



# HBP

Booklet **2022/23**  
Undergraduate Programme



USM UNIVERSITI  
SAINS  
MALAYSIA



# Quantity Surveying

School of Housing, Building, & Planning



CPM 2026  
QS 2025  
IA 2026  
Archi 2025  
BEST 2026  
BS 2025  
URP 2026

QS WORLD UNIVERSITY RANKINGS 2022 *by subject*  
ARCHITECTURE / BUILT ENVIRONMENT  
TOP 100

# Bachelor of Science (Housing, Building and Planning) (Honours) (Quantity Surveying)



**SCHOOL OF  
HOUSING,  
BUILDING &  
PLANNING**

Ranked **TOP 5**  
among  
Public Universities

& **TOP 100**  
faculty in the  
world by subject

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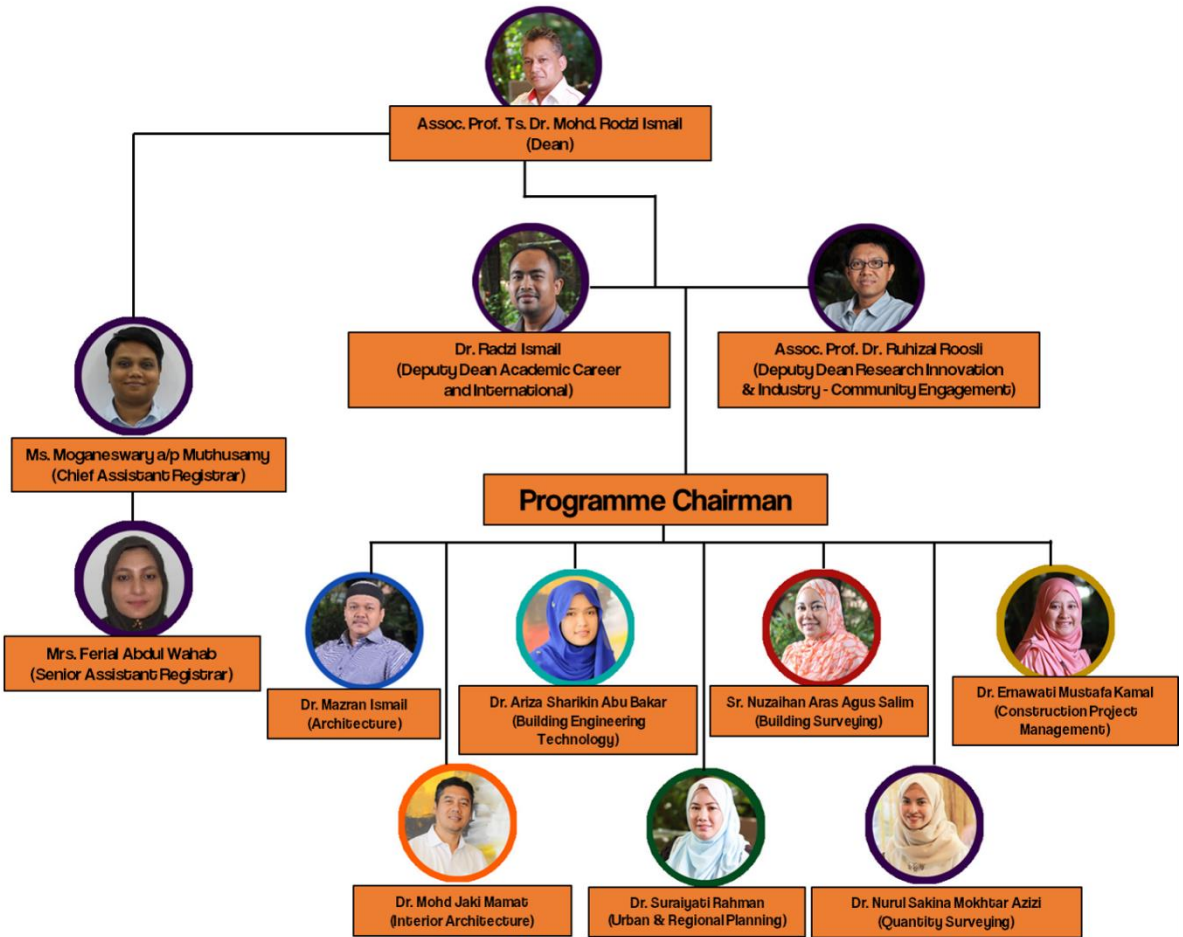
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# School of Housing, Building & Planning

The School of Housing, Building and Planning (HBP), Universiti Sains Malaysia (USM) was established in 1972 with the aim of nurturing skilled graduates who are capable of becoming leaders in implementing relevant planning, design and development processes necessary for a sustainable built environment in Malaysia and the world.

After almost five decades, the school has made tremendous progress in teaching and learning, research and publication, consultancy and innovation, and continuously making positive impact on the society and the industry.

Currently, seven undergraduate programmes are offered by the school. The programmes are recognized by the respective professional bodies such as the Board of Town Planners Malaysia (LPBM), Board of Architects Malaysia (LAM), Board of Quantity Surveyors Malaysia (BQSM), Royal Institute of Chartered Surveyors (RICS), Pacific Association of Quantity Surveyors (PAQS), Royal Institute of Chartered Surveyors Malaysia (RICSM), The Chartered Institute of Building (CIOB), and Chartered Association of Building Engineers (CABE).

