



ACADEMIC HANDBOOK 2026/2027

Bachelor Degree Programmes

**Faculty of Artificial Intelligence
and Cyber Security (FAIX)**

ACADEMIC HANDBOOK

Bachelor Degree Programmes

Session 2026/2027

FACULTY OF ARTIFICIAL INTELLIGENCE AND CYBER SECURITY
UNIVERSITI TEKNIKAL MALAYSIA MELAKA

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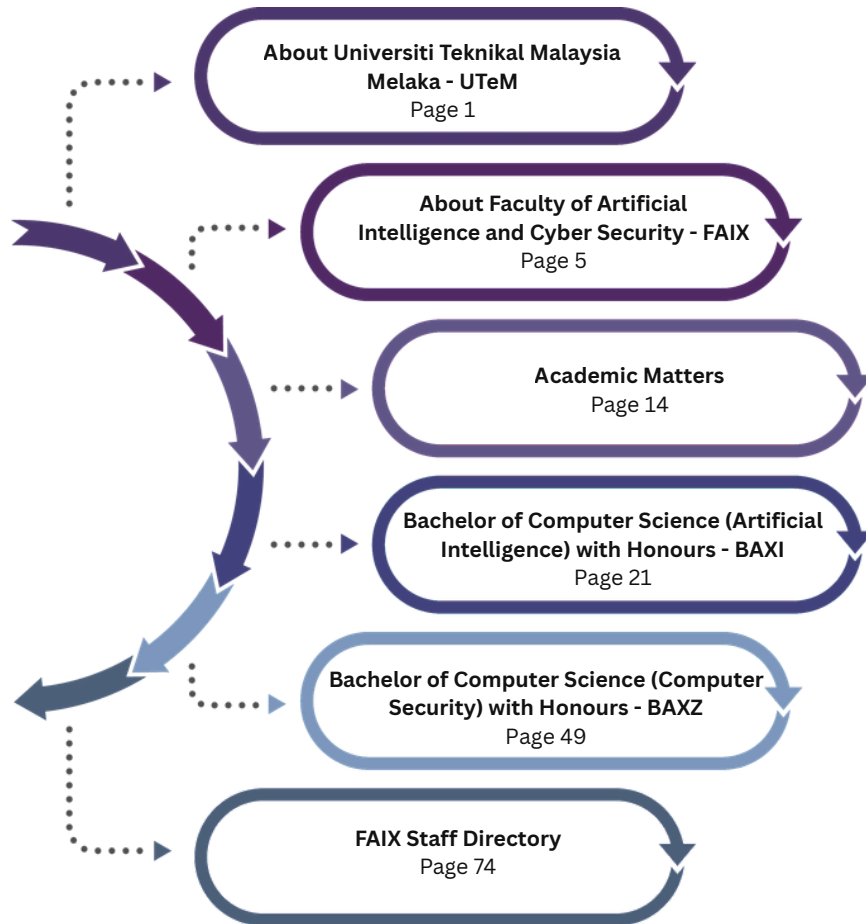
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VISION & MISSION

Establishment

UTeM was established under Section 20 University and University College Act 1971 (Act 30) through “Perintah Universiti Teknikal Malaysian Melaka (Pemerbadanan 2007)” gazetted as P.U. (A) on 1st February 2007. UTeM was initially known as Kolej Universiti Teknikal Kebangsaan Malaysia (KUTKM), established on 1st December 2001.

Vision

To be one of the world’s leading innovative and creative technical universities

Mission

UTeM determined to lead and contribute to the wellbeing of the country and the world by:

- Promoting knowledge through innovative teaching and learning, research and technical scholarship;
- Developing professional leaders with impeccable moral values;
- Generating sustainable development through smart partnership with the community and industry.

Motto

Excellence through competency.

Educational Goals

1. To conduct academic and professional programmes based on relevant needs of the industries.
2. To produce graduates with relevant knowledge, technical competency, soft skills, social responsibility and accountability.
3. To cultivate scientific method, critical thinking, creative and innovative problem solving and autonomy in decision making amongst graduates.
4. To foster research development and innovation activities in collaboration with industries for the development of national wealth.
5. To equip graduates with leadership and teamwork skills as well as develop communication and life-long learning skills.
6. To develop technopreneurship and managerial skills amongst graduates.
7. To instill an appreciation of the arts and cultural values and awareness of healthy life styles amongst graduates.

UTeM Top Management



**PROFESSOR DATUK
TS. DR. MASSILA BINTI KAMALRUDIN**
(VICE CHANCELLOR)



**PROFESSOR
DR. MOHD RIZAL BIN SALLEH**
DEPUTY VICE CHANCELLOR
(ACADEMIC AND INTERNATIONAL)



**PROFESSOR DR. ZAHRILADHA
BIN ZAKARIA**
DEPUTY VICE CHANCELLOR
(RESEARCH AND INNOVATION)



**ASSOCIATE PROFESSOR DATUK
DR. SABRI BIN MOHAMAD SHARIF**
DEPUTY VICE CHANCELLOR
(STUDENT AFFAIRS AND ALUMNI)



**ASSOCIATE PROFESSOR
DR. MUSTHAFAH BIN MOHD TAHIR**
ASSISTANT VICE CHANCELLOR
(STRATEGIC AND GLOBAL SUSTAINABILITY)



**MR. MASDZARIF
BIN MAHAT**
(CHIEF OPERATING OFFICER)



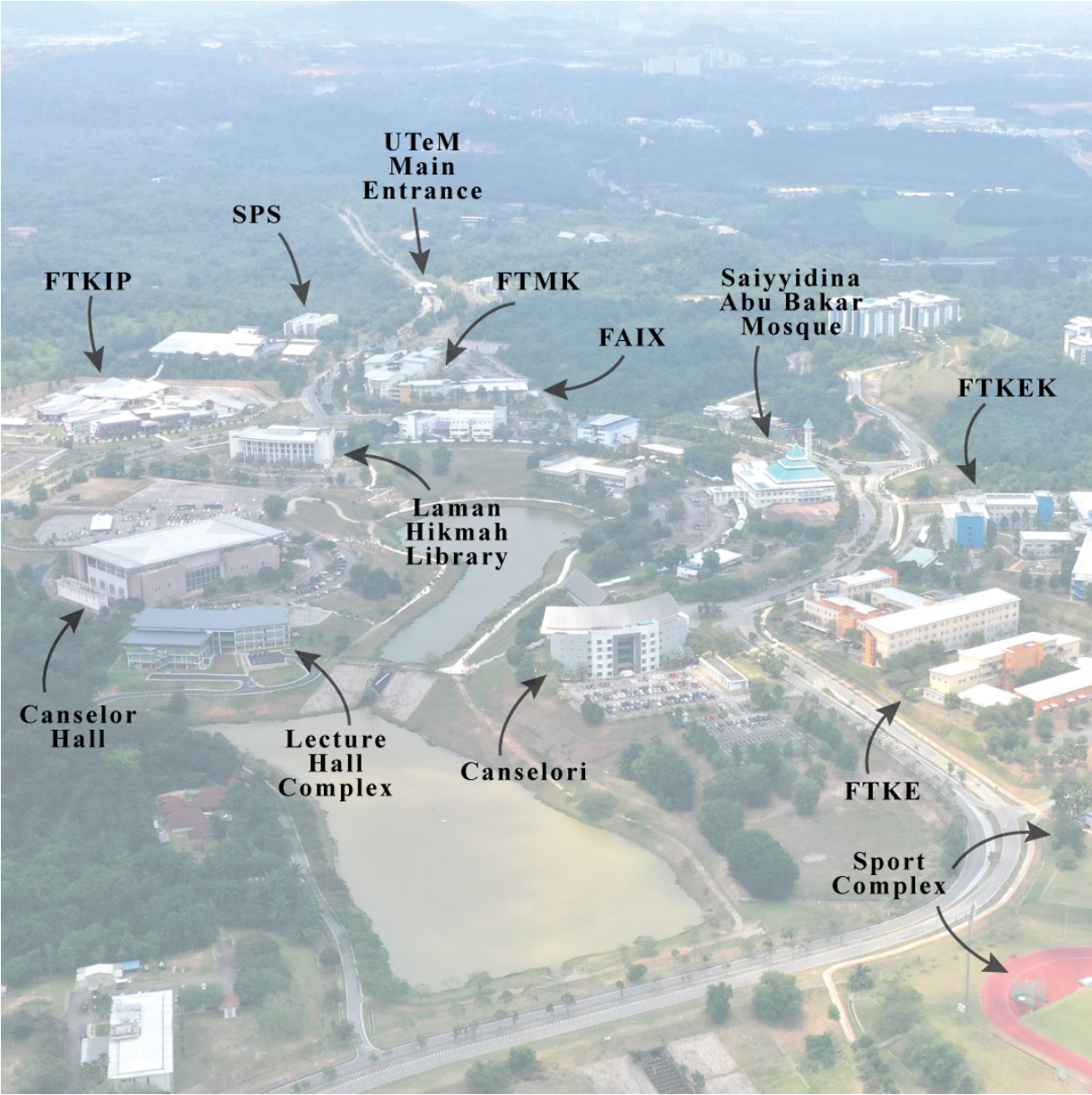
**MRS. SABARINA
BINTI ABDULLAH**
(BURSAR)



**MRS. SITI SALUWA
BINTI JAMAL**
(CHIEF LIBRARIAN)



**MR. MOHD NIZAM
BIN PAVEL**
(LEGAL ADVISOR)



FORWARD

by The Dean

Assalamualaikum warahmatullahi wabarakatuh and warm greetings.

All praise is due to Allah, the Most Gracious, the Most Merciful. It is my great pleasure to welcome all new and returning students to the Faculty of Artificial Intelligence and Cyber Security (FAIX), Universiti Teknikal Malaysia Melaka (UTeM), for the Academic Session 2026/2027.

A year has passed since FAIX embarked on its inaugural academic journey, and what an exciting year it has been. Established as part of UTeM's strategic vision to lead in emerging technologies, FAIX has continued to strengthen its position as a centre of excellence in artificial intelligence, cyber security, and digital innovation. Building upon the momentum of our official launch by the Prime Minister of Malaysia in June 2025, we have continued expanding our academic capabilities, strengthening industry collaborations, enhancing research initiatives, and creating meaningful learning experiences for our students.

Today, FAIX is no longer merely a newly established faculty. We are a growing academic community driven by innovation, integrity, and impact. Our dedicated team of academic, administrative, and technical staff remains committed to providing an education that combines strong theoretical foundations with practical, industry-relevant experiences. As technologies evolve rapidly, we continuously adapt our programmes to ensure our graduates remain future-ready, globally competitive, and ethically responsible.

To our new students, you are joining FAIX at a remarkable time. Artificial intelligence is reshaping industries, economies, and societies at an unprecedented pace. With these opportunities come great responsibilities. Beyond acquiring technical knowledge and professional skills, I encourage you to cultivate critical thinking, creativity, resilience, and a strong sense of ethics. These qualities will distinguish future leaders in the age of AI.



ASSOC. PROF. TS. DR. MUHAMMAD HAFIDZ FAZLI BIN MD FAUADI
DEAN
**FACULTY OF ARTIFICIAL INTELLIGENCE AND
CYBER SECURITY (FAIX)**

To our returning students, thank you for being part of FAIX's first chapter. Your achievements, contributions, and pioneering spirit have laid a strong foundation for those who follow. Continue to challenge yourselves, pursue excellence, and serve as role models within our growing faculty community.

At FAIX, learning extends far beyond the classroom. I encourage every student to actively participate in research, innovation projects, industry engagements, competitions, professional certifications, entrepreneurship initiatives, and community programmes. These experiences will not only enrich your university life but also prepare you to thrive in an increasingly interconnected and technology-driven world.

As we begin this new academic session together, let us continue building a faculty that embraces excellence, nurtures innovation, and creates meaningful impact for society. Together, we will contribute towards advancing Malaysia's digital transformation and developing technologies that are intelligent, secure, inclusive, and beneficial to humanity. I wish each of you a rewarding, successful, and inspiring academic journey at FAIX.

Thank you.



FAKULTI KECERDASAN BUATAN DAN KESELAMATAN SIBER
FACULTY OF ARTIFICIAL INTELLIGENCE AND CYBER SECURITY

VISION & MISSION

Vision

To be a global leader in advancing Artificial Intelligence and Cyber Security, empowering an intelligence, secure, and future-ready digital world.

Mission

1. Leading the development of competent talent in the fields of Artificial Intelligence and Cyber Security to shape human capital and a secure, intelligent digital future.
2. Pioneering innovation in Artificial Intelligence and Cyber Security through strategic collaboration.
3. Advancing Artificial Intelligence and Cyber Security solutions that are ethical, inclusive, industry-oriented and societal well-being.

