

F A C U L T Y O F
CIVIL

**ENGINEERING
ACADEMIC
GUIDELINES**

FOR UNDERGRADUATE PROGRAMME
2015 / 2016

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UTM Faculty of Engineering

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This book contains brief information about Full-time Undergraduate Degree Programme in Civil Engineering at the UTM-Faculty of Civil Engineering Universiti Teknologi Malaysia. Detailed information on the academic matter can be obtained from the following documents:

1. UTM Prospectus
2. UTM Academic Regulations

The contents of this book are accurate at the time of printing. Any amendments or clarification is subject to the discretion of the UTM-Faculty of Civil Engineering, Universiti Teknologi Malaysia.

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PHILOSOPHY, VISION, MISSION AND MOTTO



Philosophy of UTM

The divine law of Allah is the foundation for science and technology. Universiti Teknologi Malaysia strives with total and unified effort to attain excellence in science and technology for universal peace and prosperity, in accordance with His will

Vision of UTM

To be recognized as a world – class centre of academic and technological excellence.

Mission of UTM

To be a leader in the development of human capital and innovative technologies that will contribute to the nation's wealth creation.

Motto of UTM

In The Name of God for Mankind.



VISION, MISSION AND MOTTO of UTM-FKA

Vision of UTM-FKA

“To be a world-class education and research centre in Civil Engineering

Mission of UTM-FKA

“To spearhead excellence in academic and technology development through creativity.”

Motto of UTM-FKA

“Always Ahead.”

FOREWORD BY THE DEAN



Assalamu'alaikum wbth.and salam sejahtera,

Let me be among the first to congratulate you for being offered admission to the UTM-Faculty of Civil Engineering (UTM-FKA) the top 150 civil engineering faculty based on QS World Ranking Agency and the top civil engineering faculty in Malaysia. Surely, your presence here is the result of your tireless effort in your study as well as supports and prayers from your parents.

You are considered the lucky one selected to be with us. This golden opportunity is indeed priceless. I hope that you will use the time spent at UTM-FKA wisely and do your utmost to acquire knowledge, experiences and exposures necessary to be a successful civil engineer. Excellence requires detailed planning, perseverance and high unparalleled discipline.

This handbook contains information pertaining to the academic programme at UTM-FKA. It also includes regulations and guidelines that will guide you through out your study. Please treat this handbook as your main source of reference should any problem and uncertainty related to your academic affairs arises. The information in this handbook will be of great value if used wisely.

Lastly, I hope that you will do your best and continue to be excellent in your study at UTM-FKA. One who strives endlessly will not be deprived of success. We hope that you will graduate success fully as a civil engineer with flying colours.

Thank you, Wassalam.

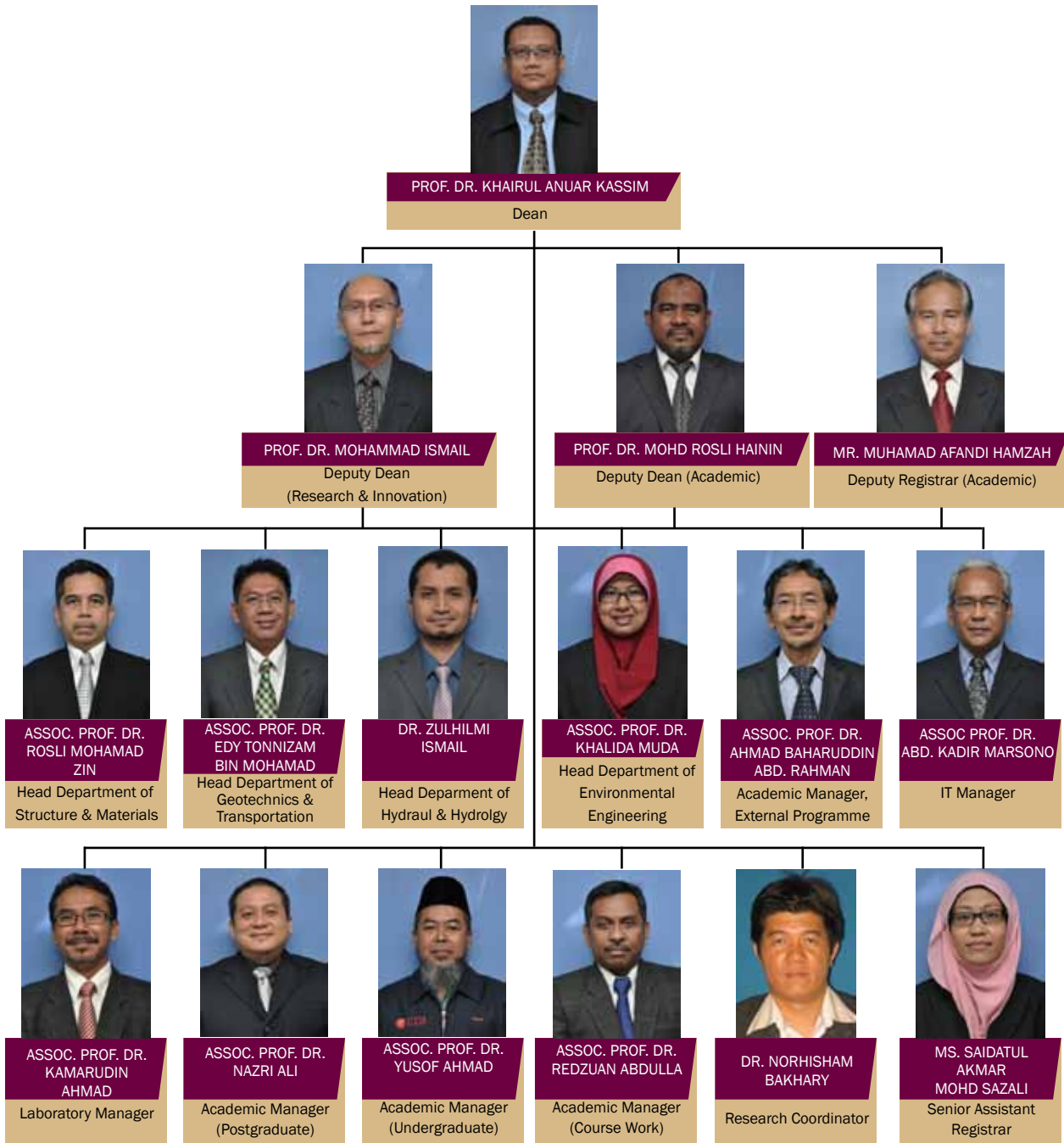
Prof. Dr. Khairul Anuar bin Kassim
Dean,
UTM-Faculty of Civil Engineering
Universiti Teknologi Malaysia

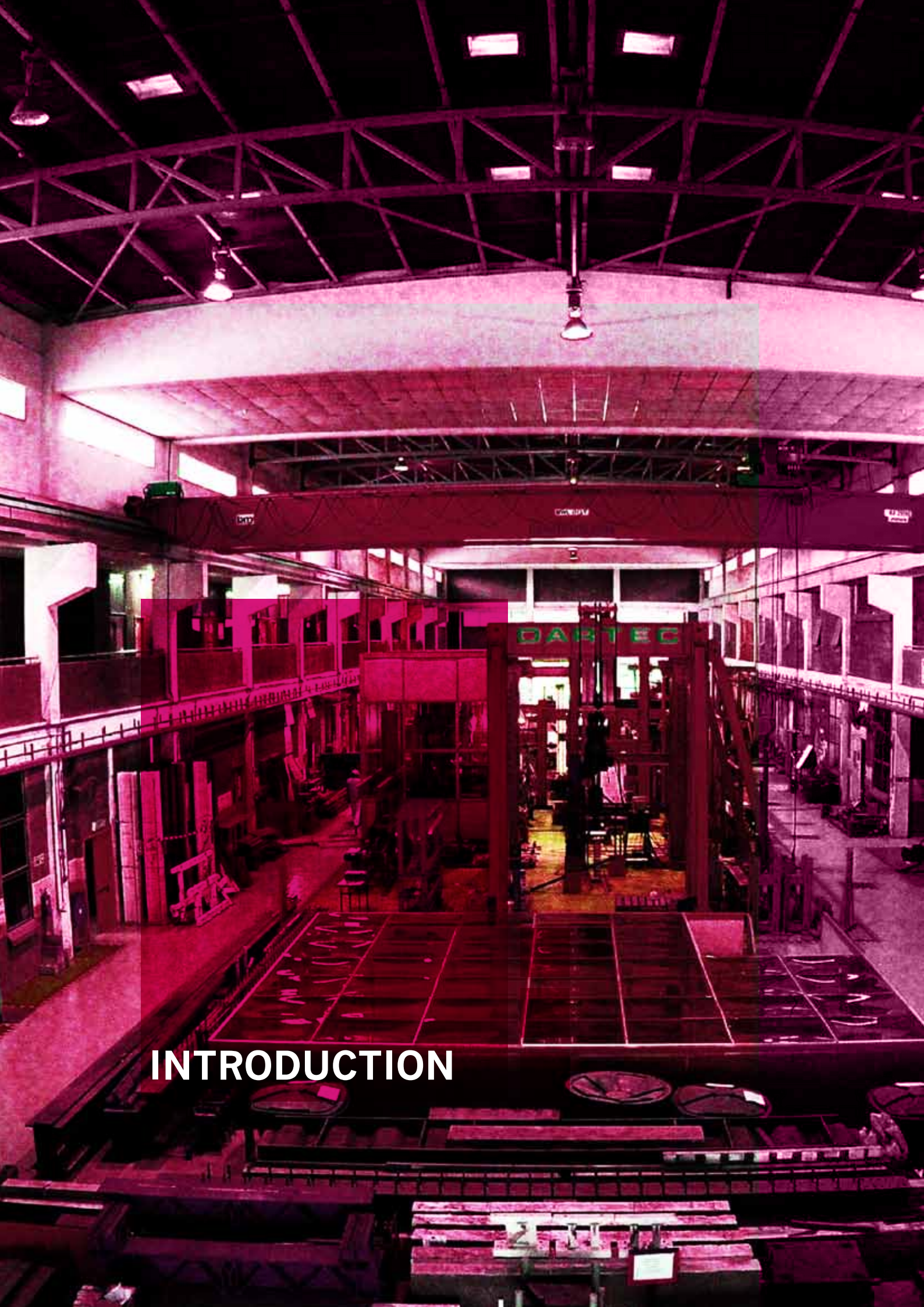


ORGANISATIONAL STRUCTURE



FACULTY MANAGEMENT TEAM





INTRODUCTION

1. INTRODUCTION

1.1 UTM in Brief

Universiti Teknologi Malaysia is an innovation-driven entrepreneurial Research University and a leading research-intensive university in engineering, science and technology ranked in the top 200 world ranking in engineering and technology. It is located both in Kuala Lumpur, the capital city of Malaysia and Johor Bahru, the southern city in Iskandar Malaysia, which is a vibrant economic corridor in the south of Peninsular Malaysia.

UTM is now a graduate-focused university with 53% of its student population consisting of postgraduate students, the highest in Malaysia. The number of postgraduates enrolled in PhD studies in diverse fields of specialization is 4,455 students, which is the highest in the region and among top ten in the world. It has 5,043 international students from more than 60 countries around the world, the highest among research universities in Malaysia. Through its Global Outreach Programme, UTM students gain international exposure and experiential learning through various student mobility and exchange programmes, service learning and community engagements and Summer School such as in Harvard.

UTM's mission is to lead in the development of creative and innovative human capital and advanced technologies that will contribute to the nation's wealth creation. This is in line with the aspirations of the country towards becoming a knowledge-based, innovation-led economy grounded in creativity and innovation with high value creation. Through a strategic transformation of its organizational structure, UTM is focused on creating a vibrant academic culture and fertile intellectual ecosystem through its New Academia approach based on Blue Ocean Strategy which focuses on innovative, entrepreneurial, value-driven and meaningful approaches beyond conventional paradigms.

UTM has also established a reputation for cutting-edge research undertakings and innovative education, proven by becoming the three-time winner for the National Intellectual Property Award for organization category. A stimulating research culture exists in UTM through 10 Research Alliances (RA) in strategic disciplines and 31 Centres of Excellence (CoE) with more than 100 Research Groups, in addition to academic faculties to service science, technology, engineering, business and management education, among others.

UTM is also actively engaged in research collaboration with renowned institutions such as Harvard University, Massachusetts Institute of Technology (MIT), University of Oxford, Imperial College of London, University of Cambridge, Tokyo University and Meiji University, to name a few, on strategic areas of interests. To facilitate further engagement and networking in academic and research undertakings, international satellite offices have been established in Tokyo, Boston, Doha and Madinah.

UTM is thus renowned for being at the forefront of engineering and technological knowledge and expertise, contributing to the technical and professional workforce of the nation since 1904. Having produced more than 200,000 technical graduates and qualified professionals over the years, UTM has earned its place as Malaysia's premier university in engineering and technology which inspires creative, innovative and entrepreneurial mindsets.

1.2 UTM-Faculty of Civil Engineering

The UTM-Faculty of Civil Engineering, affectionately known as UTM-FKA (Fakulti Kejuruteraan Awam), is one of the largest faculties in the region. It is also the largest producer of civil engineers in Malaysia. Currently there are about 1736 students in UTM-FKA, of which 924 are Bachelor Degree, 439 are Masters and 373 are Doctoral students. Presently, UTM-FKA hosts foreign students mainly from Indonesia, Pakistan, Bangladesh and some Middle Eastern and African countries who are enrolled in undergraduate and postgraduate studies in various fields in civil engineering. Many of these graduates now hold prominent positions in various organizations both in the public and the private sectors.

There are four academic departments at the Faculty representing the main branches of civil engineering. They are the Department of Structures and Materials, the Department of Hydraulics and Hydrology, the Department of Geotechnics and Transportation and the Department of Environmental Engineering. In addition to these departments, the Faculty also houses four centres of excellence to coordinate and optimize the vast expertise available in the Faculty. These centres of excellence are the Construction Research Centre (CRC), the Institute of Environmental and Water Resources Management (IPASA), the Coastal and Offshore Engineering Institute (COEI) and Centre of Forensic Engineering and the Coastal and Offshore Engineering Institute (COEI).

A number of UTM-FKA staff has been recognised at national and international level for their scholarly work and research in their fields. The recognition includes awards from many competitions or exhibitions such as the Petronas Invention Medal Award, Mindex/Innatex, UTM's Researcher of the year award, ITEX, Geneva's International Exhibition of Invention, WEPO and INPEX. Several products invented by UTM-FKA researchers have been commercialised such as the sine-slab and the artificial sea grass for coastal protection, the F-R concrete, and the mobile interlocking block machine.

As a faculty, UTM-FKA has also been acknowledged as one of the leading faculties in UTM. In the year 2000, UTM-FKA was the first faculty of civil engineering in Malaysia to obtain ISO 9002 and ISO 9001:2008 certification in the year 2008 for its undergraduate academic management. UTM-FKA was the recipient of the Vice Chancellor Quality Award in 2000 and 2009, UTM's Information Technology Award in 2001 and 2008, Creativity and Innovation Award in 2003 and Academic Quality Award in 2011 and 2013. With such achievements, there is no doubt that UTM-FKA is on the right track to becoming one of the leading teaching and research faculties in Malaysia if not the region.

1.3 Policy Statement of the Faculty

UTM-FKA aspires to become a world class centre for education and research in civil engineering. As such, the Faculty has spelled out its vision, mission and objectives as outlined below.

1.3.1 Vision

To be a world class centre of education and research in Civil Engineering.

1.3.2 Mission

To spearhead excellence in academic and technology development through creativity.

1.3.3 Objectives

- (i) To produce quality graduates through implementation of integrated curriculum that meets market demands.
- (ii) To enhance and provide professional expertise in civil engineering.
- (iii) To extend the strategic relationship between the University and industries.
- (iv) To increase the number of quality research and publications.
- (iv) To promote a systematic life long education system.
- (v) To improve the skill and expertise of human resource.
- (vi) To enhance the culture of effective team working in a conducive working environment.








**ADMINISTRATION
STAFF**















2. ADMINISTRATION STAFF







Administration Personnel







The UTM-Faculty of Civil Engineering is headed by the Dean and assisted by two Deputy Deans. The Deputy Dean (Academic) manages the academic affairs of the undergraduate and postgraduates programmes, while the Deputy Dean (Development) manages staff developments at the Faculty. At present 153 academic and 111 administrative and technical staff serve the faculty. The strength of the faculty consists of 20 Professors, 44 Associate Professors, 67 Senior Lecturers, 14 Lecturers, 8 Tutors, 109 Ph.D., 40 Master's and 3 B.Eng. Degree holders

1.		Designation : Dean Name : Prof. Dr. Khairul Anuar Kassim Qualification : B.Sc.(Civ. Eng.)(London) M.Sc.(Geotechnical)(Newcastle Upon Tyne) Ph.D.(Geotechnical)(Newcastle Upon Tyne) E-mail : kanuar@utm.my Ext. : 31500 Room No. : M46-103
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15.		<p>Designation : Director, Coastal and Offshore Engineering Institute (COEI)</p> <p>Name : Professor Dr. Ahmad Khairi Abd. Wahab</p> <p>Qualification : B.Sc.(Hons)(Civ. Eng)(Southampton) M.Eng (Hydraulics) (UTM) Ph.D. (Swansea)SPLI (MPT Cheras)</p> <p>E-mail : akhairi@utm.my</p> <p>Ext. : 31733 / 03-26154442</p> <p>Room No. : M46-213</p>
16.		<p>Designation : Director, Institute of Environment and Water Resource Management (IPASA)</p> <p>Name : Assoc. Prof. Dr. Azmi Aris</p> <p>Qualification : B.Sc.(Hons)(Civ. Eng)(Southern California) M.Sc.(Civil Env.)(Clarkson) Ph.D (Civil Env.)(UMIST)</p> <p>E-mail : azmi.aris@utm.my</p> <p>Ext. : 31578 / 31574</p> <p>Room No. : 218-01</p>
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25.		<p>Designation : Head of Transportation Lab Name : Dr. Sitti Asmah Hassan Qualification : B.Eng. (Civil Eng.)(UTM) M.Eng. (Civil Eng.)(UTM) Ph.D(Traffic Eng.)(Univ. of Southampton)</p> <p>E-mail : sasmah@utm.my Ext. : 31622 Room No. : M47-113</p>
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27.		<p>Designation : Resource Centre Coordinator Name : Dr. Balqis Omar Qualification : B. Eng. (Civil Eng.)(Wales) M.Sc (IT For Manufacture)(Warwick) Ph.D. (IT) (University of Reading)</p> <p>E-mail : balqis@utm.my Ext. : 31642 Room No. : M47-123</p>
28.		<p>Designation : Head of Surveying Laboratory Name : Radzuan Sa'ari Qualification : B.Sc (Land Surv.)(UTM) M.Sc (Land Surv.)(UTM)</p> <p>E-mail : radzuans@utm.my Ext. : 38650 / 32447 Room No. : M50-02-32-01 / M47-129</p>
29.		<p>Designation : Coordinator, Integrated Design Project (IDP) Name : Assoc. Prof. Dr. Mushairry Mustaffar Qualification : B.Sc.(Hons)(Surv. Sc.)(Newcastle),UK M. Phil. (Photogrammetry)(Newcastle),UK, Ph.D.(Photogrammetry)(Newcastle), Australia</p> <p>E-mail : mushairry@utm.my Ext. : 38680/32447 Room No. : M50 02 27 01</p>



FACILITIES



3. FACILITIES

The UTM-Faculty of Civil Engineering has one of the largest civil engineering teaching and research facilities in the country. The main facilities include smart classrooms, lecture theatres and halls, well-equipped laboratories, IT facilities, and a resource centre

3.1 Lecture Theatres, Halls and Classrooms

The Faculty has one lecture theatre that can accommodate 200, two theatres for 120 and six halls with capacities of 120 each. For small groups, there are fifteen classrooms that can seat 60 students. One of the lecture halls is equipped with 'smart E theatre' facilities and two of the classrooms are equipped with "Smart Classroom" facilities.

There are also five rooms for practical and studio work that can accommodate between 35-40 students each, and two 60-capacity classrooms for Problem-Based Learning (PBL) activities. To cater for examination needs there are three examination halls with a capacity of 120-200 students.

All lecture theatres, halls and classrooms are fully air-conditioned and are equipped with the latest teaching and learning aids.

3.2 Laboratories

There are six main research laboratories which include the Structure and Material laboratory (5860 m²) D04, the Geotechnics laboratory (2870 m²) D03, the Transportation laboratory (3200 m²) D02, the Hydraulics and Hydrology laboratory (4450 m²) D01, the Environmental Engineering laboratory (1170 m²) C07 and the Surveying laboratory (150 m²) M47.