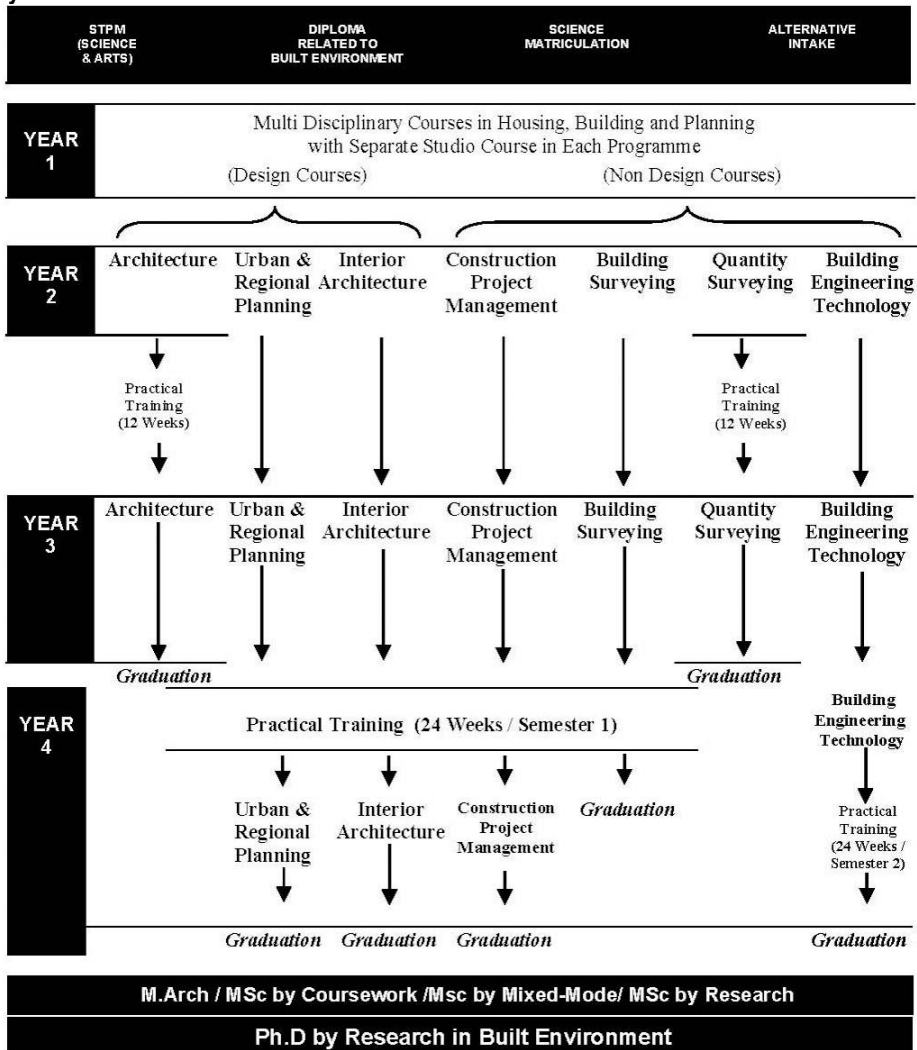
## Mission

- To establish HBP as the best Built Environment School with emphasis on sustainability
- To nurture outstanding graduates for the global market
- To position HBP as a centre of expertise in identified niche areas
- To be at the fore front of knowledge transfer and be relevant to the needs of the community (bottom billion)

**'Championing a sustainable tomorrow through holistic education and upholding a global mindset'**



# Study Path at The School of HBP



# Programme Structure/Curriculum

## Bachelor of Science (Housing, Building and Planning)

The School of Housing, Building and Planning (HBP) offers a curriculum that is unique amongst programmes of advanced education dealing with the built environment. Where curricula in architecture, quantity surveying, engineering or planning are generally based upon a professional training in one of these disciplines, the School eschews professional specialism in favour of a broad based education cutting across both professional and disciplinary boundaries. As such, it is more correct to describe the broad focus of education at the School as a field of knowledge and skills, rather than the more narrowly focused concept of a single discipline. The students of HBP on the main campus USM Penang and Offshore Programme campus draw upon many different disciplines during the course of their studies, in so far as they are all relevant to the activities of housing, building and planning.

These theoretical and practical compone grouped in the curriculum according to the f categories:

1. Courses in theory and methodology
2. Studio projects
3. Laboratory projects
4. Practical training
5. Research

| R  | A | S | 1 | 2  | 3 |
|--|---|---|---|--|---|
|  |   |   |   | <b>Courses in Series</b>                       |   |
|  |   |   |   | 00 - Studio                                    |   |
|  |   |   |   | 10 - Workshop/Laboratories                     |   |
|  |   |   |   | 20 - Physical Environment Studies              |   |
|  |   |   |   | 30 - Theory and Methodology                    |   |
|  |   |   |   | 40 - Cultural & Etiquette Studies              |   |
|  |   |   |   | 50 - Management Administration<br>& Regulation |   |
|  |   |   |   | 60 - Science and Technology                    |   |
|  |   |   |   | 70 - Research and Practical                    |   |
|  |   |   |   | <b>Course Level</b>                            |   |
|  |   |   |   | <b>Course Implementation:</b>                  |   |
|  |   |   |   | S = Studio                                     |   |
|  |   |   |   | B = Workshop/Laboratories                      |   |
|  |   |   |   | K = Lecture only                               |   |
|  |   |   |   | G = Combination of lectures and<br>practicals  |   |
|  |   |   |   | T = Combination of lectures & tutorial/seminar |   |
|  |   |   |   | L = Research                                   |   |
|  |   |   |   | <b>Course Classification:</b>                  |   |
|  |   |   |   | U = General                                    |   |
|  |   |   |   | A = Architecture                               |   |
|  |   |   |   | P = Urban & Regional Planning                  |   |
|  |   |   |   | M = Construction Management                    |   |
|  |   |   |   | D = Interior Architecture                      |   |
|  |   |   |   | E = Building Technology                        |   |
|  |   |   |   | Q = Quantity Surveying                         |   |
|  |   |   |   | B = Building Surveying                         |   |
| <b>R - Code for the School of Housing, Building and Planning</b> |   |   |   |  |   |



## 2.0 School Requirements

### Courses

The requirements for students at the School of HBP are summarised as follows:

#### (A) Core Courses

These courses are mandatory for all students and they have to obtain a pass at minimum to graduate. These courses contain the fundamental topics of the School's curriculum and are coded 'T'.

