

## Programme Specification

<b>1. Awarding Institution</b>		Universiti Teknologi Malaysia		
<b>2. Teaching Institution</b>		Universiti Teknologi Malaysia		
<b>3. Programme Name</b>		Bachelor in Civil Engineering		
<b>4. Final Award</b>		Bachelor of Engineering (Civil)		
<b>5. Programme Code</b>		SKAW		
<b>6. Professional or Statutory Body of Accreditation</b>		Kementerian Pendidikan Tinggi Malaysia		
<b>7. Language(s) of Instruction</b>		Bahasa Melayu and English		
<b>8. Mode of Study (Conventional, distance learning, etc)</b>		Conventional		
<b>9. Mode of operation (Franchise, self-govern, etc)</b>		Self-governing		
<b>10. Study Scheme (Full Time/Part Time)</b>		Full Time		
<b>11. Study Duration</b>		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	-	14	-
Short	4	-	8	-
<b>12. Entry Requirement</b>	<p>The minimum qualifications for candidates who intend to do a Bachelor of Engineering (Civil) are as follows:</p> <p>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)</p> <p>General Requirements :</p> <p>(i) Passed and obtained good results in the Malaysian Certificate Examination (SPM) or its equivalent.</p> <p>(ii) Passed Bahasa Melayu/Bahasa Malaysia with credit in the SPM/equivalent.</p> <p>(iii) Passed the Malaysian High School Certificate (STPM) or its equivalent and obtained the following:</p> <p>a) Grade C (NGMP 2.00) General paper, and</p> <p>b) Grade C (NGMP 2.00) in two other subjects</p> <p>(iv) Passed the Malaysian University English Test (MUET).</p>			

<b>Entry Requirement (contd.)</b>	<p>Special Requirements for the Programme</p> <ul style="list-style-type: none"> <li>(i) Passed with a minimum Grade B- (NGMP 2.67) in three of the following subjects: <ul style="list-style-type: none"> <li>a) Modern Mathematics/ Additional Mathematics</li> <li>b) Physics/Biology</li> <li>c) Chemistry</li> </ul> </li> <li>(ii) Passed Mathematics with credits in the SPM/ equivalent examination.</li> </ul> <p>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)</p> <p>General University Requirements</p> <ul style="list-style-type: none"> <li>(i) Passed the Malaysian Certificate Examination (SPM) with good results.</li> <li>(ii) Obtained passes in Bahasa Melayu/Bahasa Malaysia with credits in the SPM/equivalent examination.</li> <li>(iii) Passed the Matriculation Certificate Examination KPM/Asasi Sains UM with a minimum CGPA of 2.00 and passed all the core subjects.</li> <li>(iv) Passed the Malaysian University English Test (MUET).</li> </ul> <p>Special Requirements of the Programme :</p> <ul style="list-style-type: none"> <li>(i) Obtained a CPA of 2.75; and Passed with a Grade B- (2.67) in three of the following subjects: <ul style="list-style-type: none"> <li>a) Mathematics</li> <li>b) Physics/Biology</li> <li>c) Chemistry</li> </ul> </li> <li>(ii) Passed with credits in Mathematics in the SPM/ equivalent examination</li> </ul> <p>3) Minimum qualifications for students with Certificates/Diplomas (fulfill the general requirements set by the university as well as specific requirements of the programme)</p> <p>General University Requirements</p> <ul style="list-style-type: none"> <li>(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.</li> </ul>
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<b>Entry Requirement (contd.)</b>	<ul style="list-style-type: none"> <li>(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.</li> <li>(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.</li> <li>(iv) Passed the Malaysian University English Test (MUET).</li> </ul> <p><i>*Note:</i> Year of entry and duration of study will be based on the credit exemptions and credit transfer awarded by the university.</p>
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### 13. Programme Educational Objectives (PEO)

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

### 14(a). Programme Outcomes (PO)

#### (a) Technical Knowledge and Competencies

Code	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PO1	Graduates are able to communicate effectively, possess strong self-confidence and recognize the need for life-long learning.	Lectures, tutorials, seminars, laboratory works, directed reading, independent study, active learning.	Examinations, laboratory reports, presentations, assignments, problem-based exercises, project reports.

#### 14(a). Programme Outcomes (PO) (contd.)

##### (a) Technical Knowledge and Competencies

Code	Intended Learning Outcomes	Teaching and Learning Methods	Assessment
PO2	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.
PO3	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.

##### (b) Generic Skills

Code	Program Outcome	Teaching and Learning Methods	Assesment
PO4	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.	Final Year Project reports, project reports, design tasks, examinations, laboratory reports, presentations, assignments.
PO5	Ability to communicate effectively and with confidence including complex engineering activities	Projects, independent study, tutorials, surveying camps.	Oral presentations, written reports.
PO6	Ability to communicate effectively and with confidence including complex engineering activities.	Independent study, group project, industrial visit, Seminar (SEMKA), dialogue with invited speaker	Seminar report, written business proposal.

