



# Bachelor of Building Engineering Technology with Honours

## Academic Staff (Building Engineering Technology)



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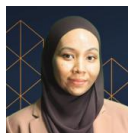
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## 2.0 School Requirements (Academic)

### Programme Educational Objectives

- i. To nurture knowledgeable and technically competent graduates who are able to solve problems in Building Engineering Technology discipline for sustainable development.
- ii. To nurture graduates with good leadership qualities and communicate effectively, work collaboratively in teams, to achieve engineering solutions that align with societal needs and values.
- iii. To nurture graduates with a global mindset, proficient in research and committed to lifelong learning.

### Programme Outcome (PO)

PO 1	Ability to apply knowledge of mathematics, science, engineering fundamentals and an engineering specialisation to defined and applied engineering procedures, processes, systems or methodologies.
PO 2	Ability to identify, formulate, research literature and analyse broadly-defined engineering problems using principles of mathematics, natural sciences and engineering sciences.
PO 3	Ability to design solutions for broadly-defined engineering technology problems and contribute to the design of systems, components or processes to meet desired engineering society needs, public health and safety; and environmental considerations.
PO 4	Ability to conduct investigations of broadly-defined problems, research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of information to provide valid conclusions.
PO 5	Ability to select and apply appropriate techniques, resources, and modern engineering and IT tools, including prediction and modelling, to broadly-defined engineering problems, with an understanding of the limitations.
PO 6	Ability to evaluate the societal, health, safety, legal, cultural, economic, and environmental impacts of engineering technology solutions to broadly-defined problems, and demonstrate awareness of sustainable development and professional responsibilities.
PO 7	Ability to understand and commit to professional ethics, responsibilities and norms of engineering technology practice.
PO 8	Ability to function effectively as an individual, and as a member or leader in diverse technical teams and in multi-disciplinary settings.
PO 9	Ability to communicate effectively on broadly-defined engineering activities with the engineering community and with society at large, by being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.
PO 10	Ability to demonstrate understanding of engineering management principles and economic decision-making to be applied to one's own work, as a member and leader to manage projects in multi-disciplinary environments.
PO 11	Ability to recognise the need for and could engage in independent and life-long learning in the broadest context of engineering technology.

### Career prospects

Building Engineer  
Site Engineer  
Building/Construction Technology Specialist  
Maintenance Engineer  
BIM Modeller  
Research and Development Engineer  
Housing Developer  
Environmental Engineer  
Geotechnical Engineer  
Entrepreneur

### 3.0 Program Requirements

#### 3.1 Courses

The course requirements for students in the Building Engineering Technology programme are as follows:

##### (A) Core Courses

These are compulsory courses that every student must take and pass. They cover the essential knowledge and skills of the programme. Core courses are identified with the code 'T'.

##### (B) Elective Courses

Elective courses give students the option to choose from different subjects offered by the school. Students majoring in Building Engineering Technology must register for the electives listed in the programme structure. Elective courses are identified with the code 'E'.

##### (C) Practical Training Course

In the fourth year (Semester 2), all students must complete Industrial Training for a duration of 24 weeks (6 months). This practical training is worth 12 credit units and provides real-world industry experience.

### 3.2 Unit Requirements

Unit requirement for graduation is as follows:-

<b>Bachelor of BUILDING ENGINEERING TECHNOLOGY with Honours</b>	
<b>Course Components</b>	<b>Units</b>
Core Courses	98
Elective Courses	27
University Courses	15
<b>Total</b>	<b>140</b>

### 2.3 Course Duration

<b>Bachelor of BUILDING ENGINEERING TECHNOLOGY with Honours</b>	
<b>Duration</b>	
Minimum semesters	8 semesters (4 years)
Maximum semesters	14 semesters (7 years)

#### Core and Elective Courses

- A grade of **D- or higher** is considered a **Pass**.
- A grade of **F (Fail)** requires the student to repeat the course.

#### Studio Courses (under Core Courses)

- A grade of **C or higher** is considered a **Pass**.
- Students who receive **C- and below** must repeat the course.