These laboratories are equipped with a wide range of the latest state-of-the-art equipment and testing facilities. Faculty also has a new teaching laboratory building at M50.

3.3 IT Facilities

The IT facilities at the Faculty consist of four computer laboratories containing more than two hundred computers for teaching and students' use. Networking and internet facilities with wi-fi access points are available throughout the premises. The Faculty also provides various engineering and general purpose software to assist students in their study.

3.4 Resource Centre

The Faculty houses a resource centre (190 m²) that is manned by trained personnel to provide students and staff with specific civil engineering references such as a collection of theses, staff publications, reports and relevant textbooks. The centre is also responsible for the management of teaching and learning equipments such as computers, LCD projectors, audio and video equipments.



PROGRAMME OF STUDY



4. PROGRAMME OF STUDY

The of Bachelor of Engineering (Civil) is offered either on a full-time or part-time basis. The full-time programme is the main programme, offered by the Faculty while the part-time programme is offered by the School of Professional and Continuing Education (SPACE). The full-time programme is offered only at the UTM Main Campus in Johor Bahru while the part-time programme is offered at various centres throughout Malaysia. The duration of study for the full-time programme is subjected to the student's entry qualifications and lasts between four (4) years to a maximum of six (6) years. Further information on the part-time programme is available at <http://web.utm.my/space>.

4.1 Programme Specification

4.1.1 General

1. Awarding Institution	Universiti Teknologi Malaysia			
2. Teaching Institution	Universiti Teknologi Malaysia			
3. Programme Name	Bachelor in Civil Engineering			
4. Final Award	Bachelor of Engineering (Civil)			
5. Programme Code	SKAW			
6. Professional or Statutory Body of Accreditation	Kementerian Pendidikan Malaysia			
7. Language(s) of Instruction	Bahasa Melayu and English			
8. Mode of Study (Conventional, distance learning, etc)	Conventional			
9. Mode of operation (Franchise, self-govern, etc)	Self-governing			
10. Study Scheme (Full Time/Part Time)	Full Time			
11. Study Duration	Minimum : 4 yrs Maximum : 6 yrs			
Type of Semester	No. of Semesters		No of weeks/Semester	
	Full Time	Part Time	Full Time	Part Time
Normal	8	-	8	-
Short	4	-	4	-

4.1.2 Entry Requirement

The minimum qualifications for candidates who intend to do a Bachelor of Engineering (Civil) are as follows :

- 1) Minimum results based on the Malaysian High School Certificate (STPM)
(results would be based on the general requirements as well as other conditions as the pre-requisites for the programme set by the university).

General Requirements :

- (i) Passed and obtained good results in the Malaysian Certificate Examination (SPM) or its equivalent.
- (ii) Passed Bahasa Melayu/Bahasa Malaysia with credit in the SPM/equivalent.
- (iii) Passed the Malaysian High School Certificate (STPM) or its equivalent and obtained the following:
 - a) Grade C (NGMP 2.00) General paper, and
 - b) Grade C (NGMP 2.00) in two other subjects
- (iv) Passed the Malaysian University English Test (MUET)

Special Requirements for the Programme

- (i) Passed with a minimum Grade B- (NGMP 2.67) in three of the following subjects:
 - (a) Modern Mathematics/ Additional Mathematics
 - (b) Physics/Biology
 - (c) Chemistry
- (ii) Passed Mathematics with credits in the SPM/ equivalent examination.

- 2) Minimum requirements for matriculation students (KPM)/Asasi Sains UM
(fulfil the general requirements set by the university as well as other conditions of the programme).

General University Requirements

- (i) Passed the Malaysian Certificate Examination (SPM) with good results.
- (ii) Obtained passes in Bahasa Melayu/Bahasa Malaysia with credits in the SPM/equivalent examination.
- (iii) Passed the Matriculation Certificate Examination KPM/Asasi Sains UM with a minimum CGPA of 2.00 and passed all the core subjects.
- (iv) Passed the Malaysian University English Test (MUET).

Special Requirements of the Programme :

- (i) Obtained a CPA of 2.75; and Passed with a Grade B- (2.67) in three of the following subjects:
 - (a) Mathematics
 - (b) Physics/Biology
 - (c) Chemistry
- (ii) Passed with credits in Mathematics in the SPM/ equivalent examination.

- 3) Minimum qualifications for students with Certificates/Diplomas
(fulfill the general requirements set by the university as well as specific requirements of the programme).

General University Requirements

- (i) Obtained a Diploma in Civil Engineering from UTM/equivalent with a minimum CPA of 2.70; or For candidates with a CPA below 2.70 but have a minimum of two or more years of working experience in the related area of study will be eligible to apply for a place to study at the university.
- (ii) Obtained a credit pass in Mathematics in their SPM/equivalent examination or a minimum grade C in any of the Mathematics Courses taken at the diploma level.
- (iii) Candidates are required to submit the results transcript of all their examinations taken during their Diploma study (semester one until the final semester) to UTM. A copy of the diploma or a letter of completion of study will also have to be submitted together with their applications.
- (iv) Passed the Malaysian University English Test (MUET).

Note :-

Year of entry and duration of study will be based on the credit exemptions and credit transfer awarded by the university.

4.1.3 Programme Educational Objectives (PEO)

- PEO 1 Graduates are competent, creative and innovative in acquiring and applying knowledge towards solving civil Engineering problems.
- PEO 2 Graduates possess leadership qualities, able to work, manage in diverse teams and serve the society in multi disciplinary environment.
- PEO 3 Graduates demonstrate professionalism and uphold ethical values with emphasis on sustainable environment.
- PEO 4 Graduates are able to communicate effectively, possess strong self-confidence and recognize the need for life-long learning.

4.1.4 Programme Outcomes (PO)

(a) Technical Knowledge and Competencies			
Code	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
P01	Ability to apply knowledge of science, mathematics, civil engineering principles and other relevant field of studies to solve complex engineering problems.	Lectures, tutorials, seminars, laboratory works, directed reading, independent study, active learning.	Examinations, laboratory reports, presentations, assignments, problem-based exercises, project reports, exit test.
P02	Ability to analyse and use appropriate techniques, resources and modern tools to solve complex engineering problems and activities.	Lectures, tutorials, computer hands-on sessions, laboratory works, industrial training, surveying camps.	Examinations, laboratory reports, presentations, assignments, problem-based exercises, project reports, design tasks, simulation exercises, industrial training reports, exit test.
P03	Ability to design solutions for complex problems and design components, systems, or processes that comply specific requirement with appropriate consideration of other requirements.	Project supervision, lectures, tutorials, laboratory works, directed reading, simulation exercises, computer-based exercises, independent study, problem-based learning.	Final Year Project reports, project reports, design tasks, examinations, laboratory reports, presentations, assignments, exit test.
P03	Ability to design solutions for complex problems and design components, systems, or processes that comply specific requirement with appropriate consideration of other requirements.	Project supervision, lectures, tutorials, laboratory works, directed reading, simulation exercises, computer-based exercises, independent study, problem-based learning.	Final Year Project reports, project reports, design tasks, examinations, laboratory reports, presentations, assignments, exit test.
(b) Generic Skills			
Code	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
P04	Ability to resolve complex problems based on investigation or research using integration of knowledge and the consequent responsibilities relevant to professional practice.	Project supervision, lectures, tutorials, laboratory works, group projects, independent study, site visits.	Final Year Project reports, project reports, design tasks, examinations, laboratory reports, presentations, assignments.
P05	Ability to communicate effectively and with confidence including complex engineering activities.	Projects, independent study,	Oral presentations, written reports, TECS.
P07	Ability to function effectively as an individual or in a team to achieve common goals in diverse teams and in multi-disciplinary settings.	Independent projects, group projects, industrial training, final year project, surveying camps, laboratory works.	Industrial training report and logbook, project report, final year project report and logbook, lab reports.
P08	Ability to perpetually seek and acquire contemporary technological changes.	Independent study, final year projects, site visits.	Final year project reports, assignments, questionnaires.
P09	Ability to demonstrate entrepreneurial skills, lead and manage a team effectively in multidisciplinary environment with self-assurance.	Lectures, laboratory works, group assignments, Industrial training, final year project, survey camps.	Industrial training reports and logbooks, final year project, report, logbooks, personality test.
P010	Ability to understand the impact of engineering decisions and apply professional ethics for sustainable development.	Final year projects, Laboratory works, Industrial training, surveying camps, seminar PPMH.	Written assignments, laboratory reports, essays, final year project reports, Industrial training report, seminar reports, exit test.

The mapping of PO for each course should refer to Handbook together published together within academic guidelines.

4.1.5 Mapping of FKA POs to KPT POs

CORE COURSES OFFERED		JPT-KPT Learning Outcomes								
		Knowledge	Technical knowledge/ practical/psychomotor	Critical thinking and problem solving	Communication skill	Social skills and responsibility	Value and ethic	Lifelong learning and information management	Management and entrepreneurial skills	Leadership
		P1	P2	P3	P4	P5	P6	P7	P8	P9
Taxonomy/Generic Skills		C/K	P/TK	P/ CTPS	P/CS	A/S	A/PE	A/LL	P/ME	A/L
PO	FKA-UTM Learning Outcomes									
P01	Ability to apply knowledge of science, mathematics, civil engineering principles and other relevant field of studies to solve complex engineering problems.									
P02	Ability to analyse and use appropriate techniques, resources and modern tools to solve complex engineering problems and activities.		√							
P03	Ability to design solutions for complex problems and design components, systems, or processes that comply specific requirement with appropriate consideration of other requirements.		√	√						
P04	Ability to resolve complex problems based on investigation or research using integration of knowledge and the consequent responsibilities relevant to professional practice.			√						
P05	Ability to communicate effectively and with confidence including complex engineering activities.				√					
P06	Ability to communicate effectively and with confidence including complex engineering activities .								√	
P07	Ability to function effectively as an individual or in a team to achieve common goals in diverse teams and in multi-disciplinary settings.					√				

P08	Ability to perpetually seek and acquire contemporary technological changes.							√		
P09	Ability to demonstrate entrepreneurial skills, lead and manage a team effectively in multidisciplinary environment with self- assurance.								√	√
P010	Ability to understand the impact of engineering decisions and apply professional ethics for sustainable development.						√			

4.1.5 Mapping of FKA POs to KPT POs

No.	Classification	Credit Hours	Percentage
i.	University Courses		
	a. General	10	
	b. Language	6	15%
	c. Entrepreneurship	2	
	d. Co-Curriculum	2	
ii.	Faculty/Programme Core	106	78.5%
iii.	Programme Electives	9	6.7%
	Total	135	100%
For engineering programmes please complete the following classification. (Others please refer to the Statutory Body guidelines)			
A	Engineering Courses		
	(a) Lecture/Project/Laboratory	81	
	(b) Workshop/Field/Design Studio	5	71.9%
	(c) Industrial Training	5	
	(d) Final Year Project	6	
	Total Credit Hours for Part A	97	
B	Related Courses		
	(a) Applied Science/Mathematic/Computer	18	
	(b) Management/Law/Humanities/Ethics/Economy	12	28.1%
	(c) Language	6	
	(d) Co-Curriculum	2	
	Total Credit Hours for Part B	38	
	Total Credit Hours for Part A and B	135	100%
	Total Credit Hours to Graduate	135 credit hours	

4.1.7 Programme Structure And Features, Curriculum And Award Requirements

Programme structure and features, curriculum and award requirements

The programme is offered on full-time basis and is based on a 2-Semester per academic session. Generally, students are expected to undertake courses equivalent to between fifteen (15) to eighteen (18) credit hours per semester. Assessment is based on final examinations and coursework given throughout the semester.

Award requirements:

To graduate, students must:

- Attain a total of not less than 135 credit hours with a minimum CGPA of 2.0.
Students from other approved programmes who wish to undertake a Minor in the programme must complete not less than 15 credit hours of specialized civil engineering courses which form part of the core and/or electives of the programme, as listed in the minor programme list.

YEAR 1					
SEMESTER 1			SEMESTER 2		
CODE	COURSES	CREDITS	CODE	COURSES	CREDITS
SKAA1012	Civil Engineering Fundamentals	2	SKAA1023	Engineering Surveying	3
SKAA1213	Engineering Mechanics	3	SKAA1422	Civil Engineering Drawing	2
SKAA1713	Soil Mechanics	3	SKAA1513	Fluid Mechanics	3
SSCE 1693	Engineering Mathematics 1	3	SSCE 1793	Differential Equations	3
ULAB1122	Academic English Skills	2	SSCE 1993	Engineering Mathematics II	3
UHAS1172/ UHAS 1162**	Dinamika Malaysia/ Arts, Customs and Beliefs of Malaysians**	2	UICI1012	Islamic and Asian Civilisation	2
Total		15	Total		16

** Elective course for international students only.

International students are not required to take UHAS 1172 & UICI 1012.

SHORT SEMESTER		
CODE	COURSES	CREDITS
SKAA 1031	Surveying Camp	1

YEAR 2					
SEMESTER 1			SEMESTER 2		
CODE	COURSES	CREDITS	CODE	COURSES	CREDITS
SKAA 2012	Civil Engineering Laboratory 1	2	SKAA 2112	Civil Engineering Materials	2
SKAA 2032	Mechanical and Electrical Systems	2	SKAA 2223	Mechanics of Materials and Structures	3
SKAA 2513	Hydraulics	3	SKAA 2712	Engineering Geology and Rock Mechanics	2
SSCE 2832	Highway Engineering	2	SKAA 2722	Geotechnics I	2
SKAA 2912	Water Treatment	2	SKAA 2922	Wastewater Engineering	2
SSCE 2393	Numerical Methods	3	SSCE 2193	Engineering Statistics	3
ULAB 2122	Advanced Academic English Skills	2	UHAS 2##2	Elective Faculty of Management	2
			UKQ 2##2	Service Learning	2
TOTAL		16	TOTAL		18

YEAR 3					
SEMESTER 1			SEMESTER 2		
CODE	COURSES	CREDITS	CODE	COURSES	CREDITS
SKAA 3021	Integrated Design Project 1	1	SKAA 3031	Integrated Design Project 2	1
SKAA 3122	Construction Technology	2	SKAA 3012	Civil Engineering Laboratory2	2
SKAA 3243	Theory of Structures	3	SKAA 3233	Design of Steel & Timber Structure	3
SKAA 3352	Reinforced Concrete Design I	2	SKAA 3613	Hydrology and Water Resources	3
SKAA 3413	Computer Programming	3	SKAA 3842	Traffic Engineering	2
SKAA 3712	Geotechnics II	2	SKAA 3913	Environmental Management	3
UHAS3##2	Elective Faculty of Management ULAM 1112*	2	ULAB 3162	English for Professional Purpose	2
UICI2022	Science Technology and Mandkind	2			
TOTAL		17	TOTAL		16

*For international student only

SHORT SEMESTER		
CODE	COURSES	CREDITS
SKAA3045	Industrial Training	5

YEAR 4					
SEMESTER 1			SEMESTER 2		
CODE	COURSES	CREDITS	CODE	COURSES	CREDITS
SKAA4##3	ElectiveI	3	SKAA4##3	ElectiveII	3
SKAA4021	Civil Engineering Seminar	1	SKAA4##3	ElectiveIII	3
SKAA4022	Research Methodologyand Pre-Project	2	SKAA4034	Final YearProject	4
SKAA4042	Integrated Design Project 3	2	SKAA4333	Reinforced Concrete Design 2	3
SKAA4113	Constructions & Project Management	3	SKAA4412	Civil Engineering Information Systems	2
SKAA4223	Structural Analysis	3	TECS1001	Oral Interaction	0
UHAS 3012	Entrepreneurship And Enterprise Development	2	TECS1002	Writing	0
TOTAL		16	TOTAL		15

4.2 Our Uniqueness

- One of the biggest Civil Engineering faculties in the world.
 - One of the biggest and best Civil Engineering lab/facilities in the region.
 - A major contributor of Civil Engineering graduates in the local workforce.
 - High employability rate of graduates.
 - A major contributor of leaders in government and industrial sectors.
 - The first Civil Engineering Faculty to achieve ISO 9001:2000, ISO 9001:2008 and ISO 17025:2005 certifications.
 - Diversity of lecturers (qualification background from institutions all over the world).
- Students are given the opportunity to experience studying abroad through various programmes organized by the Faculty/ University. Programmes such as the Global Outreach Programme (GOP), service learning and student exchange are highly sought after by students who want to be broaden their knowledge and prepare themselves for the global market.

4.3 Career Prospects and Career Path

Graduates of the programme can be employed as Project Engineers, Construction Engineers, Hydraulic Engineers, Environmental Engineers, Highway and Transport Engineers, Geotechnical Engineers, Site Engineers, Design Engineers and Structural Engineers.

4.4 Cross-Campus Programme

Students are given the opportunity to enrol in a few courses in participating universities. The grades and credits obtained during this period are transferable (up to 1/3 of the total credits of the curriculum). Currently, there are four participating universities i.e. Universiti Teknologi Malaysia, Universiti Sains Malaysia, Universiti Malaya and Universiti Malaysia Sarawak.

4.5 Professional Skills Certificate (PSC)

Students are given a chance to enrol in certificate programmes offered by the Centres of Excellence in the University and the School of Professional and Continuing Education (SPACE) during semester breaks

1. How to Get Yourself Employed (HTGYE)
2. ISO 9001: 2008 Quality Management System Requirement (ISO)
3. Occupational Safety and Health Awareness (OSHA)
4. How to Manage Your Personal Finance (HTMYPF)
5. Test of English Communication Skills for Graduating Students (TECS):-
 - (i) TECS 1001 (Paper I – Oral Interaction)
 - (ii) TECS 1002 (Paper II - Writing)

4.6 Facilities available

1. Structural Engineering Laboratory
2. Material Engineering Laboratory
3. Hydraulic sand Hydrology Laboratory
4. Environmental Laboratory
5. Geotechnical Laboratory
6. Highway & Transportation Laboratory
7. Computer Laboratory
8. Civil Engineering Testing Unit (CETU)
9. Information Technology Unit of Civil Engineering (ITUCE)
10. Resource Centre
11. Surveying Unit
12. Teaching Laboratory

4.7 Supports for Students and Their Learning

1. Personal Support
 - Academic Advisor
 - Student Academic Guidelines
 - Counseling
2. Infrastructure Support
 - Internet Access
 - E-Learning
 - Digital Library
 - Health Care and Recreational
3. Financial Support
 - Research Grant
 - Teaching Assistant
 - Research Assistant
 - Perbadanan Tabung Pengajian Tinggi Negara (PTPT)

4.8 Methods for Evaluating and Improving the Quality and Standards of Teaching and Learning Mechanisms for review and evaluation of teaching, learning, assessment the curriculum and outcome standards

1. Students performance based on:
 - Good Pass (KB) and Conditional Pass (KS)
 - Cumulative Point Average (CPA)
 - Graduation On Time (GoT)
 - Analysis of course performance (Course Assessment Report – CAR)
 - Analysis of Programme performance (Programme Assessment Report – PAR)
2. Employability
 - Exit Survey
 - Alumni Survey
 - Market Survey
 - Employer Survey
3. Lecturer's Performance:
 - Teaching evaluation by students (e-PPP)
 - Alumni Survey
 - Competency check-list for staff (CV)
 - Annual staff appraisal (SKT)
4. Other Supports
 - Faculty Academic Committee
 - PSM (undergraduate final year project) survey
 - External Examiner Reports
 - Industrial Advisory Panel Reports
 - CO Achievement survey by students
 - Students e-Portfolio
 - Generic Skills Evaluation
5. Delivery Systems
 - Quality Management System Committee (ISO 9001:2000, ISO 9001:2008 & ISO 17025:2005)
 - CSI (Customer Satisfaction Index)
 - AKA Audit Report
 - SAR / EAC Standard
6. Role of External Examiners (Visiting Examiners)
Visiting Examiners are appointed by the Faculty Academic Committee to:
 - Review and evaluate program curriculum
 - Review and evaluate assessment procedure and methods
 - Make necessary recommendations to the Academic Committee

4.9 Grading System

Summary of grades, marks and their interpretation

Marks	Grade	Value Point
90 - 100	A+	4.00
80 - 89	A	4.00
75 - 79	A-	3.67
70 - 74	B+	3.33
65 - 69	B	3.00
60 - 64	B	2.67
55 - 59	C+	2.33
50 - 54	C	2.00
45 - 49	C	1.67
40 - 44	D+	1.33
35 - 39	D	1.00
30 - 34	D	0.67
00 - 29	E	0.00

ree programme at the Faculty of Civil Engineering is implemented using the semester system. In general, the programme is realized based on the following approaches:

(i) Lectures and Tutorials

The theories are taught through lectures and tutorials according to a fixed schedule.

