

1.0 INTRODUCTION

1.1 School of Housing, Building and Planning

The School of Housing, Building and Planning, Universiti Sains Malaysia was established in 1972 with the aim of producing skilled personnel capable of implementing the relevant planning, design and construction processes necessary for Malaysia development. In almost four decades, the school has made tremendous progress in teaching, research, consultancy and publication. The academic staff is currently exceeds eighty with more than half have doctoral degrees in their respective fields.

The specializations are recognized by the respective professional bodies such as the Malaysian Institute of Planners (MIP), Malaysian Institute of Architects (PAM), Board of Architects Malaysia (LAM), Royal Institution of Surveyors Malaysia (RISM), Royal Institution of Chartered Surveyor (RICS) and Pacific Association of Quantity Surveyors (PAQS).

The broad-based approach combined with specialization gives our graduates the edge in dealing with the construction and development processes in a more holistic manner. At undergraduate level, the School offers 7 programmes which provide strong platform to enable the students to pursue studies at postgraduate level in the future. The programmes are Architecture, Interior Design, Regional and Urban Planning, Quantity Surveying, Construction Management, Building Technology and Building Surveying. At postgraduate level, there are five (5) Masters programmes offered by the School. There are:

- Master of Science (Building Technology)
- Master of Science (Project Management)
- Master of Science (Tourism Development)
- Master of Architecture
- Master of Landscape Architecture

Master of Science (Tourism Development) is offered in mixed-mode. Master of Science in Building Technology is offered in both mixed-mode and coursework. The rests are offered by coursework only. Master of Science by research and PhD programmes are also available. The programmes offered have attracted many young graduates locally and internationally. The programmes are also attractive for middle and senior level construction executives as a way for retooling and professional upgrading.

1.2 MAIN ADMINISTRATIVE STAFF

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DEPUTY DEAN



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Deputy Dean of Academic, Career
& International



Dr. Ernawati Mustafa Kamal
Deputy Dean of Research, Innovation &
Industry-Community Linkages

ADMINISTRATION



Miss Moganewary Muthusamy
Principal Assistant Registrar



Puteri Salamah Abdul Aziz
Senior Assistant Registrar

1.3 MASTER PROGRAMME COORDINATORS



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Project Management



Dr. Diana Mohamad
Tourism Development



Dr. Nooriati Taib
Architecture



Dr. Nor Zarifah Maliki
Landscape Architecture



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**MASTER OF
SCIENCE
PROGRAMMES BY
COURSE WORK**

2.1 MASTER OF SCIENCE (PROJECT MANAGEMENT)

2.1.1 Introduction

This programme has been offered since 1990, making it one of the pioneering coursework-based MSc. Project Management programmes here in Malaysia. Adopting a broad-based project management approach infused with the intricacies of the construction industry, this MSc. programme is suitable for both working professionals and scholars intending to further their studies. Integrating established and reputable project management syllabuses, this programme leverages its structured coursework which encompasses the spectrum of the project management field. This is further enhanced with dynamic and contemporary case study elements as well as a research-based dissertation. The programme has been a steady feature in the top 200 Best Masters Programs released by the Ed universal Global Masters and ranked 15th in innovation and project management in Far East Asia. Moreover, this program is accredited by the Chartered Institute of Building (CIOB). Taught and conducted by academicians with research as well as industrial backgrounds, this programme offers a cognitive and intuitive learning experience within the confines of the nation's sole APEX University.

2.1.2 Program Outcome

The outcome of the program is focused on 3 main project management talents which include (i) technical project management; (ii) leadership and (iii) strategic and business management.