#### Repeat Courses

- Students who receive **C- or lower** for a course may repeat it to improve their grade, either during the **KSCP** or in a normal semester.
- Students who receive **C or higher** are **not allowed** to repeat the course in either KSCP or a normal semester.
- **KSCP** is only allowed for **final-year students** and only for graduation purposes.



### 3.4 Studio Courses

All students are required to **pass** studio courses. A minimum of Grade C is needed to pass. Any student who receives Grade C- or below will be required to repeat the course.

#### STUDIO FOR BUILDING ENGINEERING TECHNOLOGY (42 Units)

Code	Title
RES 103/7	- Building Engineering Technology Studio 1
RES 104/7	- Building Engineering Technology Studio 2
RES 203/7	- Material and Structural System Studio
RES 204/7	- Engineering Services and Environmental Technology Studio
RES 301/7	- Infrastructure, Energy and Transportation Studio
RES 302/7	- Computer Aided Design and Information Modelling Studio

### 4.0 List of Courses

#### 4.1 Building Engineering Technology Programme

##### A. Core Courses (98 Units)

Code and Title	Unit	Semester	Year	TICK ✓
RES 103 - Building Engineering Technology Studio 1	7	1	1	
REG 131 - Mathematic for Engineering Technology	3	1	1	
REG 132 * - Structural Mechanics *	3	1	1	
RES 104 - Building Engineering Technology Studio 2	7	2	1	
REG 161 - Construction Materials	3	2	1	
RES 203 - Material and Structural System Studio	7	1	2	
REG 233 - Geomatic Technology	3	1	2	
REG 265 - Infrastructure Technology	3	1	2	
REG 266 - Structural Analysis	3	1	2	
RES 204 - Engineering Services and Environmental Technology Studio	7	2	2	
REG 261 - Building Services	3	2	2	
RES 301 - Infrastrucure, Energy and Transportation Studio	7	1	3	
REG 361 - Methods of Construction	3	1	3	
REG 371 - Design of Concrete Structures	3	1	3	
RES 302 - Computer Aided Design and Information Modelling Studio	7	2	3	
REL 300 - Building Engineering Technology Studies 1	3	2	3	
REG 360 - Industrialised Building System (IBS)	3	2	3	
REG 468 - Road and Transportation	3	1	4	
REG 469 - Professional Practice for Engineering Technologist	3	1	4	
REL 400 - Building Engineering Technology Studies 2	5	1	4	
REL 471 - Industrial Training	12	2	4	

**Note:** \*This course is a prerequisite for REG266, and students must obtain a minimum grade of C to pass

##### B. Elective Courses (27 Units)

Code and Title	Unit	Semester	Year	TICK ✓
RMK153 - Principles of Construction Economics	3	1	1	
RMK252 - Principles of Project Management	3	2	1	
RMK155 - Fundamental of Construction Law	3	1	2	
RMK264 - Construction and Financial Management	3	2	2	
RQG236* - Measurement 1*	3	2	2	
RMK156 - Health, Safety and Environmental Management	3	1	3	
RQG237 - Measurement 2	3	1	3	
RQG355 - Management, Sustainability and Internationalisation	3	2	3	
RBG351 - Building Maintenance	3	1	4	

**Note:** \*This course is a prerequisite for RQG237, and students must pass this course

## 5.0 University Course Requirements

General Studies (MPU)		CREDIT TOTAL	
		Local Students	International Students
U1	<u>Local Students</u> <ul style="list-style-type: none"> <li>HFF225 (Philosophy and Current Issues) (2 credits)</li> <li>HFE224 (Appreciation of Ethics and Civilisations) (2 credits)</li> <li>LKM400 (Bahasa Malaysia IV) (2 credits)</li> </ul> <u>International Students of Science and Technology</u> <ul style="list-style-type: none"> <li>HFF225 (Philosophy and Current Issues) (2 credits)</li> <li>LKM100 (Bahasa Malaysia I) (2 credits)</li> </ul>	6	4
U2 (Local Students) AND U3 (International Students)	<u>Local Students</u> <ul style="list-style-type: none"> <li>WUS101 (Core Entrepreneurship) (2 credits)</li> <li>English Language Courses (4 credits)</li> </ul> <u>International Students</u> <ul style="list-style-type: none"> <li>SEA205E (Malaysian Studies) (4 credits)</li> <li>English Language Courses (4 credits)</li> </ul>	6	8
U4	<u>Local Students</u> WAR122 (Integrity and Anti-Corruption Course)/Co-Curricular Courses*	2	2
	<u>International Students</u> Co-Curricular Courses*		
Options	Skill courses/Foreign Language Courses/Other courses offered by other schools. Students have to choose any of the following: <ul style="list-style-type: none"> <li>Co-curricular courses</li> <li>Skill courses/Foreign Language Courses/ Other courses offered by other schools</li> </ul>	1	1
CREDIT TOTAL		15	15