#### (B) Elective Courses

Elective courses are alternative courses offered by the School. Students who have chosen to major in one of the programmes, are required to take certain related electives that are classified as priority. When this requirement is satisfied, the student may register for any other electives of their own choice. Code to be used is 'E'.

#### (C) Practical Training Course

All B.Sc. (HBP) students are required to undergo Practical Training for a period of 12 weeks during their long term vacation in their second year. Practical training carries 6 units.

### 3.0 Unit Requirements

Unit requirement for graduation is as follows:-

- (A) **Bachelor of Science** (Housing, Building and Planning with Honours) (3 years) (CM, BT, and QS)

| <b>Bachelor of Science (Housing, Building and Planning with Honours) (3 years) (QS)</b> |              |
|---|--------------|
| <b>B.Sc.(HBP) Programme</b>   | <b>Units</b> |
| Core Courses  | 72           |
| Elective Courses  | 36           |
| University Courses  | 19           |
| <b>Total</b>  | <b>127</b>   |



### 3.1 Course Duration

#### Bachelor of Science (Housing, Building and Planning with Honours) (3 years) (QS)

|                   |                    |
|-------------------|--------------------|
| <b>Period</b>     | <b>B.Sc. (HBP)</b> |
| Minimum semesters | 6 (3 years)        |
| Maximum semesters | 10 (5 years)       |

#### For Core and Elective Courses:

- Grade F (Fail) will be required to repeat the course.
- Grade D- and above is considered as a passing grade (Pass)

#### For Studio Courses under the Core Courses:

- Grade of C and above is considered as a passing grade (except for Architecture Studio Courses which the passing grade is B-). Students obtaining grade C- (C+ for Architecture Studio Courses) and below will be required to repeat the course.

#### Repeat Courses:

- Students awarded with a grade 'C-' and below for a particular course may be given a chance to improve their grades by repeating the course during the KSCP or normal semester. Students awarded with a grade 'C' and above for a particular course will not be allowed to repeat the course whether during KSCP or normal semester.

### 3.2 Studio Courses

Studio courses are **mandatory** for all students to pass, i.e. with achievements of Grade C and above. Students obtaining Grade C- and below will be required to repeat the course.

#### QUANTITY SURVEYING (42 Units)

| Code     | Title                       |
|----------|-----------------------------|
| RQS101/7 | Quantity Surveying Studio 1 |
| RQS102/7 | Quantity Surveying Studio 2 |
| RQS201/7 | Quantity Surveying Studio 3 |
| RQS202/7 | Quantity Surveying Studio 4 |
| RQS303/7 | Quantity Surveying Studio 5 |
| RQS304/7 | Quantity Surveying Studio 6 |

### 3.3 Quantity Surveying Programme

#### A. Core Courses (72 Units)

| Code and Title |   |                                  | Unit | Semester | Year | TICK ✓ |
|----------------|---|----------------------------------|------|----------|------|--------|
| RQS 101        | - | Quantity Surveying Studio 1      | 7    | 1        | 1    |        |
| RQS 102        | - | Quantity Surveying Studio 2      | 7    | 2        | 1    |        |
| RQG 131        | - | Principles of Quantity Surveying | 3    | 1        | 1    |        |
| RAG 161        | - | Building Construction I          | 3    | 1        | 1    |        |
| RQS 201        | - | Quantity Surveying Studio 3      | 7    | 1        | 2    |        |
| RQS 202        | - | Quantity Surveying Studio 4      | 7    | 2        | 2    |        |
| RQG 236        | - | Measurement 1                    | 3    | 2        | 1    |        |
| RQG 237        | - | Measurement 2                    | 3    | 1        | 2    |        |
| RUL 275        | - | Industrial Training A            | 6    | 2        | 2    |        |
| RQG 358        | - | Professional Practice            | 3    | 2        | 3    |        |
| RQG 356        | - | Cost Management                  | 3    | 1        | 3    |        |
| RQS 303        | - | Quantity Surveying Studio 5      | 7    | 1        | 3    |        |
| RQS 304        | - | Quantity Surveying Studio 6      | 7    | 2        | 3    |        |
| RQL 371        | - | QS Final Year Project            | 6    | 1&2      | 3    |        |

#### B. Elective Courses (36 Units)

| Code and Title |   |  | Unit | Semester | Year | TICK ✓ |
|----------------|---|--|------|----------|------|--------|
| REG 161        | - | Construction Materials*                                | 3    | 2        | 1    |        |
| RMK 153        | - | Principles of Construction Economics*                  | 3    | 1        | 1    |        |
| RMK 156        | - | Health, Safety and Environmental Management *          | 3    | 1        | 2    |        |
| RMK 155        | - | Fundamentals of Construction Law*                      | 3    | 1        | 1    |        |
| RMK 252        | - | Principles of Project Management*                      | 3    | 2        | 1    |        |
| RMK 255        | - | Law and Practice of Construction Project Management 1* | 3    | 2        | 2    |        |
| REG 261        | - | Building Services*                                     | 3    | 2        | 2    |        |
| RQB 261        | - | Computerised Quantity Measurement *                    | 3    | 2        | 2    |        |
| REG 265        | - | Infrastructure Technology *                            | 3    | 1        | 3    |        |
| RAG 265        | - | Building Construction 2*                               | 3    | 2        | 2    |        |
| RMK 264        | - | Construction and Financial Management                  | 3    | 1        | 2    |        |
| RMK 262        | - | Fundamentals of Construction Business and Accounting   | 3    | 1        | 2    |        |
| RQG 355        | - | Management, Sustainability and Internationalisation*   | 3    | 2        | 3    |        |
| REG 361        | - | Methods of Construction*                               | 3    | 1        | 3    |        |

\* Recommended courses to meet the requirements approved by Board of Quantity Surveying Malaysia (BQSM)