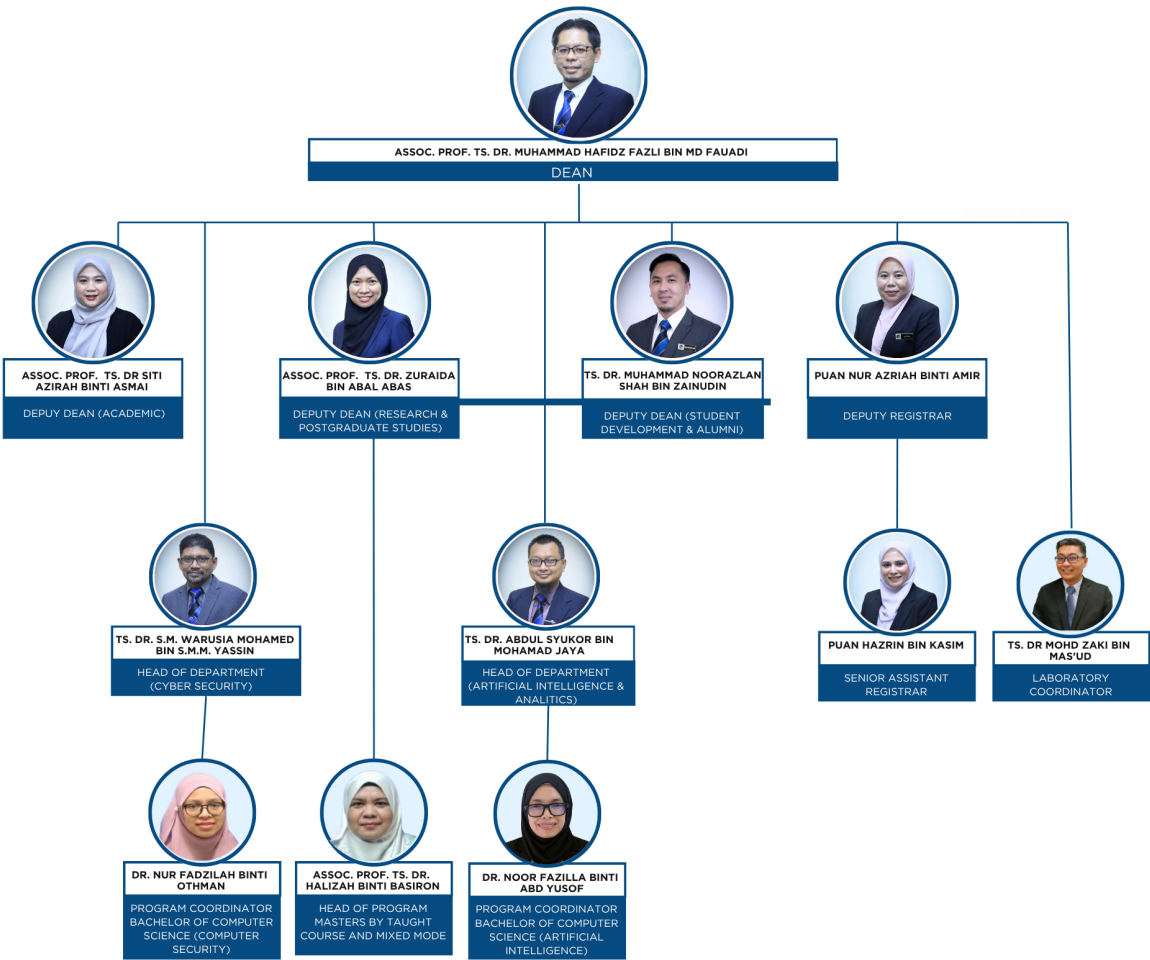
Objectives

1. To produce graduates who are competent, globally competitive, creative, and innovative in Artificial Intelligence and Cyber Security, capable of addressing future technological and industrial challenges.
2. To enhance research, innovation, and commercialisation in Artificial Intelligence and Cyber Security with strategic and integrated approach, to social well-being and technological sustainability.
3. To foster strong moral, leadership and ethics values among students holistically.
4. To strengthen smart infrastructure, digital systems, financial governance, and a high-performance work culture that supports sustainability of the faculty.
5. To uphold the faculty as a globally recognised institution through internationalisation, strategic collaborations, and excellence in academic and research.



FAKULTI KECEKORAN BERTAN DAN KESELAMATAN SIBER
FACULTY OF ARTIFICIAL INTELLIGENCE AND CYBER SECURITY

ORGANIZATIONAL CHART



List of Programme Offered

MASTER'S DEGREE¹

By coursework:

1. Master in Cyber Security, MAXX.
2. Master of Technology in Data Science and Analytics, MAXS.
3. Master of Technology in Data Science and Analytics (with Open and Distance Learning - ODL), MAXL

BACHELOR'S DEGREE

1. Bachelor of Computer Science (Artificial Intelligence) with Honours, BAXI (MQA/FA1888)
Programme Coordinator: Ts. Dr Noor Fazilla Abd Yusof.
2. Bachelor of Computer Science (Computer Security) with Honours, BITZ (MBOT/FA/IT/0/02/0015)
Programme Coordinator: Dr Nur Fadzilah Othman.

¹Please browse through our **Postgraduate Academic Handbook** for details of Postgraduate Programmes

Facilities

Lab Facilities

Faculty of Artificial Intelligence and Cyber Security (FAIX) has been equipped with the state-of-art computers and software and integrated into UTeM Network. These facilities ease the process of teaching and learning in FAIX.

Averages of 36 computers with latest software are located at each lab and studio to ensure practical teaching and learning is applicable for the students. Server, router, switches, wireless, digital camera, video, biometric machines are also provided for teaching and learning purposes.

Lab Staffs

The labs in FAIX are administered by the Lab Coordinator assisted by Assistant Engineers to ensure smooth teaching and learning processes. The infrastructure committee members are responsible for maintaining and managing respective clients in FAIX environment.

Loan Facilities on Lab Equipment

Students are allowed to use the lab equipment to complete their assignments or projects on time. The equipment that are allowed to be used are wireless equipment, video camera, digital camera, biometric tool, GSM and others.

Lab Operational Hours

During Semester:

Monday to Thursday	8:00 am to 6:00 pm
Friday	8:00 am to 12:15 pm 2:45 pm to 6:00 pm

During Semester Break:

Monday to Thursday	8:00 am to 5:00 pm
Friday	8:00 am to 12:15 pm 2:45 pm to 5:00 pm

Saturday-Sunday / Public Holidays Close

NAME OF FACILITY	DESCRIPTION
Seminar Hall	The hall is equipped with audio-visual facility for 250 pax at a time
Lecture Rooms	Rooms No. 1 to 8 with each room for 60 pax Rooms No. 13 to 14 with each room for 120 pax
Recording Capture System (ReCap)	Mini Theatre for interactive learning environment for 114 pax
Collaborative Learning Laboratory (CLeAR)	A collaborative learning laboratory with 60 pax capacity
Mini Theatre	The theatre room for student animation presentation for 32 pax
Virtual Reality Studio	Laboratory for motion capture and games development
Photography/Recording Studio	Multimedia recording and editing studio
Teaching Laboratories	1. Computer Game Laboratory 2. Software Engineering Lab 1, 2 and 3 3. Programming Laboratory 1, 2, 3 and 4 4. Database Laboratory 1, 2 and 3 5. Network Laboratory 1 and 2 6. CCNA & CCNP Laboratory 7. Fiber Optic Laboratory 8. Security Laboratory 9. System / Hardware Laboratory 10. Wireless Laboratory 11. Virtual Reality Laboratory 12. Multimedia Laboratory 1, 2, 3 and 4 13. Artificial Intelligence Laboratory 1, 2, 3 and 4 14. Student Workshop Laboratory

University-Industry Centre	UTeM Cybersecurity Competency Centre - collaboration with CyberSecurity Malaysia, ASK-Pentest, Ministry of Higher Education
University-Industry Laboratory	Coordinated Malware Eradication and Remediation Project (CMERP) Satellite Laboratory – collaboration with Cyber Security Malaysia
Research Group	1. Information Security Forensics & Computer Networking (INSFORNET) 2. Optimization, Modelling, Analytics and Simulation (OptiMAS) 3. Applied Intelligent Computing (APIC) 4. Social Analytics and Intelligence Lab (SAIL)
Other Facilities	5. Smart Factory System (SFS) 1. Visiting Professor Rooms 2. Executive Laboratory 3. Administration Office 4. Student Common Room 5. Surau or Prayer Room 6. Lobby Area 7. Parking Area for staffs and students

Lab Usage Regulation

1. Students must display their matric card at all times in the lab.
2. Students are not allowed to bring in their bags into the lab.
3. Students are not allowed to eat/drink or bring in any foods or drinks into the lab.
4. Students are not allowed to wear sandals in the lab except sandals with back straps for female students and covered sandals for male students.
5. Students are not allowed to wear t-shirt without collar in the lab. UTeM's students' dress code is referred.
6. All lab equipment used must be returned in its original condition.
7. Chairs must be arranged neatly after use.
8. Do not leave used papers or litters in the lab. Please throw it into rubbish bin if it is not needed anymore.
9. All equipment must be switched off after used.
10. Students should not enter the lab without lecturers' or tutors' presence.
11. For after-hours lab usage, students must record their details in the lab record book and submit their matric card to Assistant Engineers in duty.
12. Students are prohibited from playing games, chatting or surfing the net for unrelated content in the lab.
13. Students are not allowed to bring out any lab equipment except with permission from the lecturers or Assistant Engineers in duty.
14. Students are not allowed to bring in laptop, CPU, monitor, mouse, CD, VCD or any computer equipment except with permission from the lecturers or Assistant Engineers in duty.
15. Users are not allowed to do any installation on computers in the lab.
16. All requests for software installation into students' laptop will not be entertained.
17. Students must report immediately to lecturer or Assistant Engineers on duty if any lab equipment got lost or broken during their students' usage.

18. Research labs are for post graduates' students ONLY. Post-graduate students can get the access by referring to their supervisor.

Additional Lab Rules Outside Teaching and Learning Allocated Times

1. Total users for a lab must comply with the maximum capacity allowed for a particular lab.
2. Students are allowed to use labs outside teaching and learning allocated times with permission from a lecturer. The lecturer will be responsible for lab for the duration of the usage. Students must record their start and end times of usage in the record book provided in the lab.
3. Studios and Recording room usage are strictly by booking only. Students can use the studios or recording room through their lecturer or Assistant Engineer on duty.

DISCIPLINARY ACTIONS WILL BE TAKEN AGAINST ANY STUDENT WHO IS FOUND BREAKING ANY RULE LISTED ABOVE.

Academic System

The university adopts a semester-based academic system. Each academic year consists of two regular semesters and in some instances, the faculty may also offers a special semester, called Short Semester or Semester 3, which is arranged during the semester break.

Each regular semester spans 18 weeks, structured as follows:

- 7 weeks for the first part of lecture.
- 1 week of mid semester break.
- 7 weeks for the second part of lecture.
- 1 week of revision.
- 2 weeks for final examination.

For the Short Semester or Semester 3, the duration is limited to 8 weeks, consisting of 7 weeks of lectures followed by 1 week of final examinations.

Duration of Studies

Full-time mode	Durations of studies	
	Minimum	Maximum
Bachelor’s Degree of all programme	7 semesters (3 $\frac{1}{2}$ years)	11 semester (5 $\frac{1}{2}$ years)

Grading System

The following shows the grading system adopted by the university.

Marks	Letter Grades	Grade Points	Remarks
80 -100		4.0	Excellent
75 -79		3.7	Excellent
70 -74		3.3	Very Good
65 -69		3.0	Very Good
60 -64		2.7	Very Good
55 -59		2.3	Pass
50 -54		2.0	Pass
47 -49		1.7	Marginal Pass
44 -46		1.3	Marginal Pass
40 -43		1.0	Marginal Pass
0 -39		0.0	Fail

Academic Achievement

GRADE POINT AVERAGE (GPA):

GPA is average points obtained by students at the end of each semester.

$$\text{Total Grade Point (TGP)} = k_1m_1 + k_2m_2 + \dots + k_nm_n$$

$$\text{Total Calculated Point (TCP)} = k_1 + k_2 + \dots + k_n$$

$$\text{GPA} = \frac{TGP}{TCP}$$

where

k_n = credit hour for course n ,
 m = grade point obtained for course n ,
 n = number of courses registered.

CUMULATIVE GRADE POINT AVERAGE (CGPA):

CGPA refers to cumulative grade point average calculated for all semester studied.

$$\text{CGPA} = \frac{TGP_1 + TGP_2 + \dots + TGP_i}{TCP_1 + TCP_2 + \dots + TCP_i}$$

where

i = number of semester studied.