*\*In order to graduate, the minimum passing grade required is Grade C.*

## 6.0 Course Synopsis

### RES 103 – Building Engineering Technology Studio 1

This course exposes students to roles and contribution of various disciplines in built environment. Students will be trained in aspects of drawing, sketches, material, building element and structures. This course enhances creativity, communication skill and perception through development process that involves site analysis and planning, measured drawing, specifications and detailing.

### RES 104 – Building Engineering Technology Studio 2

This course aims to introduce students with fundamental concepts, techniques, and frameworks to assess development projects. It covers real estate development processes including site assessment, market research, project analysis, and approval of building and engineering plans.

### REG 131 – Mathematics For Engineering Technology

This course is about the mathematics that is most widely used in engineering core subjects such as algebra, calculus, statistic and statistical application. Topics covered include matrices, polynomials, application of the derivation, first order differential equations, statistic and applied statistic.

#### **REG 132 – Structural Mechanics**

This course introduces students to the principles of engineering mechanics. Course content includes forces and equilibrium of particles, equilibrium of rigid bodies, equivalent systems of forces, centroids and center of gravity, analysis of structural components such as trusses, beam and cables; friction and moment of inertia. The course not only focuses on solving conceptual components related to engineering applications but also emphasis on practical real worlds industry oriented building engineering and technology problems

#### **REG 161 – Construction Materials**

This course equipped students with knowledge on building materials in construction industry. It emphasizes on the basic physical properties of the material and classification, and current developments to enhance or vary its physical properties. The course also introduces fundamental of testing and standard requirements topics for building materials.

#### **RES 203 - Material and Structural System Studio**

This course emphasizes on laboratory and site tests. Students are being exposed to the knowledge of soil mechanics, building materials, structural testing and analysis of structures. Students also are being exposed with preparing technical report.

#### **RES 204 - Engineering Services and Environmental Technology Studio**

This course emphasizes on the internal building aspects associated with building services systems considering the environmental and sustainability aspect.

#### **REG 233 – Geomatic Technology**

This course covers the basic principles of land surveying and geomatic including exploratory survey, levelling survey, traverse survey, theodolite survey, compass survey and tacheometric survey. Contour survey, contour development, determination of volumes in cut and fills works and also construction site survey are also deliberated in details. Besides, students will be exposed to fundamental of geographic information system, control and monitoring survey and latest GIS technology related to the field of geomatic

#### **REG 261 - Building Services**

This course introduces the principles and design of various building service systems including water supply and sanitation systems, mechanical ventilation and air conditioning systems, fire prevention systems, vertical transportation systems, lighting systems, power supply systems and communication systems. Students will also be exposed to auxilliary systems and sustainable service systems

#### **REG 265 - Infrastructure Technology**

This course focuses on the components of physical infrastructures that support the development of a nation, which includes roads, water supply system, drainage system, sewerage system, power system, communication system and other relevant public facilities. Students will be exposed to the principles, components and the knowledge to design the infrastructure system. This course also discusses the technology being applied to develop such infrastructure by providing actual examples from the existing infrastructure and mega infrastructure projects in this country and overseas.

#### **REG 266 - Structural Analysis**

This course study view at various types of indeterminate structures in building and civil engineering work with emphasis on structures such as continuous beams and low / medium frames. It also study using various methods to solve the indeterminate structures such as Moment Distribution method, Conjugate beam and Integration method.