Upon successful completion, graduates of this program would be able to: -

- i. Be extensively proficient in the aspects of construction project management knowledge areas and skills.
- ii. Collate and analyse scientific research data systematically via the application of information technology.
- iii. Organize human resource matters as well as project and legal requirements towards successfully executing construction projects that are relevant to industry needs.
- iv. Manage built environment entities based on entrepreneurial and managerial know-how, tempered with a keen sense of accountability and ethics.
- v. Master the ability to communicate in analysing, displaying and undertaking the roles as well as responsibilities of a project manager.
- vi. Resolve construction project implementation issues in a concise and precise manner towards achieving the most suitable and cost-effective solutions.
- vii. Demonstrate capabilities in sourcing for and managing information, adapting to change, and actualizing a lifelong learning aptitude instilled with the potential to further pursue higher levels of education and qualification.
- viii. Portray themselves as intellectual, committed, and competent post-graduates with the intrinsic desire to be ethical, capable, analytical, and holistic individuals.
- ix. Exhibit leadership characteristics and teamwork skills garnered through active participation in construction management practices.

2.1.3 Entry Requirements

Applicants should possess the following:

- i. Satisfy the general requirements of USM's graduate school.
- ii. Candidates should hold a first degree with a minimum CGPA of 2.75 and above in **any** of the following:

Either

- a) BSc. (Hons) Housing, Building and Planning, Universiti Sains Malaysia; **or**
- b) Honours degree from Universiti Sains Malaysia OR degree from other universities in related construction fields approved by Universiti Sains Malaysia such as Architecture, Building Engineering, Planning, Quantity Surveying, Valuation; **or**

Other academic or professional qualifications acceptable by USM.

- iii. Preference will be given to those who have relevant working experience.

2.1.4 Course Structure

Each course in the program is offered once a year as follows

A. Compulsory Courses (30 units)

Code	Title	Unit	Semester
RMT 531	Project Management Essentials	4	1
RMT 550	Stakeholder Engagement and Project Cost Management	4	1
RMT 551	Law in Project Management	4	1
RMT 553	Organisation and Management	4	1
RMG 561	Information and Communication Technology in Project Management	6	2
RMT 558	Construction and Facilities Management	4	2
RMT 559	Advanced Project Management	4	2

B. Project Case Studies (6 units)

Code	Title	Unit	Semester
RMB 513	Integrated Project Case Study	6	2

C. Research Project (8 units)

Code	Title	Unit	Semester
RML 571	Research Methodology in Project Management	3	1
RML 573	Research in Project Management	5	2 & KSCP

* RML 571 is the prerequisite for RML 573

2.1.5 Course Approach

The programme has two yearly intakes. The first intake is in October which covers a minimum of one and two academic year(s) for full-time and part-time programmes respectively. The second intake is in April which covers a minimum of 1.5 and two academic years for full-time and part-time programmes respectively. These durations include the time the students need to their theses. It should be mentioned that international students are only eligible to follow the MSc program on a full-time basis.

Master of Science (Project Management) is conferred to candidates who have accumulated not less than 44 credit units. Students are required to complete all courses listed as compulsory, project case studies and the research project.

Courses are conducted through lectures, tutorials, discussions, seminars, case studies and assignments. The language of instruction is English for intake with international students, replacing Bahasa Malaysia.

All courses are assessed by assignments and examinations at the end of every semester. For research projects, students are expected to submit a dissertation and attend a viva session.

Full-Time Studies

Semester I	Semester II	Semester KSCP	Remarks
RMT 531/4 RMT 550/4 RMT 553/4 RMT 551/4 RML 571/3	RMB 513/6 RMT 558/4 RMT 559/4 RMG 561/6 RML 573	RML 573/5	RML573 is offered in Semester II & KSCP. The cumulative unit will be counted during the KSCP semester.
19 Units	20 Units	5 Units	Total Units = 44 Units

Part-Time Studies

Year 1			
Semester I	Semester II	Semester KSCP	Remarks
RMT 531/4 RMT 553/4	RMT 558/4 RMT 559/4 RMG 561/6		
8 Units	14 Units		Total Units = 22 Units
Year 2			
Semester I	Semester II	Semester KSCP	Remarks
RMT 550/4 RMT 551/4 RML 571/3	RMB 513/6 RML 573	RML 573/5	RML573 is offered in Semester II & KSCP. The cumulative unit will be counted during the KSCP semester.
11 Units	6 Units	5 Units	Total Units = 22 Units
Total Units = 44 Units			

2.1.6 Course Synopsis

A. Compulsory Courses

RMT 531 - Project Management Essentials

This course discusses the aspects of project management evolution as well as the essential knowledge and techniques. This course also discusses the need to understand project scope, quality, organization and characteristics with the aim of enabling project management techniques to be synthesized and applied.

