ABOUT UNIVERSITI POLY-TECH MALAYSIA

Universiti Poly-Tech Malaysia, also known as UPTM, is an institution of higher learning has built itself upon years of continuous improvements and change leading to a wealth of experience and wisdom.

At UPTM, the focus is on providing a comprehensive education that goes beyond theoretical knowledge to include the development of essential human attributes, attitude, and aptitude. The university's committed educators work tirelessly to ensure that every student receives personalised attention and support that enables them to realise their full potential.

UPTM's curriculum is anchored in contemporary technologies and business education, offering students a wide range of innovative courses that challenge and stimulate their skills and expertise essential for them to thrive in the fast-paced world of business. It is important to note that Poly-Tech, in this context, refers to the incorporation of cutting-edge technologies into business education, and should not be confused with technical or vocational education.

On the overall, the university's emphasis is on producing graduates who are not only highly skilled and knowledgeable, but also possess the essential qualities of professionalism, ethical responsibility, and social awareness. With its unwavering commitment to academic excellence, UPTM stands out as an institution of higher learning that prepares students for successful careers and meaningful lives.

VISION

To become a university of choice in nurturing professionals impacting the nation.

MISSION

- Develop ethical, holistic and balanced professional
- To utilize knowledge and innovative contemporary technologies to contribute towards the development of the nation.

MOTTO

Trusted ● Caring ● Resilient ● Respected

OBJECTIVES

- To provide opportunities to pursue professionally recognised programmes.
- To provide vibrant and invitational programmes relevant to current market needs and customers' demands.
- To design programmes that inculcate graduates' synergetic talents.
- To ensure that graduates are adequately prepared for the local and global workforce.
- To establish human resource development programmes as tool for assimilating the value of society.
- To establish a distinctive and accountable centre of excellence in managing research, consultation and services.

TABLE OF CONTENT

MESSAGE FROM THE PRESIDENT

I am honored to welcome you to the University Poly-Tech Malaysia (UPTM), an esteemed academic institution based at the heart of the capital city of Malaysia. As the President of UPTM, I am excited to invite you to join our community of scholars, where you will have the opportunity to develop into ethical, holistic, and balanced professionals who can impact the nation positively.

UPTM has undergone a remarkable transformation from a college to a university college and now a full-fledged university. This growth is a testament of our commitment to academic excellence and our dedication in providing a conducive learning environment. Our vision is to become a university of choice in nurturing professionals who can make a difference in society. We aim to achieve this by providing our students with the necessary skills, knowledge, and values to excel in their chosen fields.

At UPTM, our mission is to develop ethical, holistic, and balanced professionals who can contribute to the development of the nation using knowledge and innovative contemporary technologies. We strive to ensure that our graduates possess the necessary skills to thrive in a competitive global environment. Our curriculum is designed to challenge our students while also nurturing their intellectual curiosity.

Our university's core values are based on trust, care, resilience, and respect, which guide us in all our interactions with students, faculty, and staff. We pride ourselves on our inclusivity, diversity, and the community of scholars that we have built over the years. We are confident that you will find a home at UPTM, where you can grow and learn alongside other ambitious students.

I welcome you to explore our website and learn more about UPTM. Our dedicated faculty and staff are always to answer any questions you may have about our programs, admissions process, or campus life. We hope to hear from you soon and look forward to welcoming you to our university.

Sincerely,

President
University Poly-Tech Malaysia

INTRODUCTION

The Bachelor of Information Technology (Honours) in Cyber Security is a homegrown degree program specifically designed to deliver a suitable level of theoretical and practical understanding in information technology and cyber security that is useful in the workplace. The first intake was in September 2015 and has achieved full accreditation from the Malaysian Qualifications Agency (MQA) starting from 4th January 2018.

This programme consists of various Body of Knowledge in Information Technology and offers courses such as information system security, cryptography, ethical hacking, cyber security operation, network security, security assurance, digital forensic, entrepreneurship, final year project and industrial training. Students learn to design, implement, integrate and manage various security infrastructure components through a mix of theoretical and hands-on activities.

At the end of the program, graduates should be able to demonstrate specific skills in the areas of information technology and cyber security as well as apply their knowledge and skills to solve problems and make decisions in fast growing cybersecurity field.