##### (b) Generic Skills (contd.)

Code	Program Outcome	Teaching and Learning Methods	Assesment
PO7	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.	Industrial training report and logbook, project report, final year project report and logbook.
PO8	Ability to perpetually seek and acquire contemporary technological changes.	Independent study, final year projects.	Final year project reports, assignments.
PO9	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.	Industrial training reports and logbooks, final year project reports and logbooks.
	Ability to understand the impact of engineering decisions and	Final year projects, Laboratory	Written assignments, laboratory

PO10	apply professional ethics for sustainable development	works, Industrial training, surveying camps.	reports, essays, final year project reports, Industrial training report.
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14(b). Mapping of FKA POs to KPT POs

CORE COURSES OFFERED		JPT - KPT Learning Outcomes								
		Pengetahuan	Kemahiran teknikal/praktikal/psikomotor	Pendekatan kemahiran berfikir dan saintifik	Kemahiran berkomunikasi	Kemahiran social dan bertanggungjawab	Profesionalisme, nilai, sikap dan etika	Pendidikan sepanjang hayat dan pengurusan informasi	Kemahiran pengurusan dan keusahawanan	Kemahiran kepimpinan
		P1	P2	P3	P4	P5	P6	P7	P8	P9
Taxonomy / Generic Skills		(C)	(P)	(P/CTPS)	(P/CS)	(A/TS)	(A/EM)	(A/LL)	(P/KK)	(A/LS)
PO	FKA - UTM Learning Outcomes									
PO1	Graduates are able to communicate effectively, possess strong self confidence and recognise the need for life-long learning.	✓								
PO2	Ability to analyse and use appropriate techniques, resources and modern tools to solve complex engineering problems and activities		✓							
PO3	Ability to design solutions for complex problems and design components, systems, or processes that comply specific requirement with appropriate consideration of other requirements		✓	✓						
PO4	Ability to resolve complex problems based on investigation or research using integration of knowledge and the consequent responsibilities relevant to professional practice.			✓						
PO5	Ability to communicate effectively and with confidence including complex engineering activities				✓					

		P1	P2	P3	P4	P5	P6	P7	P8	P9
Taxonomy / Generic Skills (contd)		(C)	(P)	(P/CTPS)	(P/CS)	(A/TS)	(A/EM)	(A/LL)	(P/KK)	(A/LS)
PO	FKA - UTM Learning Outcomes									
PO6	Ability to communicate effectively and with confidence including complex engineering activities.								✓	
PO7	Ability to function effectively as an individual or in a team to achieve common goals in diverse teams and in multi-disciplinary settings					✓				

<b>PO8</b>	Ability to perpetually seek and acquire contemporary technological changes.							✓		
<b>PO9</b>	Ability to demonstrate entrepreneurial skills, lead and manage a team effectively in multidisciplinary environment with self-assurance									✓
<b>PO10</b>	Ability to understand the impact of engineering decisions and apply professional ethics for sustainable development						✓			

### 15. Classification of Subjects

No.	Classification	Credit Hours	Percentage
i.	University Course		
	a. General	10	15%
	b. Language	6	
	c. Entrepreneurship	2	
	d. Co-curriculum	2	
ii.	Faculty / Programme Core	106	78.5%
iii.	Programme Electives	9	6.7%
	<b>Total</b>	<b>135</b>	<b>100%</b>

For engineering programmes please complete the following classification.

(Others please refer to the Statutory Body guidelines)

A	Engineering Courses		
	(a) Lecture/Project/Laboratory	81	71.9%
	(b) Workshop/Field/Design Studio	5	
	(c) Industrial Training	5	
	(d) Final Year Project	6	
	<b>Total credit hours for Part A</b>	<b>97</b>	
B	Related Courses		
	(a) Applied Science/Mathematic/Computer	18	28.1%
	(b) Management/Law/Humanities/Ethics/Economy	12	
	(c) Language	6	
	(d) Co-Curriculum	2	
	<b>Total credit hours for Part B</b>	<b>38</b>	
	<b>Total Credit Hours for Parts A and B</b>	<b>135</b>	<b>100%</b>

### 16. Total credit hours to graduate

**135 credit hours**

### 17. 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 nine (9) 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.
- Complete and pass the Industrial Training (equivalent to 5 credit hours).
- Complete and pass the Surveying Camp (equivalent to 1 credit hour).
- Complete and pass the undergraduate Final Year Project.
- Complete and pass the Civil Engineering Seminar (equivalent to 1 credit hour).