RMT 550 - Stakeholder Engagement and Project Cost Management

This course discusses stakeholder engagement and project cost management. This includes identifying stakeholders, plan-manage-monitor stakeholders' engagement, natural disaster and stakeholder's engagement. This course also covers project financing, design economics - client's requirement and impact of sustainability, value management, whole life costing (WLC) and life-cycle costing (LCC).

RMT 551 - Law in Project Management

This course discusses the Malaysian Legal System that is related to Project Management. This includes the law of contract with special emphasis on standard forms of contract, types and use. This course also explains the law provisions which are related to health and safety in the construction industry, collateral warranties, claims, delays, the law of Torts and alternative dispute resolutions.

RMT 553 - Organisation and Management

This course discusses organizational and management theory and its evolution. The course also discusses organizational structure, motivational systems, leadership, corporate strategy, communication, ethics and corporate social responsibilities and effective organization.

RMT 561 - Information and Communication Technology in Project Management

This course explains the significance of information and communication technologies (ICTs) in communication management. The course introduces advanced digital technology concepts and software applications such as Building Information Modelling (BIM), collaborative working environment, online project information management system, as well as computer simulation models for building performance and sustainability.

RMT 558 - Construction and Facilities Management

This course will discuss and examine the management techniques and approaches in planning, scheduling, monitoring and controlling construction projects. On-site management and project team organizational aspects will also be focused on with a particular emphasis on construction-based activities. The Facilities Management segment gives an overview of management decisions during the occupancy stage through the organisational and facilities' change cycles.

RMT 559 - Advanced Project Management

This course discusses the advanced tools, techniques, and approaches in project management. It includes different techniques and methods in decision-making, risk assessment, project scheduling, and project integration management. Moreover, green, lean, and agile project management, as well as adopting artificial intelligence in project management are covered."

B. Project Case Studies***RMB 513 - Integrated Project Case Study***

This course exposes students to the contemporary practice of project management in construction and non-construction sectors. Through this course, students will examine the management of real-life projects, identify critical issues and formulate alternative management approaches in addressing the issues.

C. Research Project***RML 571: Research Methodology in Project Management***

This course explains the process and method of conducting research systematically from identifying research problem to literature search, techniques in data collection and data analysis. This course also emphasizes on the development of research proposal and the importance of good management of research data and information.

RMT 573: Research in Project Management

This course provides students with an experience in planning and conducting an independent research in topics related to project management with supervision from lecturers. The objective of this course is to expose students to the process of doing research—the students acquire research skills and contribute to the body of knowledge in the related field.

Grading System and Graduation Requirement

Students will be conferred the degree after they have successfully accumulated **44 units** from the courses. Students will be assessed according to the Cumulative Grade Point Average (CGPA) system with the following grades distributions:

Grade	Range Score	Grade Point	Explanation
A	80 and above	4.00	PASS
A-	70 – 79	3.67	
B+	64 – 69	3.33	
B	58 – 63	3.00	
B-	52 – 57	2.67	
C+	46 – 51	2.33	
C	40 – 45	2.00	FAIL
C-	36 – 39	1.67	
D+	32 – 35	1.33	
D	28 – 31	1.00	
D-	25 – 27	0.67	
F	Below 24	0.00	

* *Passing grade for each course is C+. For graduation purposes, students must obtain a minimum CGPA of 3.00 over 4.00.*

2.2 MASTER OF SCIENCE (BUILDING TECHNOLOGY) (CW)

2.2.1 Introduction

The main objective of the programme is to train graduates with expertise in science and technology of building construction and management aspects, infrastructure, building system and structure, material technology, building services and maintenance, geotechnics, and geosystem, building energy studies and others.