Academic Standing

A student’s academic standing is determined at the end of every regular semester based on his/her CGPA as shown in the following table:

Good Standing / <i>Kedudukan Baik</i> (KB)	$CGPA \geq 2.00$
Conditional Status / <i>Kedudukan Bersyarat</i> (KS)	$1.7 \leq CGPA < 2.00$
Fail / <i>Kedudukan Gagal</i> (KG)	$CGPA < 1.70$

1. With the approval of the Senate, a student who obtains $CGPA \geq 2.00$ but $GPA < 1.00$ may;
 - i. continue his/her studies with KB; or
 - ii. be instructed to defer his studies to the next semester with KB; or
 - iii. be terminated from his studies with KG.
2. With the approval of the Senate, a student who obtains $1.70 \leq CGPA < 2.00$ but $GPA < 1.00$ may;
 - i. be instructed to defer his/her studies to the next semester with KS; or
 - ii. be terminated from his/her studies with KG.
3. The Academic Standing of a student in the Special Semester shall not be determined. Grades obtained in the Special Semester shall be counted when calculating the CGPA of the subsequent semester. For a student who is due to graduate in the Special Semester, the CGPA will be calculated based on the Repeat or Redeem Course.
4. A student who obtains KS for three (3) consecutive semesters shall be given KG.
5. A student who obtains KG shall be terminated from his/her studies.
6. For students with KS, maximum permissible credit for the upcoming semester is 12 credits.

Dean's List Award

A student who obtains a GPA of 3.50 and above will be awarded a Dean's List Certificate. The list will be published at the University board and webpage.

Graduation Requirement

A student shall only be conferred a Bachelor Degree or Diploma subject to the following requirements:

1. The student must obtain a Good Academic Standing (KB) in his/her final semester.
2. The student must pass all Courses required by the curriculum.
3. Any other requirements set by the University.

Academic Advisory System

RESPONSIBILITY OF ACADEMIC ADVISOR

The importance of having an academic advisory system are as follows:

1. The Academic Advisor is required to explain to the students the important information concerning university's policy and procedure, curriculum and syllabus, academic calendar and etc.
2. The Academic Advisor also needs to assess the students' aptitude to ensure credit hours and Courses registered are suitable with their capability.
3. In addition, the Academic Advisor must approve application to add/drop Courses based on student performance.

RESPONSIBILITY OF STUDENT

Students are responsible to consistently meet with their Academic Advisor twice per semester (minimum) to get advice and help in solving any academic problems arise. In general, students are responsible to:

1. meet with the Academic Advisor in the first week of each semester and obtain the general explanation about the Semester System and related issues concerning learning process as well as monitoring students' performance.
2. obtain an assistance from the Academic Advisor in preparing their study plan throughout their study in UTeM, such as Courses to be registered every semester.
3. inform the Faculty's Administration and Academic Advisor concerning their performance and problems.
4. check and verify Courses registered for the examination.
5. seek advice and explanation from their Academic Advisor the effects of registering and dropping Courses.

Student Clubs

The Faculty of Artificial Intelligence and Cyber Security (FAIX) encourages student participation in extracurricular and co-curricular activities to promote holistic development, leadership, and community engagement. The faculty supports one official student society namely Artificial Intelligence and Cyber Security Student Association (AIXA) and two student clubs; Artificial Intelligence Club (AIC) and Cyber Security Society (CSS) that serve as platforms for knowledge sharing, skills development, and industry exposure related to Artificial Intelligence and Cyber Security.

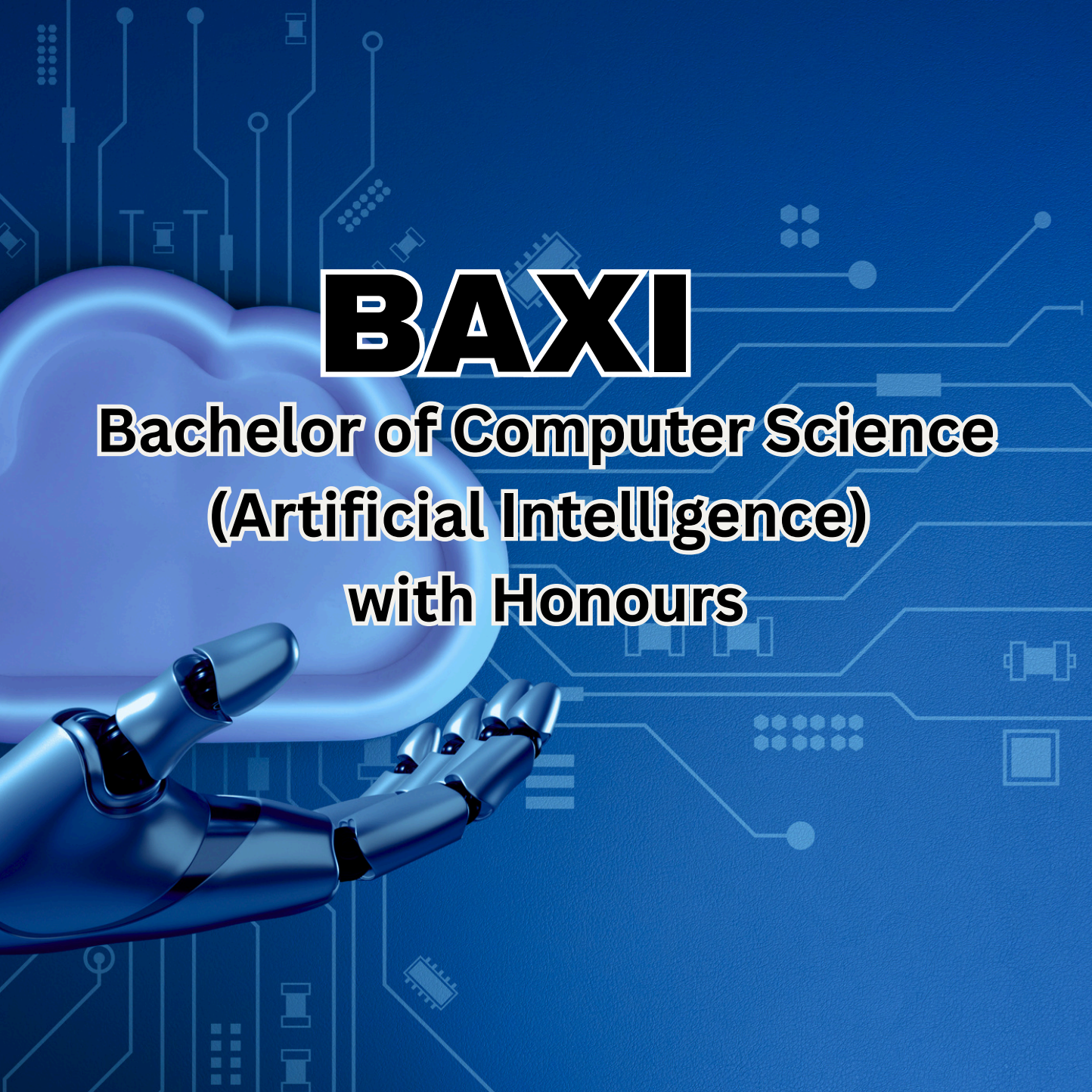
AIXA is the official student society representing all undergraduate students within the faculty which serves as the primary student body that facilitates communication between students, faculty administration, and external stakeholders. This society plays a pivotal role in academic and professional development by organizing workshops, seminars, competitions, community outreach programs, and student welfare initiatives.

AIC focuses on cultivating interest, knowledge, and practical skills in Artificial Intelligence and its subfields, such as machine learning, deep learning, computer vision, and natural language processing. AIC provides a platform for students to collaborate on AI-related projects and research initiatives, often bridging academic theory with hands-on application. While CSS offers a safe and structured environment for students to explore ethical hacking, digital forensics, penetration testing, cyber law, and information security practices through a mix of theoretical and practical activities.

Objectives:

1. To organize events and activities that enhance academic, technical, and soft skills.
2. To build an active and inclusive student community within the faculty.
3. To promote student participation in related competitions, conferences, and exhibitions.
4. To represent and voice student interests and concerns at the faculty and university level.
5. To strengthen ties with industry partners, government, agencies, and alumni.

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BAXI

**Bachelor of Computer Science
(Artificial Intelligence)
with Honours**

Bachelor of Computer Science (Artificial Intelligence) with Honours

(MQA/FA1888)

Programme Details

Bachelor of Computer Science (Artificial Intelligence) with Honours, BAXI, academic programme is offered to prepare graduates with a thorough understanding and superior skills of Computer Science, particularly in the area of Artificial Intelligence. Graduates will also be equipped with advanced scientific knowledge and engineering skills in Artificial Intelligence (AI) to fulfil industry needs especially in the field of information and communication technology (ICT), robotics and manufacturing.

Programme Educational Objectives (PEO)

Four years after graduation, graduates of the Bachelor of Computer Science (Artificial Intelligence) with Honours are expected to become computing practitioners who are able to:

1. provide artificial intelligence solutions to complex computing problems using knowledge and technical skills that meet industry needs.
2. possess leadership characteristics, communication and interpersonal skill in engaging with industry and community.
3. practice lifelong learning with entrepreneurial mind set to improve professional know-how and career development.
4. uphold professional practices and ethics with integrity principles in fulfilling their responsibilities.

Programme Learning Outcomes (PLO)

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

1. analyse computing problems using computer science knowledge.
2. apply appropriate computer science solutions for artificial intelligence problems.
3. construct solutions using appropriate computing methods for complex problems.
4. demonstrate social skills and responsibilities in engaging with society, community and stakeholders.
5. exhibit effective communication through oral and written modes in engaging with society, community and stakeholders.
6. deploy a broad range of software or tools to solve industry computing problems.
7. apply numeracy skills to solve computing problems.
8. demonstrate leadership characteristics and contribute independently as individual or member in a team to solve computing problems.
9. demonstrate capabilities in information management, lifelong learning and independent study.
10. utilise an entrepreneurial mind set in delivering solutions.
11. uphold professionalism, attitudes and ethical values in workplace.

Career Prospects

There is a wide range of career opportunities in the field of computer science and information technology available for graduates who are specialised in AI. Among the career opportunities are:

- | | |
|--|--|
| 1. Knowledge Engineer / AI Engineer / Machine Learning Engineer. | 3. Data Analyst / Data Engineer. |
| 2. Intelligent Systems / Expert Systems Developer. | 4. System Analyst / Programmer / Designer. |
| | 5. Computer / Data Scientist. |
| | 6. Researcher. |

Other than that, the graduates also have the opportunity to further their studies at postgraduate level.

Professional Certification Courses

Professional certification courses are tailored to assist undergraduate students in securing professional certificates or equipping themselves to pursue such credentials. Possessing a professional certificate can add significant value and enhance graduates’ employability.

Undergraduate students will be offered professional certification courses, which are set to take place in Year 2, Semester 3 (Short Semester). Please note that, **the list of courses may be periodically updated to align with industry demands**. Currently, the faculty offers the following professional certifications:

- BAXI 3920 Microsoft Power Apps Profesional Certification.
- BAXZ 2640 Digital Forensic First Responder Professional Certification.

Curriculum Structure

Students are required to complete a minimum of **120** credits to graduate with a Bachelor of Computer Science (Artificial Intelligence) with Honours. The programme components are as follows:

Bachelor’s Degree (Computer Science)		
Minimum graduating credit - 120		
Component	Component’s Code	Credits
General Studies Courses (MPU) and University Courses	W	18
Core Computing	P	18
Discipline Core	P	36
Specialisation	K	24
Free Elective	E	6
Final Year Project	P	6
Industrial Training	P	12
Total Credits		120

Curriculum Structure for Each Semester

Year One: Semester 1

Course Code	Course Name	Comp Code	Contact Hrs		Crdt	Pre-requisite
			Lect	Lab		
BLHW 1772	Philosophy and Current Challenges ¹	W	2	0	2	
BLLW ***2	Third Language ²	W	2	0	2	
BAXU 1113	Programming Technique	P	2	2	3	
BAXU 1123	Computer Organisation and Architecture	P	2	2	3	
BAXU 1323	Database	P	2	2	3	
BAXZ 1313	Data Communication and Networking	P	2	2	3	
Total Credits					16	

¹For International Students, change to BLHW 1762 Philosophy and Current Issues

²For International Students, change to BLLW 1282 Bahasa Melayu Komunikasi 2

Year One: Semester 2

Course Code	Course Name	Comp Code	Contact Hrs		Crdt	Pre-requisite
			Lect	Lab		
BKK* ***1	Co-Curriculum I	W	0	3	1	
BLLW 1142	English for Academic Purposes	W	2	0	2	
BAXU 1213	Operating System	P	2	2	3	
BAXU 1223	System Analysis and Design	P	2	2	3	
BAXU 1143	Data Structures and Algorithms	P	2	2	3	BAXU 1113
BAXI 1113	Artificial Intelligence	P	2	2	3	
BAXI 1233	Discrete Structures	P	2	2	3	
Total Credits					18	

Year Two: Semester 1

Course Code	Course Name	Comp Code	Contact Hrs		Crdt	Pre-requisite
			Lect	Lab		
BLHW 2722	<i>Aspirasi Negara Bangsa</i> ¹	W	2	0	2	
BLLW 2152	Academic Writing	W	2	0	2	BLLW 1142
BAXU 1233	Graphic Visualization and Computational Modelling	P	2	2	3	
BAXU 2113	Algorithm Analysis	P	2	2	3	BAXU 1113
BAXU 3113	Object-Oriented Programming	P	2	2	3	
BAXU 2913	Workshop I	K	1 ²		3	BAXU 1113
BAXI 2123	Computational Intelligence	K	2	2	3	BAXI 1113
Total Credits					19	

¹For International Students, change to BLHW 2762 Malaysian Citra.