This programme is suitable for those who are interested in working with the government and private sectors as security engineer, security analyst, network security engineer, network security specialist, data security analyst, security administrator, information security architect, application security tester, information security consultant or senior IT auditor.

Graduates can also further their study at master level in local higher institutions in specific field such as Computer Security, Network, Software Engineering or Information Science.

PROGRAMME INFORMATION

1. Programme Title : BACHELOR OF INFORMATION TECHNOLOGY (HONOURS) IN CYBER SECURITY

2. Programme Code : CT206

3. Duration : 3 YEARS

4. Total Credit Hours : 120

5. Medium of Instruction : ENGLISH

6. Entry Requirement :

   i. A pass in Sijil Tinggi Persekolahan Malaysia (STPM) or its equivalent with a minimum Grade C (NGMP 2.00) in any two (2) subjects, and credits in Mathematics at SPM level;

   OR

   ii. A pass in Matriculation / Foundation or its equivalent with a minimum CGPA 2.00 and credits in Mathematics at SPM level;

   OR

   iii. A Diploma in Computer Science OR Software Engineering OR Information Technology OR Information System OR equivalent with a minimum CGPA of 2.50 and credits in Mathematics at SPM level or its equivalent;

   OR

   iv. Any other Diploma in Science and Technology or Business Studies with a minimum CGPA of 2.50 maybe admitted subject to a rigorous internal assessment process and credits in Mathematics at SPM level or equivalent;

   AND (JIKA ADA)

   For international students, a candidate must achieve a score of Test of English As A Foreign Language (TOEFL) Minimum 500 or International Language Testing System (IELTS) minimum Band 5.0.

7. Programme Educational Objectives :

   The specific program educational objectives are to train Cyber Security Specialists who:

PEO1 :   apply appropriate methodologies and techniques, relevant knowledge and technical computing skills in network and cyber security in line with the industry requirements

PEO2 :   display positive leadership skills, autonomy and responsibility, communicate effectively with stakeholders, and perform well as a team player

PEO3 :   equipped with critical and creative thinking skills, numerical competence and ethical values applicable in a professional context

PEO4 :   able to demonstrate entrepreneurship skills and competence in using a broad range of information, media and technology applications for successful career advancement and lifelong learning

8.   Programme Outcomes   :

Upon completion, the Bachelor of Information Technology (Honours) in Cyber Security programme will produce graduates who are able to:

PLO1 :   Explain the knowledge, facts, concepts, principles, techniques and theories relating to the field of study.

PLO2 :   Apply critical thinking skills in making decisions and providing solutions to related problems.

PLO3 :   Adopt appropriate methodologies and techniques for proposing, designing, implementing and managing the information technology solutions.

PLO4 :   Interact and work effectively with diverse group of stakeholders.

PLO5 :   Communicate effectively using appropriate forms of presentation to diverse groups of audience.

PLO6 :   Utilize a broad range of digital and technology software / applications in providing solutions related to the field of study.

PLO7 :   Use numeracy skills for problem solving related to the field of study.

PLO8 :   Demonstrate leadership, accountability and autonomy in undertaking assigned tasks and responsibilities.

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

PLO10 : Apply entrepreneurial mind set in delivering solutions under changing industry landscape.

PLO11 : Uphold professional and ethical practices in providing services related to the field of study.

9.   Awarding Body   :   Universiti Poly-Tech Malaysia

10. Programme Standards   :   Computing (2015)

PROGRAMME STRUCTURE

BACHELOR OF INFORMATION TECHNOLOGY (HONOURS) IN CYBER SECURITY (CT206)

Year 1 Semester 1:

COURSE CODE	COURSE NAME	STATUS	CREDIT	SLT	PRE-REQ	ASSESSMENT	
						Course Work	Final Assessment
ARC2153	Computer Organization and Architecture	Major Core	3	120	None	60	40
ITC2213	Digital Technology and Society	Major Core	3	120	None	60	40
NWC2163	Computer Systems and Networking	Major Core	3	120	None	70	30
STA2103	Statistics	Major Core	3	120	None	60	40
SWC2483	Introduction to Programming	Major Core	3	120	None	50	50
UCS3012 / UCS3032 / UCS3052	Arabic 1 / Mandarin 1 / French 1	Compulsory	2	80	None	60	40
	Total		17				