This programme has been a popular course from various disciplines of undergraduates namely architecture, engineering, management and building science. This course was offered in two modes: by coursework and mixed mode. In this section, the details are given for MSc. by coursework. Master of Science (Building Technology) by mixed mode will be explained in section 2.2.

2.2.2 Program Outcome

At the end of this programme, students will be able to understand and apply the concept, tools and techniques as well the additional skills in the major focus of science and technology in building perspective. In later phases, students can apply their skills and knowledge to the roles of advisor, administrator, manager or researcher.

- i. Acquire scientific knowledge and skills that incorporate sustainable construction and building technology practices.
- ii. Master skills in the process of scientific research, including research methodologies, analyse research data systematically via the application of information technology.
- iii. Assemble relevant remedial for construction and building technology issues as well as organize resources successfully in compliance with the industry needs.
- iv. Exhibit communication skills, ethics and professionalism in gathering, presenting and practicing knowledge obtained as well as undertaking responsibilities of a Building Technologist.
- v. Solve construction and building technology problems accurately towards achieving the most applicable and cost-effective solutions.
- vi. Demonstrate the ability to find and manage information, adapting to change and involve in lifelong learning programs and able to pursue higher education and qualifications.
- vii. Produce graduates who are independent, committed, skilled and able to adapt the current technologies and possess analytical and holistic approach.
- viii. Manifest personal skills and leadership qualities through individual and teamwork projects in building technology practices.

2.2.3 Entry Requirements

Applicants should possess the following:

- i. Satisfy the general requirements of USM's graduate school.
- ii. Candidates should hold a first degree with a minimum CGPA of 2.75 and above in **any** of the following:

Either

- (a) BSc. (Hons) Housing, Building and Planning, Universiti Sains Malaysia.

or

Honours degree from Universiti Sains Malaysia OR degree from other universities in related construction fields approved by Universiti Sains Malaysia such as Built Environment, Civil Engineering and Building Engineering.

or

Other academic or professional qualifications acceptable by USM.

2.2.4 Course Structure

The program consists of the following courses:

A. Compulsory Courses (32 units)

Code	Title	Unit	Semester
REG 521	Building Science and Environment	4	1
REG 532	Construction Geotechnology	4	2
REG 562	Building Services Technology	4	1
REG 563	Sustainable Infrastructure	4	1
REG 564	Sustainable Buildings	4	1
REG 566	Building Pathology and Maintenance	4	2
REG 567	Advanced Construction Materials	4	2
RMT 558	Construction and Facilities Management	4	2

B. Graduation Requirement (3 units)

Code	Title	Unit	Semester
REL 574	Research Methodology in Building Technology	3	1

* REL574 is a graduation requirement and not counted in total units

C. Research Project (8 units)

Code	Title	Unit	Semester
REL 572	Research Project in Building Technology	8	2 & KSCP

2.2.5 Course Approach

The full-time programme covers a minimum of one-year academic session, or equivalent to two semesters (including submission of research project report).

The part-time programme covers a minimum of two-year academic sessions, or equivalent to four semesters (including submission of research project report).

The courses are conducted by full-time academic staff with the support of visiting lecturers, professors, and relevant practicing professionals. Modes of teaching include lectures, tutorials, discussions, seminars, case studies and project assignments.

Assessment is made based on assignments, coursework, and examination. For research projects, candidates are required to submit a formal report and attend a viva session at the end of the final semester.

Master of Science (Building Technology) by coursework is conferred to candidates who have accumulated not less than 40 credit units. The students are required to complete all courses listed as compulsory, graduation requirement and research project.