(ii) Laboratory Activities

The laboratory activities include testing and experiment related to the theories taught in the lectures. This is important to enhance the students' understanding of the basic theories and their applications.

(iii) Practical Design Session

All design and project based courses are required to include hands-on design sessions.

(iv) Problem Based Learning (PBL)

Problem Based Learning is a very important component of teaching and learning process. PBL is implemented in a number of courses at the Faculty. It helps students to reinforce their understanding on the course contents.

(v) Survey Camp

Apart from the theories learnt during lectures, students are required to attend a two-week survey camp which is conducted out of the campus during semester break.

(vi) Industrial training

All third year students are required to undergo a twelve week Industrial Training at civil engineering establishments of their choice. At the end of the training, students are required to submit an Industrial Training Report to the Faculty for assessment purposes

(vii) Civil Engineering Seminar (SEMKA)

This is a compulsory seminar that is organized to expose students to the latest technologies, practical knowledge and techniques that are applied in civil engineering practices. This is one of the methods to disseminate contemporary knowledge that could not be implemented in the traditional lecture settings. The speakers for the seminar are mostly local or foreign professionals.

(viii) Final Year Project

As part of the fulfillment for the award of the Bachelors Degree, students have to complete a Final Year Project under the supervision of academic staff. The project has to be completed within two semesters. Upon the completion of the project the students are required to submit a dissertation and give an oral presentation. To hone the generic skills of the students, the curriculum is designed to address generic skills through infusion or diffusion. By doing so, graduates from this Faculty would be competitive, competent and have high ethical values. The generic skill attributes are as stipulated in the Programme Specifications

4.12 Students' Academic Assessment

As the programme is implemented using the semester system, the performance of students is assessed continuously throughout the semester. The grades are given based on the coursework and the final examination

4.13 Cross-campus Programme

4.13.1 Introduction

The Cross-campus Programme is meant to provide opportunities for undergraduate to gain experience by attending courses at other universities. Currently, there are four local universities participating in this programme. They are:

- (i) Universiti Teknologi Malaysia (UTM)
- (ii) Universiti Sains Malaysia (USM)
- (iii) Universiti Malaya (UM)
- (iv) Universiti Malaysia Sarawak (UNIMAS)

Students who choose to participate in this programme will be placed in one of the universities listed above during the second semester of each academic session.

4.13.2 Eligibility

The programme is open to undergraduates who have undergone a minimum of two semesters of their studies with the following conditions:

- (i) The total number of credits allowed to be taken is between twelve (12) and sixteen (16) credits only.
- (ii) The student should hold a minimum CGPA of 3.00 at the time of application.
- (iii) The student is not a residence of or originated from the state where the university that he/she intends to attend is located.

4.13.3 Fees

The student will not be charged tuition fees by the participating university but shall pay the regular tuition fees at UTM. However should the participating university provide accommodation, the student will need to pay accommodation fees


4.14 Minor Programme

The Minor programme provides opportunities for students to gain knowledge in other areas of study and therefore become more competitive in the job market.

The Minor programme is offered by a particular faculty with the consent of the University Senate. The programme consists of five (5) courses with a total credit is fifteen (15).

The group of courses for the Minor programme is determined by the faculty offering the programme. It is based on the curriculum of the Bachelors Degree programme offered by that particular faculty. In principle, the decision is based on the fulfillment of the criteria as stated by the University Senate. Participating in the Minor programme does not entail any change to the original Bachelors Degree programme.

The list of Minor programme and courses can be obtained from the Guidebook for Minor Programmes produced by the Registrar's office (Academic Management). The guidebook is available for reference at the Faculty's Academic Office.



**SEMESTER
SYSTEM RULES
AND GUIDELINES**



5. SEMESTER SYSTEM RULES AND GUIDELINE

5.1 Academic Advisory System and Role of Students

Every student is assigned an academic staff as an academic advisor. The objectives of the academic advisory system are:

- (i) To guide and assist students in adapting themselves to the academic system of the University, especially at the initial stage.
- (ii) To advise students in solving academic related problems such as workload, selection of courses and to explain the aim and purpose of the courses.
- (iii) To identify and provide counseling to problematic students as well as to develop a balanced character and positive attitude among students.
- (iv) To act as a link between students and the Faculty.

With various services and facilities provided, the Faculty expects students to be responsible in their study plan. The academic advisor should not be held responsible for the students' failure in completing their study on time. The students are advised to consult their academic advisor for the following matters:

- To obtain information on the semester system and other matters related to their study, during the first week of each semester.
- To obtain endorsement for registration or withdrawal of courses.
- To seek advice in planning for their study, particularly in terms of course selection, total number of credits and duration of study.
- To obtain endorsement for application of graduation award.

5.2 Academic Year

- (i) The University Academic Year is divided into two regular semesters, namely Semester I and Semester II. Each semester consists of 14 weeks of lectures, as shown in Table 1.
- (ii) The University also offers a short semester between the Academic Year. The implementation of the short semester is illustrated in Appendix VII. The semester is not included in the calculation of duration of study

Table1 : Academic Year*

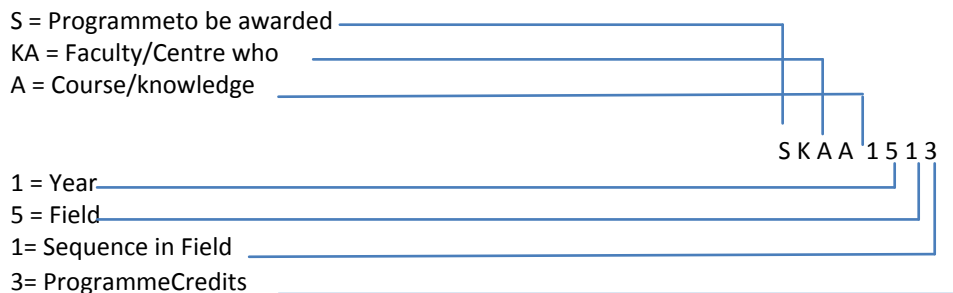
Orientation Week	1 week			
(During the Year End Break)				
SEMESTER I				
Lectures	14 weeks			
Mid Semester Break	1 week			
Study Break	1 week			
Final Examinations	3 weeks			
Total	19 weeks			
End of Semester Break	4 weeks			
SEMESTER II				
Lectures	14 weeks			
Mid Semester Break	1 week			
Study Break	1 week			
Final Examinations	3 weeks			
Total	19 weeks		OR	
End of Academic Year Break	10 weeks	Final Semester Break		1 week
SHORT SEMESTER				
		Lectures & Examinations		8 weeks
		Final Semester Break		1 week
TOTAL	52 weeks			

5.3 Registration of Programme

- (i) New students are required to register for the programme offered on the date determined by the University.
- (ii) New students who fail to register for the study programme without any acceptable reason will have their admission automatically withdrawn.
- (iii) The registration for senior students is done automatically by the University based on the previous examination results.
- (iv) Senior students who have deferred status, need to re-register for the programme. If the students do not register for the programme within the time given, the students study will be terminated.
- (v) Senior students who have been approved to pursue a Minor programme must register for the Minor programme at the respective faculties on the date specified by the University. The Rules and Regulations pertaining to the Minor programmes are listed in Appendix VIII.

5.3.1 Course Code

Course Code consist of 4 alphabets and 4 digits as description below :



A. Programme to be awarded

- | | | |
|---|---|------------------------------|
| C | = | Certificate |
| D | = | Diploma |
| S | = | Bachelors Degree |
| L | = | Graduate Diploma |
| M | = | Masters |
| P | = | Doctor of Philosophy |
| U | = | University's General Courses |

B. Faculty/Centre

- | | | |
|----|---|---|
| KA | = | Civil Engineering |
| BB | = | Built Environment |
| CS | = | Computer Science and Information Systems |
| DP | = | Diploma Programme by UTM SPACE |
| KE | = | Electrical Engineering |
| GH | = | Geoinformation Real Estate |
| HA | = | Human Resource Development and Management MaManManagement |
| KK | = | Chemical Engineering |
| IC | = | Islamic Civilization |
| KM | = | Mechanical Engineering |
| PP | = | Education |
| KQ | = | General Course & Co-curriculum Centre |
| SC | = | Sciences |
| KB | = | Bio Medical & Health Science |
| QB | = | Bio Science and Bio Engineering |
| KP | = | Petroleum and Renewal Energy Engineering |
| LA | = | Language Academic |
| SP | = | Post Graduate School |

5.4 Registration of Courses

- (i) Students must register for all courses taken in each semester.
- (ii) The registration of the courses must be made before the end of the mandatory course registration date, which is TWO (2) days before the semester begins.
- (iii) Students must register with the correct course codes and section number.
- (iv) Students can only register for the courses approved by the Faculty.
- (v) Students are responsible to amend any error in the course registration slip within the stipulated period.
- (vi) Registration of Audit Courses (Hadir Sahaja - HS)
 - (a) Students are allowed to register for not more than TWO (2) audit courses with HS status per semester with permission or direction by the Faculty.
 - (b) The credits for courses registered under HS status are not included in the calculation of GPA and CGPA. However, students who register for the HS courses must meet the attendance requirement and complete all assignment and coursework given by the lecturer.
 - (c) The registration of audit courses will recorded in the examination results and in the students' transcript, provided that item (vi) (b) above is fulfilled.
- (vii) Withdrawal of Courses (Tarik Diri - TD)(CW)
 - (a) With the approval of the course lecturer and the verification of the academic advisor, students can apply to withdraw any registered course not later than the last working day of week NINE (9) of the respective semester.
 - (b) The course withdrawal is subjected to the minimum credit hours for the semester, unless approval is obtained from the Dean.
 - (c) (c) A TD (CW) code will appear in the course registration record and transcripts for the withdrawn course.
- (viii) Registration of Minor courses
 - (a) With the approval of academic advisor and the Faculty in which the Minor programme is offered, a student may register for any course offered as Minor programme courses.
 - (b) The registration of each Minor course must be in accordance with the Rules and Regulations, and time period as specified by the offering faculties.
 - (c) The grade obtained for a Minor course will be calculated in the GPA and CGPA.
 - (d) Courses for the Minor programme cannot be registered as Audit Status (HS).
- (ix) Students who fail to register courses within the specified time period can be dismissed from the programme, unless valid reasons are given and accepted by the University.
- (x) Procedures, rules and regulations pertaining to registration of the courses are given in Appendix I.

5.5 Credit Scheme

5.5.1 Course Credit

Each course has a credit value to signify the importance, learning time and the nature of the course.

5.5.2 Credit Value

- (i) The credit value of courses may vary depending on the nature of courses as shown in the following table:

Type of meeting	Total of meeting hours per semester	Credit Value	Total No. of Student Learning Time
Lecture	14	1	40
Practical/Studio/ Site Project	28/28/42	1	40

Note : The total number of student learning time includes lecturer,practical/studio/project/tutorial and independentstudy.

- (ii) Credit for Industrial Training
 - (a) Industrial Training is given a Compulsory Attendance status (Hadir Wajib - HW).
 - (b) A value of ONE (1) credit for Industrial Training is equivalent to at least TWO (2) weeks of raining.

5.5.3 Credit Load Per Semester

- (i) All full-time students, except those with Conditional Status (Kedudukan Syarat KS) or those in the final two (2) semesters must register for no less than the Minimum Credit requirement that is 12 credits per semester, inclusive of HS and HW courses.
- (ii) Students who would like to register for more than EIGHTEEN (18) credits must obtain approval from the Dean. However, no student is allowed to take more than TWENTY TWO (22) credits per semester.
- (iii) A student with an academic problem status (KS) is allowed to register between NINE (9) to THIRTEEN (13) credits only for the following semester. Their pre-registration of courses will be cancelled and they must re-register within a specified time.

5.5.4 Credit Earned

- (i) Credit Earned is defined as credit of the Passed course including the Compulsory Attendance (HW) course but not the Audit (HS) course.
- (ii) For students who are given Credit Transfer, the Credit Earned is the sum of the total transferred credit and the Passed credit

5.5.5 Credit Counted

Credit Counted is the credit taken in the current and in all semesters which are used to calculate the GPA and CGPA, respectively. The credit of the HS and HW courses are not included in the Credit Counted.

5.5.6 Credit Exemption

- (i) Students are awarded Credit Exemption if they possess:
 - (a) A qualification from any accredited institution equivalent to the University's certificate, diploma or degree; or
 - (b) Working experience that has been recognized by the Senate as equivalent to certain courses offered at certificate or diploma or university degree level.
 - (c) Student who change their study programme within the University or from another institution of higher learning.
- (ii) Application for Credit Exemption must be made together with the application for admission to the University or not later than week THREE (3) during the first semester of study.
- (iii) Student are not allowed to registrar for courses which have been given credit exceptions.
- (iv) No Credit Exemption will be given for any Minor programme.
- (v) Rules and regulations pertaining to Credit Exemption are as in Appendix II.

5.5.7 Credit Transfer

- (i) The Credit Transfer pertains to the cross-campus programme.
- (ii) Students can request for a transfer of credit provided that:
 - (a) The course is taken in another institute of higher learning (IPT) approved by the University during the programme of study at the University; and
 - (b) The request for transfer of credit is done during the semester in which the course is taken in that particular IPT.
- (iii) Rules and regulations pertaining to Credit Transfer are as in Appendix II.

5.5.8 Credit for Failed Course

- (i) Students who fail any core (compulsory) course must retake and pass that particular course. In calculating the CGPA, only the final credit and the Passed grade point of the course will be taken into consideration. The previous Failed credit and grade point will automatically be removed.
- (ii) Failed elective courses can be taken again or replaced with other elective courses but the failed courses will still be calculated in the GPA and CGPA.
- (iii) Failed Minor courses may not necessarily be repeated but the credit and grade point of the courses will still be counted in the GPA and CGPA.

5.5.9 Credit for Graduation and Duration of Study

- (i) The Credits for Graduation and the normal duration of study of the study programme are determined by the Faculty, with the approval of the Senate.
- (ii) Students must pass all required courses listed in the curriculum of the study programme.
- (iii) The calculation of total Credits for Graduation will not take into account the credits obtained from any Minor course.
- (iv) The maximum Duration of Study is the regular duration specified for the study programme plus additional FOUR (4) semesters.
- (v) For direct entry students, the maximum duration of study is determined by the faculty based on the approval total number of credit exemptions given.
- (vi) Credit for Graduation and Duration of Study for a Minor programme:
 - (a) Students must pass all courses required for a particular minor programme.
 - (b) There is no additional number of semesters added to the maximum duration of study for students registering for a minor programme
- (vii) The total minimum credit and maximum period to complete the programme is as shown in Table 3.

Total No. of Credit Exemptions (CE)	Maximum Duration (Semester)
<20	(Normal Duration+4)-0
20 - 33	(Normal Duration+4)-1
34 - 50	(Normal Duration+4)-2
51- 67	(Normal Duration+4)-3
>68	(Normal Duration+4)-4

5.5.10 Grading System

- (i) A student's performance in any course is reflected by the grades obtained. The relationship between marks, grades and credit points is shown in Table 4.

Marks	Grade	ValuePoint
90 - 100	A+	4.00
80 - 89	A	4.00
75 - 79	A-	3.67
70 - 74	B+	3.33
65 - 69	B	3.00
60 - 64	B-	2.67
55 - 59	C+	2.33
50 - 54	C	2.00
45 - 49	C-	1.67
40 - 44	D+	1.33
35 - 39	D	1.00
30 - 34	D-	0.67
00 - 29	E	0.00

- (ii) The passing grade for any course is set by the Faculty upon the Senate's approval. D+ is the minimum passing grade.
- (iii) Apart from the above grading system, the followings also apply:
 - Incomplete (I) [TS]** - Grade given to students who did not take the final exams or were unable to complete their coursework due to illness or other reasons accepted by the university.
 - Attendance Only (AO) [HS]** - Grade given to registered audit courses
 - Compulsory Attendance (CA) [HL]** - Passed Grade given to registered compulsory attendance (CA) audit courses
 - Failed Attendance (FA) [HG]** - Failed Grade given to registered compulsory attendance (CA) audit courses

5.6 Assessment

5.6.1 Attendance Requirement

- (i) Students must fulfill the 80% attendance requirement for any course in ONE (1) semester including Compulsory Audit Course (HW) and Audit Course (HS).
- (ii) Students who do not meet the 80% attendance requirement will not be allowed to attend any subsequent lecture or to sit for any subsequent assessment. Failing grade (HG) will be given to a course with a HW status while ZERO (0) mark is given to other courses.
- (iii) For a course registered with HS status, the grade HS will not appear in the transcript if the 80% attendance requirement is not fulfilled.
- (iv) The rules, regulations and procedures on actions to be taken against students with less than 80% attendance are given in Appendix III

5.6.2 Assessment Scheme

- (i) Assessment of a course is carried out continuously in the form of coursework, final examination or other forms throughout the lecture weeks, according to the guidelines set by the Faculty and subject to the University's approval.
- (ii) The assessment for the industrial training is set by the Faculty and is subject to the University's approval.
- (iii) For a course that is assessed based on coursework and final examination, the weightage of the coursework must not be less than 50% of the total mark. On the other hand, the weightage of the final examination must not be more than 50% of the total mark, unless approval is given by the Senate.
- (iv) For courses to be 100% assessed through coursework or to have less-than-50% weightage for the final examination, they are subject to the approval of the Faculty's Academic Committee.

5.6.3 Final Examination

The final examination must be conducted within a specific time frame, according to guidelines set by the University as in Appendix IV.

5.6.4 Special Examination

- (1) Special Examination can be held for the following cases:
 - (i) Students who are unable to sit for the final examination because of illness and validated by a medical officer from the university or government hospital or have given reasons accepted by the university; or
 - (ii) Students in their final semester who have passed with Good Standing (GS)[KB] but failed in ONE (1) course taken in the last TWO (2) semesters of study not including the semester used for Practical/Industrial Training.
- (2) The special examination mark will be used to determine the results of the course based on the following:
 - (i) The special examination mark as in para (1) (i) will be used to replace the previous final examination mark whereas the coursework marks remain the same.
 - (ii) Students as in para (1) (ii) who have passed the special examination with a grade D + or a passing grade set by the faculty will be calculated as part of their GPA and CGPA. Students who have been given Grade D will have to repeat the course.
- (3) Special Examination will not be held for the following cases:
 - (i) Courses that have no final examination; or
 - (ii) Students who did not sit for the final examination and gave reasons that are not accepted by the university; or
 - (iii) Students who have been barred from sitting for the final examination
- (4) Special Examination will only be conducted once in a semester unless with the approval of the Senate.

5.6.5 Release of Examination Result

- (i) The University will display the students' final grade for every course within a specific period.
- (ii) Students are required to check the grade displayed. If there was any discrepancy, the students need to report to the Faculty latest by ONE (1) weeks after the last date of the final examination week

5.6.6 Appeal on the Result

A student can appeal to the Faculty for a review of any final examination grade no later than TWO (2) weeks after the last date of the final examination, based on the Guidelines and Procedures as stated in Appendix V

5.6.7 Academic Standing

- (i) A student's performance is assessed based on the TWO (2) measurements GPA and CGPA which are as follow:

$$\text{GPA} = \frac{\text{Total Credit Point of particular semester}}{\text{Total Credit Counted of a particular semester}}$$

$$\text{CGPA} = \frac{\text{Total Credit Point value of all semesters}}{\text{Total Credit Counted of all semesters}}$$

- (ii) A student's academic standing is determined at the end of every regular semester based on his/her CGPA is as shown in Table 5 below:

Academic Standing	CGPA
Good Status (GS)[KB] Probation Status (PS)[KS] Failed Status (FS)[KG] (Study)	CGPA > 2.00 1.70 < CGPA < 2.00 CGPA < 1.70

- (iii) With approval from the Senate, a student who obtains a GPA < 1.00, but maintains a CGPA > 1.70 can:
- Continue his/her study; or
 - Be instructed to defer his study till the following semester; or
 - Study will be terminated.
- (iv) A student who obtains Probation Status (PS) [KS] for three subsequent semesters will be given a Failed Status (FS) [KG] and will be terminated from his/her programme of study.
- (iv) The academic standing of a student who studies in Short Semester will not be determined, even though the GPA and CGPA are calculated, unless if it is necessary for the purpose of graduation. The grade obtained in the Short Semester will be taken into account in the calculation of CGPA for the following semester.

5.6.8 Improving Academic Performance

- (1) Students are given the chance to improve their grades with the faculty's approval during their study according to the following conditions:
- obtain faculty's approval;
 - improve the grade of the course which is B- and below;
 - allowed to improve only once the grade of the course;
 - the better grade between the original and the latest grade will be used in the GPA and CGPA calculation; and
 - request for improving grade will have to be accompanied with grade improvement registration payment determined by the Senate.
- (2) Students who have completed their study but have not fulfilled the requirements for an award such as Good Status (GS) [KB] (Completed Program) will not be allowed to improve the grade of their course.