Year 1 Semester 2:

COURSE CODE	COURSE NAME	STATUS	CREDIT	SLT	PRE-REQ	ASSESSMENT	
						Course Work	Final Assessment
ARC2163	Operating Systems	Major Core	3	120	None	60	40
MAT2093	Discrete Structure	Major Core	3	120	None	60	40
MPU3183	Penghayatan Etika dan Peradaban	Compulsory	3	120	None	70	30
NWC3173	Routing and Switching	Elective Core	3	120	NWC2163	60	40
SWC4423	Data Structure and Algorithm	Major Core	3	120	SWC2483	60	40
UCS3022 / UCS3042 / UCS3062	Arabic 2 / Mandarin 2 / French 2	Compulsory	2	80	UCS3012 / UCS3032 / UCS3052	60	40
	Total		17				

Year 1 Semester 3

COURSE CODE	COURSE NAME	STATUS	CREDIT	SLT	PRE-REQ	ASSESSMENT	
						Course Work	Final Assessment
MMC2213	Human Computer Interaction	Major Core	3	120	None	60	40
NWC3183	Information System Security	Major Core	3	120	None	60	40
	Total		**6**				

Year 2 Semester 1:

COURSE CODE	COURSE NAME	STATUS	CREDIT	SLT	PRE-REQ	ASSESSMENT	
						Course Work	Final Assessment
ENW3123	Academic Writing	Elective Free	3	120	None	60	40
ITC2153	Database Fundamentals	Major Core	3	120	None	60	40
MPU3193 / MPU3143	Falsafah dan Isu Semasa / Bahasa Melayu Komunikasi 2 (International Student)	Compulsory	3	120	None	70	30
NWC3193	Fundamental of Cryptography	Elective Core	3	120	MAT2093	70	30
SWC3433	Web Application Development	Major Core	3	120	SWC2483	50	50
SWC3503	Secure Programming	Elective Core	3	120	SWC2483	60	40
	Total		**18**				

Year 2 Semester 2:

COURSE CODE	COURSE NAME	STATUS	CREDIT	SLT	PRE-REQ	ASSESSMENT	
						Course Work	Final Assessment
ESL3073	English for Professional Interaction	Compulsory	3	120	None	60	40
ITC3013	Database Management and Administration	Elective Core	3	120	ITC2153	60	40
ITC3083	Project Management	Major Core	3	120	None	70	30
NWC4243	Network Security	Elective Core	3	120	NWC2173	70	30
SWC4443	Web API Development	Elective Core	3	120	SWC3433	50	50
UCS3133	Computing and Multimedia Project For Community	Compulsory	3	120	None	60	40
	Total		**18**				

Year 2 Semester 3:

COURSE CODE	COURSE NAME	STATUS	CREDIT	SLT	PRE-REQ	ASSESSMENT	
						Course Work	Final Assessment
MPU3333 / MPU3363	Pengajian Islam 3 / Ethics and Moral 3	Compulsory	3	120	None	70	30
SWC3493	System Analysis and Design	Major Core	3	120	SWC2483	60	40
	Total		**6**				

Year 3 Semester 1:

COURSE CODE	COURSE NAME	STATUS	CREDIT	SLT	PRE-REQ	ASSESSMENT	
						Course Work	Final Assessment
FYP4074	Information Security Project 1	Elective Core	4	160	NWC3183 & ITC3083	70	30
MPU3422	Khidmat Masyarakat 2	Compulsory	2	80	None	90	10
NWC4233	Ethical Hacking	Elective Core	3	120	NWC2163	65	35
NWC4253	Cybersecurity Operations	Elective Core	3	200	FYP4074	70	30
	Total		**12**				

Year 3 Semester 2:

COURSE CODE	COURSE NAME	STATUS	CREDIT	SLT	PRE-REQ	ASSESSMENT	
						Course Work	Final Assessment
FYP4085	Information Security Project 2	Elective Core	5	120	FYP4074	70	30
NWC3213	Information Security Assurance	Elective Core	3	120	None	70	30
NWC4223	Digital Forensic	Elective Core	3	120	NWC3183	70	30
UCS3103	Digital Entrepreneurship	Compulsory	3	120	None	60	40
	Total		**14**				

Year 3 Semester 3:

COURSE CODE	COURSE NAME	STATUS	CREDIT	SLT	PRE-REQ	ASSESSMENT	
						Course Work	Final Assessment
INT40212	Industrial Training	Industrial Training	12	480	Pass ALL Courses & CGPA greater or equal to 2.0	40	60
	Total		**12**				

COURSE INFORMATION

Computer Organization and Architecture (ARC2153)
Prerequisite : None

This course introduces modern computer system architecture which is structured around primary building blocks of general-purpose computing systems and applications of these insights and principles to future computer designs.