Full Time Studies

Semester I	Semester II	Semester KSCP	Remarks
REG 521/4 REG 562/4 REG 563/4 REG 564/4 REL 574/3	REG 532/4 REG 567/4 RMT 558/4 REG 566/4 REL 572	REL 572/8	* REL574 is a graduation requirement and not counted in total units * REL572 is a two Academic Session courses (Semester II & KSCP). Cumulative unit will be counted on the KSCP semester
16 Units	16 Units	8 Units	Total Units = 40 Units

Part Time Studies

Year 1			
Semester I	Semester II	Semester KSCP	Remarks
REG 521/4 REG 562/4	REG 532/4 REG 567/4		
8 Units	8 Units		Total Units = 16 Units
Year 2			
Semester I	Semester II	Semester KSCP	Remarks
REG 563/4 REG 564/4 REL574/3	RMT 558/4 REG 566/4 REL 572	REL 572/8	* REL574 is a graduation requirement and not counted in total units * REL572 is a two Academic Session courses (Semester II & KSCP). Cumulative unit will be counted on the KSCP semester
8 Units	8 Units	8 Units	Total Units = 24 Units
Total Units = 40 Units			

2.2.6 Course Synopsis

A. Compulsory Courses

REG 521 - Building Science and Environment

This course provides exposure to building science and environmental elements, their relevance in affecting environmental conditions including humans and approaches in creating a sustainable environment.

REG 532 - Construction Geotechnology

This course includes an introduction to soil characteristics, sampling, laboratory and site investigation, earthwork operations, geosynthetics, geosystems and geomaterials, groundwater and pressure systems, slope stability, soil improvement methods and shallow and deep foundations.

REG 562 - Building Services Technology

This course provides exposure to advanced knowledge on the category, design, technology and management of building service systems.

REG 563 - Sustainable Infrastructure

This course provides the exposure to the advanced knowledge on types, systems, technology and materials to design new, rehabilitate old, and optimize existing infrastructures according to the latest global sustainable development principles.

REG 564 - Sustainable Buildings

This course emphasizes on the concept, methodologies and strategies to achieve sustainable buildings, including various standard evaluation techniques applied in determining the level of sustainability in buildings.

REG 566 - Building Pathology and Maintenance

This course discusses building pathology including a holistic approach to building and structure repair. This involves a detailed understanding of how the structure was constructed, the materials being constructed, how it was used, how it has progressed over time, and all the factors that influence its current state.

REG 567 - Advanced Construction Materials

This course provides exposure to the physical and mechanical properties of advanced building materials as well as their use in the building construction industry. Performance, resilience, sources of damage and resistance to environmental factors are also considered.

RMT558 - Construction and Facilities Management

This course will discuss and examine the management techniques and approaches in planning, scheduling, monitoring and controlling construction projects. On-site management and project team organizational aspects will also be focused on with particular emphasis on construction-based activities. The Facilities Management segment gives an overview of management decisions during the occupancy stage through the organisational and facilities' change cycles.

B. Graduation Requirement

REL 574 - Research Methodology in Building Technology

This course explains the process and method of conducting research systematically from identifying research problem to literature search, techniques in conducting data collection and data analysis. This course also emphasises on the development of research proposal and the importance of good management of research data and information

C. Research Project

REL 572 - Research Project in Building Technology

This course provides students with knowledge in planning and conducting research on topics related to building technology, with supervision from lecturers. The objective of this course is to provide exposure to students in the process of conducting research and acquire the necessary research skills to contribute to building technology fields.

2.2.7 Grading System and Graduation Requirement

Students will be conferred the degree after they have successfully accumulated **40 units** from the core, graduation requirement and research project courses. Students will be assessed according to the Cumulative Grade Point Average (CGPA) system with the following grades distributions:

Grade	Range Score	Grade Point	Explanation
A	80 and above	4.00	PASS
A-	70 – 79	3.67	
B+	64 – 69	3.33	
B	58 – 63	3.00	
B-	52 – 57	2.67	
C+	46 – 51	2.33	
C	40 – 45	2.00	FAIL
C-	36 – 39	1.67	
D+	32 – 35	1.33	
D	28 – 31	1.00	
D-	25 – 27	0.67	
F	Below 24	0.00	

* *Passing grade for each course is C+. For graduation purposes, students must obtain a minimum CGPA of 3.00 over 4.00.*