²Average official contact hours per week.

Year Two: Semester 2

Course Code	Course Name	Comp Code	Contact Hrs		Crdt	Pre-requisite
			Lect	Lab		
BLHW 2792	Kursus Integriti dan Anti-Rasuah	W	2	0	2	
BAXU 2223	Software Requirements and Design	P	2	2	3	
BAXU 2313	Human Computer Interaction	P	2	2	3	
BAXU 3153	Platform-based Development	P	2	2	3	
BAXI 2223	Machine Learning	K	2	2	3	BAXI 1113
BAXI 2313	Machine Vision	K	2	2	3	BAXI 1113
Total Credits					17	

Year Three: Semester 1

Course Code	Course Name	Comp Code	Contact Hrs		Crdt	Pre-requisite
			Lect	Lab		
BTMW 4012	Technology Entrepreneurship	W	2	0	2	
BKK* ***1	Co-Curriculum II	W	0	3	1	
BAXU 3143	Distributed and Parallel Application Development	P	2	2	3	
BAXU 3923	Workshop II	K	1 ¹		3	BAXU 2913
BAXZ 3423	Information Technology Security	P	2	2	3	
BAXI 3413	Natural Language Processing	K	2	2	3	BAXI 1113
BAXI 3533	Artificial Intelligence Project Management	K	2	2	3	
Total Credits					18	

¹ Average official contact hours per week.

Year Three: Semester 2

Course Code	Course Name	Comp Code	Contact Hrs		Crdt	Pre-requisite
			Lect	Lab		
BLLW 3162	English for Professional Interaction	W	2	0	2	BLLW 2152
BAXU 3463	Professional Practices in Computing	P	2	2	3	
BAXU 3973	Final Year Project I	P	1 ¹		3	BAXU 3923
BAXI 3543	AI-driven Data Science	K	2	2	3	
B*** ***3	Free Elective I	E	2	2	3	
B*** ***3	Free Elective II	E	2	2	3	
Total Credits					17	

¹ Average official contact hours per week.

Year Three: Special Semester

Course Code	Course Name	Comp Code	Contact Hrs		Crdt	Pre-requisite
			Lect	Lab		
BAXU 3983	Final Year Project II	P	1 ¹		3	BAXU 3973
Total Credits					3	

¹Average official contact hours per week.

Year Four : Semester 1

Course Code	Course Name	Comp Code	Duration (weeks)	Crdt	Pre-requisite
BAXU 3926	Industrial Training	P	24	6 (Attend & Pass)	BAXU 3983 ¹
BAXU 3946	Industrial Training Report	P	24	6	BAXU 3983 ¹
Total Credits				12	

¹Completed all Courses.

List of Courses in Third Language

Course Code	Course Name	Contact Hrs		Crdt	Pre-requisite
		Lect	Lab		
BLLW 1212	Arabic 1	1	2	2	
BLLW 1222	Mandarin 1	1	2	2	
BLLW 1232	Japanese 1	1	2	2	
BLLW 1242	Korean	1	2	2	
BLLW 1252	German 1	1	2	2	

List of Courses in Free Elective

Course Code	Course Name	Contact Hrs		Crdt	Pre-requisite
		Lect	Lab		
BAXI 3113	Intelligent Agent	2	2	3	
BITM 2113	Web Application Development	2	2	3	
BITM 3133	Computer Games Development	2	2	3	
BITP 3253	Software Validation and Verification	2	2	3	
BITP 3453	Mobile Application Development	2	2	3	
BITS 2573	Cloud Computing Foundation	2	2	3	
BMIP 3122	Manufacturing Sustainability	2	2	2	
BMTU 1093	Business Statistics	2	2	3	
BTMP 3243	Strategic Innovation Management	2	2	3	
BTMP 3523	Industrial Leadership	2	2	3	
BTMT 3323	Contemporary Business Management	2	2	3	
BTMT 3383	Social Entrepreneurship	2	2	3	

Course Synopsis: General Studies Courses (MPU) and University Courses

BLHW 1762

Philosophy and Current Issues

This course will discuss on the concept of knowledge, ethics and civilisation which emphasize on comparative available systems, social development and multi-cross cultural activities in Malaysia. Besides, this course is stressing on current and contemporary issues discussion related to economy, politic, social, culture and environment based on ethical and civilisational approach. This course will cover the comparative system, developmental phase, social development and cross cultural activities in order to produce a man with positive values.

BLHW 2752

Malaysian Culture

This subject exposes international students to the socio-cultural background of Malaysia which includes ethnic composition, religions, traditions and values. Other elements like music, arts, cuisine, costume, ethnic games, celebrations and national festivals are also highlighted. Student Centered Learning (SCL) methods such as group discussion and presentation will be used in order to assist international students in developing their understanding and appreciation of Malaysian culture.

BLLW 1282

Bahasa Melayu Komunikasi 2

Synopsis:

Kursus ini memperkenalkan susuk tatabahasa bahasa Melayu. Pelajar didedahkan dengan aspek-aspek nahu, klausa, terminologi, binaan ayat, penjodoh bilangan dan unsur sastera. Diharapkan pelajar dapat menguasai pertuturan atau berkomunikasi dengan baik dan mudah berdasarkan kemampuan pelajar asing.

BLHW 1772**Philosophy and Current Issues**

This course explains the foundations and frameworks of philosophical thought that underlie the development of Malaysian society, emphasizing key concepts such as the Rukun Negara (National Principles), the National Philosophy of Education, the Sejahtera concept, and the Malaysia MADANI framework. The application of philosophical analysis as a thinking tool is introduced as a systematic intellectual approach to understanding and addressing various contemporary life challenges. Through exposure to the main components of philosophy, students will be trained to analyze contemporary issues and develop the capacity to think critically and reflectively. By the end of the course, students are expected to be able to evaluate and formulate strategies based on philosophical approaches to confront future challenges, thereby contributing to the creation of an inclusive, prosperous, and visionary Malaysian society.

BLLW 1142**English for Academic Purposes**

This course aims to develop students' reading skills and grammar. A variety of academic reading texts and reading skills are explored to facilitate students' comprehension of the texts. These reading skills are also necessary in assisting students to master study skills. Grammar elements are taught in context to develop students' accuracy in the use of the language. This course also includes elements of blended learning.

BLLW 2152**Academic Writing**

This course aims to equip the students with the skills to communicate clear and detailed viewpoints in writing. The students are expected to have a stand on topics of their fields by providing advantages and disadvantages to support their arguments. From time to time, consultations with the students will be conducted throughout the completion of their assignments. This serves as the formative evaluation in the course. Grammar components are embedded in the course to support the required writing skills. Blended learning is incorporated in this course.

BLLW 3162**English for Professional Interaction**

This course which is designed based on a blended and student-centred learning approach aims to develop students' listening skills as well as communication skills and strategies. Among the elements covered are professional interactions that include group discussion and public speaking. Students are also required to express ideas with relevant examples in public speaking and online assessments. They are also exposed to the rudiments of grammar implicitly via the communicative activities.

BTMW 4012**Technology Entrepreneurship**

The subject provides students with technological knowledge about entrepreneurship as well as the skills to turn such knowledge into practice. The teaching and learning (T&L) activities include case study and field work with the aim to inculcate entrepreneurship values and entrepreneurship acculturation with a view to successfully launch and subsequently manage their enterprises. Students will be exposed with the support systems available or government agencies in starting new ventures, including the tactics commonly employed by entrepreneurs starting a business. The subject allows students to critically evaluate business in terms of technical feasibility, investment potential and risks.

BLHW 2792***Kursus Integriti dan Anti Rasuah***

Kursus Integriti dan Anti Rasuah (KIAR) ini bertujuan memperkenalkan kepada para pelajar mengenai amalan integriti dan pengurusan pencegahan rasuah dalam masyarakat serta organisasi. Penekanan akan diberikan kepada teori dan amalan berkaitan nilai integriti dan pencegahan rasuah, isu, permasalahan dan cabaran pengurusan jenayah rasuah dalam masyarakat dan organisasi. Aktiviti pembelajaran merangkumi latihan dalam kumpulan, simulasi, penulisan dokumen rasmi dan kerja lapangan dalam masyarakat pelbagai sektor (sektor awam, swasta, NGO, politik dan pelajar).

BLHW 2752**Malaysian Citra**

This course offers a comprehensive introduction to Malaysia, encompassing the country's historical evolution, geographical diversity, rich cultural heritage, and socio-political development. Students will explore the formation of modern Malaysia, its multicultural society, linguistic landscape, and unique traditions. This course also emphasizes Malaysia's traditional arts and cultural assets, including elements recognized by UNESCO. Students will gain foundational knowledge regarding Malaysia's political and administrative framework, federal structure, and Westminster-style Constitutional Monarchy. In addition, the course examines Malaysia's economic transformation, key industrial sectors, and current challenges within the context of digital and sustainable development. Malaysia's position as an international tourism hub, along with its global achievements in diplomacy, sports, and trade, will also be highlighted. The final section of the course focuses on Malaysia's future prospects, particularly regarding smart cities, climate change, youth engagement, and innovation. Through this course, students will develop a comprehensive understanding of Malaysia's national identity and its evolving role on the global stage. The teaching and learning process, conducted through experiential learning, lectures, and assignments, enables students to acquire key knowledge and appreciate the lived realities of life in Malaysia.

BLHW 2782**Malaysian Nation-State Aspiration**

This course explores the foundations of the formation and development of the Malaysian nation-state, emphasizing elements of statehood, the history of inter-ethnic interaction, and the uniqueness of Malaysian society. The course also discusses the theoretical framework of unity, the concept of a nation-state, and the vision of an “Ideal Malaysian Nation” (Bangsa Malaysia Idaman) centered on the values of the Rukun Negara (National Principles), Wawasan 2020, Malaysia MADANI, and other national initiatives. In addition, this course exposes students to current realities, including regional and territorial sentiments, as well as the challenges of building a harmonious and inclusive society. Emphasis is also placed on the influence and impact of technology and climate change on the aspirations of nation-state development, aligned with the Sustainable Development Goals (SDGs) agenda. The teaching and learning of this course will reinforce students’ understanding of Malaysia’s aspirations as a progressive and tolerant nation, emphasizing common values such as goodwill (muhibah), acceptance, harmony, and shared responsibilities.

Third Language Courses

BLLW 1212

Arabic 1

This course is designed for students who do not have prior knowledge in Arabic. It provides students with the foundation of knowledge to enable them to understand and respond in the oral and written forms. This course encompasses the listening, speaking, reading and writing components. This course aims to help students to obtain enough exposure of the Arabic language skills. The basic grammar introduced is related to the language used daily in conversation. Particular care is also taken to ensure the development of verbal communication and written skills in Arabic.

BLLW 1222

Mandarin 1

This course is designed for students who do not have prior knowledge in Mandarin. It provides students with the foundation of knowledge to enable them to understand and respond in the oral and written forms. This course encompasses the listening, speaking, reading and writing components. This course aims to help students to obtain enough exposure of the Mandarin phonetics (Han Yu Pin Yin). The basic grammar introduced is related to the language used daily by the Chinese. Particular care is also taken to ensure the development of verbal communication and written skills in Mandarin.

BLLW 1232

Japanese 1

This course is designed for students who do not have any background in Japanese. It provides students with the knowledge to enable them to understand and communicate in the oral and written forms. This course encompasses the listening, speaking, reading and writing components. The grammar introduced is related to the language used daily by the Japanese. In addition, two types of Japanese language writing systems; Hiragana and Katakana are also introduced. Students are also exposed to elementary reading materials.

BLLW 1242

Korean

This course is designed for students who do not have prior knowledge in Korean. It provides students with the foundation of knowledge to enable them to understand and respond in the oral and written forms. This course encompasses the listening, speaking, reading and writing components. This course aims to help students to obtain basic knowledge about Korean language. The basic grammar introduced is related to the language used daily by the Korean. Particular care is also taken to ensure the development of verbal communication and written skills in Korean.

BLLW 1252**German 1**

This course is designed for students who do not have prior knowledge in German. It provides students with the foundation of knowledge to enable them to understand and respond in the oral and written forms. This course encompasses the listening, speaking, reading and writing components. This course aims to help students to obtain basic exposure of the German phonetics. The basic grammar introduced is related to the language used daily by the German. Particular care is also taken to ensure the development of verbal communication and written skills in German.

Course Synopsis: Core Computing Courses

BAXU 1113 **Programming Technique**

This course covers the introductory topics in programming using C++ language. It includes the introduction to computers and programming as well as the fundamentals of programming, problem solving and software development. Data types and operators, selection, repetition, function, array, file, structured data and pointer are among the topics covered in the course.

BAXU 1123 **Computer Organisation and Architecture**

This course provides a detail of computer system's functional components, characteristics, performance and interactions including system bus, different types of memory and Input / Output and CPU, as well as practical implementations of the components. Besides that, the architectural issues such as instruction set design and data types are covered. This course includes digital circuit design and its application in microprocessor architecture.

