course offers a comprehensive introduction to Oracle Database management. It equips students with essential skills for efficiently managing</p>	<ol style="list-style-type: none"> 1. construct the Oracle Database Administrator task using Oracle database structure to practices database administration process (P4,PLO3)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
	<p>and safeguarding data within Oracle Database environments. Throughout the course, students will engage in practical exercises and hands-on labs to reinforce theoretical concepts. Upon completion, students will be well-prepared to embark on careers as capable Oracle Database administrators, possessing the knowledge and skills needed to effectively manage, secure, and maintain these critical data platforms</p> <p>CREDITS: 3 PREREQUISITES: DFC20283 DATABASE FUNDAMENTALS</p>	<ol style="list-style-type: none"> 2. demonstrate effective interpersonal about database administration roles and operations by using Oracle database server. (A3,PLO4) 3. practices the ethical and professional skills in performing backup and recovery operations. (A2,PLO11)
INTEGRATIVE PROGRAMMING TECHNOLOGIES DFP50383	<p>INTEGRATIVE PROGRAMMING AND TECHNOLOGIES course introduces students to the knowledge of Graphical User Interface (GUI) programming in Java. This course addresses the creation of interactive GUIs through standalone frontend applications. This course primarily focuses on the Swing and Abstract Window Toolkit (AWT) library with addition of Java Database Connectivity (JDBC) API. The application of the libraries will equip students with knowledge in the development of database applications solutions.</p> <p>CREDITS: 3 PREREQUISITES: DFP30323 OBJECT ORIENTED PROGRAMMING</p>	<ol style="list-style-type: none"> 1. construct user interface by using java package in developing interactive GUI application (P4, PLO3) 2. perform the use of digital application that show event-based GUI handling principles in Java program (P4, PLO6) 3. Demonstrate best practices in developing mobile security computing in context of social environment (A3, PLO11)
PYTHON PROGRAMMING DFP 50393	<p>PYTHON PROGRAMMING introduces with the knowledge and skills needed to develop applications using Python with structured and Object Oriented Programming technique. Upon completion, students should be able to design and code a program, understand file and directory handling, design Graphical User Interface (GUI) which integrate with database using Python Programming.</p> <p>CREDITS: 3 PREREQUISITES: DFC20303 PROGRAMMING FUNDAMENTALS</p>	<ol style="list-style-type: none"> 1. construct Python application based on given scenario (P4, PLO 3) 2. develop effective leadership and teamwork related to Python Environment (A3, PLO8) 3. demonstrates the ethical and professional skills in developing GUI and database in Python (A3, PLO11)

COURSE	SYNOPSIS	COURSE LEARNING OUTCOMES
JAVA WEB DEVELOPMENT DFP 50403	<p>Java Web Development course explores web technologies, Java EE, and fundamental web application principles. Students will gain skills in creating dynamic web pages using Java Server Pages (JSP), establishing database connections through JDBC and ensuring secure web application deployment. Upon completion, they will be proficient in developing powerful Java-based web applications.</p> <p>CREDITS: 3 PREREQUISITES: DFC20283 DATABASE FUNDAMENTALS, DFP30323 OBJECT ORIENTED PROGRAMMING</p>	<ol style="list-style-type: none"> 1. construct a dynamic web application using JSP and database within Java EE platform (P4,PLO3) 2. demonstrate effective communication skill about the integration of JSP and web security in developing web application. (A3, PLO5) 3. display the ability to visualize the development process web application development using JSP. (P3, PLO6)
INTEGRATED PROJECT DFT 50194	<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 encourages students 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 CORE COMPUTING COURSES</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, PLO5) 3. Perform leadership and team management skills effectively to manage issues in project development (A2, PLO8) 4. Relate professional career goals in project development that lead to local or region mass communities building (A4, PLO9)
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) |

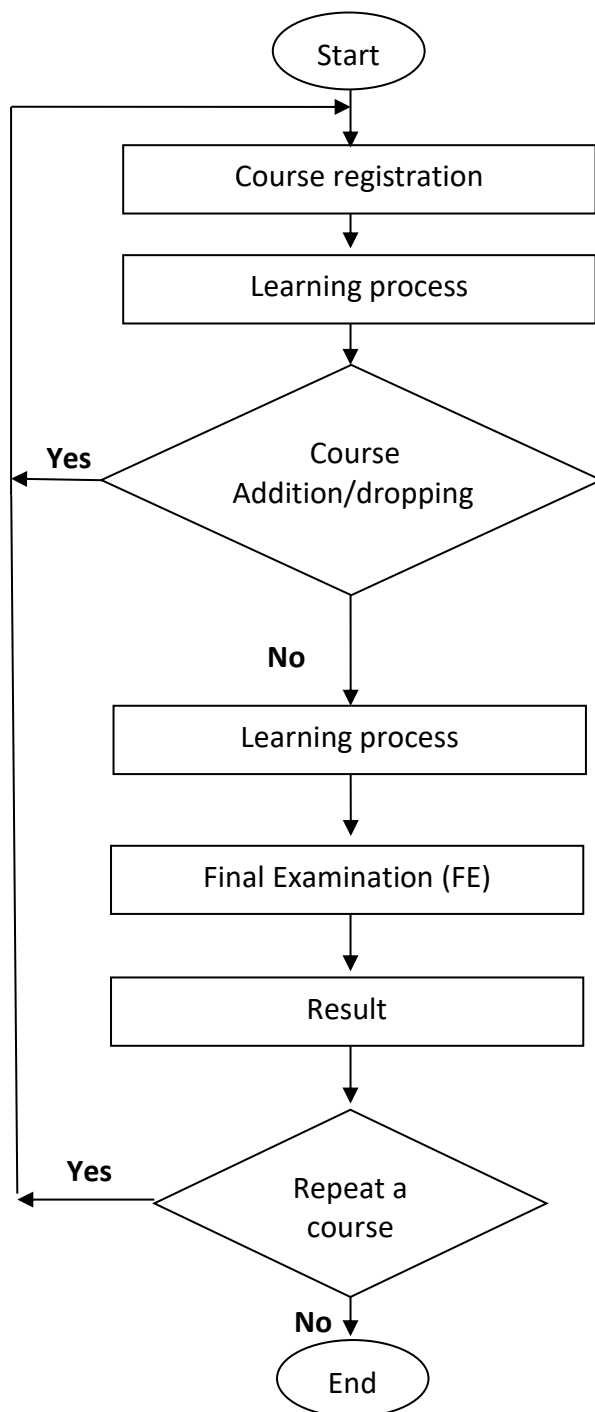
Student's Act

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* should accomplish 6 semesters for teaching and learning process and for each semester, the steps are as below: -

Teaching and Learning process conducted in 14 weeks



- In 7 days after new semester

- In week 3 until week 6 on each lecture session

- Can only be taken 3 times for each course

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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