5.6.9 Announcement of Student Academic Standing

The academic standing of students will be announced through the modes adopted by the university.

5.7 Computation of GPA and CGPA

- (i) Grade Point Average (GPA):
- The GPA is the average grade points obtained in a semester.
 - The GPA is calculated as follows:

$$\text{GPA} = \frac{\text{Total Grade Points (TGP)}}{\text{Total Credit Count (TCC)}}$$

$$\text{GPA} = \frac{k_1 m_1 + k_2 m_2 + \dots}{k_1 + k_2 + \dots}$$

$$\text{Total Grade Points (TGP)} = k_1 m_1 + k_2 m_2, \dots$$

$$\text{Total Credit Counted (TCC)} = k_1 + k_2 \dots$$

k_1, k_2, \dots = Credit value for each course taken

m_1, m_2, \dots = grade points obtained for each course taken

- (c) Example of GPA calculation for first year student:

Semester1

Course	Credit Counted (k)	Marks (%)	Grade	Grade Point (m)	Total Grade Points (kxm)
SKAA1012	2	78	A-	3.67	7.34
SKAA1213	3	72	B+	3.33	9.99
SKAA1713	3	80	A	4.00	12.00
SSCE1693	3	75	A-	3.67	11.01
ULAB1122	2	89	A	4.00	8.00
UHAS1172	2	71	B+	3.33	6.66
	15				55.00

$$\text{Total Credit Counted (TCC)} = 15$$

$$\text{Total Grade Points (TGP)} = 55.55$$

$$\text{GPA} = \frac{\text{Total Grade Points (TGP)}}{\text{Total Credit Count (TCC)}} = \frac{55}{15} = 3.67 \text{ for semester 1, CGPA=GPA}$$

- (ii) Cumulative Grade Point Average (CGPA)
- The CGPA is the grade point average obtained overall semesters.
 - The CGPA is calculated as follows:

$$\text{CGPA} = \frac{\text{Total Grade Points (TCP)}}{\text{Total Credit Count (TCC)}}$$

$$\text{CGPA} = \frac{\text{TCP}_1 + \text{TCP}_2 + \dots}{\text{TCC}_1 + \text{TCC}_2 + \dots}$$

$\text{TCP}_1 + \text{TCP}_2 + \dots$ = Total Credits Points obtained in each semester

$\text{TCC}_1 + \text{TCC}_2 + \dots$ = Total Credits Counted in each semester

Total Credits Counted (TCC) = $0k_1 + k_2 + \dots$

Total Credits Counted for semester 1 = 15

GPA for semester 1 = 55.00

(c) Example of CGPA calculation

Course	Credit Counted (k)	Marks (%)	Grade	Grade Point (m)	Total Grade Points (kxm)
SKAA1023	3	86	A	4.00	12.00
SKAA1422	2	80	A	4.00	8.00
SKAA1513	3	86	A	4.00	12.00
SSCE1793	3	76	A-	3.67	11.01
SSCE1993	3	72	B+	3.33	9.99
UICI1012	2	86	A	4.00	8.00
UKQ# 2##2	2	90	A+	4.00	4.00
	18				65.00

Total Credit Counted (TCC) for semester 2 = 18
 Total Grade Points (TGP) for semester 2 = 65.00

GPA for semester 2 = $\frac{65.00}{18}$ = 3.61

CGPA for semester 2 = $\frac{55.00 + 65.00}{15 + 18}$ = 3.75

5.8 Status of Students' Academic Year

Students' academic year will be determined by the Faculty according to the total Credit Earned as shown in Table 6

Table 6: Minimum Credit Earned for Advancement

Year	Credit Obtained
1	0-33
2	34-66
3	67-104
4	105-135

5.9 Award and Recognition

(i) The Royal Academic Prize

The prize is contributed by the Office of the Keeper of the Royal Seal. The prize is awarded to one (1) Bumiputra and ONE (1) Non-Bumiputra graduates who have obtained a First Class Degree and are actively involved in academic and co-curricular activities.

(ii) The Chancellor's Award

This award is bestowed to the best TWO (2) graduates who have obtained a First Class Honours Degree and are actively involved in academic and Co-Curriculum activities. The award consists of cash, a certificate and a medal.

(iii) The Vice-Chancellor's Award

This award is bestowed to the best graduate who has obtained a First Class Honours Degree from each faculty and are actively involved in academic and Co-Curriculum activities. The award consists of cash, a certificate and a medal.

(iv) The Alumni's Prize

The prize is given to the best graduate from each faculty. The prize consists of cash and a certificate

(v) The Academic Prize

The prize is given to the best graduate for each programme in each faculty. The prize is contributed by Statutory and Professional Bodies and Private Companies. The prize consists of cash, a medal and a book or Certificate of Appreciation

(vi) The Dean's List

A student who obtains a GPA of 3.50 and above will be awarded a Dean's List Certificate, provided that he/she has registered for at least 12 credit hours for that semester excluding courses with HS and HW status. The remark "Dean's List" will be printed on the student's transcript.

5.10 Conferral of the Degree

5.10.1 Conferral Requirements

- (i) The Senate normally endorses degree conferral in two regular semesters. Nevertheless, based on certain reasons, the Senate may approve degree conferral in short semester.
- (ii) Students are only qualify for the conferral of their degree after fulfilling the following requirements:
 - (a) Obtain a Good Status (GS) [KB]
 - (b) Passed all required courses
 - (c) Have applied for a degree conferral and have received the Faculty's approval
 - (d) Fulfill other requirements.
- (iii) Students are eligible to have a remark of Minor in a particular programme in their transcripts after:
 - (a) Passing all courses required for the Minor programme
 - (b) Having applied for a Minor conferral and have obtained the offering faculty's approval.

5.10.2 Application for the Degree conferral

- (i) Students who have fulfilled all the requirements for graduation must submit an application for a degree conferral within a specific period in a particular semester. A fine will be imposed on late application.
- (ii) Students who do not apply for the conferral of degrees within the specific period will only be awarded with a Good Status (Completed Study). The students can apply for the degree conferral in the following semesters.
- (iii) Students who are given above (ii) status but do not apply for degree conferral within FIVE (5) years after completing their study will not be awarded the degree except with the Senate's approval.
- (iv) Students who do not meet the requirements for the degree conferral, yet submit an application for the degree conferral, will be fined
- (v) Students who have fulfilled passing requirements for Minor programme must submit the application for Minor programme conferral together with the application for the degree conferral.
- (vi) Guidelines and the application procedures for the degree conferral are given in Appendix VI.

5.10.3 Classification of the Degree

The classifications of Degree conferred to students are based on their final CGPA obtained as shown in Table 7:

Table 7: Classification of Degree

CGPA	Degree Classification
CGPA > 3.67	First Class Honours
3.00 < CGPA < 3.67	Second Class Honours (Upper)
2.00 < CPGA < 3.00	Second Class Honours (Lower)

5.11 Deferment of Study

- (i) A student who has been diagnosed as having illness by a Medical Officer of the or by any Government Hospital is entitled to request for deferment of study. This deferment will not be counted as part of the total number of semesters in the calculation of his/her Duration of Study.
- (ii) The maximum length for deferment for each application is TWO (2) continous semesters. However, if the student requires more than FOUR (4) continous semesters, the case will be referred to the University Medical Panel to decide whether this student will be allowed to continue with the study or have his study terminated.
- (iii) A student can also request for deferment of study for non-medical reasons. The application must be made before the last working day of week NINE (9) of the semester. The non-medical deferment period will be counted as part of the total number of semesters in the calculation of his/her maximum Duration of Study.

However, if recommended by the Dean of the Faculty and approved by the Deputy Vice Chancellor (Academic and Internationalization) the deferment period may be waived from being counted in the student's maximum Duration of Study.

- (iv) For a student who is deferred because of University's regulation (GPA < 1.00), the deferment period will be counted as part of the total number of semesters that the student has undergone. However, if recommended by the Dean of the Faculty and approved by the Deputy Vice Chancellor (Academic and Internationalization) the deferment period may be excluded from the calculation.
- (v) For a student who is deferred by the University due to disciplinary action, his/her deferment period will be counted as part of the student's maximum study period.

5.12 Change of Programme

Change of programme for full-time students is not encouraged. However, the University may consider an application to change the study programme by a full time student within the same faculty or to another programme offered in another faculty provided that:

- (i) The change of programme is only applicable for those who have completing a minimum of ONE (1) semester at the University.
- (ii) The application for change of programme must be made no later than TWO (2) weeks after the examination results are released.
- (iii) The academic performance of the student must not be Failed Status (FS) [KG].
- (iv) For change of programme involving two almost similar Degrees, the student's previous academic records will be maintained and the student is considered as continuing student.
- (v) For change of programme involving two different Degrees (from a Degree to a Diploma), all previous academic records of the student will be closed, and a new record keeping will be established subject to Credit Exemption regulation. The maximum Duration of Study for the student is also subject to Credit Exemption transferred by the Faculty.
- (vi) Change of programme is allowed only once during the whole duration of the programme of study.

5.13 Academic Misconduct

- (i) Students who have committed misconduct or academic wrong doing will be penalized according to the University and College University Acts, 1971, Procedures according to Universiti Teknologi Malaysia (Students Code of Conduct) 1999 or any other actions determined by the university.
- (ii) Students are not allowed to commit the following academic misconducts :-
 - (a) Copy/plagiarize such as copy phrases, ideas or information without citing the original sources; or
 - (b) Misbehave and suspicious behavior during an examination; and/or
 - (c) Any form of wrong doing or attempts of academic cheating other than the above.

5.14 General Provisions

- (i) All Academic Rules and Regulations must be observed. The Senate is entitled to the Rules and Regulations as deemed appropriate.
- (ii) The Appendices and Tables in this Academic Guidelines will become part of the current Academic Regulations.
- (iii) Should any dispute arise, the regulations stated in this Academic Guidelines will apply.
- (iv) The information in this book is correct at the time it is published.



CURRICULUM AND SYLLABUS

6. CURRICULUM AND SYLLABUS

Civil engineering covers a wide area of study. In general, civil engineering deals with the design, construction and maintenance of the physical and natural built environment including works such as bridges, roads, canals, dams and buildings. It also includes water resources management, water works, waste management, and environmental pollution control for use and benefit of mankind. Civil engineering programme at UTM encompasses the following areas of study:

(i) Science and Mathematics

Science and Mathematics courses are required to prepare students with strong fundamentals, which are prerequisites to the engineering fields.

(ii) Civil Engineering Core Courses

Students will be given basic training and knowledge in civil engineering study. The courses cover four main areas in civil engineering, namely structures and materials, geotechnics and transportation, hydraulics, hydrology and water resources, and environmental engineering and management.

(iii) Civil Engineering Elective Courses

Final year students are required to take three advanced courses in the civil engineering field which are equivalent to courses offered at graduate level. The objective of the elective courses is to develop an area of expertise which is of interest to the students.

(iv) Humanities and Social Science Courses

Humanities and social science courses are taught to students as the basis for moral education towards becoming responsible, dedicated and ethical, as well as competent individuals. Courses in these areas also enable students to understand and appreciate the values and diverse cultures of various races in Malaysia and other nations.

(v) Co-curricular Courses

Students are required to attend co-curricular courses of their choice. The courses are developed to instill leadership qualities as well as to produce resilient individuals.

6.1 Bachelor of Engineering (Civil) Curriculum

The curriculum for the Bachelor of Engineering (Civil) is given in the following tables. The courses are arranged according to the semester in which they are offered. Students are strongly encouraged to enroll in the courses according to the proposed arrangement. Students may not graduate on time should they fail or withdraw from the courses offered.

Year 1 Semester 1

Code	Course	Credits	L	T	P/S	Lab
SKAA1012	Civil Engineering Fundamentals	2	3	1		
SKAA1213	Engineering Mechanics	3	3	1		
SKAA1713	Soil Mechanics	3	3	1		
SSCE1693	Engineering Mathematics 1	3	3	1		
ULAB1122	Academic English Skills	2	2			
UHAS1172/UHAS1162**	Dinamika Malaysia/Arts, Customs and Beliefs of Malaysians**	2	2			
Total Credits		15				

**UHAS1162 for international student only

Semester 2

Code	Course	Credits	L	T	P/S	Lab
SKAA1023	Engineering Surveying	3	3			
SKAA1422	Engineering Drawing	2			4	
SKAA1513	Fluid Mechanics	3	3	1		
SSCE1793	Differential Equations	3	3	1		
SSCE1993	Engineering Mathematics II	3	3	1		
UICI1012	Islamic and Asian Civilisation	2	2			
Total Credits		16				

Short Semester

Code	Course	Credits	P/S
SKAA1031	Survey Camp	1	Two weeks

Year 2 Semester 1

Code	Course	Credits	L	T	P/S	Lab
SKAA2012	Civil Engineering Laboratory 1	2				4
SKAA2032	Mechanical and Electrical Systems	2	2			
SKAA2513	Hydraulics	3	3	1		
SKAA2832	Highway Engineering	2	2	1		
SKAA2912	Water Treatment	2	2	1		
SSCE2393	Numerical Methods	3	3	1		
ULAB2122	Advanced English for Academic Communications	2	2			2
Total Credits		16				

Semester 2

Code	Course	Credits	L	T	P/S	Lab
SKAA 2112	Civil Engineering Materials	2	2			
SKAA 2223	Mechanics of Materials and Structures	3	3	1		
SKAA 2712	Engineering Geology and Rock Mechanics	2	2	1		
SKAA 2722	Geotechnics I	2	2	1		
SKAA 2922	Wastewater Engineering	2	2	1		
SSCE 2193	Engineering Statistics	3	3	1		
UHAS 2##2	Elective Faculty of Management	2	2			
UKQU 2##2	Co-Curriculum/Service Learning	2	2		2	
Total Credits		18				

Year 3 Semester 1

Code	Course	Credits	L	T	P/S	Lab
SKAA3021	Integrated Design Project 1	1				
SKAA3122	Construction Technology	2	2			
SKAA3243	Theory of Structures	3	3			
SKAA3352	Reinforced Concrete Design I	2	2			
SKAA3413	Computer Programming	3	2			2
SKAA3712	Geotechnic II	2	2			
UHAS3##2/ULAM1112	Elective FM Malay Language Communication	2	2			
UICI 2022	Science Technology and Mankind	2	2			
Total Credits		17				

** ULAM1112 for international students only

Semester 2

Code	Course	Credits	L	T	P/S	Lab
SKAA 3031	Integrated Design Project 2	1				
SKAA 3012	Civil Engineering Laboratory 2	2				4
SKAA 3233	Design of Steel & Timber Structures	3	2		2	
SKAA 3613	Hydrology and Water Resources	3	3			
SKAA 3842	Traffic Engineering	2	2			
SKAA 3913	Environmental Management	3	3			
ULAB 3162	English for Professional Purpose	2	2			
Total Credits		16				

Short Semester

Code	Course	Credits	P/S
SKAA3045	Industrial Training	5	12 weeks

Year 4 Semester 1

Code	Course	Credits	L	T	P/S	Lab
SKAA 4##3	Elective I	3	3			
SKAA 4021	Civil Engineering Seminar		1			
SKAA 4022	Research Methodology and Pre-Project		2		2	
SKAA 4042	Integrated Design Project 3					
SKAA 4113	Constructions & Project Management		3			
SKAA 4223	Structural Analysis	3	2			1
UHAS 3012	Entrepreneurship and Enterprise Development		2			
Total Credits		16				

Semester 2

Code	Course	Credits	L	T	P/S	Lab
SKAA4##3	Elective II	3	3			
SKAA4##3	Elective III	3	3			
SKAA4034	Final Year Project	4			8	
SKAA4333	Reinforced Concrete Design 2	3	2		2	
SKAA4412	Civil Engineering Information Systems	2	1		2	
Total Credits		16				

Professional Skills Certificate

Code	Course	Credits	L	T	P/S	Lab
TECS 1001	Oral Interaction					
TECS 1002	Writing					
GLL 1001	How To Get Yourself Employed					
GLL 1029	ISO 9001:2008 Quality Management System Requirement (ISO)					
GLL 1040	Safety & Health Officer (SHO)/Occupational (OSHA)					
GLL 1041	How To Manage Your Personal Finance					
Total Credits						

Subject to change

Notes :- L - Lecture; T - Tutorial; P/S - Practical/Studio; Lab – Laboratory

6.2 List of Faculty's Elective Courses

1. Materials, Management and Construction

SKAA 4013	Advanced Engineering Survey
SKAA 4123	Advanced Construction Technology
SKAA 4133	Construction Laws and Contract
SKAA 4143	Construction Plants and Equipment
SKAA 4163	Concrete Technology

2. Structural Analysis and Design

SKAA 4203	Stability and Dynamics of Structures
SKAA 4233	Offshore Structures
SKAA 4243	Finite Element for Structural Analysis
SKAA 4263	Earthquake and Wind Engineering
SKAA 4273	Maintenance of Seismic Structures and Materials
SKAA 4293	Advanced Solid Mechanics
SKAA 4313	Advanced Reinforced Concrete Design
SKAA 4323	Design of Pre-Stressed Concrete
SKAA 4383	Tall Building System : Analysis and Design

3. Information Technology

SKAA 4433	Advanced Computer Programming
SKAA 4463	Construction Integrated Environment
SKAA 4473	Geographic Information System

4. Hydraulics and Hydrology

SKAA 4523	Coastal Engineering
SKAA 4613	Integrated Water Resources Management
SKAA 4623	Hydrology Analysis and Design
SKAA 4643	Environmental Hydraulics and

5. Geotechnic and Transportation

SKAA 4713	Geotechnical Engineering Design
SKAA 4733	Foundation Engineering
SKAA 4813	Advanced Highway Engineering
SKAA 4823	Transportation and Traffic Engineering

6. Environmental Engineering

SKAA 4923	Advanced Water and Wastewater Treatment
SKAA 4943	Municipal Solid Waste Management
SKAA 4973	Industrial and Hazardous Waste Treatment
SKAA 4983	Water Quality Management

6.3 Synopsis of Core Courses

6.3.1 First Year

SKAA 1012 Civil Engineering Fundamentals

This course is only offered in the 1st Semester every year to all new students who have just registered in the Faculty of Civil Engineering. The course includes a general introduction to the field of civil engineering and the engineer's responsibilities to society. Main subfields in the discipline such as Structural Engineering, Transportation and Geotechnical Engineering, Hydraulics and Hydrology and Environmental Engineering will be highlighted.

Problem solving exercises apply fundamental concepts from these subfields to integrate the steps of analysis, synthesis and evaluation through individual homework assignments and group projects through competition in selected civil engineering fields that require attention to a broad range of issues.

The course also exposes the students to issues related to engineering practice such as working in teams, scheduling, evaluating risk and making ethical decisions. Prior to regular weekly lectures and project exercises, a special welcoming lecture will be given by the Dean of the Faculty.

SKAA 1023 Engineering Surveying

This course provides the basic theory and practice of surveying to civil engineering students. Methods of establishing horizontal & vertical control for construction and design are explained and compared. Detailing for producing site plans, area and volume estimations, road curves geometric design are also discussed. Error analysis and adjustments are described. The concept of field survey automation and the usage of software are explained. At the end of the course, students are expected to be able to plan, execute, compute and analyse surveying works involved in establishing horizontal & vertical controls and producing plans for civil engineering applications. Students should also be able to geometrically design horizontal and vertical curves according to standards, perform area calculations and volume estimation for earthwork activities in civil engineering.

SKAA 1031 Surveying Camp

Pre-requisite : SKAA 1023 Engineering Surveying

After successfully completing course SKAA 1023, students are well exposed to the theory and practice of surveying. Nevertheless, surveying projects that were undertaken so far are 'stand alone' projects with emphasis on the understanding of the concepts involved. Therefore, this subject provides training of the surveying work involved in a typical civil engineering project. In other words, this subject gives a holistic view of the surveying activities needed prior to and during the construction stage of a civil engineering project. The course will furthermore, train students in planning and executing survey works on a larger scale.

The surveying works involved depend on the type of project undertaken, but normally include

establishing horizontal and vertical controls, detailing, earthwork calculations and setting out. Students are assessed based on their oral presentation and written reports submitted at the end of the course. This subject introduces the basics and concepts of surveying in general with emphasis towards engineering surveying. Basic surveying needs commonly required in civil engineering are explained. Methods of establishing horizontal & vertical controls, detailing for producing site plans, area and volume estimations, road curves geometric design and setting out are discussed. Students are introduced to the typical field tasks as required in civil engineering. Common methods of field procedures, bookings and reduction of observations are adopted.