Digital Technology and Society (ITC2213)
Prerequisite : None

This course explains the importance of internet and digital technology that give impacts to the individual and society. Current applications and issues related to the misuse of technology are investigated. Ethical and legal aspects are also discussed.

Computer System and Networking (NWC2163)
Prerequisite : None

This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. 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.

Statistics (STA2103)
Prerequisite : None

This course emphasizes the basic concepts of statistics and probability. Topics include descriptive statistics, probability, probability distribution, sampling distribution, estimation and hypothesis testing.

Introduction to Programming (SWC2483)
Prerequisite : None

This course gives a basic introduction to software construction using an object-oriented approach to solve computing problems. Object-oriented programming (OOP) is a programming paradigm that uses "objects" and their interactions to design applications and computer programs. It is based on several techniques, including inheritance, modularity, polymorphism, and encapsulation. This course will use a block-based programming environment and Integrated Development Environment (IDE) to build the foundation of logical and computational thinking of object-oriented programming.

Arabic 1 (UCS3012)
Prerequisite : None

This course introduces the basic of Arabic language: Arabic letters (Hijaiyyah), grammar and the four language skills (listening, reading, writing and speaking) in situational context.

Mandarin 1 (UCS3032)
Prerequisite : None

This course covers information to the Chinese universal pronunciation system (Hanyu Pinyin), Chinese simplified characters, basic speaking, listening, writing and reading skills for communicate purposes on selected topics in daily life.

French 1 (UCS3052)
Prerequisite : None

This course is designed to focuses on exposure to, and practice of, general language functions in spoken, written and aural forms. Grammatical structures necessary for the production of the target language and practice of pronunciation, intonation and stress. It helps to develop language-learning skills and to foster cultural (Francophone) awareness.

Operating Systems (ARC2163)
Prerequisite : None

This course introduces operating systems and their functions in managing processor, file, Input/Output (I/O), memory and secondary storage efficiently. It also covers operating system issues and the techniques used relating to resources management and protection.

Discrete Structure (MAT2093)
Prerequisite : None

This course introduces further mathematical concepts used in computing science. Topics covered include sets theory, logic and proofs, mathematical induction and recursion, graph teory, algorithms, cryptography and modular arithmetics.

Routing and Switching (NWC3173)
Prerequisite : NWC2163

This course introduces the architecture, structure, functions, components, and models of the Internet and other computer networks. 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.

Data Structures and Algorithms (SWC4423)
Prerequisite : SWC2483

This course is a continuation of Object-oriented Programming course. It emphasizes on manipulating data by applying the fundamentals of data structures concept such as lists, stacks, queues and trees for primitive and abstract data types. In addition, it exposes basic searching and sorting algorithms, and examples of recursive methods with ideas of how to convert algorithms expressed in recursion into iteration. These knowledge and techniques will help in designing effective and efficient programs using data

Arabic 2 (UCS3022)
Prerequisite : UCS3012

This course is a continuation of Arabic 1. It focuses on the development and strengthening of the four language skills at the intermediate level.

Mandarin 2 (UCS3042)
Prerequisite : UCS3032

This course covers information to the Chinese universal pronunciation system (Hanyu Pinyin), Chinese simplified characters, basic speaking, listening, writing and reading skills for communicate purposes on selected topics in daily life.

French 2 (UCS3062)
Prerequisite : UCS3052

This course has higher depth compared to its pre-requisite, French 1. This course is designed to focuses on exposure to, and practice of, general language functions in spoken, written and aural forms. Grammatical structures necessary for the production of the target language and practice of pronunciation, intonation and stress. It also helps to develop language-learning skills and to foster cultural (Francophone) awareness.