BAXU 1213 **Operating System**

This course is designed to give an exposure to students about basic concepts, theory and technology used in operating system such as concurrency, kernel, deadlock and multithreading. Student will learn about the fundamental of operating system including process, management of memory, file, I/O and CPU scheduling. In addition, students will be introduced to Linux operating system at basic administrative level.

BAXU 1223 **System Analysis and Design**

Students will be introduced to a variety of information systems and system development lifecycles. Then, the system development methodology will be explained with different approaches - structured approach and object-oriented approaches. Next, it discusses the planning phase with a focus on project identification, selection, initiation, and planning. The analysis phase will emphasize the determination and structuring of user requirements. The design phase then discusses the database, input, output, interface, and dialogue design. The final phase of system development will cover the implementation and software quality assurance. Object-oriented concepts with common UML diagrams are also introduced in general as different approaches to system analysis and design methodology.

BAXU 1323**Database**

This course provides a comprehensive introduction to the core concepts and practical skills necessary for effective database management. Students will gain a solid foundation in understanding databases, data modeling, executing SQL queries, and developing simple database systems. At the end of this course, students will have gained a comprehensive understanding of database fundamentals and the practical skills required to design, manage, and interact with databases effectively. The course will prepare students to step into roles as database designers and developers, enabling them to apply their knowledge in diverse professional environments and providing a solid foundation for further studies in advanced database courses.

BAXZ 1313**Data Communication and Networking**

This course introduces the fundamental concepts and terminology of data communication and networking, encompassing both technical and managerial aspects and to help students better understand the challenges and opportunities faced by modern business. Topics will include: fundamentals of telecommunications, data transmission mechanisms, telecommunication media and technologies, considerations for LAN and WAN implementations, the internet and intranet applications, emerging telecommunications technologies, and trends in the telecommunications industry. Students will also be able to understand, explain and apply the fundamentals of data communication and network technology concepts and skills in network applications, troubleshooting, and configuring basic computer networks using guided or unguided media.

Course Synopsis: Discipline Core Courses

BAXI 1113

Artificial Intelligence

Students are exposed to the basic and branches of Artificial Intelligence such as the various search techniques, knowledge representation and reasoning, inference techniques, learning from experience and planning. Besides, some applications of AI including game playing, expert systems and machine learning will be introduced.

BAXU 1143

Data Structures and Algorithms

This course will expose the students in data structures and algorithms. The basic concept in structure, class, array and pointer is discussed in order to understand the fundamental of data structures and algorithms. The course will focus on data structures such as list, stack, queue, tree, searching and hash while sorting, graph and heaps topics will concentrate on the algorithms. Algorithm efficiency for run time will also be discussed. Pseudo code and C++ programming language will be used for algorithm implementation. Apart from the theory, the students are asked to apply the data structures and algorithms through small application that is developed in a team.

BAXI 1233

Discrete Structures

This course introduces the fundamental concepts and techniques of Discrete Mathematics that are needed for computer science. It includes logic, sets, functions, counting, relations, graphs and trees along with their applications to problems in computer science.

BAXU 1233

Graphics Visualisation and Computational Modelling

This course offers an interdisciplinary approach to graphics visualization and computational modeling. Students will learn to create impactful graphics for data representation and explore computational methods for modeling real-world phenomena. Through hands-on projects, they'll gain proficiency in graphic design tools, data visualization techniques, and computational modeling software. By course completion, students will possess the skills to visualize data effectively, analyze models, and communicate insights across various disciplines.

BAXU 2113**Algorithm Analysis**

This course aims to develop students' knowledge in algorithm analysis. Students will be introduced to abstract data type (ADT) concept. The course then introduces the analysis of algorithm efficiency, followed by problem-solving using recursion. Students will learn essential data structures like linear and linked list, stack, queue, tree, graph and heaps, along with the operations for maintaining them. This course will also enable students to analyze source codes by taking into consideration the efficiency of algorithms. The course then discusses various common searching and sorting algorithms, followed by problem-solving using greedy and string matching algorithms. Throughout the semester, students will also be exposed on applying algorithms complexity in solving various problems.

BAXU 2313**Human Computer Interaction**

This subject introduces the concept of HCI and its relationship in system/application development. It focuses on optimizing user experiences and making technology more accessible as well as user-friendly. The topics include the basic understanding of multidisciplinary aspect of HCI comprises cognitive psychology, user interface design, interaction design, usability, and evaluation. Other current topics such as universal access, assistive technologies and culture-sensitive design are also discussed in this course.

BAXU 2223**Software Requirements and Design**

This course introduces the students to the object oriented approach using UML to apply Object Oriented Analysis and Design (OOAD) towards developing software project. This course covers UML modeling to capture requirements in use cases, perform analysis modeling to produce interaction diagrams; static and dynamic, and identifies design elements in classes. The students will be taught to know sources of requirement, major activities in requirement analysis, knowing tools in requirements management and identify classes via use case analysis, defining relationships and outlining attributes and methods. In design phase, the students will be exposed to designing software architecture, high level and detail design which will be realized through refined class diagram, component diagram and deployment diagram.

BAXU 3113**Object-Oriented Programming**

This subject will discuss the concept of object-oriented approach by using object-oriented programming language. The student will be able to apply and construct the object-oriented programming basic structures (such as polymorphism, inheritance, encapsulation and abstraction), GUI, event handling, exception handling, and database. The student should be able to develop a complete application with a database.

BAXU 3143**Distributed and Parallel Application Development**

This course introduces the concepts of distributed and parallel computing. Topics covered include architectural patterns, I/O fundamentals, distributed application development with TCP and UDP programming, multithreading, concurrency, the Fork/Join framework, and performance testing of Fork/Join applications. Upon completion of this course, students will be able to understand the fundamental concepts of distributed and parallel computing, apply architectural patterns to design distributed and parallel applications, use I/O effectively in distributed and parallel applications, develop distributed applications using TCP and UDP programming, understand the basics of multithreading, apply concurrency concepts to design and develop parallel applications, use the Fork/Join framework to develop parallel applications, and perform performance testing of Fork/Join applications.

BAXU 3463**Professional Practices in Computing**

This subject provides an in-depth examination of the societal effects and real-world uses of technology. Students will learn the importance of interdisciplinary project development and effective communication. This subject also examines the social implications of technology and user-centric approaches towards developing a quality computing solution.

BAXU 3153**Platform-based Development**

Recent developments in the evolution of computing have addressed diverse social and industry needs requiring the collection of different platforms. This course concentrates on designing and developing software applications for specific platforms, with particular attention to web and mobile platforms. This platform-based development involved working with ecosystems and environments that are resource-constrained, feature-restricted, and energy-efficient. Thus, the skills of developing concerning services, APIs, and hardware are covered within the course curriculum, including programming paradigms, component libraries, and security. This course involves significant practical programming components focusing on different platform concepts with a broad range of theoretical and technical advances.

BAXZ 3423**Information Technology Security**

Security in Information Technology is a very important issue. It is an area that deserves study by computer professionals, students, and even many computer users. Through this subject, student will be able to learn security services that covered Confidentiality, Integrity and Availability (CIA) in ICT based system. This subject also highlights use of cyberlaw in protecting user rights. Finally, students will be able to learn methods in disaster recovery plan.

Course Synopsis: Specialisation Courses

BAXI 2123

Computational Intelligence

This course provides the fundamental knowledge of intelligent systems and their capacity to solve real-world challenges using algorithms inspired by nature. It focuses on core computational intelligence (CI) techniques, specifically, neural networks (NN), fuzzy systems (FS), and evolutionary computation (EC). The course aims to guide students in exploring the foundational aspects of CI, including key concepts and characteristics of CI approaches, and how the three main constituents of CI can be used together for problem-solving. In addition, this course adopts a practical approach by showcasing practical applications of CI techniques. This is to apply the theoretical understanding and implement CI algorithms for addressing real-world problems.

BAXI 2223

Machine Learning

This course provides an introduction to machine learning and deep learning. Students will learn a range of techniques, starting with simple linear regression and progressing to deep neural networks. In addition, various applications of machine learning, including sentiment analysis, natural language processing, image prediction, product recommendation, and computer vision, will be introduced.

BAXI 2313

Machine Vision

This course introduces the field of machine vision and robotics, focusing on principles rooted in Artificial Intelligence (AI). Students will explore the fundamental concepts necessary to develop intelligent robots and devices, addressing applications that involve digital image processing, sensing, navigation, and uncertainty. The syllabus covers not only theoretical foundations but also practical aspects, including mobile robotics and computer vision programming. Additionally, attention is given to health and safety considerations in the context of implementing AI techniques in machine vision and robotics. Upon completion, students will possess the knowledge and skills to apply key AI concepts, construct practical programming solutions, and effectively organize the steps in solving machine vision and robotics problems.

BAXI 3413

Natural Language Processing

Natural language processing (NLP) deals with the application of computational models to text or speech data. This course provides knowledge to students about natural language processing (NLP). Topics covered are morphology (word formation), NLP tasks including syntax analysis (sentence structure and parsing), semantic analysis (meaning), and discourse analysis (pronoun resolution) and NLP applications such as machine translation, information retrieval and extraction, question-answering systems, and dialog systems.

BAXI 3533

Artificial Intelligence Project Management

This course provides students with fundamental discipline in managing artificial intelligence project. The course exposes students to a variety of techniques to manage people, budget, schedule, risk and quality of artificial intelligence project. The course also provides skills to the students on how to analyse potential problems in managing project that they would responsible with the stakeholders.

BAXI 3543

AI-Driven Data Science

This course delivers an essential exposure on the fundamental concepts and techniques of data science. It is divided into two parts. Part 1 is the introductory lecture and guided practical session for the first 5 weeks. The main topics covers the five important phases in understanding data science: introduction to data science, data wrangling, exploratory data analysis, data manipulation, applied machine learning, and data visualization and communication. Part 2 is a guided capstone project for another 9 weeks. The capstone project provides a platform to the students to applied their previously learn knowledge especially in artificial intelligent, statistics, analytics, project managements and data science in a real project setting. The last 3 weeks is the project presentation and technical report submission. There is no final written examination for this course.

BAXU 2913

Workshop I

This course aims to provide exposure and skills to the students in submitting and presenting a project of application/system development individually. Students must use the knowledge that had been learned to solve problems and think creatively to get result that achieved the objective and scope of the proposed project. Students must use the techniques learned in programming technique and system development subjects to assure that the project built will have a logical process flow and in precise with the system's criteria of robustness, consistent, have an interesting interface and able to handle error in data input/output process. At the end of this course, students must present and debate to defend the project that had been built. The process of supervision/evaluation is handled in terms of supervision and progress evaluation by a supervisor within 12 weeks besides the presentation evaluation by an evaluator. Workshop I is also functioned as the platform to prepare the students for their industrial training program.

BAXU 3923

Workshop II

This project provides an opportunity to the student to practice their knowledge and experience gained from previous subjects. This subject also develops the students understanding of problem-solving techniques to solve a particular problem based on their respective project scopes. The project scope is based on their majoring, and they are required to develop their projects in groups of four or five.

Course Synopsis: Free Electives Courses

BAXI 3113

Intelligent Agent

This course will cover the underlying theory of agents, the common agent architectures, methods of cooperation and communication, and the potential applications for agents. Students will be exposed to the concept of intelligent agent and multi agent systems. Students will also construct their own agents for solving different types of problems. The potential applications of agents are numerous including web search assistants, travel advisors, electronic secretaries, bidders in on-line auctions, tutoring systems, and actors in games or simulations.

BITM 2113

Web Application Development

The purpose of this course is to provide students with a comprehensive understanding of the tools and problem-solving techniques related to building effective World Wide Web sites. It emphasizes 4 components in developing web applications which are: client site technologies: HTML, XHTML, HTML5, CSS, JavaScript, jQuery; server site technologies: PHP; database server: MySQL; and web servers: Apache. This course also brings together all of the elements of web site design, graphics, animation, data storage in the construction of fully functional commercial web site applications.

BITM 3133

Computer Games Development

This course is conducted to give exposures to students on the principles, fundamentals and the technologies behind developing a computer game. Students will learn how gaming experience can be created throughout the process of designing and development a computer game. Some of the topics which the students will learn includes the game concepts, character development, game balancing as well as the game genre such as action games, adventure games, puzzle games and construction management games. Students will also be able to perform problem solving skills during the design and the development of a computer game for the project.

BITP 3253

Software Validation and Verification

This course gives exposure to the students about the software testing concept and focus on process to develop and implement testing plan, testing strategy, software check, unit testing, integration testing, system testing and acceptance testing. The students will implement software quality assurance activity such as quality requirement, quality criteria, software metrics, software quality model, software evaluation, review, audit and accreditation.

BITP 3453**Mobile Application Development**

This course exposes the students to the development of mobile application development focusing on Android. Students are to be exposed to the introduction of native and hybrid application development as well as multi-threading programming and client server interaction via web services.