Students are expected to be able to establish horizontal and vertical controls, setting out and detailing. The importance of surveying field activities prior to the design and during the construction stages in civil engineering work is highlighted. Since accuracy of survey work is vital in ensuring designs are exactly positioned, students must be able to conduct survey works that meet standard accuracies.

SKAA 1213 Engineering Mechanics

The course is designed to expose the students to the basic principles of statics and dynamics. The subject is divided into two parts: Mechanics of Statics and Mechanics of Dynamics. The content of the lecture will be emphasized on the application of the basic mechanics principle in civil engineering.

Mechanics of Statics deals with equilibrium of bodies, i.e. bodies at rest and bodies moving with a constant velocity. It includes resultant and resolution of forces, equilibrium of a particle, force system resultant, equilibrium of rigid bodies, center of gravity and centroid, and moment of inertia of an area.

Mechanics of Dynamics deals with the accelerated motion of bodies. It includes kinematics and kinetics of a particle and of a rigid body. Kinematics discusses the relationship between displacement, velocity and acceleration against time. Kinetics covers the concepts of force and acceleration (Newton's second law of motion), energy and work, impulse and momentum, and vibration.

At the end the course, students should be able to incorporate and utilise principles of applied mechanics in civil and structural engineering problems.

SKAA 1422 Civil Engineering Drawing

This course is designed to expose the students to the basic understanding of engineering drawings. It will cover the aspect of understanding and interpretation of the element of drawings. Student can exercises his creativity to draw construction lines during the orthographic and isometric projection exercises. This will be ends with the hands-on session with Computer Aided Design (CAD). Students will also be exposed to the civil works drawings, i.e. the earthworks and the reinforcement drawings. Several exercises are performed with the use of CAD to get the students acquaintance of the software. During this session, students will be asked to design, draw and submit group projects that are given to them. After completing this course students should be able to produce civil engineering drawings using CAD.

SKAA 1513 Fluid Mechanics

This course is designed to introduce and apply the concepts of Fluid Mechanics (fluid statics and kinematics, forces and flow in closed conduits, with/and centrifugal pumps) and to solve problems related to Civil Engineering. It encompasses topics such as fluid statics and fluid dynamics. The pressures and forces in these static and dynamic fluids are introduced, discussed and analyzed through equations. It also covers upon the analyses of flows in closed conduits to include minor and major head losses. The performance characteristics, functions and applications of centrifugal pumps in pipeline systems are also demonstrated and analyzed in this course.

SKAA1713 Soil Mechanics

This subject is compulsory subject for civil engineering students. The content of this subject will give a student basic understanding and exposure towards practical in Geotechnical Engineering. It will cover on basic

soil properties which, consists of soil composition, soil classification and soil compaction. Besides that, it will also discuss on water in soil and soil shear strength. The topic that will cover is important to civil engineers where most of problems occur at site will involve with geotechnical and soil mechanics. At the end of this subject, students will able to apply the knowledge on basic soil properties, water in soil and shear strength parameters in the planning, analysis, design and supervision of related geotechnical works.

6.3.2 Second Year

SKAA 2012 Civil Engineering Laboratory 1

Civil engineering is a practical field and the laboratory work is essential to be performed by students in this field. The laboratory work, which consists of workshops and experiments are designed to expose students essential problem solving and experimental techniques. Most of the generic attributes that the students must develop at the University are acquired through the laboratory experiments and researches.

Laboratory sessions are able to strengthen the students to relate the fundamental theories with laboratory experiments in the field of concrete, geotechnics, hydraulics, and structural engineering. Each student will experiences.

Data collections and performs data analysis and result interpretations. Application of the experimental results to the real civil engineering problem will be highlighted.

Upon completion of the course, students are expected to be able to perform laboratory experimental work and investigation in concrete, geotechnics, hydraulics and structural engineering, to develop the techniques of conducting measurements, data analysis and interpret results in written report, and to develop generic attributes and enhance their ability to participate effectively in a laboratory environment and be able to work as a part of a team.

SKAA 2032 Mechanical and Electrical Systems

This course is a service course from the Faculty of Mechanical Engineering & The Faculty of Electrical Engineering. The course will exposed civil engineering students to the fundamentals of Mechanical & Electrical building services. The topics to be covered in the Mechanical Portions are design of Domestic Water Supply System, Fire Prevention System, Ventilation and Air-Conditioning System and Lift and Escalators System. Students will be exposed more on design using professional charts and codes and catalogues from manufacturers.

The electrical portion of the course covers single phase and three phase system followed by an insight to transformer and induction motor operation. The electrical section will also cover the commercial practice of electrical wiring and substation design. At the end of the course, students should be able to demonstrate the understanding of electrical system and machines operation and ability to design domestic wiring system.

SKAA 2112 Civil Engineering Materials

This course is designed for students to understand the different types of construction materials in civil engineering. It will emphasize on types and function of cement, the function of aggregates in concrete, water, admixtures, properties of fresh and hardened concrete, concrete mix design, manufacturing concrete on site, properties and application of timber, types and characteristics of brick and block, ferrous and non-ferrous metal, and other latest materials in construction industry. At the end of the course students should be able to describe, identify and discuss the properties and behaviour of different types of civil engineering materials together with the applications of the materials in practice.

SKAA 2223 Mechanics of Materials and Structures

Pre-requisite: SKAA 1213 Engineering Mechanics

This is a core subject. Students will be able to understand the basic theory of the fundamental principles of mechanics of materials. Students will be able to incorporate these basic fundamentals into application of the basic design of simple structures. It will assure them of the concepts of stress and strain, plane-stress

transformation, shear force and bending moment, stresses in beams, deflections of beams, vibration of beams, columns, and torsion. At the end of the course, the students should be able to solve numerous problems that depict realistic situations encountered in engineering practice. The students will also be able to develop and master the skills of reducing any such problem from its physical description to a model or symbolic representation to which the principles may be applied.

SKAA 2513 Hydraulics

Hydraulics is one of the major discipline of civil engineering. This course introduces the concepts of open channel fluid flow and their applications in hydraulics engineering problems. It covers various aspects of open channel hydraulic including types of open channel flow, design of channel section dimensions, uniform and non-uniform steady flows. Flow distribution in pipe network system and dimensional analysis are also included. At the end of the course, students should be able to apply the knowledge in solving civil engineering hydraulics problems.

SKAA 2712 Engineering Geology and Rock Mechanics

Pre-requisite: SKAA 1713 Soils Mechanics

This course is designed to enable students to evaluate, to apply and to analyse the relevant geological and rock mechanics principles in designing safe and economical rock engineering structures. In geology, the related topics on rock types/classifications, geological structures and geological processes are taught. Having acquired this knowledge, the principles of rock mechanics are then introduced mainly to highlight the relevancy of engineering properties of geological materials in designing rock engineering projects. These principles include engineering properties of rock material, rock discontinuities and rock stabilisation systems. At the end of the course, students should acquire the related knowledge and principles in geology and rock mechanics, and should be able to apply these knowledge and principles in designing safe and economic engineering structures in rock masses.

SKAA 2722 Geotechnics I

Pre-requisite : SKAA 1713 Soil Mechanics

This course is one of the core courses, which provides solid background knowledge on the properties and behaviour of soils for geotechnical engineering practice. Understanding of the course will help the students in designing civil and geotechnical engineering structures. Topics for the course are stresses in soils, compressibility and consolidation of soils, and slope stability. At the end of the course, students should be able to analyse and apply the related theories of soil behaviour, and to solve problems of stresses on retaining structures, consolidation settlement and slope stability.

SKAA 2832 Highway Engineering

Pre-requisite : SKAA 1713 Soil Mechanics

This is one of the compulsory courses which will expose students to the fundamental theory of highway engineering. Topics covered are highway materials and evaluations, premix plants, construction techniques and plants, mix designs, quality controls and testing, pavement structural thickness design, highway drainage, pavement visual assessment, maintenance and rehabilitation.

SKAA 2912 Water Treatment

This course is designed to expose the students to water treatment technology. Topics discussed include basic water quality requirement, water characteristics, water treatment process and supply, and design of unit water treatment systems. For design of water treatment system, it will cover the design of unit treatment operation. Other than treatment methods, the course also discuss on the water distribution.

SKAA 2922 Wastewater Engineering

This course is designed to expose the students to wastewater treatment technology. Topics discussed include basic environmental microbiology, characteristics of wastewater, wastewater analysis (Biological Oxygen Demand, Chemical Oxygen Demand and Suspended Solids), design of conventional wastewater treatment systems, sludge treatment and design of septic tank. For design of wastewater treatment systems, it

will cover the design of sedimentation tank, Waste Stabilization Pond, Conventional Activated Sludge, Extended Aeration, Aerated Lagoon and Trickling Filters. At the end of the course, the student should be able to apply the knowledge to design a simple unit operation of wastewater treatment systems and also to modify existing unit operation.

6.3.3 Third Year

SKAA 3012 Civil Engineering Laboratory 2

Civil engineering is a practical field and the laboratory work is essential to be performed by students in this field. The laboratory work, which consists of workshops and experiments are designed to expose students essential problem solving and experimental techniques. Most of the generic attributes that the students must develop at the University are acquired through the laboratory experiments and researches.

Laboratory sessions are able to strengthen the students to relate the fundamental theories with laboratory experiments in the field of concrete, environment, geotechnics, transportation, hydrology, and structural engineering. Each student will experiences data collections and performs data analysis and result interpretations.

Application of the experimental results to the real civil engineering problem will be highlighted. Upon completion of the course, students are expected to be able to perform laboratory experimental work and investigation in concrete, transportation, hydrology, geotechnics, environment and structural engineering, to develop the techniques of conducting measurements, data analysis and interpret results in written report, and to develop generic attributes and enhance their ability to participate effectively in a laboratory environment and be able to work as a part of a team.

SKAA 3021 Integrated Design Project 1

Pre-requisite : To be determined as required basis

Integrated Design Project 1 is tailored to encourage students to explore the inception and conceptual planning stage of a civil engineering development project. The subject focuses on site and utility planning of a development project given to students, working in groups. Such exercise may include developing a survey plan.

For the specific proposed site, developing a general drainage and sewerage plan including evaluation of and connection to existing infrastructure and possible need for sewage lift station, proposing location and type of soil investigation to be carried out, producing preliminary road and utility cross sections and recommending any improvements to ease traffic congestion, developing an environmental mitigation plan including sittings of detention ponds and wetlands, to consider alternatives for sustainable design, evaluate the impact of relocating existing utility services and producing a preliminary project design schedule showing milestones and critical path.

The scope and brief of the proposed development will be as reflective of a real life development project. Students are required to integrate their knowledge of civil engineering disciplines such as (but not limited to) geotechnical engineering, highway and transportation, waste water engineering, and sustainable development considerations into their overall project work. At the end of this course, the students will be able to comprehend the importance of proposing a viable and workable development project and appreciate the importance of integration and synthesis of various discipline of civil engineering knowledge.

SKAA 3031 Integrated Design Project 2

Pre-requisite: To be determined as required basis

Integrated Design Project 2 (IDP 2) is tailored to expose and familiarize students to a feasibility study and preliminary design of a civil engineering development project that has been developed previously in Integrated Design Project 1 (IDP 1) (conceptual planning stage). The aim of the Feasibility Study phase is to determine the optimum scheme from a technical, economic, environmental, and construction view.

A Feasibility Study Report is the minimum expected output of this phase. The Feasibility Report shall encompass all the engineering attributes developed in the Planning Stage (IDP 1) and shall propose several options. Each

option shall then be investigated to measure its capability to sufficiently address the project constraint aspects and the optimum scheme determined. The chosen scheme will then be developed to the stage of producing a Detailed Design Brief to be adopted at the final Integrated Design Project phase (SKAA 4042). Such exercise shall in part maintain the continuity of the IDP project series.

At the end of this course, the students will be able to comprehend the importance of reviewing and selecting a feasible technical proposal and appreciate the importance of integration and synthesis of various discipline of civil engineering knowledge.

SKAA 3045 Industrial Training

Pre-requisite: All Basic Civil Engineering Core Subject

This course is a core course which will expose students to the application of Civil Engineering in working environment. The student will have a better view of applying theoretical knowledge in classroom and adopt it practically in the professional environment. Student will be exposed to team working, professional ethics, experience and knowledge used in Civil Engineering. It was expected that towards the end of practical training, they will have a clear view of Civil Engineering profession.

SKAA 3122 Construction Technology & Estimating

This is a compulsory course. This course emphasizes on the principles of construction in building and civil engineering works, which consists of site preparation and layout, earthwork activities, construction of various building elements such as foundations, floors, walls and roofs. It also covers other important aspects in construction i.e formworks and scaffoldings. General concepts on industrialized building systems including precast, prestressed and modular coordination in construction are also introduced.

The syllabus also covers the introduction to the methods of estimating and the preparation of the Bills of Quantities and project estimating. At the end of the course, the students should be able to describe and distinguish the various building elements, techniques and systems used in a construction and also to be able to estimate the cost of the building elements. The students should also be able to demonstrate capability of working in a team and some acquirement of contemporary knowledge

SKAA 3233 Design of Steel & Timber Structure

Pre-requisite: SKAA 3243 Theory of Structures

This is a core subject. Students will be able to incorporate and utilise technology in the analysis and design of steel and timber structures. It will expose the students to the analysis and design of steel and timber structural elements. For the steel design, the topics covered include the advantages and the general concepts of steel constructions, analysis and design of restrained and unrestrained beams, columns with axial load, columns with axial load and bending moment, trusses, bolt and weld connections. For timber structures, the topics covered include the design of beams and columns

SKAA 3243 Theory of Structures

Pre-requisite: SKAA 2223 Mechanics of Materials

This course is designed to expose students to the analysis of determinate and indeterminate structures in civil engineering. The course emphasizes on analysis of beams, portal frames, arches and cable structures subjected to various load conditions using classical techniques.

Analysis by influence line for determinate beams, methods of consistent displacement by virtual work approach, slope deflection, moment distribution, and plastic method for beams and frames are covered. The course is limited to the analysis of linear elastic behaviour of structures except in plastic analysis where the critical loads at failure of structures are examined. At the end of the course, students should be able to apply the knowledge and use the techniques for analyzing indeterminate structural elements.

SKAA 3352 Reinforced Concrete Design I

Pre-requisite: SKAA 2223 Mechanics of Materials

This is a core course which will provide an understanding and ability to analyze and design reinforced concrete structural elements. Among the topics discussed are objective and methods of design, code of practice, analysis and design of sections for moments and shear, checking for deflection and cracking, durability and detailing requirements, design of simply supported and continuous beams, and design of one way and two way restrained simply supported slab. Furthermore the students will be exposed to the concept of prestressed concrete which covers topics on principle and methods of prestressing, stress limit, losses and selection of section.

SKAA 3413 Computer Programming

This course is designed to expose the students on the development of programming skill using a computer language, which is suitable for the current computer operating system. It will emphasize on the general concept of computer programming that includes steps of problem solving using computer, algorithm and program logic tools, interface design, modularization, arrays, files and graphics.

Examples, assignments and group projects related to various civil engineering fields are given to the students. At the end of the course, the student should be able to plan, analyse, and write computer programs for basic civil engineering applications.

SKAA 3613 Hydrology and Water Resources

Pre-requisite: SKAA 1513 Fluid Mechanics

The course emphasizes hydrology and its application in the field of engineering especially those related to water resources. Interdisciplinary aspects of hydrology that will be introduced and discussed are the understanding of the hydrological processes. These processes are precipitation, evaporation, transpiration, surface runoff, groundwater flow, infiltration and interception. Some processes will be discussed in more detail as compared to the others.

An introduction to flood estimation will be highlighted together with the basic analysis and concept design in accordance to local guideline of Urban Storm water Management Manual for Malaysia (MASMA). Frequency analysis will be discussed in this subject. A brief introduction to the hydrologic modeling processes will be introduced as a basic requirement to the understanding to the empirical and numerical modeling concepts.

Upon completion of the course, students are expected to be able to describe and assess all the physical processes found in the hydrologic cycle together with the basic quantitative hydrologic analysis methods.

SKAA 3712 Geotechnics II

Pre-requisite : SKAA 2722 Geotechnics I

This course will provide students with sound knowledge on site investigation and foundation designs for civil and geotechnical engineering structures. The main topics of the course are site investigations, shallow and pile foundations. The importance of site investigation for safe and economic foundation designs will be emphasized.

Methods, procedures and planning of effective site investigation will be addressed. The topic of shallow foundation will be based on Terzaghi's theory and Meyerhof's general bearing capacity equations, which will include the effects of ground water and eccentric load. Static formulae (Meyerhof' method, and β methods) and dynamic formula will be introduced to determine pile capacity.

SKAA 3842 Traffic Engineering

This is one of the compulsory courses which will expose students to the fundamental of traffic engineering. The content of traffic engineering course provides students with the fundamental theory of traffic flow and management. Major topics include traffic studies, drivers' behavior and interactions, statistics, the fundamental

theory of speed–flow–density relationships and applications in road performance analysis, the design of traffic signalized system, and highway geometric design.

SKAA 3913 Environmental Management

The course is designed to expose the students to various aspects in environmental pollution and concepts of environmental management. The course will emphasize on discussion in different aspects of water, air, soil, and noise pollution, various pollution control and prevention methods, environmental regulations, environmental impact assessment (EIA), as well as environmental management system (EMS). Upon completion, students should be able to demonstrate and apply the knowledge by the ability to identify specific pollution control technology and methods and the processes in preparing an environmental impact assessment (EIA) report. The students should be able to synthesize the knowledge in a group project and to demonstrate a cooperative effort while working in a team.

6.3.4 Fourth Year

SKAA 4021 Civil Engineering Seminar

This course is designed as a compulsory attending course, which is carried out based on a seminar format. Speakers from within the University and from within the practicing civil engineering-based organisations will be invited to talk on specialised topics and issues in civil engineering field including safety and health. At the end of the course, student should be able to understand the actual civil engineer practices in civil-engineering based activities, and adhere to professional ethics.

SKAA 4022 Research Methodology and Pre-Project

This course is a compulsory course for all students before they undergo the Final Year Project. In this course, the student will be exposed in various aspect of research including types of research, method of literature review, research design, results and analysis, writing of thesis and journal and also presentation skills. The students will also be exposed to the problem solving methodology, decision-making and data collection process. This helps to prepare the students for Final Year Project.

The student has to prepare a Pre-Project report in the topic that will be given by their supervisors. At the end of this course, students should be able to understand all aspects of research, conduct research in a systematic way, solve and analyse data and results and write and present project report.

SKAA 4034 Final Year Project

Pre-requisite : SKAA 4022 Research Methodology and Pre-Project

This course is compulsory for all students before they can get their Bachelor Degree. In this course, the student is expected to be able to conduct research activity independently with supervision from their supervisor. The students are also required to write a good thesis report and be able to present their project findings effectively. At the end of the course, students should be able to conduct research in a systematic way, collect data relating to the project, solve and analyse data to obtain results, write a good project report and present project findings.

SKAA 4042 Integrated Design Project 3

Pre-requisite : To be determined as required basis

Integrated Design Project 3 is the final phase of the IDP series tailored to process the Detailed Design Stage of a development project that has previously undergone the (i) Planning Stage Integrated Design Project 1 (IDP1) and (ii) Feasibility and Preliminary Design stage Integrated Design Project 2 (IDP 2). The subject focuses on the implementation and integration of infrastructure design and building design to produce a comprehensive final technical report including engineering proposals and drawings, specifications and bills of quantities, cost estimates of development projects given to students, working in groups.

Apart from basic infrastructure design, students are also required to integrate their knowledge of other civil engineering disciplines such as (but not limited to) structural analysis and design including geotechnical (foundation) design, project scheduling techniques and sustainable development considerations into their overall project work. The content on this subject (apart from structural analysis & design, geotechnical engineering, construction management including sustainable issues etc. which has been covered in other core subjects) covers basic infrastructure design such as earthworks design, storm water drainage design, potable water supply design, sewerage reticulation design and road design.

At the end of this course, the students will be able to comprehend the needs and requirements of local/ government authorities regarding submission procedures and are able to appreciate the importance of integration and synthesis of various discipline of civil engineering knowledge.

SKAA 4113 Constructions & Project Management

This course aim to develop understanding on the importance of construction management principles and its related tools. The course starts with analyzing the general perspective of management processes and their relationship to construction. The role and responsibilities of a project manager will be explained. Then the focus is on construction project life cycle together with the roles and responsibilities of professionals involved at each stage within different project deliveries methods. Apart from that ethical issue related to engineering profession will be discussed.