## 4.0 University Requirements

19 units of University Courses are required for Quantity Surveying Program

| UNIVERSITY COURSE REQUIREMENTS |   | CREDIT TOTAL   |                        |
|--------------------------------|---|----------------|------------------------|
|                                |   | Local Students | International Students |
| <b>General Studies (MPU)</b>   |   |                |                        |
| 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<br>Or<br>U3                 | <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                             | Co-curricular courses*  | 2              | 2                      |
| <b>Options</b>                 | 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>   | 5              | 5                      |
| <b>CREDIT TOTAL</b>            |   | <b>19</b>      | <b>19</b>              |

## Course Structure

| YEAR 1       |                                      |   |           |              |  |   |           |
|--------------|--------------------------------------|---|-----------|--------------|--|---|-----------|
| SEMESTER 1   |                                      |   |           | SEMESTER 2   |  |   |           |
| RQS 101      | Quantity Surveying Studio 1          | T | 7         | RQS 102      | Quantity Surveying Studio 2              | T | 7         |
| RMK155       | Fundamentals of Construction Law     | E | 3         | REG 161      | Construction Materials                   | E | 3         |
| RQG 131      | Principles of Quantity Surveying     | T | 3         | RMK 252      | Principles of Project Management         | E | 3         |
| RAG 161      | Building Construction I              | T | 3         | RQG 236      | Measurement 1                            | T | 3         |
| RMK 153      | Principles of Construction Economics | E | 3         | WUS 101      | Core Entrepreneurship                    | U | 2         |
| HFF 225      | Philosophy and Current Issues        | U | 2         | HFE 224      | Appreciation of Ethics and Civilisations | U | 2         |
| <b>UNITS</b> |                                      |   | <b>21</b> | <b>UNITS</b> |  |   | <b>20</b> |

| YEAR 2  |   |   |           |              |   |   |           |
|---|---|---|-----------|--------------|---|---|-----------|
| SEMESTER 3  |   |   |           | SEMESTER 4   |   |   |           |
| RQS 201   | Quantity Surveying Studio 3                 | T | 7         | RQS 202      | Quantity Surveying Studio 4                           | T | 7         |
| RQG 237   | Measurement 2                               | T | 3         | REG 261      | Building Services                                     | E | 3         |
| RMK 156   | Health, Safety and Environmental Management | E | 3         | RAG265       | Building Construction 2                               | E | 3         |
| RQG 356   | Cost Management                             | T | 3         | RMK255       | Law and Practice of Construction Project Management 1 | E | 3         |
|   | University Courses                          | U | 4         | RQB 261      | Computerized Quantity Measurement                     | E | 3         |
| <b>UNITS</b>                                      |   |   | <b>21</b> |              | University Courses                                    | U | 2         |
| <b>UNITS</b>                                      |   |   | <b>21</b> | <b>UNITS</b> |   |   | <b>21</b> |
| <b>SEMESTER 4 (Semester Break July-September)</b> |   |   |           |              |   |   |           |
| RUL 274   | Compulsory Practical Training               |   | 6         |              |   |   |           |
| <b>UNITS</b>                                      |   |   | <b>6</b>  | <b>UNITS</b> |   |   | <b>6</b>  |

| YEAR 3                    |                             |   |           |              |   |   |            |
|---------------------------|-----------------------------|---|-----------|--------------|---|---|------------|
| SEMESTER 5                |                             |   |           | SEMESTER 6   |   |   |            |
| RQS 303                   | Quantity Surveying Studio 5 | T | 7         | RQS 304      | Quantity Surveying Studio 6                       | T | 7          |
| REG 265                   | Infrastructure Technology   | E | 3         | RQG 358      | Professional Practice                             | T | 3          |
| REG 361                   | Methods of Construction     | E | 3         | RQG 355      | Management, Sustainability & Internationalisation | E | 3          |
| RQL 371                   | QS Final Year Project       | T | TL        | RQL 371      | QS Final Year Project                             | T | 6          |
|                           | University Courses          | U | 5         |              | University Courses                                | U | 2          |
| <b>UNITS</b>              |                             |   | <b>17</b> | <b>UNITS</b> |   |   | <b>21</b>  |
| <b>Core Courses</b>       |                             |   |           |              |   |   |            |
|                           |                             |   |           |              |   | T | 72         |
| <b>Elective Courses</b>   |                             |   |           |              |   |   |            |
|                           |                             |   |           |              |   | E | 36         |
| <b>University Courses</b> |                             |   |           |              |   |   |            |
|                           |                             |   |           |              |   | U | 19         |
| <b>TOTAL UNITS</b>        |                             |   |           |              |   |   | <b>127</b> |

## 5.0 Course Synopsis

### 5.1 Practical Training

#### RUL 274– Compulsory Practical Training

This course emphasizes on compulsory practical training to students on matter related to practicing professional in related fields.

#### Learning Outcomes

At the end of the course students will be able to:

- (i) Complete tasks assigned by a firm or organization in a professional manner
- (ii) Display the ability to solve problems based on industrial requirements
- (iii) Solve relevant design issues via teamwork

## 5.2 Courses in Quantity Surveying

### RQS 101 – Quantity Surveying Studio 1

This course introduces the entire property development process as well as the actors of the built environment to the students. Technical drawing skills are also taught in this module and projects are given to provide an understanding of building elements. Creativity is nurtured through the model making project.

#### Learning Outcomes

At the end of the course students will be able to:

- (i) Explain the role and responsibility of each actor in the property development process.
- (ii) Identify the various stages in the planning and development process of real estate.
- (iii) Have the ability to draw technical drawings and to produce cut section model based on the technical drawings.
- (iv) Explain the detailings of each building elements.

### RQS 102 – Quantity Surveying Studio 2

This course provides an understanding on the building design morphology, characteristics of iconic buildings and mega projects, infrastructure works, building services, preliminary cost estimate & elemental cost analysis, and environmental issues in

construction.