BITS 2573**Cloud Computing Foundation**

This course teaches the student on how to develop technical proficiency in cloud computing and launch or pivot to careers in a cloud-first world. It will provide a detailed overview of concepts covering cloud basics, big data, and machine learning and where and how Cloud Computing fits in. Starts with an overview of cloud computing and then dives deeper into two areas - cloud computing infrastructure, and big data and machine learning. By the end of the course, students will be able to articulate concepts around cloud computing, big data, and machine learning and demonstrate some hands-on skills.

BMIP 3122**Manufacturing Sustainability**

This course is designed to provide students with an understanding of sustainability issues, the concepts and the scope of Sustainable Manufacturing (SM), the strategies in SM, the management approaches in SM, and tools commonly used in SM. In the current situation, integrating sustainability into business process will enhance the business's total performance and competitiveness. Skills developed and knowledge acquired from this course will prepare students to be environmentally conscious engineers who are sensitive to environment, economic and social/community related problems and capable to solve those problems and enhance total performance of industries.

BMTU 1093**Business Statistics**

This course is related to the application of applied statistics used for problem solving in conducting any business operation. The topics include introduction to statistics, data classification, graphic presentation, central tendency measurement, frequency of spread distribution measurement, concepts of probability, probability distribution, sampling distribution, interval estimation, hypothesis testing, chi-square distribution, variance analysis (ANOVA), simple linear regression analysis, and correlation analysis. Knowledge acquired will arm students with the competencies in statistics for analyzing and solving daily business problems.

BTMP 3243**Strategic Innovation Management**

This subject discusses strategic imperatives in research implementation and innovation management. Topics include developing research and innovation processes, as well as technology and innovation strategic management. Students will acquire the necessary knowledge and skills in innovation processes and management. The subject also discusses intellectual property rights. Case studies will be incorporated to enhance students' understanding on strategic innovation management.

BTMP 3523**Industrial Leadership**

This subject discussed the concepts, theories, strategies and elements of leadership in organizations. Among the topics which also will be discussed are the leadership characteristics, leadership and motivation, empowerment, leadership power and influence, shaping values and culture in the workplace, leading team and leading innovation.

BTMT 3323**Contemporary Business Management**

This subject is designed to develop business talent for the future world of production. Students will be guided through the process of creating, analyzing, planning and implementing disruptive and innovative business models with its operational strategies pertaining to the Industry 4.0. Students will be exposed to the theoretical and hands-on exercises of Industry 4.0 business management to enable them to apprehend the concept of the 4th Industrial Revolution. Topics discussed will include the Emergence of Business Model 4.0, 4.0 Products and Services, Industrial Internet of Things (IoT), Cyber-Physical System, Digital Business Transformation, Digital Enterprise, Smart Factory, Intelligent Robots and Intelligent Production and Manufacturing. In the hands-on exercises, students will use visualization software as well as stationary modules or simulators. Students are expected to acquire the skills and knowledge to utilize the Industry 4.0 model in the current and future global marketplace. These would enhance their professional career as a technopreneur, executive or consultant in the field of Industry 4.0 transformation. By the end of this course, students should be able to define, discuss, understand and apply the business strategies and tactics learnt in the context of Industry 4.0.

BTMT 3383**Social Entrepreneurship**

This course explores the approaches of social innovation and social entrepreneurship (SISE) used by social entrepreneurs to develop innovative social business models and breakthrough solutions to pressing social problems. Students learn about the full range of social business models, including non-profit organisations, businesses that produce income-generating products or services for a social purpose, and socially responsible for-profit businesses. Students must understand how social enterprises use the SISE to develop business models that provide innovative solutions to deep-rooted social challenges. Students will also critically engage with social problems in communities and create innovative strategies for transformative social change. For the course's final project, students will need to design and manage viable SISE projects that target the social beneficiaries or communities they want to transform.

Course Synopsis: Final Year Project

BAXU 3973 **Final Year Project I**

This course joins together all the subjects learnt from year one of the studies including to analyse and to design a specific system, the application of database, algorithm and data structure, web programming, data communication, etc. It is compulsory to the final year students to develop a Final Project and to attend the offered courses.

BAXU 3983 **Final Year Project II**

This course joins together all the subjects learnt from year one of the studies including to analyse and to design a specific system, the application of database, algorithm and data structure, web programming, data communication, etc. It is compulsory to the final year students to develop a Final Project and to attend the offered courses.

Course Synopsis: Industrial Training

BAXU 3926 **Industrial Training**

Students must do the internship no less than 24 weeks in an organisation which they have chosen. Throughout the internship, students are guided and monitored by the industrial supervisor. Students are required to report their internship's activities in their log book. The faculty supervisor will visit the student twice: one after 2 weeks of internship and another will be near the end of the 24 week period. During the second visit, students are required to do a presentation at the organisation in attendance of both Industrial and Faculty supervisor. Students must also submit a copy of Industrial Training Report to the faculty supervisor for evaluation.

BAXU 3946 **Industrial Training Report**

Students must do the internship no less than 24 weeks in an organisation which they have chosen. Throughout the internship, students are guided and monitored by the industrial supervisor. Students are required to report their internship's activities in their log book. The faculty supervisor will visit the student twice: one after 2 weeks of internship and another will be near the end of the 24 week period. During the second visit, students are required to do a presentation at the organisation in attendance of both Industrial and Faculty supervisor. Students must also submit a copy of Industrial Training Report to the faculty supervisor for evaluation.

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The background is a vibrant blue digital theme. It features a network of glowing white lines and nodes, some of which are hexagonal and contain icons like a laptop, a cloud, a person, and a location pin. On the right side, there is a large, glowing padlock icon composed of a grid of dots. The overall aesthetic is high-tech and secure.

BAXZ

**Bachelor of Computer Science
(Computer Security)
with Honours**

Bachelor of Computer Science (Computer Security) with Honours

(MBOT/FA/IT/0/02/0015)

Programme Details

Bachelor of Computer Science (Computer Security) with Honours, BAXZ, is aimed to produce highly knowledgeable and skilful graduates in the field of security related to computer science and information technology. Graduates are competent in advanced specialised knowledge and skill to analyse, design, install, configure, implement, administer, maintain and monitor the security infrastructure.

Programme Educational Objectives (PEO)

Four years after graduation, graduates of the Bachelor of Computer Science (Computer Security) with Honours are expected to become computing practitioners who are able to:

1. have strong knowledge of sciences, engineering and technology in their profession.
2. attain knowledge of contemporary issues in technology through research and life-long learning activities.
3. ability to function as an effective team player with the capability to lead and appreciate team work and leadership qualities.
4. appreciate and uphold professional attitudes and ethics necessary in fulfilling their responsibilities towards the Almighty, clients and the society.

Programme Learning Outcomes (PLO)

The aim of the Bachelor of Computer Science (Computer Security) programme is to produce students with the following characteristics:

1. able to apply knowledge of computer science and information technology.
2. able to analyse, design and develop ICT applications.
3. able to analyse, create, assemble, configure, implement, manage, maintain and administer network infrastructure and security.
4. able to analyse and design the physical and cybersecurity policy.
5. able to obtain recognition from professional bodies.
6. able to resolve problems in creative way and able to communicate effectively.
7. able to contribute individually or in a team in various disciplines and domains.
8. able to lead with ethics and have entrepreneurship skills.
9. able to perform continuous self-learning to obtain knowledge and skills.

Career Prospects

There is a wide range of career opportunities in the field of computer science and information technology available for graduates who are specialised in Computer Security, either in the government sector or private sector, as well as undertaking business ventures of their own. Among the career opportunities are:

- | | |
|--|--|
| 1. Computer Security Executive / Consultant. | 4. System Analyst. |
| 2. Network Security Administrator / Manager / Executive / Engineer / Consultant. | 5. Information Technology Executive. |
| 3. System Security Administrator / Manager / Consultant. | 6. Information Technology Project Manager. |
| | 7. Researcher. |

Other than that, the graduates also have the opportunity to further their studies at postgraduate level.

Professional Certification Courses

Professional certification courses are tailored to assist undergraduate students in securing professional certificates or equipping themselves to pursue such credentials. Possessing a professional certificate can add significant value and enhance graduates’ employability.

Undergraduate students will be offered professional certification courses, which are set to take place in Year 2, Semester 3 (Short Semester). Please note that, **the list of courses may be periodically updated to align with industry demands**. Currently, the faculty offers the following professional certifications:

- BAXI 3920 Microsoft Power Apps Profesional Certification.
- BAXZ 2640 Digital Forensic First Responder Professional Certification.

Curriculum Structure

The minimum number of credits required for an award of Bachelor of Bachelor of Computer Science (Computer Security) with Honours is **120**. The breakdown of course categories and credits required are as follows:

Bachelor’s Degree (Computer Science)		
Minimum graduating credit - 120		
Component	Component’s Code	Credits
General Studies Courses (MPU) and University Courses	W	18
Core Module	P	45
Specialisation Module	K	30
Free Elective	E	9
Final Year Project	P	6
Industrial Training	P	12
Total Credits		120

Curriculum Structure for Each Semester

Year One : Semester 1

Course Code	Course Name	Comp Code	Contact Hrs		Crdt	Pre-requisite
			Lect	Lab		
BKK* ***1	Co-Curriculum I	W	0	3	1	
BLHW 1772	Philosophy and Current Challenges ¹	W	2	0	2	
BLLW 1142	English for Academic Purposes	W	2	0	2	
BAXI 1213	Linear Algebra and Discrete Mathematics	P	2	2	3	
BAXU 1113	Programming Technique	P	2	2	3	
BAXU 1123	Computer Organisation and Architecture	P	2	2	3	
BAXU 1133	Multimedia System	P	2	2	3	
Total Credits					17	

¹For International Students, change to BLHW 1762 Philosophy and Current Issues

Year One : Semester 2

Course Code	Course Name	Comp Code	Contact Hrs		Crdt	Pre-requisite
			Lect	Lab		
B*** ***2	Third Language ¹	W	2	0	2	
BAXI 1223	Calculus and Numerical Methods	P	2	2	3	
BAXU 1143	Data Structure and Algorithm	P	2	2	3	BAXU 1113
BAXU 1323	Database	P	2	2	3	
BAXU 2313	Human Computer Interaction	P	2	2	3	
BAXZ 1313	Data Communication and Networking	P	2	2	3	
Total Credits					17	

¹For International Students, choose BLLW 1282 Bahasa Mealyu Komunikasi 2.

Year Two : Semester 1

Course Code	Course Name	Comp Code	Contact Hrs		Crdt	Pre-requisite
			Lect	Lab		
BKK* ***1	Co-Curriculum II	W	0	3	1	
BLLW 2152	Academic Writing	W	2	0	2	BLLW 1142
BAXI 1113	Artificial Intelligence	P	3	2	3	
BAXI 2233	Statistics and Probability	P	2	2	3	
BAXU 1213	Operating System	P	2	2	3	
BAXU 2913	Workshop 1	P	1 ¹		3	BAXU 1113
BAXZ 2343	Computer Network	K	2	2	3	
Total Credits					18	

¹ Average official contact hours per week.

Year Two : Semester 2

Course Code	Course Name	Comp Code	Contact Hrs		Crdt	Pre-requisite
			Lect	Lab		
BAXU 2213	Software Engineering	P	2	2	3	
BAXU 3113	Object-oriented Programming	P	2	2	3	
BAXZ 2413	Network Security Infrastructure and Design	K	2	2	3	
BAXZ 2423	Physical Security and Electronic Surveillance	K	2	2	3	
BAXZ 2523	Cyber Law and Security Policy	K	2	2	3	
BAX* ***3	Elective I	E	2	2	3	
Total Credits					18	

Year Three : Semester 1

Course Code	Course Name	Comp Code	Contact Hrs		Crdt	Pre-requisite
			Lect	Lab		
BLHW 2722	<i>Aspirasi Negara Bangsa</i> ¹	W	2	0	2	
BAXU 3923	Workshop 2	K	1 ²		3	BAXU 2913
BAXZ 3353	Network Security Administration and Management	K	2	2	3	
BAXZ 3363	Network Security Project Management	K	2	2	3	
BAXZ 3463	Cryptography Application and Information Theory	K	2	2	3	
BAX* ***3	Elective II	E	2	2	3	
Total Credits					17	

¹For International Students, choose BLHW 2762 Malaysian Citra.

²Average official contact hours per week.

Year Three : Semester 2

Course Code	Course Name	Comp Code	Contact Hrs		Crdt	Pre-requisite
			Lect	Lab		
BLHW 2792	Kursus Integriti dan Anti Rasuah	W	2	0	2	
BLLW 3162	English for Professional Interaction	W	2	0	2	BLLW 2152
BTMW 4012	Technology Entrepreneurship	W	2	0	2	
BAXU 3973	Final Year Project 1	P	1 ¹		3	BAXU 3923
BAXZ 3523	Computer Audit and Risk Management	K	2	2	3	
BAXZ 3613	Hacking Techniques and Prevention	K	2	2	3	
BAX* ***3	Elective III	E	2	2	3	
Total Credits					18	

¹Average official contact hours per week.