Students from other approved programmes who wish to undertake a *Minor* in the programme, must complete not less than **17** credit hours of specialised 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
SKAA 1012	Civil Engineering Fundamentals	2	SKAA 1023	Engineering Surveying	3
SKAA 1213	Engineering Mechanics	3	SKAA 1422	Civil Engineering Drawing	2
SKAA 1713	Soil Mechanics	3	SKAA 1513	Fluid Mechanics	3
SSCE 1693	Engineering Mathematics 1	3	SSCE 1793	Differential Equations	3
ULAB 1112	English for Academic Communication	2	SSCE 1993	Engineering Mathematics II	3
UHAS 1172 / UHAS 1162**	Dinamika Malaysia / Arts, Customs and Beliefs of Malaysians**	2	UICI 1012 / ULAM 1112**	Islamic and Asian Civilisation / Malay Language for Communication**	2
			UKQ# 1##1	Co-Curriculum	1
<b>Total</b>		<b>15</b>	<b>Total</b>		<b>17</b>

\*\* 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
SKAA 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 2112	Advanced English for Academic Communications	2	UHAS 2##2	Elective FPPSM	2
			UKQ# 1##1	Co-Curriculum	1
<b>Total</b>		<b>16</b>	<b>Total</b>		<b>17</b>

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 Laboratory 2	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
UHAS 3##2	Elective FPPSM	2	ULAB 31#2	English Language Elective, Language Academy	2

UICI 3##2	Elective FTI	2		
<b>Total</b>		<b>17</b>	<b>Total</b>	<b>16</b>

SHORT SEMESTER					
Code	Courses	Credits			
SKAA 3045	Industrial Training	5			

  

YEAR 4					
SEMESTER 1			SEMESTER 2		
Code	Courses	Credits	Code	Courses	Credits
SKAA 4##3	Elective I	3	SKAA 4##3	Elective II	3
SKAA 4021	Civil Engineering Seminar	1	SKAA 4##3	Elective III	3
SKAA 4022	Research Methodology and Pre-Project	2	SKAA 4034	Final Year Project	4
SKAA 4042	Integrated Design Project 3	2	SKAA 4333	Reinforced Concrete Design 2	3
SKAA 4113	Constructions & Project Management	3	SKAA 4412	Civil Engineering Information Systems	2
SKAA 4223	Structural Analysis	3	TECS 1001	Oral Interaction	0
UHAS 3012	Entrepreneurship And Enterprise Development	2	TECS 1002	Writing	0
<b>Total</b>		<b>16</b>	<b>Total</b>		<b>15</b>











## 19. Our Uniqueness

1. One of the biggest Civil Engineering faculties in the world.
2. One of the biggest and best Civil Engineering lab/facilities in the region.
3. A major contributor of Civil Engineering graduates in the local workforce.
4. High employability rate of graduates.
5. A major contributor of leaders in government and industrial sectors.
6. The first Civil Engineering Faculty to achieve ISO 9001:2000, ISO 9001:2008 and ISO 17025:2005 certifications.
7. Diversity of lecturers (qualification background from institutions all over the world).
8. 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.

## 20. 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.

## 21. 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.

## 22. 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. AutoCAD offered by SPACE
2. *Certificate in Modular Construction in the Construction Industry* offered by Construction Technology and Management Centre.
3. *How to Get Yourself Employed (HTGYE)*
4. *ISO 9001 : 2008 Quality Management System Requirement (ISO)*
5. *Occupational Safety and Health Awareness (OSHA)*
6. *How to Manage Your Personal Finance (HTMYPF)*
7. *Test of English Communication Skills for Graduating Students (TECS):-*
  - (i) *TECS 1001 (Paper 1 - Oral Interaction)*
  - (ii) *TECS 1002 (Paper II - Writing)*

## 23. Facilities available

1. Structural Engineering Laboratory
2. Material Engineering Laboratory
3. Hydraulics and 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

## 24. Support 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 (PTPTN)

## 25. 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. Financial Support
  - 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)
  - AKNC Audit Report
  - MQA / EAC Standard

## 26. Regulation of Assessment

- a. 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

b. 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

## 27. Assessment Tools

Measurement Tools	Learning Outcomes										Duration	Action By
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10		
e-Portfolio	x	x	x	x	x	x	x	x	x	x	Continuous	Student
Course Review Report	x	x	x	x	x	x	x	x	x	x	End of semester	Lecturer
Final Year Project Survey	x	x	x		x			x			End of semester	Faculty
PO Survey by Final Year Students	x	x	x	x	x	x	x	x	x	x	End of semester	Faculty
Industrial Training Survey	x	x		x	x		x	x		x	End of session	Faculty
Alumni Survey	x	x	x	x	x	x	x	x	x	x	Once / year	Faculty
Employer Survey	x	x	x	x	x	x	x	x	x	x	Once / year	Faculty