#### Learning Outcomes

At the end of the course students will be able to:

- (i) Explain the diversity of different types of iconic buildings, mega projects as well as the detailing of the building services.
- (ii) Discuss the issues in the development process and its impact on sustainability.
- (iii) Demonstrate the methods to calculate preliminary estimate as well as to prepare elemental cost analysis.

### RQG 131 – Principles of Quantity Surveying

This course introduces the quantity surveying profession and their roles within the RIBA plan of work and construction process. It explains the impact of construction industry to the society, economy and environment. The course also covers basic understanding in cost estimating, building economics, various Standard Methods of Measurement and mensuration techniques.

#### Learning Outcomes

At the end of the course students will be able to:

- (i) Explain the role of quantity surveyors within the construction process.
- (ii) Discuss the impact of design on the cost of building.
- (iii) Differentiate the various Standard Methods available in the industry and able to use them appropriately
- (iv) Demonstrate measurement using the right mensuration techniques

### RMK 153 – Principles of Construction Economics

This course emphasizes on market structure, supply and demand in marketing building industry. It introduces the economic concepts; main economic problems; demand, supply and market equilibrium; economic structure; cost and production are also being discussed.

### **Learning Outcomes**

At the end of the course students will be able to:

- (i) Demonstrate the ability to relate economic principles to the construction industry market .
- (ii) Reproduce economic development models based on current situations .
- (iii) Study the problems within the construction industry based on the volatility of the economy system.
- (iv) Report the findings on the relationship between economy and the construction industry.

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

This course encompasses the identification and control of hazards and management supervision of health, safety and environment in workplace, with an emphasis on the construction industry.

#### **Learning outcomes:**

At the end of the course, students will be able to:

- (i) Explain the basic concepts of management of health, safety and the environment within organization.
- (ii) Explain relevant acts applicable in health, safety and the environmental management.
- (iii) Identify risks at construction sites and methods of controlling the risks.

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

This course discusses on managing the construction industry encompassing the methods of basic planning, monitoring and controlling use in project management.

#### **Learning Outcomes**

At the end of the course students will be able to:

- (i) Differentiate the various basic concepts within the aspects of management and organization
- (ii) Manipulate the organizational objectives and structure as well as to identify the organizational

environment

- (iii) Explain the psycho-social aspects of management and organization
- (iv) Demonstrate the methods of project management

### **RMK 254 – Legal Studies**

In this course, students are exposed to the Malaysian legal system, laws that are relevant to construction projects, criminal law, contract law, company law, partnership law and of torts.

#### **Learning Outcomes**

At the end of the course students will be able to:

- (i) Demonstrate the elements of the Malaysian legal system
- (ii) Organize the legal conflicts and problems related to construction projects
- (iii) Demonstrate and apply the relevant legal provisions in the construction process
- (iv) Propose and review the current and most appropriate legal provisions in line with company and partnership laws as well as the Laws of Tort

### **RMK 354 – Construction Law**

This course discusses building contracts, professionals, workmen compensation, and arbitration pertaining to property development including planning.

#### **Learning Outcomes**

At the end of the course students will be able to:

- (i) Discover the laws pertaining to the construction industry
- (ii) Dismantle the problems for each related law
- (iii) Demonstrate and apply the provisions of law at the work place.
- (iv) Explain and review the suitability of current law provisions

### **RMK 362 – Construction and Finance Management 1**

This course introduces the students to the importance and methods of financial analysis in construction. This subject emphasizes on the fundamentals and application of financial management in construction. Students are also exposed to the elements of accounting systems and financial statements as well as the available banking facilities in the market.

#### **Learning Outcomes**

At the end of the course students will be able to:

- (i) Analyze the importance of financial analysis.
- (ii) Organize the implementation of analytical methods of financial management in the construction industry
- (iii) Report the findings of financial analysis within an actual construction industry environment.

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

This course focuses on the efficiency of building services and the systems involved. The building services that are mainly highlighted in this course are lighting, heating and ventilating, air conditioning, security and alarm systems and fire detection and protection. Students will be exposed to the principles, components and knowledge to design an appropriate building service system for different types of buildings such as residential, offices and multi-storey buildings.

#### **Learning Outcomes**

At the end of the course students will be able to:

- (i) Elaborate every principles of basic building services component.
- (ii) Display the ability of analyzing and preparing building services in a teamwork.
- (iii) Propose theories and techniques in designing building services systems.

#### **REG 265 – Infrastructure Technology**

This course focuses on the components of physical infrastructures that support the development of a nation. The examples of physical infrastructures are roads, power supplies, drainage and sewerage

system. 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 for the country by providing actual examples from the existing infrastructure and mega infrastructure projects in this country and overseas.

#### **Learning Outcomes**

At the end of the course students will be able to:

- (i) Explain the principles of each components of basic facilities needed for development.
- (ii) Manipulate the theories and techniques in designing the infrastructure system.
- (iii) Shape the infrastructure component and practice work professionally.

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

This course prepares students with the knowledge on the process and methods of construction. Students are given practical exposure on site management, earth work including cleaning, cut and fill, dewatering process from the construction site. They are also exposed to the basic design and preparation of concrete construction and removal of formwork for the prefabricated construction system, pre-stressed concrete construction and high rise construction

#### **Learning Outcomes**

At the end of the course students will be able to:

- (i) Identify construction characteristics and methods critically.
- (ii) Explain graphically the construction method and building material used in construction.
- (iii) Unveil and suggest the latest and suitable methods use in current construction industry.

#### **QRS 201 – Quantity Surveying Studio 3**

This course introduces professional QS practices with emphasis on pre-contract aspects as well as exposes students to the work processes through projects that mirror the requirement in the industry. In this course, students will be introduced to the roles and duties of



QS as well as building morphology and construction contracts. The course will also emphasize on pre-contract stage of work which includes taking-off and BQ preparation including the types of tender and tendering process. Students will be working in teams for certain projects where they will have the opportunity to develop leadership, communication, problem solving and team-working skills.