Year Three : Special Semester

Course Code	Course Name	Comp Code	Contact Hrs		Crdt	Pre-requisite
			Lect	Lab		
BAXU 3983	Final Year Project 2	P	1 ¹		3	BAXU 3973
Total Credits					3	

¹Average official contact hours per week.

Year Four : Semester 1

Course Code	Course Name	Comp Code	Duration (weeks)	Crdt	Pre-requisite
BAXU 3926	Industrial Training	P	24	6 (Attend & Pass)	BAXU 3983 ¹
BAXU 3946	Industrial Training Report	P	24	6	BAXU 3983 ¹
Total Credits				12	

¹Completed all Courses.

List of Courses in Third Language Course and Elective Category

Below is the list of courses offered in Third Language Course and Elective category that can be selected as part of the curriculum, respectively. For Elective courses, list of courses offered can be changed from time to time in accordance with industry needs.

Course Code	Course Name	Contact Hrs		Crdt	Pre-requisite
		Lect	Lab		
Third Language Course					
BLLW 1212	Arabic 1	1	2	2	
BLLW 1222	Mandarin 1	1	2	2	
BLLW 1232	Japanese 1	1	2	2	
BLLW 1242	Korean	1	2	2	
BLLW 1252	German 1	1	2	2	
Elective Courses (Subject to Course availability)					
BAXZ 3443	Digital Forensics	2	2	3	
BAXZ 3453	Malware Analysis and Digital Investigation	2	2	3	BAXZ 3443
BAXZ 3473	Watermarking and Steganography	2	2	3	BAXZ 3463
BITM 2113	Web Application Development	2	2	3	
BITS 2513	Internet Technology	2	2	3	
BITS 2573	Cloud Computing Foundation	2	2	3	
BITS 3513	TCP/IP Programming	2	2	3	BAXU 1113
BITS 3533	Wireless Network and Mobile Computing	2	2	3	BAXZ 1313

Course Synopsis: General Studies Courses (MPU) and University Courses

BLHW 1762

Philosophy and Current Issues

This course will discuss on the concept of knowledge, ethics and civilisation which emphasize on comparative available systems, social development and multi-cross cultural activities in Malaysia. Besides, this course is stressing on current and contemporary issues discussion related to economy, politic, social, culture and environment based on ethical and civilisational approach. This course will cover the comparative system, developmental phase, social development and cross cultural activities in order to produce a man with positive values.

BLHW 2752

Malaysian Culture

This subject exposes international students to the socio-cultural background of Malaysia which includes ethnic composition, religions, traditions and values. Other elements like music, arts, cuisine, costume, ethnic games, celebrations and national festivals are also highlighted. Student Centered Learning (SCL) methods such as group discussion and presentation will be used in order to assist international students in developing their understanding and appreciation of Malaysian culture.

BLHW 2772

Penghayatan Etika dan Peradaban

Kursus ini membincangkan tentang konsep ilmu, etika serta peradaban yang berunsurkan perbandingan sistem, kemajuan sosial dan kebudayaan merentas budaya yang pelbagai di Malaysia. Selain itu, kursus ini juga menekankan tentang perbincangan isu kontemporari berkaitan bidang ekonomi, politik, sosial, budaya dan alam sekitar mengikut acuan etika dan peradaban. Pendekatan kursus ini meliputi perbandingan sistem, tahap perkembangan, kemajuan sosial dan kebudayaan merentas budaya bagi melahirkan manusia yang mempunyai nilai-nilai positif.

BLLW 1282

Bahasa Melayu Komunikasi 2

Synopsis:

Kursus ini memperkenalkan susuk tatabahasa bahasa Melayu. Pelajar didedahkan dengan aspek-aspek nahu, klausa, terminologi, binaan ayat, penjodoh bilangan dan unsur sastera. Diharapkan pelajar dapat menguasai pertuturan atau berkomunikasi dengan baik dan mudah berdasarkan kemampuan pelajar asing.

BLHW 1772**Philosophy and Current Issues**

This course explains the foundations and frameworks of philosophical thought that underlie the development of Malaysian society, emphasizing key concepts such as the Rukun Negara (National Principles), the National Philosophy of Education, the Sejahtera concept, and the Malaysia MADANI framework. The application of philosophical analysis as a thinking tool is introduced as a systematic intellectual approach to understanding and addressing various contemporary life challenges. Through exposure to the main components of philosophy, students will be trained to analyze contemporary issues and develop the capacity to think critically and reflectively. By the end of the course, students are expected to be able to evaluate and formulate strategies based on philosophical approaches to confront future challenges, thereby contributing to the creation of an inclusive, prosperous, and visionary Malaysian society.

BLLW 1142**English for Academic Purposes**

This course aims to develop students' reading skills and grammar. A variety of academic reading texts and reading skills are explored to facilitate students' comprehension of the texts. These reading skills are also necessary in assisting students to master study skills. Grammar elements are taught in context to develop students' accuracy in the use of the language. This course also includes elements of blended learning.

BLLW 2152**Academic Writing**

This course aims to equip the students with the skills to communicate clear and detailed viewpoints in writing. The students are expected to have a stand on topics of their fields by providing advantages and disadvantages to support their arguments. From time to time, consultations with the students will be conducted throughout the completion of their assignments. This serves as the formative evaluation in the course. Grammar components are embedded in the course to support the required writing skills. Blended learning is incorporated in this course.

BLLW 3162**English for Professional Interaction**

This course which is designed based on a blended and student-centred learning approach aims to develop students' listening skills as well as communication skills and strategies. Among the elements covered are professional interactions that include group discussion and public speaking. Students are also required to express ideas with relevant examples in public speaking and online assessments. They are also exposed to the rudiments of grammar implicitly via the communicative activities.

BTMW 4012**Technology Entrepreneurship**

The subject provides students with technological knowledge about entrepreneurship as well as the skills to turn such knowledge into practice. The teaching and learning (T&L) activities include case study and field work with the aim to inculcate entrepreneurship values and entrepreneurship acculturation with a view to successfully launch and subsequently manage their enterprises. Students will be exposed with the support systems available or government agencies in starting new ventures, including the tactics commonly employed by entrepreneurs starting a business. The subject allows students to critically evaluate business in terms of technical feasibility, investment potential and risks.

BLHW 2792***Kursus Integriti dan Anti Rasuah***

Kursus Integriti dan Anti Rasuah (KIAR) ini bertujuan memperkenalkan kepada para pelajar mengenai amalan integriti dan pengurusan pencegahan rasuah dalam masyarakat serta organisasi. Penekanan akan diberikan kepada teori dan amalan berkaitan nilai integriti dan pencegahan rasuah, isu, permasalahan dan cabaran pengurusan jenayah rasuah dalam masyarakat dan organisasi. Aktiviti pembelajaran merangkumi latihan dalam kumpulan, simulasi, penulisan dokumen rasmi dan kerja lapangan dalam masyarakat pelbagai sektor (sektor awam, swasta, NGO, politik dan pelajar).

BLHW 2752**Malaysian Citra**

This course offers a comprehensive introduction to Malaysia, encompassing the country's historical evolution, geographical diversity, rich cultural heritage, and socio-political development. Students will explore the formation of modern Malaysia, its multicultural society, linguistic landscape, and unique traditions. This course also emphasizes Malaysia's traditional arts and cultural assets, including elements recognized by UNESCO. Students will gain foundational knowledge regarding Malaysia's political and administrative framework, federal structure, and Westminster-style Constitutional Monarchy. In addition, the course examines Malaysia's economic transformation, key industrial sectors, and current challenges within the context of digital and sustainable development. Malaysia's position as an international tourism hub, along with its global achievements in diplomacy, sports, and trade, will also be highlighted. The final section of the course focuses on Malaysia's future prospects, particularly regarding smart cities, climate change, youth engagement, and innovation. Through this course, students will develop a comprehensive understanding of Malaysia's national identity and its evolving role on the global stage. The teaching and learning process, conducted through experiential learning, lectures, and assignments, enables students to acquire key knowledge and appreciate the lived realities of life in Malaysia.

BLHW 2782**Malaysian Nation-State Aspiration**

This course explores the foundations of the formation and development of the Malaysian nation-state, emphasizing elements of statehood, the history of inter-ethnic interaction, and the uniqueness of Malaysian society. The course also discusses the theoretical framework of unity, the concept of a nation-state, and the vision of an “Ideal Malaysian Nation” (Bangsa Malaysia Idaman) centered on the values of the Rukun Negara (National Principles), Wawasan 2020, Malaysia MADANI, and other national initiatives. In addition, this course exposes students to current realities, including regional and territorial sentiments, as well as the challenges of building a harmonious and inclusive society. Emphasis is also placed on the influence and impact of technology and climate change on the aspirations of nation-state development, aligned with the Sustainable Development Goals (SDGs) agenda. The teaching and learning of this course will reinforce students’ understanding of Malaysia’s aspirations as a progressive and tolerant nation, emphasizing common values such as goodwill (muhibah), acceptance, harmony, and shared responsibilities.

Third Language Courses

BLLW 1212

Arabic 1

This course is designed for students who do not have prior knowledge in Arabic. It provides students with the foundation of knowledge to enable them to understand and respond in the oral and written forms. This course encompasses the listening, speaking, reading and writing components. This course aims to help students to obtain enough exposure of the Arabic language skills. The basic grammar introduced is related to the language used daily in conversation. Particular care is also taken to ensure the development of verbal communication and written skills in Arabic.

BLLW 1222

Mandarin 1

This course is designed for students who do not have prior knowledge in Mandarin. It provides students with the foundation of knowledge to enable them to understand and respond in the oral and written forms. This course encompasses the listening, speaking, reading and writing components. This course aims to help students to obtain enough exposure of the Mandarin phonetics (Han Yu Pin Yin). The basic grammar introduced is related to the language used daily by the Chinese. Particular care is also taken to ensure the development of verbal communication and written skills in Mandarin.

BLLW 1232

Japanese 1

This course is designed for students who do not have any background in Japanese. It provides students with the knowledge to enable them to understand and communicate in the oral and written forms. This course encompasses the listening, speaking, reading and writing components. The grammar introduced is related to the language used daily by the Japanese. In addition, two types of Japanese language writing systems; Hiragana and Katakana are also introduced. Students are also exposed to elementary reading materials.

BLLW 1242

Korean

This course is designed for students who do not have prior knowledge in Korean. It provides students with the foundation of knowledge to enable them to understand and respond in the oral and written forms. This course encompasses the listening, speaking, reading and writing components. This course aims to help students to obtain basic knowledge about Korean language. The basic grammar introduced is related to the language used daily by the Korean. Particular care is also taken to ensure the development of verbal communication and written skills in Korean.

BLLW 1252**German 1**

This course is designed for students who do not have prior knowledge in German. It provides students with the foundation of knowledge to enable them to understand and respond in the oral and written forms. This course encompasses the listening, speaking, reading and writing components. This course aims to help students to obtain basic exposure of the German phonetics. The basic grammar introduced is related to the language used daily by the German. Particular care is also taken to ensure the development of verbal communication and written skills in German.

Course Synopsis: Common Core Courses

BAXI 1113

Artificial Intelligence

Students are exposed to the basic and branches of AI such as the various search techniques, knowledge representation and reasoning, inference techniques, learning from experience and planning. Besides, some applications of AI including game playing, expert systems and machine learning will be introduced.

BAXI 1213

Linear Algebra and Discrete Mathematics

This course covers selected topics from two disciplines of mathematics (Linear Algebra and Discrete Mathematics) that are important for computer science students. Topics for Linear Algebra includes matrices, determinants, linear equations, vectors, eigenvalues and linear transformation while discrete mathematics covers introduction to logics, integers and algorithms, mathematical reasoning, combinatorics, relations, graphs and trees.

BAXI 1223

Calculus and Numerical Methods

This course covers two areas of mathematics namely Elementary Calculus and Introductory Numerical Methods. Topics for first part include Functions, Differentiation, Exponential and Natural Logarithm Functions and Its Applications, Integration and Initial Value Problems. The second part topics consist of Errors, Taylor Polynomials, Root Finding, Interpolation, Numerical Integration and Differentiation and Numerical Solution for Initial Value Problems.

BAXI 2233

Statistics and Probability

This course will provide a comprehensive introductory to statistics and probability for computer science students. Topics that will be covered in this course includes data description and numerical measures, probability, discrete random variables, continuous random variables and sampling distribution. Main topics for inferential statistics will start with estimation and will be followed by hypothesis testing, estimation and hypothesis testing for two populations, simple linear regression and correlation, and one-way ANOVA. In this course, students will be guide to use statistical software to perform descriptive and inferential statistics analysis.

BAXZ 1313**Data Communication and Networking**

This course introduces the fundamental concepts and terminology of data communication and networking, encompassing both technical and managerial aspects and to help students better understand the challenges and opportunities faced by modern business. Topics will include: fundamentals of telecommunications, data transmission mechanisms, telecommunication media and technologies, considerations for LAN and WAN implementations, the internet and intranet applications, emerging telecommunications technologies, and trends in the telecommunications industry. Students will also be able to understand, explain and apply the fundamentals of data communication and network technology concepts and skills in network applications, troubleshooting, and configuring basic computer networks using guided or unguided media.