Human Computer Interaction (MMC2213)
Prerequisite : None

This course introduces the basic concepts of human computer interaction (HCI). It covers various aspects involved in creating an environment for humans to interact with the computer in developing user interfaces for different interactions.

Information System Security (NWC3183)
Prerequisite : None

This course introduces the concepts and issues in securing information systems which include threats, vulnerabilities, controls and countermeasures in organization.

Database Fundamentals (ITC2153)
Prerequisite : None

This course introduces fundamental knowledge on how database concepts are used commercially. It covers an introductory study of database theory, design and implementation.

Fundamentals of Cryptography (NWC3193)
Prerequisite : MAT2093

This course provides the knowledge of various public key and private key cryptosystems. It explains the principles behind the implementation, structures and cryptographic algorithms.

Web Application Development (SWC3443)
Prerequisite : SWC2483

This course provides the concepts and skills necessary to design and develop web-based application. It covers building a working database application using an appropriate relational database management system such as MySQL and an appropriate server-side scripting language such as Hypertext Preprocessor (PHP) to serve the information needs of an enterprise. The course focuses on the use of high-level software tools in order to develop web-based application.

Secure Programming (SWC3503)
Prerequisite : SWC2483

The course introduces the common security concepts such as security principles, mitigation and security threats. It also covers secure coding practices using appropriate programming language and environments which include designing secure applications, writing secure codes, security testing and auditing to ensure the code to be attack-resistance.

English For Professional Interaction (ESL3073)
Prerequisite : None

This course further develops English language and communication skills required to communicate effectively in future professional interactions. It provides the opportunity to apply the principles of communication in both writing and speaking situations through the use of different types of business correspondence in workplace setting.

Database Management and Administration (ITC3013)
Prerequisite : ITC2153

This course provides an insight into additional database management which covers DBMS administration features, concurrent transaction management, database security management, and the aspect of business intelligence and relevant tools in handling big data.

Project Management (ITC3083)
Prerequisite : None

This course develops the technical and human skills required in managing information technology (IT) related projects. It emphasises the role of a project manager within a broader perspective of strategic business management, identification of problems and the best possible solution. The important aspects of integrated project management including scheduling skills, costing and estimating skills, managing teamwork skills and leadership skills are emphasized.

Network Security (NWC4243)
Prerequisite : NWC3173

This course focuses on the development of technical competency to support Information security infrastructures. It provides broad understanding of network and systems security concepts to implement, protect and enforce the network security policies required by globally inter-networked technology infrastructure.

Web API Development (SWC4443)
Prerequisite : SWC3433

This course is divided into two main parts. The first part focuses on understanding and visualizing business processes using business process modeling and notation (BPMN). The second part focuses on implementing the BPMN constructs in web Application Programming Interfaces (API). Through understanding both the business and development perspectives, this course provides the skills necessary to develop web services or API that obey to Representational State Transfer (REST) constraints which also known as RESTful.

Computing and Multimedia Project For Community (UCS3133)
Prerequisite : None

This course requires students to recognize a suitable community and identify possible activities that can be carried out with the community in the field of computing and multimedia. The chosen activities are expected to be impactful and beneficial to the community. Students will be guided and trained on how to discover community aspirations and needs related to computing and multimedia perspectives.

System Analysis and Design (SWC3493)
Prerequisite : SWC2483

The course introduces information systems concepts, systems analysis, design methodologies and technologies used during the development of information systems. It covers system analysis and design according to an analysis of system application and construction of the system model based on relevant methodologies using any modeling tool.

Information Security Project 1 (FYP4074)
Prerequisite : NWC3183 & ITC3083

The course is the first part of a two-part information security project. It is an integration of the various cyber security course modules. This part focuses on project planning: identification of problem and project objectives, literature review, requirements gathering and analysis. The project is a practical problem-solving exercise or a research study which requires students to demonstrate their skills in organization, time management, investigation and communication.

Ethical Hacking (NWC4233)
Prerequisite : NWC2163

This course provides basic foundation of ethical hacking. It covers theoretical, practical and social aspects of hacking to provide awareness regarding current information security.

Cybersecurity Operations (NWC4253)
Prerequisite : NWC3183

This course introduces some key concepts in Cybersecurity operations. It also covers applications of domain-specific techniques to respond to cybersecurity threats and attacks.