#### **Learning Outcomes**

At the end of the course students will be able to:

- (i) Describe the role that a quantity surveyor plays in the various stage of work in a construction project.
- (ii) Differentiate the various standard forms of contract available in the industry and to produce a tender document.
- (iii) Take-off quantities and produce bill of quantities for a building.
- (iv) Develop interactional skills and the ability to work effectively in a group.

#### **RQS 202 – Quantity Surveying Studio 4**

This course is an extension of RQS 201 and builds students in the skills and knowledge of quantity surveying works. This course includes both new and advance topics. New topics include introduction to calculation of price rates, preparation of cost estimates, procurement, preparation of fee proposal and building conservation. Advanced topics on tendering and construction contract will also be covered in this course. Students will be given opportunity to work in teams and debates on current issues to hone their soft skills. Field trips will be organised to enable students to gain first-hand experience in construction sites.

#### **Learning Outcomes**

At the end of the course students will be able to:

- (i) Describe the contents of a tender report as well as contract documents for construction projects and advise clients on suitable procurement methods for a project based on the requirements

of the client.

- (ii) To apply the understanding in construction law to solve contractual disputes and problems.
- (iii) Take-off quantities and prepare bill of quantities using computer.
- (iv) Develop interactional skills and the ability to work effectively in a group.

#### **RQG 236 – Measurement 1**

This course provides knowledge and basic skills in measurement of a small building based on the Standard Method of Measurement for Building Works, 2<sup>nd</sup> Edition (SMM2). This course also explains the basic principles of building measurement according to 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.

#### **Learning Outcomes**

At the end of the course, students will be able to:

- (i) Demonstrate the usage of measurement technique systematically using Standard Method of Measurement for Building Works, 2<sup>nd</sup> Edition (SMM2).
- (ii) Measure quantity of each building elements in detail and accurately.
- (iii) Construct a detail and clear building elements description.

#### **RQG 237 – Measurement 2**

This course explains the principles of measurement and covers the methods of measuring quantities for sub-structure, structural frame and infrastructure works according to the Standard Method of Measurement for Building Works, 2<sup>nd</sup> Edition (SMM2) and the Malaysian Civil Engineering Standard Methods of Measurement (MyCESMM). This course is an extension from RQG 236 Measurement 1 and it explains the principles of measurement and covers the methods of measuring quantities for sub-

structure, structural frame and infrastructure works such as basement, roadworks, drainage, sewer reticulation, water reticulation, structural steel, diaphragm walling, etc.

### **Learning Outcomes**

At the end of the course, students will be able to:

- (i) Demonstrate measurement techniques systematically for sub-structure, structural frame and infrastructure works according to the Standard Method of Measurement for Building Works, 2nd Edition (SMM2) and the Malaysian Civil Engineering Standard Methods of Measurement (MyCESMM).
- (ii) Measure the quantity of sub-structure, structural frame and infrastructure works in detail and accurately.
- (iii) Construct a detail and clear description of the measured elements.

### **RQB 261 – E Measurement**

This course provides hands-on training in using special software to organize quantities measured from hardcopy drawings and to generate the Bill of Quantity (BQ) upon completion of the entire taking-off process. It also offers the same hands-on experience in using CAD software to take-off quantities from CAD drawings and finally the use of BIM application to extract and organize quantities from 3D CAD drawings for BQ purposes.

### **Learning Outcomes:**

At the end of the course, students will be able to:

- (i) Measure and organise quantities for the production of bill of quantities using customized softwares. Demonstrate the use of suitable cost management technique in each phase of the construction process.
- (ii) Demonstrate techniques of measurement from 3D CAD drawings using softwares and related applications.
- (iii) Perform measurement using related software's based on project needs

### **RQS 303– Quantity Surveying Studio 5**

This course is a continuation of the course RQS 202. It introduces professional QS practices which emphasizes on post-contract aspects which include cost control, progress payment, variation order, extension of time, loss and expense and final account. Good site management practice is also covered in this course.

### **Learning Outcomes**

At the end of the course, students will be able to:

- (i) Demonstrate the ability to control and monitor project cost based on actual construction work during post-contract stage.
- (ii) Propose solutions to issues related to the responsibilities of quantity surveyor during the post-contract stage including construction site issues.
- (iii) Relate contractual and legal matters in the management of a construction project.
- (iv) Present issues clearly and confidently.
- (v) Organise a team effectively and understand the role between leader and team members.

### **RQS 304 – Quantity Surveying Studio 6**

This course is a continuation from RQS 303 Studio Quantity Surveying 3 which equips the student with recent issues in the construction industry at the local and international level as a preparation for their future career. Students are exposed to the modus operandi, challenges and rewards of international practice, appointment of consultants, value management as well as contemporary issues. In line with the university to nurture entrepreneurship, students are required to come up with a mock business set up. To prepare the students when they leave the university, personal development lifelong learning and career planning are incorporated in the curriculum.

### **Learning Outcomes**

At the end of the course students will be able to:

- (i) Differentiate work practices at local and international levels.

- (ii) Discuss professional practice of a quantity surveyor and job opportunities at professional and corporate level.
- (iii) display leadership skills in multidisciplinary setting.

#### **RQG 355 – Management, Sustainability And Internationalisation**

This course focuses on three important areas namely, management, sustainability and internationalization related to construction industry. The management aspect covers entrepreneurship, leadership and organizational management. Sustainability includes green concept, heritage conservation and safety issues while internationalisation shall look into multi-lateral trade agreement and procurement. These aspects will be discussed in relation to its significance to a quantity surveyor.

##### **Learning Outcomes:**

At the end of the course, students will be able to:

- (i) Discover the theories and issues on management, sustainability and internationalisation in the context of quantity surveying.
- (ii) Practise critical thinking in discussing local and international contemporary issues to elevate the level of professionalism among quantity surveyors.
- (iii) Demonstrate an understanding of the needs of future generation and to appreciate built heritage
- (iv) Integrate management and entrepreneurial skills in the context of quantity surveying.