#### **RES 301 - Infrastructure, Energy and Transportation Studio**

This comprehensive course covers the planning and implementation of both internal and external infrastructure systems, involving vital elements such as energy, power, and water supply. Additionally, it explores into the particulars of land development, offering a holistic understanding of infrastructure development from various perspectives

#### **RES 302 - Computer Aided Design and Information Modelling Studio**

This course focuses on the design of components of building structures that include substructure and superstructure in construction. The design involves standard guided manual methods and using computer software simulation for structural analysis.

#### **REG 360 – Industrialised Building System (IBS)**

This course introduces the concept of IBS as sustainable construction in Malaysia. A comparison of conventional and IBS construction process and method studies is also introduced. Various materials, technologies and economic aspects of IBS will also be discussed in this course. Modular aspects of coordination, modular design rules and structural design concepts using components and assemblies are also covered

#### **REG 361 - Methods of Construction**

This course exposes students to the construction process and methods. It emphasised the knowledge of the soil and test involved; site work and construction of structure

#### **REL 300 – Building Engineering Technology Studies 1**

The Final Year Project requires students to undertake a research project supervised by a lecturer in topics related to building engineering and technology. Studies can be conducted in the form of literature reviews, experiments, modeling, arrangement simulations, case studies, questionnaires and others. The first part of this study involves the preparation of a project methodology based on the need to get answers to the problems that have been identified. Students will identify specific problems carefully through reading surveys, site visits and discussions with the industry involved to formulate reasonable research questions. After that, a research methodology will be developed to find answers to these problems that will be conducted in the second part of the study in the REL 400 course

#### **REG 371 – Design of Concrete Structures**

This course equipped students with knowledge on reinforced concrete design as a structural material. Knowledge on the behaviour and properties of concrete is explained. The ultimate limit state concept design in reinforced concrete will also be explained. Students are exposed to the knowledge of design of the structural elements: slab, beam, column and footing.

#### **REG 468 - Road and Transportation**

This course covers the planning of road and road transportation systems (layout, category and administration of roads and transportation systems in Malaysia); road design and road systems; technology and construction (including earthworks, hydraulic structures, traffic control systems and tools); including materials (such as soil, aggregates, concrete and asphalt)

#### **REG 469 - Professional Practice for Engineering Technologist**

This course provides students with exposure to basic knowledge and skills to adapt in industrial and professional practice. Emphasis is placed on standardized procedures and data, office procedures and official affairs, management structures and related networks in the construction industry

#### **REL 400 - Building Engineering Technology Studies 2**

This course is a continuation of REL370 offered in Semester I. In this second part of building engineering and technology studies, students will carry out data collection activities using appropriate methodologies established in the previous stage. Students will then be expected to present the analyzed data in form of tables, charts and graphics and be able to produce meaningful discussion and debate in a written report. Research findings should be reported in the form of introduction, objectives of research, scope of study, literature review, research methodology, data collection/experimental work, data analysis, results and discussions, conclusions and recommendations and references. A scientific report in the form of a final year project report should be submitted at the end of the research and the student is required to communicate the findings of the research through an oral presentation. In addition, students will also be trained to produce their findings as an article in standard publications format

#### **REL 471 - Industrial training**

This course is a compulsory industrial training for Housing, Building and Planning Students. It focuses on training in professional practises in respective fields to prepare students for real-life in the respective industries. The course runs during long holiday and semester 1 for 24 weeks continuously.

#### **RMK 153 – Principles of Construction Economics**

This course introduces the economic concepts of demand, supply and market equilibrium; market structures; costs and production and in identifying the main economic problems. Emphasis is also given to supply and demand as well as market structures in the construction and building industries.

#### **RMK 252 – Principles of Project Management**

The course content covers three knowledge areas comprising organization, management and planning techniques in construction projects.

#### **RMK 155 – Fundamentals of Construction Law**

This course will expose students to the Malaysian legal system, and legislation related to construction projects. Among the related laws are criminal law, contract law, tort law, company law and partnership as well as land law.

#### **RMK 264 – Construction and Financial Management**

The main objective of this subject is to introduce to the students the importance of construction management and method of financial analysis in the construction industry.