The second part of the course will include the usage of tools available in construction management particularly in the application of planning and scheduling technique using Gantt Chart and networking technique. The course will also expose the students on the application of contemporary scheduling software available in the market. The application of scheduling technique will cover the issues related to resource management, resource allocation and project time cost trade-off. The third part of the course dedicated in analyzing the project cash flow requirements, project monitoring and control. The course ends with the discussion on contemporary issues in construction. The final part of the course covers an introduction to the development process and construction contracts, types of tender, tendering process and the preparation of tender documents, strategy in tendering including quality and safety and health in construction management.

SKAA 4223 Structural Analysis

Pre-requisite: SKAA 3243 Theory of Structures

This course is designed to expose the students in analysing two-dimensional and three-dimensional structures using matrix operational method and computer applications. The matrix operational method is also suitable to be programmed in computers as the solutions adopt the matrix concept. The course consists of the stiffness method, concept for solving matrices and also structural modelling using existing software. The structures include beams, trusses, frames and grillage. At the end of the course, students should be able to analyse the structures by using the numerical methods and/or the existing computer software. The students should also have a problem solving skill on problems of interest in Civil Engineering structures.

SKAA 4333 Reinforced Concrete Design 2

Pre-requisite: SKAA 3352 Reinforced Concrete Design 1

This course is a core course which will exposed students to a wider scope of reinforced concrete design. As a continuation to the Reinforced Concrete Design 1, the topics to be covered are design of staircase, design of column, design of footing and pile cap and design of retaining walls. Furthermore the students will exposed to the method of analysis of reinforced concrete frame.

SKAA 4412 Civil Engineering Information Systems

Pre-requisite : SKAA 3413 Computer Programming

This course is designed to expose the students in analysing, designing and developing the huge of data. It concerns on the management of information and how to model it in a structured manner. The used of Database Management System (DBMS) as an application tool give the student a further step in order to apply an IT application in solving their problems. This course also exposes the knowledge on the usage, management and

sharing of data and information to ensure that information is manipulated and used effectively. The introduction of Knowledge Management also has been introduced. At the end of the course, students should be able to plan, analyse, and modelling the information for develop DBMS related to civil engineering problems.

6.4 Synopsis of Faculty's Elective Courses

SKAA 4133 Construction Laws and Contract

This course introduces students to Malaysia laws, which will focus on the sources, and branches of law in Malaysia. The course will emphasize on private laws related to construction practice, torts, law of contract and construction contract administration. Students will be exposed to construction contract administration which covers the Standard Forms of Contract, disputes in construction and dispute resolutions. At the end of the course, students should possess a sound knowledge of the Malaysian legal framework and familiar with legislative and legal constraints applicable to the practise of construction. More importantly, the students should be able to use their knowledge to promote ethical and better image of the construction industry.

SKAA 4143 Construction Plants and Equipment

This course introduces the techniques of applying engineering fundamentals and analyses to the planning, selection and utilisation of construction equipment. In general, the right selection, efficient utilization and cost-effectiveness of major construction operations have significant impacts on the overall cost and duration of construction activities. This course uses concepts from various engineering disciplines such as Engineering Economics, Geotechnical, Mechanical, Structural and Environmental Engineering, among others. At the end of this course, the students should be able to apply engineering fundamentals and analyses to the planning, selection and utilisation of construction equipment. This includes a thorough understanding on the total construction process and how construction equipment should be selected and used to produce the intended quality in the most cost-effective manner.

SKAA 4163 Concrete Technology

This course is designed to introduce students and enhance their knowledge on concrete technology. It will emphasize on the rheology of fresh concrete, the various design of concrete mixes, the different types and properties of cement replacement materials, special concretes which include fibre reinforced concrete, high strength concrete, lightweight aggregate concrete, and polymer concrete. Other topics that will be covered include concrete deformations, durability of concrete, and repair of concrete structures due to various causes of deterioration. At the end of the course students should be able to identify, discuss and apply the materials and technology available in producing good concrete that is suitable for different applications.

SKAA 4203 Stability and Dynamics of Structures

Pre-requisite: SKAA 3243 Theory of Structures

SKAA 4223 Structural Analysis

This is an elective course that is offered to final year undergraduate students. This structural dynamics covers introduction, natural frequency, single degree of freedom, multi-degree of freedom system, Eigenvalues and Eigenvectors, free vibration response. Structural instability covers concept, simple model, Euler column instability, stability functions, Bolton Method and Horne Method . At the end of the course the students should be able to solve numerous problems which involves dynamics and instability. The students will also be able to develop and master the skills of reducing any problems from its physical description to a model or symbolic representative to which the principles may be applied.

SKAA 4233 Offshore Structures

Pre-requisite: SKAA 3243 Theory of Structures

SKAA 3352 Reinforced Concrete Design 1

SKAA 3233 Design of Steel and Timber Structures

This course emphasizes on the overview of offshore structural engineering related to oil and gas industry by covering vast amount of fundamental topics such as Front-end engineering design (FEED), Environmental loads, Response of Structures to environmental loading, Analysis and Design of Offshore Steel platforms, Analysis and Design of Offshore Topsides Modules, Construction of Steel Platforms, Load-out, installation, hook-up and

commissioning of offshore structures, Inspection, repair and Maintenance, Structural assessment of existing structures as well as removal of disused structures.

SKAA 4243 Finite Element for Structural Analysis

Pre-requisite: SKAA 4223 Structural Analysis

This course is developed to expose students to the fundamental theory and application of the finite element method. The course covers linear analyses for displacements and stresses in continuum structures. Formulation of stiffness matrices for one-dimensional elements, beams, plane stress and plane strain are presented in detail. Grillage, plate bending, shell, Axisymmetric and solid elements are also discussed. Isoparametric formulation is emphasized.

Use of finite element software for modeling and analysis is also emphasized. At the end of the course, students should be able to apply the finite element method by hand calculation for simple problems. For more complicated problems, the students should be able to create finite element model, choose correct elements, analyze and interpret results using Finite Element software. Students also should be able to analyze practical problems by implementation through final project and make class presentation to demonstrate their understanding about the course materials.

SKAA 4263 Earthquake and Wind Engineering

This is an optional course. In the early stage, introduction to structural design and dynamic effect from wind and earthquake is revealed. Steps and method of structural design for wind load will be discussed. Then, engineering aspect in seismology will be discussed.

Other than that, seismic reaction on structure, general consideration on earthquake resistant design and seismic behavior of structural system will be taught. Students will also be introduced with the permanent earthquake resistant design and structural earthquake resistant design. Lastly, some issues on special topics in Earthquake Engineering will be discussed.

SKAA 4273 Maintenance of Seismic Structures and Materials

This is an optional subject. This subject gives an introduction on seismic maintenance and concepts related to it. Dynamic analysis with computer will also be introduced. Topics related including non-linear seismic analysis, structure and earth interaction, base separation and energy dissipation device.

SKAA 4293 Advanced Solid Mechanics

This course is designed to discuss the theories of elasticity and to provide the mathematical background for finite element applications. The course begins with the discussion of the basic concepts in elasticity covering tensors notations, analysis of stress and strain and the constitutive equations. The course continues with the discussion of the variational approach in solid mechanics focusing on the application of the stationary potential energy principle. At the end of the course, students should be able to understand multidimensional states and analyses through the ability to utilize the compact notations of tensors.

SKAA 4313 Advanced Reinforced Concrete Design

Pre-requisite : SKAA 4333 Reinforced Concrete Design 2

This is elective course which will provide extra knowledge on the aspect of design of reinforced concrete structural elements. As a continuation to the Reinforced Concrete Design 1 and 2, the topics discussed are analysis and design of ribbed, waffle and flat slabs, water retaining structures, shear walls, corbel and nibs. Furthermore students will be exposed to the methods of deflection calculation, design of elements for torsion and design of raft foundations.

SKAA 4323 Design of Pre-Stressed Concrete

Pre-requisite : SKAA 3352 Reinforced Concrete Design I

This is an elective course, which will provide students an understanding and ability to analyse and design prestressed concrete structural elements. Topics discussed include the concept and principles of prestressing,

methods of prestressing concrete, stress limits, losses of prestress, selection of section, serviceability and strength requirements. Students will also be exposed to the complete analysis and design procedure of simply supported prestressed concrete non-composite and composite beams, and design principles of continuous beams.

SKAA 4383 Tall Building System Analysis and Design

The subject emphasized on the analysis and design of tall buildings structural system. It covers a fundamental to tall building structures and related issue in analysis and design from around the world. The students will be guided through the Code of Practice basic requirement of analysis and design of tall buildings. The ultimate behavior, analysis and design of tall building structural elements such as from basic element of reinforced concrete plates, formation of frames structures, composition of shear walls and core wall of structures will be checked and explain before the students are guided through the real analysis and design of various shapes of buildings. Finally, detailing of shear walls and core walls will be explained together with the behavior of infill's of frame structures.

SKAA 4433 Advanced Computer Programming

Pre-requisite : SKAA 3413 Computer Programming

This course is designed to expose the students in designing and developing computer program using suitable programming languages such as visual basic and active server pages. It will emphasize on the general concepts of computer programming, steps of problem solving using computer program, advanced interface design, graphic, multimedia, animation, database design and web programming. The course will also provide hands- on session for the students to solve tutorials and problems given that related to civil engineering fields.

At the end of the course, students should be able to understand the steps in problems solving and apply the knowledge to identify and analyze civil engineering problems that require computer programming solutions. The students should also be able to design and write the computer program to solve the problems.

SKAA 4463 Construction Integration Environment

Pre-requisite : SKAA 4412 Civil Engineering Information System

This subject is concerns on the Integrated Construction Environment (ICE) which involve coordinating the integration process between various construction applications. Such environment will provide a platform whereby the Architectural, Engineering And Construction (AEC) can share and exchange the information. The progress of information technology (IT) in the construction industry relies on the ability of the project participants to exchange and share information among themselves and managing Information System (MIS).

The student is expected to gain some knowledge on the Computer Integrated Construction (CIC) which is an emerging technology to automate the flow and exchanging of construction project information. They will be exposed to Information Modeling, E-Construction, Internet, Networking, Artificial Intelligent and Groupware. The used of database management system (DBMS) and Standardisation to manipulate the information will give the student a further step in order to apply an IT application in solving their construction problems. In the new development on the current research and development (R&D), the applications of IT in the construction are becoming more important, especially in the new era of globalisation. Therefore, the new generation of civil engineers should be equipped with this knowledge to stay competitive in the industry equipped with this knowledge to stay competitive in the industry.

SKAA 4473 Geographic Information System

This course is an elective course specially designs for civil engineering students who always have to manipulate huge amount of spatial data. It concerns on the management of information (spatially and attribute) and how to model it in a structured manner. This course will emphasize on the overview and the application of GIS in civil engineering, GIS data structure, data manipulation and GIS implementation, information presentation of GIS, and a review of GIS software and sample of application. The development of a prototype system is also been highlighted in this course in order to give the student a proper technique for developing an application. At the end of the course, students will be able to plan, analyse, and modeling the information for develop GIS application related to civil engineering problems.

SKAA 4523 Coastal Engineering**Pre-requisite: SKAA 2513 Hydraulics**

The course covers theoretical and fundamental principles of coastal hydrodynamics and processes. It gives background knowledge of the various hydrodynamic parameters acting in the coastal region due to waves, tides and currents. Sediment transport mechanism in the littoral zone leading to the understanding of coastal morphology, erosion and accretion processes are described. Underlying principles of coastal engineering works, coastal erosion management and implications from implementing coastal structures in the coastal environment are delivered. Emphasis in solving and tackling coastal engineering problems adopts the use of established analytical techniques. The application of state-of-the-art computational techniques as a tool in several aspects of coastal engineering and management works are introduced. At the end of the course, students should be able to describe and analyse the various coastal processes and the effect of these forces on the coastal zone. The students should be able to quantify coastal environmental parameters. They should also be capable of proposing methods to control the processes using analytical techniques and evaluate results yielded by computational techniques when applied to solve coastal engineering problems.

SKAA 4613 Integrated Water Resources Management**Pre-requisite: SKAA 1513 Fluid Mechanics****SKAA 3613 Hydrology and Water Resources**

This is an elective course aim to equip students with in-depth knowledge in water resources design and management. This course highlights major water resources management issues with the emphasis on the integration of various management components. While the course contents maintain the technical elements of water resources system and engineering, students are also exposed to the realities of the political, economic, and social settings that influence the decision making process. Upon completion of this course, the students should be able to demonstrate the diverse and complicated issues in water resource management, discuss the need and steps for integrated management approach, analyse and determine viable project options, propose appropriate management strategies, and apply the appropriate techniques and strategies in reservoir planning and design.

SKAA 4623 Hydrology Analysis and Design**Pre-requisite : SKAA 1513 Fluid Mechanics****SKAA 3613 Hydrology & Water Resources**

The course covers the theoretical aspects and design of urban stormwater drainage system. It is intended to introduce students to the fundamentals of stormwater drainage system design. Methods of hydrologic design, rainfall design, flood estimation, rainfall-runoff relationship and flood routing will be taught. This will involve the planning, analysis, design and management for the quantity aspect.

The objectives of this subject are :

1. To review basic concepts of hydrology
2. To analyze design aspects of hydrologic processes
3. To discuss the effect of urbanization to catchments runoff
4. To explain issues in drainage system management and flood control programs
5. To carry out the design of drainage structures and flood control mechanisms
6. To incorporate the guidelines in MASMA into drainage system design.

At the end of the course, the students are being exposed to design elements in drainage and flood control systems comply with Malaysian design criteria.

SKAA 4643 Environmental Hydraulic and Hydrology

This course is designed to expose the students to surface water environmental hydraulics. The fundamentals and principles, which underlie the mathematical modeling techniques used to analyze the quality of surface waters are emphasized. Students will be able to build their own models from mass balance equations, and will appreciate the related environmental disciplines. At the end of the course, the students should be able to apply the numerical models for a selected case study.

SKAA 4713 Geotechnical Engineering Design**Pre-requisite: SKAA 1713 Soil Mechanics****SKAA 2722 Geotechnics I**

This elective course introduces the students to some design concept and construction practice of earthworks, such as embankment, cutting, earthdam, tunnel and earth retaining structures. It will examine poor ground conditions and propose alternative technique(s) for ground improvement and the corresponding monitoring activities. The course also suggests practical solution to problems often confronted during construction in difficult ground area. At the end of the course, student should be able to test and apply the theory and practice of earthwork design and construction. The students should also be able to evaluate construction and post-construction data for purposes of performance, safety and design compatibility.

SKAA 4733 Foundation Engineering**Pre-requisite: SKAA 2722 Geotechnics I****SKAA 3712 Geotechnics II**

The application of soil mechanics principles to foundation design and will be highlighted. Lectures will be emphasized on foundation theories and design that are applicable in Civil Engineering. Foundation design must be based on and make use of the principles of mechanics which requires the knowledge of suitable soil parameters from various soil testing techniques. Various types of foundation and their criteria for selection will be presented which includes shallow foundation, pile, raft foundation, drilled shaft foundation, cofferdam and underpinning. Design of group piles, laterally loaded and uplift piles will be covered in the course. Settlement and bearing capacity considerations will be employed to select and design the appropriate foundation scheme for structures. At the end of the course the student will be able to understand and apply the principles in foundation design in terms of technical feasibility, economic viability, articulate and justify technical analyses through oral, written and graphical means. The student will also be able to appreciate the constantly evolving nature of civil engineering design and practice.

SKAA 4813 Pavement Design and Construction**Pre-requisite: SKAA 2832 Highway Engineering**

This course will develop the knowledge and experience of the students in pavement design and construction. It comprises the following topics: Factors influencing thickness design, Stresses in flexible and rigid pavement, traffic and material characterization, methods of pavement thickness design for flexible and rigid. Other topics include construction techniques for subgrade, subbase and roadbase layers; hot mix asphalt plants, production, delivery, placement and compaction; construction of concrete pavement; ground improvement, embankment and cut slope; surface and subsurface drainage.

SKAA 4823 Transportation and Traffic Engineering**Pre-requisite: SKAA 3842 Traffic Engineering**

An option subject to expose the student in the practical and design of transportation planning. Transportation engineering includes the process of transportation planning, survey, trip generation, trip distribution, trip assignment, modal split, capacity retrained assignment and evaluation of transport system. This subject is also to provide knowledge to the student in the public transport system, traffic evaluation, parking management and traffic safety.

SKAA 4923 Advanced Water and Wastewater Treatment**Pre-requisite: SKAA2922 Wastewater Treatment**

This course is an extension of the water and wastewater treatment courses (SKAA 2912 and SKAA 2922). It covers two different aspects of treatment namely, advanced treatment processes and effluent reuse. In advanced treatment processes, students are exposed to different physico-chemical unit processes i.e. air stripping and aeration, chemical precipitation, ion exchange, chemical oxidation, adsorption and membrane filtration. It also covers the advance topic of aerobic biological treatment process, anaerobic treatment process, and nutrients removal. Effluent reuse and the applications of the advanced processes are also discussed. The emphasis is on theoretical background, conceptual design and applications of the treatment processes.

SKAA 4943 Municipal Solid Waste Management

This is an elective course, offered to final year undergraduate students. It provides the students with an overview of solid waste management, particularly municipal solid waste. The program includes discussion on the practices of municipal waste management, sources of wastes, generation rate and characteristics (physical and chemical properties), analysis of collection systems, handling of waste and disposal practices of municipal waste. Processing and recycling of wastes are also discussed. At the end of the course, students should be able to apply the theory and knowledge of managing municipal solid waste. The students should also be able to work in a team and able to present works through a written report as well as an oral presentation.

SKAA 4973 Industrial and Hazardous Waste Treatment

Pre-requisite : SKAA 2912 Water Treatment

SKAA 2922 Waste Water Engineering

This course introduces students to issues of industrial and hazardous wastes management. The course includes discussion on the concept of hazardous waste, sources, quantities and characteristics (physical and chemical properties). The key elements in waste management such as storage, collection, transport, treatment and disposal of hazardous wastes are also addressed. Waste minimisation, one of the main strategies is also introduced. At the end of the course, students should be able to apply the knowledge by associating environmental problems that arise with poor management, treatment and disposal of industrial waste. The students should be able to work in a team to solve waste management issues.

SKAA 4983 Water Quality Management

This course is designed to exposed students to the various aspects of water quality management for river catchments, reservoirs and lakes. It will emphasize on some key issues in monitoring and assessment of water quality and the impact of water pollution to the environment. The students will find a wide range of material covered and its quantitative nature through project works will be of benefit to them. At the end of the course, students should be able to apply the knowledge through proper sampling and monitoring methods of river water quality. The students should be able to work in a team to plan mitigating and control measures for water pollution.



**UNIVERSITY'S
GENERAL
COURSES**

7. UNIVERSITY'S GENERAL COURSES

7.1 University's General Courses

Undergraduates in the Bachelors Degree Program are required to register for the University's General Courses during their Duration of Study. The courses are categorized as follows:

- (i) Islamic and Asian Civilization (UICI) - 4
- (ii) Human Resources Development (UHAS) - 8
- (iii) English Language (ULAB) - 6
- (iv) Co-curriculum (UKQ#) - 2
- (v) Science and Mathematics or ecourses (SSCE) – 15

7.2 Centre of Islamic Study and Social Development Courses (UICI)

These courses, first introduced in the 1998/99 Academic session, are compulsory for the Bachelors Degree students of UTM. Students will have to complete these courses as one of the requirements for graduation.

List of Courses and The Codes

Code	Name of Course	Credit
UICI 1012	(Compulsory Courses as required by the Ministry of Education) Islamic and Asian Civilisation	2
UICI 2022	Science Technology and Mankind	2
Total no. of compulsory university credit course		4

7.3 English Language Course (ULAB)

Students must accumulate six (6) credits of English Language courses during the course of their study.

Each course is taught for four (4) hours per week and the focus is on developing basic skills in reading, writing, listening and speaking using science and technology materials.

List of Courses and The Codes

Code	Name of Course	Credit
ULAB 1122	Academic English Skills	2
ULAB 2122	Advanced Academic and English Skills	2
**ULAB 3162	English for Professional Purpose	2
Total no. of compulsory university credit course		6

7.4 Human Resource Development Courses (UHAS)

Students are required to take a total of four (4) credits of Human Resource Development Courses as listed in the following table, and another two (4) credits from the list of elective courses.