#### **RQG 356 – Cost Management**

This course provides the fundamental knowledge in cost management in both pre and post contract stages including risk management and whole life cycle costing. Cost management at pre-contract covers cost modelling, cost indices and cost budgeting while post-contract focuses on cost

monitoring and cost control activities such as progress payment, extension of time, loss and expense, variation order and final account. Students will also be exposed to the theory of risk management and whole life cycle costing.

##### **Learning Outcomes:**

At the end of the course, students will be able to:

- (i) Demonstrate the skill to manage, control and monitor cost in a construction project.
- (ii) Demonstrate the use of suitable cost management technique in each phase of the construction process
- (iii) Explain theory of Whole Life Cycle Costing and risk management

#### **RQG 358 - Professional Practice For Quantity Surveyors**

This course introduces the Quantity Surveyor Act and related professional bodies, followed by work ethics, values and responsibilities. Apart from that, this course also focuses on ethical conduct of the professional Quantity Surveyor and the relevance of various statutory instruments governing the profession. New and contemporary practice management concepts will be explored, apart from traditional service. A comparative analysis of the relevant institutions and establishing key performance indicators (KPI) for benchmarking, a critical analysis of the functions and purpose of the BQ and post contract documentations will be carried out. This course also emphasizes on negotiation skills, management of consultant team and the changing role of quantity surveyors.

##### **Learning Outcomes:**

At the end of the course students will be able to:

- (i) Explain the legal and professional practice related to Quantity Surveying in Malaysia .
- (ii) Integrate responsibility, value and ethics with quantity surveying professional practice.
- (iii) Demonstrate the ability to manage consulting team, client and to conduct negotiation.

- (iv) Display the ability to adapt to changes in the industry and technology advancement and be innovative in the dynamic environment.

#### **RQL 371 - Quantity Surveying Final Year Project**

This course equips the students with research skills and techniques, ability to work independently and to build interest in research work. Students are required to select an appropriate research topic that can come from a diverse range of areas that include construction contracts and contractual issues, professional practice, cost and estimating, procurement systems, among others.

##### **Learning outcomes:**

At the end of the course students will be able to:

- (i) Synthesise information gathered from the literature review to form problem statement and conceptual or theoretical statement.
- (ii) Identify critical issues for research and to propose appropriate research methodology
- (iii) Practice fluent and professional communication with respondents in order to obtain necessary data to be analyzed.
- (iv) Comply with research ethics in all stages of research process.
- (v) Work on the literature search, data collection and analysis through the optimum usage of technology.
- (vi) Demonstrate the ability to manage time, resources and data in completing the research project.

#### **RAG 121 – Environmental Science 1**

This course discusses on physical environmental issues and its measurement methods. It targets students to understand the physical environment in a holistic form, reviewing the condition and the quality of the national physical environment and the negative effect of unbalanced development. It also gives students the understanding of the interrelationship between environmental issues and climatic or

ecological building design especially for the tropics. The students are also expected to understand the simple quantitative and qualitative evaluation methods on human comfort condition for the tropics. They are also expected to understand various aspect of natural or passive buildings' environmental or indoor climatic control such as natural ventilation, day lighting, shading design, heat flow, energy, noise control and acoustic.

##### **Learning Outcomes**

At the end of the course students will be able to:

- (i) Identify environmental issues of the country, current environmental problems including pollution issues and their relation with built environment
- (ii) Show skills in using basic measuring tools to measure climatic elements qualitatively or quantitatively in evaluating thermal comfort
- (iii) Study basic function and natural ventilation strategy, basic principles of natural lighting and its expectation, solar radiation control with shading design and principles of heat gain and heat loss in the building

#### **RAG 161 – Building Construction 1**

This course introduces basic comprehension pertaining to building and materials used in the building components, beginning with systems, basic structure and its building relationship. It covers the main component of substructure, superstructure and roof systems.

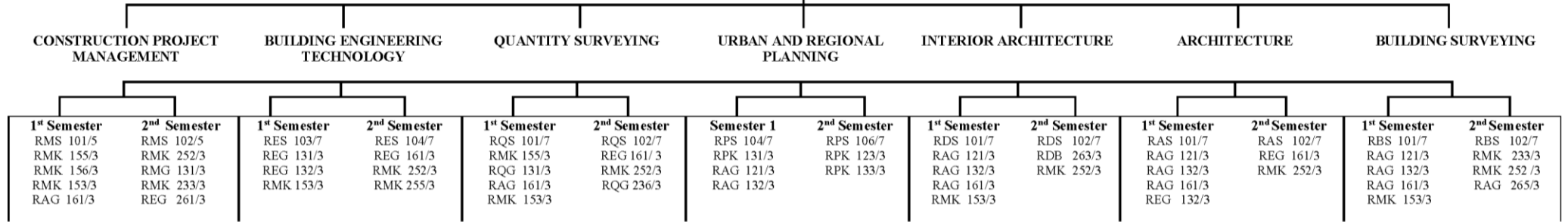
##### **Learning Outcomes**

At the end of the course students will be able to:

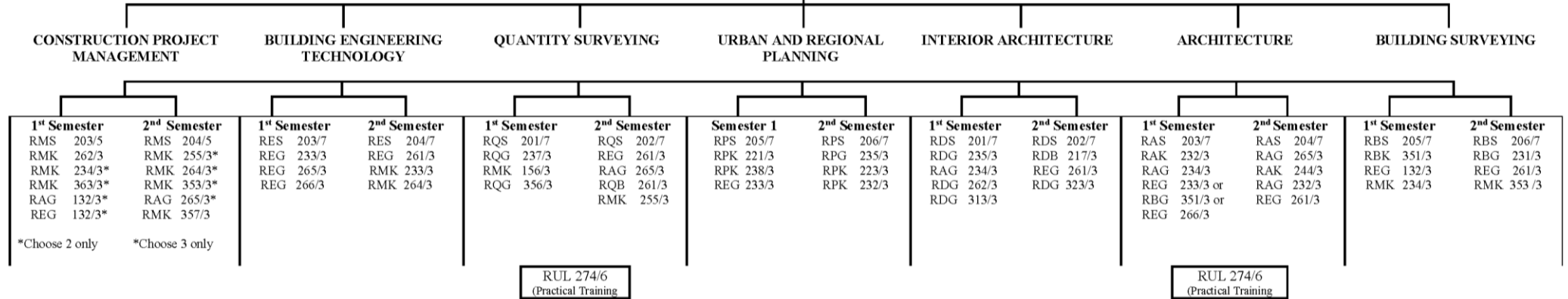
- (i) Identify construction materials which used in constructions.
- (ii) Organise types of materials suitable for constructions and sketch construction system in simple way.
- (iii) Propose materials and construction system which are suitable for building constructions.

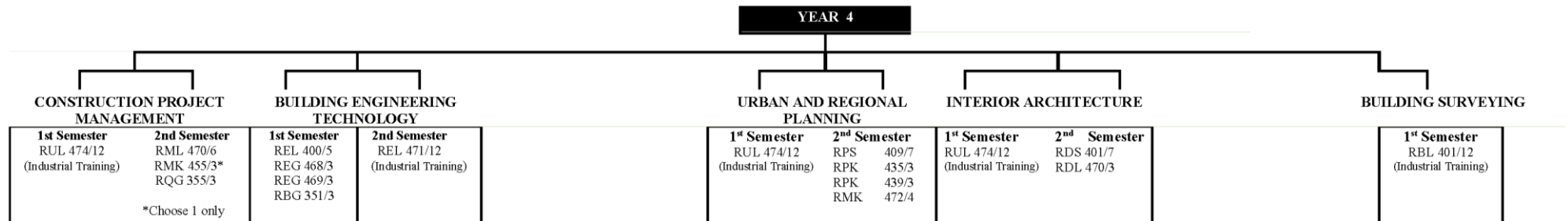
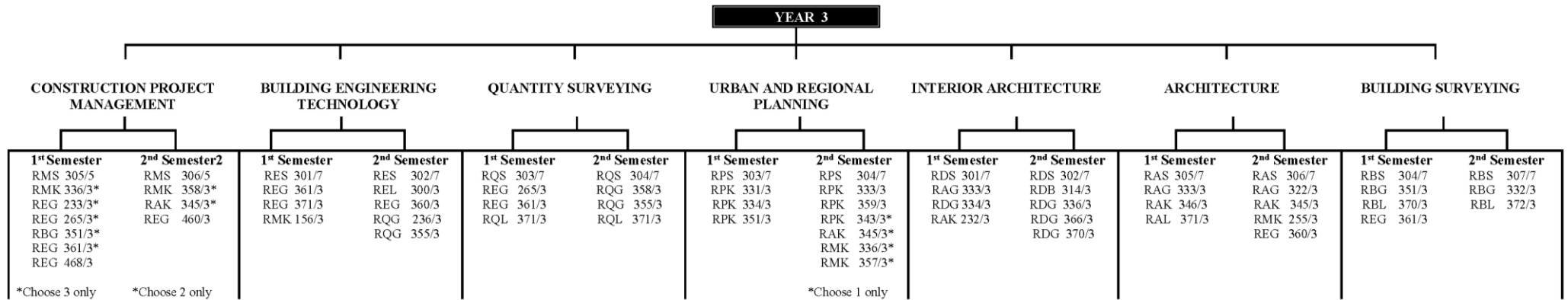
**CURRICULUM AT SCHOOL OF HOUSING, BUILDING AND PLANNING**

**YEAR 1**

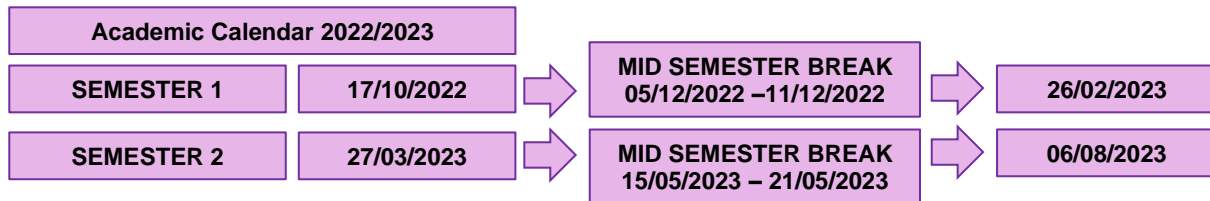


**YEAR 2**





| University/Option  |  |           |
|--|--|-----------|
| Bahasa Malaysia  |  | : 2 unit  |
| English language/Other language                              |  | : 4 unit  |
| Philosophy & Current Issues (Local & international students) |  | : 2 unit  |
| Appreciation of Ethics & Civilisation (Local students)       |  | : 2 unit  |
| Malaysian Studies (International students)                   |  | : 4 unit  |
| Core-Entrepreneurship (Local students)                       |  | : 2 unit  |
| Co-Curriculum  |  | : 2 unit  |
| Other Co-Curriculum/Option/Skill Courses/Third language      |  |           |
| i) URP, CPM  |  | : 7 unit  |
| ii) IA, BS, QS   |  | : 5 unit  |
| ii) Architecture, BEsT                                       |  | : 1 unit  |
| Total Unit (URP, CPM)  |  | : 21 unit |
| Total Unit (IA, BS, QS)                                      |  | : 19 unit |
| Total Unit (Architecture, BEsT)                              |  | : 15 unit |



Notes: Maximum Units Allowed for Registration per Semester is 21 (including Universiti Option courses)