#### **RQG 236 – Measurement 1**

This course explains the basic principles of building measurement according to the Standard Methods of Measurement for Building 2 (SMM2) and covers the method of measuring quantities for all major building elements which includes substructure, superstructure, finishing, external works and Bills of Quantities (BQ) preparation

#### **RMK 156 – Health, Safety and Environmental Management**

The structure of this course covers the identification and control of hazards and the supervision of health, safety and environment management in the workplace within the context of the construction industry.

#### **RQG 237 – Measurement 2**

This course explains the basic principles of building and infrastructure measurement according to Standard Method of Measurement for Building 2 (SMM2) and Malaysian Civil Engineering Standard Methods of Measurement (MyCESMM) which also covers the method of measuring quantities for building and infrastructure elements which includes basements, piling, electrical installation, roadworks, drainage, sewer reticulation, water reticulation, structural steel, and external works.

**RQG 355 – Measurement 1**

This course focuses on three areas namely, management, sustainability and internationalization in construction industry and within the context of quantity surveyors. The management aspect covers entrepreneurship, leadership and organizational management. Sustainability includes the application of green concept in construction and building including building heritage conservation. Internationalisation covers economic policies, work expectation and services of working overseas.

**RBG 351 - Building Maintenance**

This course focuses on planned maintenance program for building, encompassing conservation, preservation and dilapidated buildings as well as building space usage.

## COURSE STRUCTURE

### UNDERGRADUATE PROGRAMME BUILDING ENGINEERING TECHNOLOGY

#### YEAR 1

SEMESTER 1				SEMESTER 2			
RES 103	Building Engineering Technology Studio 1	T	7	RES 104	Building Engineering Technology Studio 2	T	7
REG 131	Mathematics for Engineering Technology	T	3	REG 161	Construction Materials	T	3
REG 132	Structural Mechanics	T	3	RMK 252	Principles of Project Management	E	3
RMK 153	Principles of Construction Economics	E	3				
	University Course	U	2		University Course	U	2
	University Course	U	2		University Course	U	2
<b>UNITS</b>				<b>20</b>	<b>UNITS</b>		
					<b>17</b>		

#### YEAR 2

SEMESTER 3				SEMESTER 4			
RES 203	Material and Structural System Studio	T	7	RES 204	Engineering Services and Environmental Technology Studio	T	7
REG 233	Geomatic Technology	T	3	REG 261	Building Services	T	3
REG 265	Infrastructure Technology	T	3	RMK 264	Construction and Financial Management	E	3
REG 266	Structural Analysis	T	3	RQG 236	Measurement 1	E	3
RMK 155	Fundamentals of Construction Law	E	3		University Course	U	2
<b>UNITS</b>				<b>19</b>	<b>UNITS</b>		
					<b>18</b>		

#### YEAR 3

SEMESTER 5				SEMESTER 6			
RES 301	Infrastructure, Energy and Transportation Studio	T	7	RES 302	Computer Aided Design and Information Modelling Studio	T	7
REG 361	Methods of Construction	T	3	REL 300	Building Engineering Technology Studies 1	T	3
REG 371	Design of Concrete Structure	T	3	REG 360	Industrialised Building System	T	3
RMK 156	Health, Safety and Environmental Management	E	3	RQG 355	Management, Sustainability and Internationalisation	E	3
RQG 237	Measurement 2	E	3				
	University Course	U	1		University Course	U	2
<b>UNITS</b>				<b>20</b>	<b>UNITS</b>		
					<b>18</b>		

#### YEAR 4

SEMESTER 7				SEMESTER 8			
REL 400	Building Engineering Technology Studies 2	T	5	REL471	Industrial Training	T	12
REG 468	Road and Transportation	T	3				
REG 469	Professional Practice for Engineering Technologist	T	3				
RBG 351	Building Maintenance	E	3				
	University Course	U	2				
<b>UNITS</b>				<b>16</b>	<b>UNITS</b>		
					<b>12</b>		

	<b>Core Courses</b>	<b>T</b>	<b>98</b>
	<b>Elective Courses</b>	<b>E</b>	<b>27</b>
	<b>University Courses</b>	<b>U</b>	<b>15</b>
	<b>TOTAL UNITS</b>		<b>140</b>