List of Courses and The Codes

Code	Name of Course	Credit
UHAS 1172/ UHAS 1162	(Compulsory Courses by the Ministry of Education) Dinamika Malaysia/Arts, Customs and Belieft of Malaysian (For International Student)	2
UHAS3012	Entrepreneurship and Enterprise Development	2
UHAS2##2 UHAS3##2*/ ULAM 1112	(Compulsory University Elective) Elective from the Faculty of Management	2
Total no. of compulsory university credit course		8

List of elective courses (UHAS)

	Code	Name of Course
(1)	UHAS 2052	Effective Communication
(2)	UHAS 2092	Professional Ethics
(3)	UHAS 2122	Critical and Creative Thinking
(4)	UHAS 3022	Engineering Communication
(5)	UHAS 3042	Human Development
(6)	UHAS 2122	Organization Leadership

7.5 Science and Mathematics Core Courses (SSCE)

Students are required to complete 15 credits of Science and Mathematics courses, listed below

(1)	SSCE 1693	Engineering Mathematics I
(2)	SSCE 1793	Differential Equations
(3)	SSCE 1993	Engineering Mathematics II
(4)	SSCE 2393	Engineering Statistics
(5)	SSCE 2193	Numerical Methods

7.6 Co-Curricular Courses (UKQ#)

7.6.1 Background

The co-curricular courses were first introduced as part of the University General Courses in July semester 1992/1993 Academic Session. It is compulsory for every student to take these courses as a pre-requisite for graduation.

The courses offered are managed by the General Courses and Co-curricular centre. To attract the interest of students, a variety of courses are offered and they are categorized into main modules such as Sports and Character Building, Personal and Social Development, Arts and Culture, and Special Programmes.

7.6.2 Requirements for Co-curricular Course Registration

The rules are applicable for students who are studying in the full-time programmes at the University.

- (i) The total number of credits for the Bachelors Degree program is two (2).
- (ii) The maximum number of credit and course allowed per semester is one (1).
- (iii) Students who would like to take more than one (1) credit as listed in (ii) will need to obtain permission from the Co-curricular centre and will be charged additional fees.
- (iv) The Co-curricular courses are part of the University's General Courses. If a student failed in any of the courses, he/she may:
 - (a) Repeat the course.
 - (b) Substitute the course with another one but the failed course will still appear on the student's transcript and will be used in the calculation of the CGPA.
- (v) Course Registration
 - (a) Students are encouraged to register during the pre-registration period to ensure a place in the course of their choice.
 - (b) Students may take any course offered subject to its availability.
 - (c) Students are not allowed to change courses once they have registered.
 - (d) The Rules and Regulations of registration are subject to change as deemed necessary by the University.
- (vi) Credit Transfer (Credit Exemption)
 - (a) UTM graduates are eligible for Credit Transfer for all co-curricular courses they have taken in previous programme.
 - (b) Direct entry students from other institutions of higher learning will have to take at least one (1) credit of co-curricular courses.
 - (c) Credit transfer for graduates from other institutions of higher learning will only be given if the course is accredited and recognized by the General Courses and Co-curricular centre.

- (d) Any core course taken in or out of UTM will not be considered although the contents are equivalent or of a higher standard.
- (e) Application for Credit Transfer must be made during the first semester of the study. Approval from the General Courses and Co-curricular centre is required.
- (vii) Final Examination Week
The final examination for the co-curricular courses, if any, will be held during the last week of lecture

7.6.3 Implementation of Co-curricular Courses

Students are required to attend all courses as scheduled inclusive of outdoor or off campus activities such as camping, study tour, and social services. Every activity is designed to transfer the theoretical knowledge to practical applications.

- (i) Meeting Times
The meeting hour for co-curricular courses is between 2.00pm–7.00pm on every Tuesday. However, there are courses that will be conducted on Thursday mornings. The time allocated for the courses are a one-hour lecture or a two-hour practical activities.
- (ii) Marking Scheme
The marking scheme usually followed by the trainers/lecturers is as follows:
 - (a) Contribution and Attendance 20%
 - (b) Assignments/practical activities 60%Types of tasks:
 - Portfolio
 - Assignment, group or individual reports
 - Practical evaluation at site or lab
 - (c) Tests and Quizzes 20%
- (iii) Current Rules
 - (a) Students are given the choice to select the activities that are of interest to them. However, the activities must be the ones offered by the General Courses and Co-curricular centre for that semester. Registration for the course is subject to the availability of places.
 - (b) Upon registration of the course of their choice, students will not be allowed to change to another course. Students are recommended to consider their options carefully before making their decision. They are advised to refer to the timetable and the requirements of the activities before making the final decision.
 - (c) Students who register for the co-curricular course with less than 80% attendance without valid reasons accepted by the University, will be awarded zero (0) mark for the course. They need to repeat the course.
 - (d) Each student is responsible to ensure that the credit requirement for the co-curricular courses is fulfilled in accordance with the University's Regulations

7.7 Synopsis of General Courses

7.7.1 Islamic and Asian Civilization Courses Compulsory Courses

UICI 1012 Islamic and Asian Civilization (TITAS)

The course familiarize students with the Islamic and Asian Civilization. It discusses on the science of civilization that embraces an introductory to the science of civilization, the interactions of various civilizations (Malay, China and India) Islamic Civilization contemporary issues on the islamic and Asia Civilization, Islam in Malay Civilization and its role in establishing the Malaysian civilization. At the end of the course, student will be extensively exposed to the history, principles, value and fundamental aspects of the civilizational studies in Malaysia as well as to strengthen the integrity of Malaysian as citizen of a multi-racial country which has a high tolerance towards others. Throughout the learning process, some aspects of generis skills namely team working, communication skills and ethics will be emphasized.

UICI 2022 Science, Technology and Mandkind

The course discusses the philosophy in terms of its definitions, concepts, theories, history, culture, knowledge and transfer of knowledge. It also discussed about the science in terms of its concepts, theories, history, cosmology and Islamic view of learning science, methodology of Islamic science, the comparisons between Islamic science and Western science, as well a modern science and the divine. Next discussion is about technology in terms of its concepts, historical development, solutions to technology issues, as well as technology and divinity. This course also discussed about the humans; the concept and theory, the creation or man, the human role, the stages of human life, the glory factors, ethics, values, and purpose of human creation.

UICI 2042 Islamic Institutions (Elective Courses)

The course exposes students to the comprehensiveness of Islam via its distinctive institutions. It discusses on various institutions including family, social, education, economics, legislative and jurisdiction, enforcement and politics. The discussion will be focused on the concepts of family: Its internalizing and implementation, the concept of society and the social responsibility, Islamic philosophy and educational system, concepts of Islamic economics, insurance and banking, the concept and characteristics of law and legislation, the position of Islamic law in the Malaysian constitution, witness, allegation, evidence and demonstration, wilayah al- qadha', wilayah al-Hisbah and al-Mazalim, and the concepts of Islamic politics and its dominion. At the end of the course, students are able to understand the concepts and the roles of various Islamic institutions which can be an alternative solution to overcome the problem of Ummah. Students are also able to work in team and equipped with communication and problem solving skills.

UICI 2032 Islam and Current Issues (Elective Courses)

The course acquaints student with various topics on current issues and the Islamic approaches to overcome the problems and the challenges. The topic comprise discussions on globalization, clash of Eastern and Western civilizations, moral decadency, ethical issues in science and technology, economic issues, development and environmental issues, postmodernism, governance and administration, issues that challenge the credibility of Islam, as well as fundamentalism and extremism. issues pertaining to the ethic relations and ethnic chauvinism and the current challenges of Muslim people will also be discussed.

At the end of the course, student will be able to explain the Islamic views pertaining to current issues and able to provide answers and alternatives to the problems by referring to the Islamic principles. They are also able to work in team and equip themselves with communication and problem solving skills.

7.7.2 English Language Courses**Compulsory Courses****ULAB 1122 Academic English Skills**

This course prepares students for the skills needed to perform academic tasks such as extracting information from texts taken from different sources, producing academic assignments, listening to lectures, presenting ideas orally and exchanging views. It empahasises on various skills such as reading academic texts, identifying main ideas, making and expanding notes into coherent writing. At the end of the course, students should be able to apply the skills in an academic setting when communicating in both oral and written discourse.

ULAB 2122 Advanced Academic English Skills

Pre-requisite : ULAB 1122 Academic English Skills

The course prepares students for advanced academic communication in English with emphasis on oral communication skills. Students will be assigned projects that require them to look for and extract relevant information from various sources. In the process of completing the project assigned, students will put into practice various skills developed in the earlier subject as well as skills in collecting data through interviews and questionnaire survey, integrating and presenting information (in oral and written form), time management and group interaction. The various oral activities such as presenting a proposal of the project, giving a briefing on the progress of the report and presenting the completed report are designed to build students' oral communication skills and confidence in expressing themselves, i.e. skills that are much needed in their study and career.

ULAB 3162 English for professional Purpose
Pre-requisite : **ULAB 1122 Academic English Skills**
ULAB 2122 Advanced Academic English Skills

The course focuses on the techniques of producing good spoken discourses which include public communication such as impromptu and public speeches, group discussion and negotiation. Aspects of sound and speech production will be introduced to improve intelligibility and communicability. Basic principles of oral communication and importance of non-verbal communication will be introduced for effective communication. Students will have substantial practice in oral communication through in-class tasks and activities. These tasks and activities will enhance students' confidence in using English for academic and professional purpose.

7.7.3 Human Resource Development Courses**Compulsory Courses****UHAS 1162 Art, Customs and Belief of Malaysian**

This course is designed for first year foreign undergraduates from countries of non-Malay origins. Students will be exposed to various aspects of the Malaysian culture such as the belief system, religious festivals, customs and etiquette of different racial groups in Malaysia. They will also be introduced to Malaysian traditional music, arts and crafts.

UHAS 1172 Dinamika Malaysia

Kursus ini merangkumi pelbagai disiplin ilmu sains sosial, yang meliputi ilmu sosiologi, sains politik, sejarah dan hubungan antarabangsa. Kursus ini memberi nilai tambah kepada pelajar UTM untuk membentuk jati diri, memupuk semangat perpaduan dalam kalangan pelajar, serta melahirkan pelajar yang dinamik dan berfikiran global.

Elective Courses**UHAS 2052 Effective Communication**

This course focuses on effective communication techniques. These include verbal and non verbal communication, interpersonal communication, public speaking, conflict management and problem solving.

UHAS 2092 Professional Ethics

This course consists of basic debates on ethics (morale), ethics theories, ethics awareness, ethics principles and functions, ethnics relations with professionalism, ethics problem in profession, value and structure of professional ethics, service obligation, obligation towards clients, obligation towards the profession, current issues in management, medicine engineering business.

UHAS 2122 Critical and Creative Thinking

The aims of the course is to develop students' understanding of the concept, theory and practice of critical and creative thinking. Attention is on critical and creative thinking techniques as well as obstacles of both thinking methods. Both thinking methods help students to make decisions or solve problems whether in groups or individually.

UHAS 3012 Entrepreneurship and Enterprise Development

This course is designed to expose students to the concept of entrepreneurship and entrepreneurs and the skills needed to prepare a good business plan. In addition to exposing the students to the characteristics of successful entrepreneurs, various skills to successfully run and manage entrepreneurial ventures, technique of identifying, evaluating and choosing business opportunities, procedures to form a business, planning, funding and business supports available in Malaysia will also be discussed. Finally, students will be guided to prepare a business plan after they have learned the fundamentals of a good business plan (following a chosen model). In general, the focus is on instilling entrepreneurial features among the students and developing the required skills to manage a business enterprise.

UHAS 3022 Engineering Communication

The aim of this course is to develop students competency in communication related to engineers workplace. For that purpose we expose the basic skills in communication of taking students through the basic process in communication. The content of this course also include a communication skills related to technical field such as interpersonal skills for engineers, writing skills, presentation skills, instructional skills, supervisory communication for engineers, negotiation and consultation skills.

UHAS 3042 Human Development

This course aims to enables student to understand human development process from the aspect of physical, cognitive, emotional and social development. It combines the study of psychology and social skills in order to develop human potential.

UHAS 3052 Organization Leadership

Leadership is an influence process. An effort to influence others does not depend upon the power of belonging but also depend on the skill of the leader. Leaders must have the skills to influence the behavior of his followers to achieve the goals. Each individual an organization who guides their followers toward an eventual achievement of a goal is considered as a leader. Therefore, each leader or manager, no matter what position, must have leadership skills.

7.7.4 Service Courses from the Faculty of Science**SSCE 1693 Engineering Mathematics I**

This is a first course in Engineering Mathematics. It covers topics including differentiation and integration which focus on hyperbolic and inverse functions. Improper integrals are also studied. Vectors and matrices including basic operations, solving related problems in 3 dimensions are discussed. In addition, vector spaces, eigenvalues and eigenvectors are introduced. Sketching of polar graphs is discussed. This course also covers complex numbers, function of complex variable, series and power series.

**SSCE 1793 Differential Equations
SSCE 1693 Engineering Mathematics I**

This is an introductory course on differential equations. Topics include first order ordinary differential equations (ODEs), linear second order ODEs with constant coefficients up to fourth order, the Laplace transform and its inverse, Fourier series, and partial differential equation (PDEs). Students will learn how to classify and solve first order ODEs, use the techniques of undetermined coefficients, variation of parameters and the Laplace transform to solve ODEs with specified initial and boundary conditions, and use the technique of separation of d' Alembert to solve wave equation.

**SSCE 1993 Engineering Mathematics II
SSCE 1693 Engineering Mathematics I**

This course is about multivariable calculus of real and vector-valued functions. The basic theory of partial derivatives and multiple integrals of real function with their application are discussed. This theory is extended to vector valued functions to describe motion in space, directional derivatives, gradient, divergence and curl, line integrals, surface integrals and volume integral. Related theorems, namely Green's Theorem, Stokes' Theorem and Gauss Divergence Theorem and their applications are discussed.

**SSCE 2193 Engineering Statistics
SSCE 1793 Differential Equations
SSCE 1993 Engineering Mathematic II**

This course begins with basic statistics, elementary probability theory and properties of probability distributions. Introduction to sampling distribution, point and interval estimation of parameters and hypothesis testing are also covered. Simple linear regression and one-way analysis of variance are also taught in this course. Students are taught on how to use and incorporate statistical tools and software for solving engineering statistics problem through a group assignment.

SSCE 2393 Numerical Methods

This courses discusses problem solving using numerical methods that involve no-linear equations, systems of linear equations, interpolation and curve fitting, numerical differentiation and numerical integration, eigenvalue problems, ordinary differential equations and partial differential equations.

The background features a dark gradient transitioning from deep red at the top to dark blue at the bottom. It is filled with numerous thin, glowing lines in shades of blue, purple, and pink, which curve and sweep across the frame. Scattered throughout are small, bright particles and bokeh-like spots in various colors, creating a sense of depth and movement.

ACADEMIC PROCEDURE

COURSE REGISTRATION GUIDELINES

1. Students who have already registered for a study programme in a particular semester are required to register all courses that they intend to take for that particular semester. Course registration is not allowed for students who have not registered for a study programme.
2. Students can only register for courses that are offered for a particular semester subject to the Regulations set by the Faculty. Course registration is not allowed for courses that are not offered in that semester.
3. Each course to be taken in any particular semester must be registered correctly with accurate course code, section number, number of course credits and the status such as Replacement Course (RC)[UM], Replacement Grade (RG)[UG], Audit Course (AC)[HS], Compulsory Audit Course (CAC)[HW]/HWUM (Compulsory Attendance/Repeat Course) or Minor Course (MC)[MN].
4. An error in registration of a course may result in the student being awarded zero (0) mark for that particular course.
5. Any course that needs to be repeated by a student must be registered as Replacement Course (RC)[UM] or Replacement Grade (RG)[UG]. This course will be classified as follows:
 - 5.1 Replacement Course (RC)[UM] or HWUM for repeated course with Failed grade in the previous semester;
 - 5.2 Replacement Grade (RG)[UG] for repeated course with grade B- and below upon Faculty's approval for purpose of improving academic achievement. A non-refundable fee of RM50.00 for each credit will be imposed for this purpose.
6. The original course code must be used in the course registration stated in Item 5 above.
7. Course registration is conducted at the Faculty and can be made using the Course Registration Form. The form must be verified by the student's Academic Advisor or any other officers appointed by the Dean. Each course to be registered must be endorsed by the course's Lecturer or by his/her representative.
8. Students are encouraged to carry out Pre-registration of Courses. Pre-registration of Courses for a particular semester is normally conducted in the last two (2) weeks of the previous semester.
9. The registration of courses is conducted within two (2) working days of the last week prior to the beginning of a semester, as set by the University. Students are allowed to make changes to their course registration until Thursday of the first week of the semester. The changes that can be made include addition of course, deletion of course, and amendment of code, section and status of the registered courses. Changes can be made by using the Course Registration Amendment Form and certified by the Academic Advisor.
10. Item 8, Item 9 and Item 10 can be done on-line by abiding to the procedures mentioned earlier.
11. Late course registration or registration amendment beyond the stated time period is not accepted, except for cases that can be considered by the University. For registration beyond the last day of registration i.e. Thursday of the second week of the semester, a late registration/amendment fee of RM50.00 per course will be imposed subject to a maximum of RM300.00.
12. A Course Registration Slip will be issued to each student through his/her Faculty. Students must collect the slip from the Faculty after every registration or amendment of course registration.
13. Students should review and ensure that all information printed on the Course Registration Slip is correct. Should there be any error on the slip, students are required to make necessary changes according to the rules and regulations within the predetermined period as mentioned in Item 10 and Item 12 above.
14. Students can withdraw (TD) any courses registered for a particular semester. Application to withdraw must be made using the Course Withdrawal Form starting from week THREE (3) and not later than Thursday of week NINE (9) of the semester. Application to withdraw is not accepted after this period.
15. The registration of courses must be made according to the procedures set by the University. Registration that is carried out not in accordance with the procedures will not be considered or accepted.
16. If a student fails to carry out the course registration within the specified period as mentioned above, except with valid reasons accepted by the University, he/she will be dismissed from the University.

GUIDELINES FOR EXEMPTION AND TRANSFER OF CREDIT

1.0 Exemption of Credit

- 1.1 Credit Exemption refers to the credit of a study programme that has been waived, determined during the admission process into the programme. The exemptions are given on specific courses based on the students' achievement of those courses in their previous level of study or institution. The credits exempted are based on the students' previous qualification (e.g. certificate, diploma, bachelor or experience) which is identified as equal to the Diploma or Degree from UTM. The total Credit Exemption is informed to the students during programme registration.
- 1.2 Students who change their programme of study, either within the University or from other IPT/ programme can apply for Credit Exemption. The Faculty accepting the student will determine the courses that will be given Credit Exemption.
- 1.3 Credit Exemption will not be given for programme of study which has been completed and has already been conferred a Degree from other IHLs (Institute of Higher Learning) in similar area and level.
- 1.4 Subject to Item 3.5 below, the maximum Credit Exemption allowed must not exceed 33% of the total credit required for degree conferral. However, the Faculty can appeal to the Senate for Credit Exemption of more than 33% subject to a maximum of 50%. Application for Credit Exemption must be submitted to the Faculty and the assessment process must be completed in week THREE (3) of the first semester of study programme.

2.0 Transfer of Credit

- 2.1 Credit Transfer is the course's credit given to students who have passed the course taken at other recognized IHLs (Institute of Higher Learning) during their duration of study at the University. The course applied for Credit Transfer must be equivalent and fulfill the requirements of the study programme at the University.
- 2.2 Subject to Item 3.5 below, the total Credit Transfer allowed must not exceed 33% of the total number of credits required for the degree conferral of a programme of study.
- 2.3 Credit Transfer approved will be included in the calculation of GPA and CGPA.
- 2.4 Students are not allowed to complete their last semester in other IHLs (Institute of Higher Learning) through Credit Transfer programme.
- 2.5 Only student with Active registration status is allowed to make use of Credit Transfer programme.
- 2.6 Application for transfer of credit from other IHLs must be made within ONE (1) semester before enrolling the study programme at the University.

3.0 Rules and Regulations for Exemption of Credit and Transfer of Credit

Students can apply for Credit Exemption and/or Credit Transfer of any particular course based on the specified Rules and Regulations.

- 3.1 Passing Grade
 - (i) A minimum of Grade C according to the University's grading system is required for Credit Exemption.
 - (ii) A minimum of a Passed grade as set by the Faculty is required for Credit Transfer.
- 3.2 Credit Value

Courses that are given Credit Exemption and Credit Transfer must be equivalent to the courses in the curriculum of the programme pursued at the University with regards to calculation of academic load and credit value.
- 3.3 Contents of Course and Curriculum

The contents of the course considered for Credit Exemption and Credit Transfer must be equivalent to the similar course in the present curriculum of the programme pursued. The contents of the course should be the same or not less than 80% of the similar course in the University.
- 3.4 Approval for Credit Exemption and Credit Transfer will only be given to the courses that are recognized by the government.
- 3.5 Combination of Item 1.4 and Item 2.2 above must not exceed 33% of the total credits required for a degree conferral of the programme of study. However, the Faculty can appeal to the Senate for a total that exceed 33%, subject to a maximum of 50%.
- 3.6 The courses given Credit Exemption and Credit Transfer will be recorded in the student's Academic Record.
- 3.7 Application for Transfer of Credit and Exemption of Credit should be done using Form UTM- E/3.8.
- 3.8 Approval for Credit Exemption and Credit Transfer will be given by the Faculty based on endorsement by the Faculty's Academic Committee.
- 3.9 Approval of Credit Exemption and Credit Transfer will be informed to the student.