Information Security Project 2 (FYP4085)
Prerequisite : FYP4074

The course is the continuation of Information Security Project 1. It focuses on project completion: project design, implementation and testing.

Information Security Assurance (NWC3213)
Prerequisite : None

This course introduces concepts on the protection of information systems, networks, and sensitive data at organizational level. It explores the technical aspects and the impact on the decisions made in maintaining the security of information. It also covers on how to create and maintain the policy in organization.

Digital Forensic (NWC4223)
Prerequisite : NWC3183

This course introduces the principles and practices in digital forensics. It covers identification and analysis of artefacts and investigation procedures using open source tools.

Digital Entrepreneurship (NWC4223)
Prerequisite : UCS3103

This course will expose the students with theoretical knowledge and tools of digital entrepreneurship. In addition students also will train to sell a real product through social media. This course also provides students with the basic knowledge and process on how to prepare a digital business plan. It also requires students to do research and consultation with their respective lecturers in preparing the digital business plan.
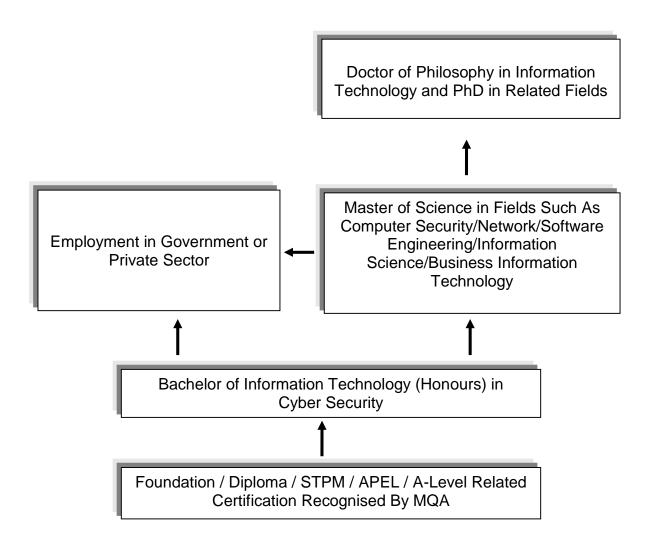
Industrial Training (INT40212)
Prerequisite : Pass ALL Courses & CGPA greater or equal to 2.0

Industrial Training provides practical experience relevant to the real working environment prior to graduation. With all the experiences and knowledge acquired, students will be ready to join the workforce upon graduation.

STUDY PATH

BACHELOR OF INFORMATION TECHNOLOGY (HONOURS) IN CYBER SECURITY (CT206)

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                        │ Doctor of Philosophy in          │
                        │ Information Technology and PhD    │
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│ Government or          │   │ Such As Computer                 │
│ Private Sector         │   │ Security/Network/Software        │
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         │ (Honours) in Cyber Security            │
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         │ Foundation / Diploma / STPM / APEL /   │
         │ A-Level Related Certification          │
         │ Recognised By MQA                      │
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ACADEMIC PLANNER

ACTIVITY	Long Semester	Short Semester
	Day / Week	Day / Week
Registration (New Students)	Day 1	Day 1
Induction	Day 2	Day 2
Add/Drop Week	Week 4	Week 2
Lectures	Week 1 - 7	Week 1 - 7
Mid-Semester Break	1 Week	
Lectures	Week 8 – 14	
Revision Week	2 Days	2 Days
Final Examination	3 Weeks	1 - 2 Weeks
Semester Break	2 - 3 Weeks	2 - 3 Weeks

Note: Actual academic calendar can be accessed in the UPTM website at www.uptm.edu.my.

- The University reserves the right to make any changes to the academic calendar when necessary. Students are advised to be aware of announcements regarding changes at all times.

ACADEMIC REGULATIONS

- All UPTM students are subjected to the academic rules and regulations as outlined in the Academic Regulations of Universiti Poly-Tech Malaysia (UPTM) (2023 Amendment). A copy of this academic rules and regulations can be accessed in the UPTM website at www.uptm.edu.my.

- All UPTM students pursuing academic programmes in collaboration with professional, local or foreign partner institutions are also subjected to the rules and regulations of the partner institutions. A copy of this handbook can be accessed in the UPTM website at www.uptm.edu.my