BAXU 1113**Programming Technique**

This course covers the introductory topics in programming using C++ language. It includes the introduction to computers and programming as well as the fundamentals of programming, problem solving and software development. Data types and operators, selection, repetition, function, array, file, structured data and pointer are among the topics covered in the course.

BAXU 1123**Computer Organisation and Architecture**

This course provides a detail of computer system's functional components, characteristics, performance and interactions including system bus, different types of memory and Input / Output and CPU, as well as practical implementations of the components. Besides that, the architectural issues such as instruction set design and data types are covered. This course includes digital circuit design and its application in microprocessor architecture.

BAXU 1133**Multimedia System**

This course prepares students with the basic concept of multimedia, technology and the importance of multimedia application. It covers the introduction to multimedia elements such as text, graphic, audio, animation and video include 2D / 3D graphic and authoring, multimedia integration and multimedia application development. During lab sessions, students will be introduced to several tools for selected media element and authoring software for media integration. In addition, students will be trained for practical preparation of still image, simple animation, sound and effectively apply it to multimedia project. Students also will be exposed to teamwork, leadership, problem-solving and communication skills while performing their various tasks and project. Blended Learning / Flipped Classroom / Cooperative Learning (CL) / Problem Based Learning (PBL) / Collaborative Learning approach will be used to enhance students capability such as competency, attitude, knowledge and communication skills.

BAXU 1143**Data Structure and Algorithm**

This course will expose the students in data structures and algorithms. The basic concept in structure, class, array and pointer is discussed in order to understand the fundamental of data structures and algorithms. The course will focus on data structures such as list, stack, queue, tree, searching and hash while sorting, graph and heaps topics will concentrate on the algorithms. Algorithm efficiency for run time will also be discussed. Pseudo code and C++ programming language will be used for algorithm implementation. Apart from the theory, the students are asked to apply the data structures and algorithms through small application that is developed in a team.

BAXU 1213**Operating System**

This course is designed to give an exposure to students about basic concepts, theory and technology used in operating system such as concurrency, kernel, deadlock and multithreading. Student will learn about the fundamental of operating system including process, management of memory, file, I/O and CPU scheduling. In addition, students will be introduced to Linux operating system at basic administrative level.

BAXU 1323**Database**

This course will introduce student to the fundamental concepts of database management, which include the aspects of data models, database language; SQL and RA as well as database design. This course also focuses on practical skills which make students be able to apply fundamental concepts required for the use and design of database management systems (DBMS).

BAXU 2213**Software Engineering**

This course introduces the basic concept of software engineering to the student. It covers all the software development process which includes analysis, requirement, design, implementation and testing. The course also covers support areas such as project management and quality management. The course exposes the student to structured approach and object oriented approach.

BAXU 2313**Human Computer Interaction**

This course introduces the concept of HCI and its relationship in system development. The topics include the basic understanding of cognitive psychology, user interface design, interaction design, usability and evaluation. Other topics such as user-centered design, task analysis and user support design are also covered. The current issues on accessibility and localization are also discussed at the end of this course.

BAXU 3113**Object-oriented Programming**

This course discusses about the concept of object-oriented approach by using Java programming language. The student will be able to apply and construct the object oriented programming basic structures (such as polymorphism, inheritance, encapsulation and abstraction), GUI, swing, event handling, interface components, exception handling, database, multimedia, networking and threads. The student should be able to develop a complete Java applications with database.

BAXU 2913**Workshop 1**

This course aims to provide exposure and skills to the students in submitting and presenting a project of application/system development individually. Students must use the knowledge that had been learned to solve problems and think creatively to get result that achieved the objective and scope of the proposed project. Students must use the techniques learned in programming technique and system development subjects to assure that the project built will have a logical process flow and in precise with the system's criteria of robustness, consistent, have an interesting interface and able to handle error in data input/output process. At the end of this course, students must present and debate to defend the project that had been built. The process of supervision/evaluation is handled in terms of supervision and progress evaluation by a supervisor within 12 weeks besides the presentation evaluation by an evaluator. Workshop I is also functioned as the platform to prepare the students for their industrial training program.

BAXU 3926**Industrial Training**

Students must do the internship no less than 24 weeks in an organisation which they have chosen. Throughout the internship, students are guided and monitored by the industrial supervisor. Students are required to report their internship's activities in their log book. The faculty supervisor will visit the student twice: one after 2 weeks of internship and another will be near the end of the 24 week period. During the second visit, students are required to do a presentation at the organisation in attendance of both Industrial and Faculty supervisor. Students must also submit a copy of Industrial Training Report to the faculty supervisor for evaluation.

BAXU 3946**Industrial Training Report**

Students must do the internship no less than 24 weeks in an organisation which they have chosen. Throughout the internship, students are guided and monitored by the industrial supervisor. Students are required to report their internship's activities in their log book. The faculty supervisor will visit the student twice: one after 2 weeks of internship and another will be near the end of the 24 week period. During the second visit, students are required to do a presentation at the organisation in attendance of both Industrial and Faculty supervisor. Students must also submit a copy of Industrial Training Report to the faculty supervisor for evaluation.

BAXU 3973**Final Year Project 1**

This course joins together all the subjects learnt from year one of the studies including to analyse and to design a specific system, the application of database, algorithm and data structure, web programming, data communication, etc. It is compulsory to the final year students to develop a Final Project and to attend the offered courses.

BAXU 3983**Final Year Project 2**

This course joins together all the subjects learnt from year one of the studies including to analyse and to design a specific system, the application of database, algorithm and data structure, web programming, data communication, etc. It is compulsory to the final year students to develop a Final Project and to attend the offered courses.

Course Synopsis: Programme Core Courses

BAXZ 2343

Computer Network

This course is an introduction to the current methods and practices in the use of Local and Wide Area Networks. The emphasis will be placed on LAN hardware and software, installation management and connection to other networks. Topics covered include network architecture, network communication protocols, end-to-end protocol stacks, network components, network management and the Open Systems Interconnection (OSI) reference model. Furthermore, WAN technologies such as Ethernet, Token Ring, ATM and FDDI also will be covered.

BAXZ 2413

Network Security Infrastructure and Design

This course is designed to provide fundamental knowledge in planning and designing a secure network infrastructure. Topics covered include how to analyse security policies, procedures and requirements as well as how to identify and design for potential security threats. Students will also be exposed to designing a network infrastructure security, authentication strategy for the organisation domain, access control strategy for network resources and public key infrastructure with certificate services. They will also be involved in designing security for internet information services, servers with specific roles, as well as designing an infrastructure for updating computers and secure network management infrastructure.

BAXZ 2423

Physical Security and Electronic Surveillance

This course is designed to provide fundamental knowledge in physical security and electronic surveillance. It addresses the threats, vulnerabilities and countermeasures that can be utilised to physically protect an enterprise's resources and sensitive information. These resources include people, the facility in which they work and the data, equipment, support systems, media and supplies they utilise. Topics cover protection techniques for the entire facility, from the outside perimeter to the inside office space, including all of the information system resources. These focus on the methods of recognition, anticipation, selection and design of security technologies as well as examining the principles and applications of security systems.

BAXZ 2523

Cyber Law and Security Policy

This course is designed to provide fundamental skills needed to understand cyber laws related to copyright, patents, digital rights, computer crimes, privacy issues, hacking and prosecution in Malaysia. This course will also covers the scope and enforcement bodies in Malaysia. Furthermore, students will be exposed to design and produce security policies accordance with legal laws.

BAXZ 3353**Network Security Administration and Management**

This course covers the topics in network security administration and management. The students will be equipped with the knowledge and practicality of a network security administrator / manager. Together with the tools used in lab sessions and the skills trained, the students will be educated and qualified enough to be network security practitioners.

BAXZ 3363**Network Security Project Management**

This course provides distinct knowledge in network security project management. The topics cover project management body of knowledge namely managing projects in aspects of integration, scope, time, cost, quality and human resource. It also covers the phases of network security project management namely project initiation, planning, executing, controlling and closing or termination. Software for security project management such as Microsoft Project and Microsoft Excel will be introduced and used to help in applying the network security project management knowledge areas and processes.

BAXZ 3463**Cryptography Application and Information Theory**

This course covers the probability theory concept, information theory, complexity theory, number theory, abstract algebra and finite fields to understand the ideas regarding the discrete log problem, strength of an algorithm, information security, encryption, decryption, symmetric systems, symmetric systems and cryptanalysis in cryptography. The symmetric and asymmetric cryptosystems and its cryptographical mathematical theory behind it are emphasized.

BAXZ 3523**Computer Audit and Risk Management**

This course focuses on the fundamental knowledge of computer security and risk management. In addition, emphasizes has given to the importance of computer audit and risk management. The enclosed topics are mainly related to security audit analysis, security monitoring, environmental security and follow up auditing in security concern. The student will be exposed to the field of risk and incident response, recovery and disaster recovery.

BAXZ 3613
Hacking Techniques and Prevention

In this course, students will study and gain experience with the role of defending hosts and networks from attack as well as learning how the hacker uses tools to attack and penetrate networks. Students will be able to use several open software tools that will analyse host and networks for vulnerabilities and be exposed to the hacker technique of "thinking outside the box". It will immerse the student into an interactive environment where they will be shown how to scan, test, hack and secure their own systems. The lab intensive environment gives each student in-depth knowledge and practical experience with the current essential security systems. Students will begin by understanding how perimeter defences work and then be lead into scanning and attacking their own networks, no real network is harmed. Students then learn how intruders escalate privileges and what steps can be taken to secure a system.

BAXU 3923
Workshop 2

This course provides an opportunity to the student to practice their knowledge and experience gained from previous courses. This course also develops the students understanding of problem solving techniques to solve a particular problem based on their respective project scopes. The project scope is based on their programme and they are required to develop their projects in groups of four or five.

Course Synopsis: Elective Courses

BAXZ 3443

Digital Forensics

This course is an introduction to digital forensics reflects the need for conducting professional computing investigations. Students will explore general computer investigations, security issues with operating systems, setup and maintenance of a digital forensics lab, use of computer forensics tools, digital evidence controls, data acquisition and analysis, e-mail investigations and the preparation of investigation report.

BAXZ 3453

Malware Analysis and Digital Investigation

This course presents the malware issues that cover malware taxonomy, malware intrusion and malware behaviour. The course also offers the malware intrusion investigation based on digital forensic investigation framework. The goal is to provide an understanding of digital forensic investigation process implemented in malware intrusion crime. This course will use lectures, homework assignments, case studies and group projects to promote learning. Students are expected to be active participants, asking questions, challenging instructors and generally taking responsibility for their own learning.

BAXZ 3473

Watermarking and Steganography

This course provide students with the basic concept of digital watermarking, steganography including knowledge on fingerprint and biometric. It covers the introduction to the theoretical background on above-mentioned area and development as well as implementation of fundamental techniques in digital watermarking and steganography. In the lab session, students will be introduced to selected editing software for embedding information in the media. Students will be trained for practical embedding on text, image, audio and video. Students will be exposed to teamwork, leadership, problem-solving and communication skills while performing their various tasks and project.

BITM 2113

Web Application Development

The purpose of this course is to provide students with a comprehensive understanding of the tools and problem-solving techniques related to building effective World Wide Web sites. It emphasis 4 components in developing web applications which are: client site technologies: HTML, XHTML, HTML5, CSS, JavaScript, jQuery; server site technologies: PHP; database server: MySQL; and web servers: Apache. This course also brings together all of the elements of web site design, graphics, animation, data storage in the construction of fully functional commercial web site applications.

BITS 2513**Internet Technology**

Internet has become a major tool in doing business today. The evolutions of web-based knowledge also contribute to this phenomenon. This course is purposely designed to provide an introduction to Internet technologies. This course covers a wide range of material about the Internet and the major areas of study include basic concepts and client, networking, programming on the Internet, security and Internet applications.

BITS 2573**Cloud Computing Foundation**

This course teaches the student on how to develop technical proficiency in cloud computing and launch or pivot to careers in a cloud-first world. It will provide a detailed overview of concepts covering cloud basics, big data, and machine learning and where and how Cloud Computing fits in. Starts with an overview of cloud computing and then dives deeper into two areas - cloud computing infrastructure, and big data and machine learning. By the end of the course, students will be able to articulate concepts around cloud computing, big data, and machine learning and demonstrate some hands-on skills.

BITS 3513**TCP/IP Programming**

This course intended to expose student on how network programming works. Since Java is one of the most demanding skill in industry, so this course will emphasize on how to write a network programming by using Java language. This course will show students on how to use Java's network class library to quickly and easily write programmes that accomplish many common networking tasks.

BITS 3533**Wireless Network and Mobile Computing**

This course is designed to give the knowledge of the concept of mobile computing and wireless networks, by exploring the relationship between hardware, software and development kits. Through class, research and application development, students will understand the current mobile technology and the relation to operating systems and standards. Students will be exposed to the challenges to handle the constraints of memory and storage of these hardware.

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