REGULATIONS FOR STUDENTS WITH LESS THAN 80% ATTENDANCE

1. Students who do not attend classes without any valid reason must be reminded or given written warning by the course lecturer.
2. When the absence of a student is more than 20%, the Faculty that offers the course can take the following actions:
 - 2.1 The student is not allowed to follow or continue any form of study tutorial/practical/studio and so forth) for that particular course
 - 2.2 The student is not allowed to sit for forthcoming assessment (quiz, test, examination and so forth) for that particular course
 - 2.3 The student will be given a zero (0) mark for that particular course and he/she must repeat the course.
3. The Faculty needs to inform the actions taken to the student by writing.

NOTE:

Actions taken by the Faculty on a student pertaining to the above matter do not need to be informed to the Senate.

EXAMINATION REGULATION

In implementing the power granted under Section 13 Universiti Teknologi Malaysia (Examination) Act 1991, the Senate of UTM decides the following:

1.0 Requisites on sitting the Final Examination

- 1.1 All registered and active students are required to sit for the final examination for all courses set by the Faculty, provided that the students have registered for the courses and have abide to the Regulation for Students less than 80% attendance as shown in Appendix III.
- 1.2 Faculty can defer examination for a sick student or for reasons acceptable to the University. The student is required to produce a Medical Certificate (endorsed by a government Doctor or University Medical Officer) or other supporting letter to the Dean of the Faculty not later than twenty four (24) hours after the start of the examination of that particular course except for other reasons acceptable by the University.

2.0 Final Examination Supervision

- 2.1 The supervisor for the final examination is the Dean of the Faculty.
- 2.2 The final examination supervisor is responsible to ensure that the examination is being invigilated strictly and systematically.
- 2.3 The final examination supervisor should appoint invigilators and assistant invigilators. Invigilators are members of the academic staff while assistant invigilators are members of the supporting staff.
- 2.4 The invigilators and assistant invigilators are answerable to the Supervisor of the Final Examination.

3.0 Monitoring Final Examination

- 3.1 An invigilator is responsible for invigilating the final examination.
- 3.2 Unless permitted by the Examination Manager, at least TWO (2) invigilators should be appointed for every examination hall. One of them will be appointed as the Chief Invigilator.
- 3.3 Responsibilities of the Chief Invigilator are:
 - a. To report to the Supervisor of the Examination or his/her representative at the Faculty's office at least thirty (30) minutes before the examination starts. The Chief Invigilator will collect a sealed envelope containing the examination question papers and a list of names of students sitting for the examination;
 - b. Certify the attendance of Invigilators and assistant invigilators;
 - c. Instruct the assistant invigilators to distribute the answer booklets, attendance forms, and other examination requirements on each examination table and this should be done no later than FIFTEEN (15) minutes before the examination begins;
 - d. Instruct the students to enter the examination Hall/Room FIFTEEN (15) minutes before the examination begins;
 - e. Ensure that the students' attendance is noted and recorded correctly;
 - f. Announce the starting and ending time of the examination. Another announcement for the last FIFTEEN (15) minutes of the examination must also be made;
 - g. Remind the students regarding the consequences of the examination misconducts;
 - h. Ensure that the student is under close observation for any request from the student to leave temporarily examination hall for a specific purposes;
 - i. The chief invigilator is allowed to bar the students who disobey the examination regulation from sitting for the examination;
 - j. Report to the Examination Supervisor or his/her representative about any incident that violates the examination regulations, immediately after the end of the examination;
 - k. At any time before the last FIFTEEN (15) minutes of the examination period, the Chief invigilator may allow any student to leave the examination hall if the student wishes to submit his/her answer scripts;
 - l. Instruct the invigilators and assistant invigilators to collect the answer scripts after the examination ends while students remain seated. Empty or unused answer booklets or answer scripts will be collected separately;
 - m. Responsible for counting and ensuring the number of answer booklets or scripts collected;
 - n. Responsible for handing over the answer booklets or scripts to the examination supervisor or his/her

- representative. Answer books/papers that are empty or unused are also to be submitted;
- o. Should not allow suspending, postponing or canceling any examination without the approval of the examination supervisor;
 - p. Present attendance form of the invigilators and assistant invigilators to the examination supervisor or his/her representative at the Faculty's office after the examination;
 - q. Collect information or evidence pertaining to any case of violation of examination rule and regulation and to surrender them to the examination supervisor or his/her representative;
 - r. Responsible to ensuring the smooth running of the examination; and
 - s. Authorised to take action deemed to be appropriate in managing misconduct during examination.

3.4 Responsibilities of the Invigilator

- a. Report for duty to the Chief Invigilator at the examination hall/room THIRTY (30) minutes before the examination begins.
- b. Distribute/place the question papers on the student table before the students are allowed to enter the examination hall;
- c. Ensure that the information listed in the attendance slip/form matches the information on the student's identity card or matriculation card and course registration slip before collecting the attendance slip.
- d. Collect the answer booklets/scripts after the examination has ended while students remain seated. Empty or unused answer scripts need to be collected separately;
- e. Report to the chief invigilator if there is any misconduct observed during the examination;
- f. Carry out other duties as instructed by the chief invigilator.

3.5 Responsibilities of the Assistant Invigilator

- a. Report for duty to the examination supervisor or his representative at the faculty's office THIRTY (30) minutes before the examination starts. They are then expected to report for duty to the chief invigilator at the examination hall/room.
- b. Assistant Invigilators are answerable to the chief invigilator and are expected to:
 - (i) Bring all examination materials to the examination hall;
 - (ii) Place the required examination materials on the student's table as instructed by the chief invigilator;
 - (iii) Assist invigilators in collecting students' answer scripts/booklets.
 - (iv) Return all examination materials after the examination has ended to the examination supervisor or his/her representative at the Faculty's office.
 - (v) Carry out other duties as instructed by the chief invigilator.

4.0 Final Examination Etiquette

- 4.1 Students are advised to be at the designated examination hall/room as listed in the examination schedule no later than FIFTEEN (15) minutes before the examination begins;
- 4.2 The Head of Invigilator may allow the students to enter the examination hall FIFTEEN (15) minutes before the examination starts. Students must behave appropriately when entering the hall;
- 4.3 Students who arrive late at the examination hall, but not later than THIRTY (30) minutes, will be allowed to sit for the examination but the end of the of the examination time will not be extended as it will the same for all the students;
- 4.4 Students who arrive THIRTY (30) minutes after the examination has started will not be allowed to enter the examination hall/room or sit for the examination;
- 4.5 Students are not allowed to leave the examination hall/room for the first THIRTY (30) minutes after the examination has started and FIFTEEN (15) minutes before the examination ends. Students who wish to leave the examination hall at other time for any reason must obtain permission from the invigilator;
- 4.6 Students are required to bring the course registration slip along with their matriculation card/ identity card/ MyCard or passport to the examination hall. All items must be placed at the right hand corner of the desk for inspection by the invigilators.
- 4.7 Students who do not bring their course registration slip and matriculation or identity card will not be allowed to sit for the examination, except with written permission from the examination supervisor;

- 4.8 Students are prohibited from bringing any book, paper, picture, note, equipment with written notes, programmable calculator, communication device or any other devices, into the examination hall except those permitted by the chief invigilator. In addition, students are not allowed to receive any of the stated items from anyone while in the examination hall except those given by the Invigilator as permitted by the Vice Chancellor or recommended by the Faculty Examination Committee;
- 4.9 Any item borrowed by the student during the examination has to be returned to the invigilators when the examination ends.
- 4.10 Students must obey strictly all instructions given in the examination hall/room by the chief invigilator throughout the examination period;
- 4.11 Within fifteen (15) minutes before an examination starts, students are required to:
 - (a) Fill-in the attendance slip and the front page of the answer booklet/script as required; and
 - (b) Read the examination questions without making any notes.
- 4.12 Students must write their names, MyCard/passport numbers, course and programme codes, and any other required information on each answer book and attachments used.
- 4.13 Students must read carefully and follow the instructions printed on the cover of the question paper.
- 4.14 Students must ensure that they are given the correct question papers, with complete number of pages before attempting to answer. If there is mistake, students must immediately inform the invigilator.
- 4.15 All examination related work including rough work must be done in the answer books. Pages in the answer books must not be torn out.
- 4.16 All answer books, whether used or unused, must not be brought out of the examination hall/ room.
- 4.17 Students are prohibited from communicating with each other throughout the examination period.
- 4.18 Students are prohibited from eating, drinking or smoking in the examination hall/room.
- 4.19 At the end of the examination, students must ensure that their answer booklet/scripts (except empty or initial work) is organized and tied inclusive of the first copy of their attendance form according to the instructions given before handing them in to the invigilator.
- 4.20 Students must remain seated after the examination ends and should only leave the examination hall/room after being instructed to do so by the chief invigilator.
- 4.21 Students are not allowed to begin answering the questions before the examination starts and are not allowed to continue answering the questions after the examination period ends.
- 4.22 Students must enter and leave the examination hall/room in an orderly manner.
- 4.23 Students are prohibited from referring or use any reference material inside or outside the examination hall/ room while the examination is being conducted, except those permitted by the chief invigilator.
- 4.24 Students are not allowed to give or receive any kind of assistance from any party related to the examination during the examination, except those permitted by the chief invigilator.

5.0 Examination Misconduct

- 5.1 Students are prohibited from committing any of the following examination misconducts:
 - (a) Distributing, receiving or possessing any information in electronic, printed or any other forms that are related to the course being tested in the examination whether inside or outside the examination hall during the examination period unless with the permission from the chief invigilator; or
 - (b) Use the obtained information to answer the examination questions;
 - (c) Cheating or attempting to cheat or doing anything that may be deduced as cheating or attempting to cheat while the examination is being conducted; or
 - (d) Other misconducts as stated by the university

6.0 Punishment

- 6.1 If a student was found violating any of the Rules and Regulations of the examination, after being heard by the Faculty's Academic Committee and is found guilty, the Senate can decide on any one of the penalties, or a combination of two or more penalties listed below:
 - (a) To give ZERO (0) mark for the course (inclusive of coursework); or
 - (b) To give ZERO (0) mark for all courses registered in that particular semester.
- 6.2 Students who have found to act against the rules and regulations of the examinations for the second time will be dealt according to the Universities and Colleges Act, 1971, Procedures according to the Universiti Teknologi Malaysia (Student Code of Conduct), 1999.

PROCEDURES FOR APPEAL OF COURSE GRADE

1. The faculty offering the course will display the results of the examination (grades only) of every course and programme. Students' identity will only be revealed by their Identity Card number (MyCard/ Passport).
2. The faculty offering the course would display the posted list of the examination results mentioned above not later than seven (7) days after the semester examination week ended. The results must be displayed for a minimum of seven (7) days on the notice board for students' appraisal, subject to a closing date set by the University. The University will also display the posted list on the University's website during that period.
3. Students can directly contact the lecturer if they feel that a mistake has been made. They are also allowed to review the examination answer script and to discuss with the lecturer if they did not satisfy with the grade awarded. If the students still did not satisfy after reviewing the script, they can apply for Appeal of Course Grade Results. The appeal is made for the answer script to be reviewed and re-marked. Students are however not allowed to make an Appeal of Course Grade Results without reviewing the examination answer script and discussing it with the lecturer.
4. The Appeal of Course Grade Results has to be made within and not later than two (2) weeks after the final examination period ends.
5. Students can obtain the Appeal of Course Grade Results form (Form UTM.E/5-1) at the Faculty. After the form has been filled in 4 copies, the student must make the necessary payment to the Bursar's Office based on the following procedures:
 - 5.1 The fees for an appeal is RM50.00 for each course;
 - 5.2 The Payment Instruction form can be obtained from the Academic Office of the Faculty;
 - 5.3 The payment has to be made in the form of cash, money order or postal order. Personal cheques are not accepted; and
 - 5.4 All payments must be made personally by the student at the Bursar's Office. Payment made through mail will not be accepted and considered.
6. Students have to personally submit the completed copies of the forms to the respective faculty that offer the course. One copy of the form has to be kept by the student. When submitting the copies of the form to the respective faculty, the student will have to enclose the payment receipt.
7. If the appeal was made based on Item 3 above, the Faculty will review and re-mark the examination answer script of the student.
8. For servicing course, the respective faculty offering the course must submit a report on the review and the re-mark made as stated in Item 7 to the student's faculty.
9. Based on the review and re-mark made, a new mark based on the result of the re-mark will be awarded. If the result of the re-mark is lower than the original mark, the original mark will be retained. The faculty offering the course must update the student's examination records in the computer system.
10. The faculty offering the course needs to inform the student about the result of the review and/or the result of the appeal.

PROCEDURES FOR APPLICATION OF DEGREE CONFERRAL

1. Final semester students who are completing their studies must apply for the conferral of their Degree. Students who have applied for the conferral of their Degree but unable to complete their study on time are required to re-apply for the conferral. The application submitted in the previous semester is invalid.
2. Students who are not eligible to apply (besides those mentioned in Item 1) will be fined RM50.00 if they submitted an application.
3. The application must be made using the Application of Degree Conferral Form (in three copies) within a specified period set by the University. Students must bring all forms to the Faculty for endorsement. The first copy of the form must be submitted to the Faculty, the second copy to the Academic Advisor and the third copy for their record keeping. If the student fails to submit a copy to the Faculty, this will be considered that the student has not submitted his application form.
4. The closing date for the application is THIRTY (30) days before the start of the final examination. Application received within TWO (2) weeks after the closing date will be fined RM50.00.
5. Students who do not submit the application form to the Faculty within the specified period will not be conferred in that semester. Nevertheless, they can submit their application within the specified period of the following semester.
6. Only students who have applied for the degree conferral within the specified period will be recommended by the Faculty to the Senate to be verified as eligible recipients of the Degree.
7. Students who have not applied for the conferral of Degree could not be considered for registration of a postgraduate study at the University.
8. Application for the conferral of Degree must be submitted not later than FIVE (5) years after the completion of study. Application submitted to the Faculty after the stated duration will not be entertained and the student is not eligible for conferral.

GUIDELINES FOR SHORT SEMESTER

1.0 Duration of Study

- 1.1 Short Semester is an optional semester for students and will not be counted as a part of the Duration of Study set for a particular programme.
- 1.2 The Short Semester commences a week after the end of Semester II and it is conducted over eight (8) weeks.
- 1.3 The duration of the Short Semester including final examination period and no specific provision is given for semester break and revision week.

2.0 Courses Offered

- 2.1 Any course can be offered in the Short Semester.
- 2.2 The maximum number of credits that can be registered by students is limited to six (6) credit only.
- 2.2 Courses which have high percentages of failures students are encouraged to be offered in the Short Semester.

3.0 Registration of Courses

- 3.1 Students are required to register each course taken during the Short Semester according to the existing regulations or procedures and within the specific period set by the University.
- 3.2 Students are allowed to withdraw any registered course, except for courses taken upon directive of the University. Course withdrawal (TD) must be carried out before the middle of the semester according to the procedures mentioned in Item 15 of Appendix I.
- 3.3 Faculties are required to decide on the total number of students who can register for a Section of each course that is offered.

4.0 Method of Computing Academic Achievement Results

- 4.1 The students' GPA and CGPA will be calculated for the Short Semester. However, the academic standing of the students will not be determined.
- 4.2 The examination results of the Short Semester will be combined with the examination results of Semester I of the following session to determine the academic standing of the student.
- 4.3 The existing Regulations and Procedures for notifying examination results and Appeal of Course Grade will be applied for the Short Semester.

5.0 Tuition Fees

- 5.1 The tuition fee chargeable to the students for the Short Semester is as follows:

5.1.1 Rates for Tuition Fee

Type of Course	Fee
Diploma	RM15.00 per credit
Bachelor's Degree	
Technology	RM45.00 per credit
Social Science	RM45.00 per credit
Arts	RM35.00 per credit

5.1.2 Service Charge

A service charge of RM110.00 is applied to respective students.

5.2 Method of Payment

- 5.2.1 Students must pay all their fees for the Short Semester before or during course registration of that particular semester. Course registration of only those who have fully paid their fees will be accepted.
- 5.2.2 Students who fail to make full payment of the fees are strictly not allowed for course registration. In addition, students who have paid the fees but withdraw from the courses are not entitled for any refund after the official deadline of the course registration.

REGULATIONS AND GUIDELINES OF MINOR PROGRAMME

1.0 Registration of Minor Programme

- 1.1 Continuing students who have been approved to follow a Minor programme must register for the programme at the students' Faculty according to the specific date set by the University.
- 1.2 Students are not allowed to change the Minor programme that has been registered.
- 1.3 Students are not allowed to have more than TWO (2) Minor programmes during their course of study.

2.0 Registration of Minor Programmes Courses

- 2.1 Students can register for any course that is offered in the Minor programme with the permission of the students' Academic Advisor and the Faculty which offering the Minor programme.
- 2.2 Students are required to register for each Minor course that they plan to take for that particular semester according to the existing Regulations and Procedures and within the duration specified by the offering faculty.
- 2.3 Minor courses cannot be registered as Audit Status (HS).
- 2.4 Item 5.4 (ii) to item 5.4 (x) in Section 5 can be used except for Item 5.4 (v).

3.0 Passing Credit for Minor Programme and Duration of Study

- 3.1 Students must pass all the required courses for the registered Minor programme.
- 3.2 The faculty that offers the Minor programme, with the University's approval, determines the total number of credits passed for that particular Minor.
- 3.3 Additional semester beyond the specified maximum duration of study will not be granted to those students who register for any Minor programme.

4.0 Exemption and Transfer of Credit for Minor Programme

- 4.1 Exemption and Transfer of Credits will not be allowed for Minor programme.

5.0 Academic Standing

- 5.1 The results of the Minor programme courses will be counted in the students' GPA and CGPA.
- 5.2 Failed Minor courses are not required to be repeated but the credits and credit points earned will be counted in the students' GPA and CGPA.

6.0 Minor Conferral

- 6.1 Students will only be recorded a Minor in a particular course, in their transcript, after having:
 - i. Passed all the courses required by the registered Minor programme.
 - ii. Applied for Minor conferral and with approval from the offering faculty.
- 6.2 Application for Minor Conferral.
 - a. Students who have fulfilled all the requirements for their Minor programme must submit the application together with the application for their degree conferral.
 - b. Application for Minor conferral cannot be done after the award of any degree.
 - c. Students who do not apply for their Minor conferral together with their degree conferral will not be awarded a Minor.

STUDENTS' CODE OF ATTIRE

1. Students must be neatly, tidily and appropriately dressed according to the common practice of Malaysian society.
2. Students must dress decently (shirts, T-shirts with collar, shoes, slacks, long skirts below the knees) especially during lectures and official functions at the Faculty/administrative building.
3. Students should avoid dressing indecently in public by wearing inappropriate clothing such as:
 - a. Skirts or shorts that are at or above the knee level
 - b. T-shirts without collars
 - c. Sleeveless clothes
 - d. Tight trousers or skirts
 - e. Flip-flops/sandals/slippers
4. Male students attending formal university functions must dress neatly in clothes such as long sleeve shirt, necktie, slacks (not jeans), leather shoes or complete national attire. Female students are required to dress in Baju Kurung or in loose clothes such as long skirts that go below the knees or loose trousers.
5. Female students are not allowed to wear clothes that cover their faces (purdah).
6. During official University functions, students are not allowed to wear cap or bandana.
7. Male students are not allowed to keep long hair (reaching the collar, covering the ears and reaching the eye brows), have pony tails, dyed hair and untidy hairstyles.
8. Male students are not allowed to dress in female attire and vice-versa.
9. Male students are not permitted to wear bangles, ear studs, necklaces and ear rings or any jewelry whereas female students should not have pierced body parts other than the ones accepted as the norms of the Malaysian society.
10. Tattoos are not permitted on any part of the body.
11. Participation in the laboratories, sports and cultural activities require students to be appropriately dressed according to the Rules and Regulations set by the University.
12. Students are required to wear matriculation card within the vicinity of the University or university owned premises inclusive of rented premises. The card must be worn and displayed around the chest area.

**“Students who do not abide by the Rules and Regulations
can be given warnings or fine of not more the RM50.00 (first offence)
and will be summoned by the Disciplinary Committee for repeated offences.”**

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