2.3 MASTER OF ARCHITECTURE

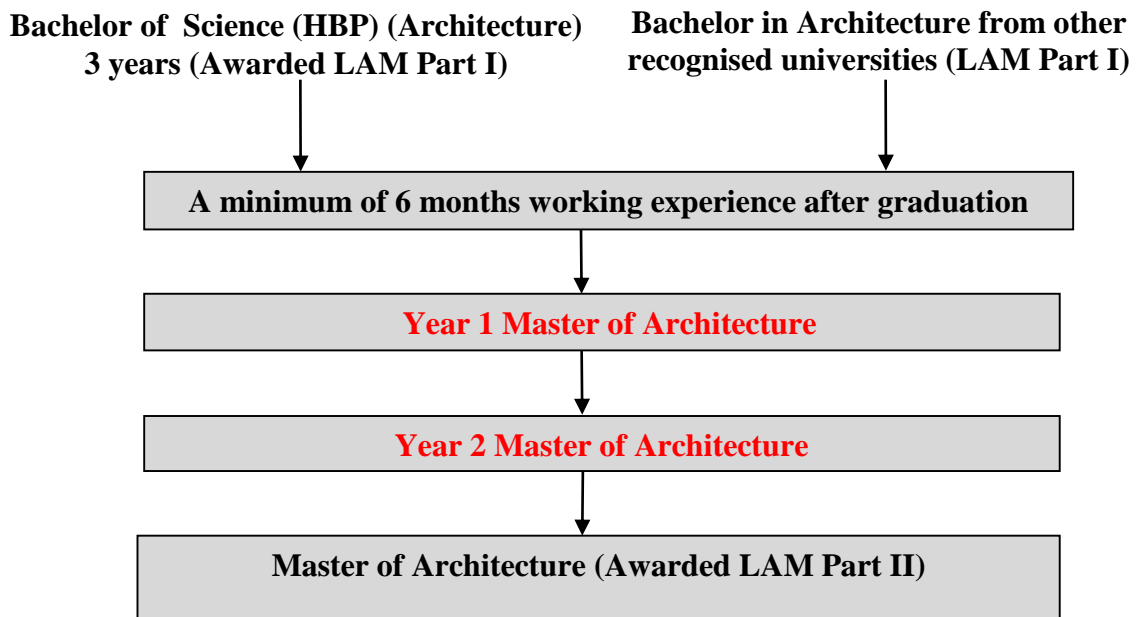
2.3.1 Introduction

The Master of Architecture Programme at the School of HBP is a two year course which is equivalent to the LAM Part II accreditation upon successful completion. This is a continuation of Bachelor of Science HBP (Architecture) or a similar Degree from other local universities or abroad with LAM Part I accreditation or equivalent. In addition to training future architects to be competent in exploring the design process and related skills vital to a professional architect, this master degree also provides opportunities for students to conduct a special area of study on contemporary issues such as sustainability, special technologies, conservation or other areas of special interests.

The first year aims at exposing students to design of multi storey building, focusing on technological and green aspects whereas the second semester is tailored to problem solving of housing issues, affordable homes, unique housing design concepts for human settlement. Students are also expected to explore smaller projects of different variety, site context, constraints and scale.

In the final year, students are expected to complete an independent design thesis study of a challenging typology that suits their interest and touches on wider architectural issues. The course promotes a holistic green approach in design, combining energy efficiency, optimum indoor environmental quality and other relevant green criteria to produce future architects who are energy conscious, forward thinking and sensitive to the environment that can offer revolutionary and innovative solutions for future needs. Students are also expected to be sensitive to physical, social and cultural aspects while developing a strong philosophical mindset, within an array of contemporary issues and styles. A key objective is to produce designers who possess critical and analytical thinking, with creative design solving capabilities for the needs of a globalised future.

The pre-requisite to enter the course is to have undergone a minimum duration of 6 months of working experience in the relevant architectural field after completing the Bachelor of Architecture (Part I). The study path to Master of Architecture offered by the School of HBP is as shown below:



2.3.2 Programme Education Objectives

The Programme Education Objective [PEO] of the Master of Architecture Programme is as follows:

- i. **PEO 1:** To produce graduates who are sought-after by employers and possess holistic knowledge in the field of architecture and proficient with the relevant skills.
- ii. **PEO 2:** To foster students with soft skill attributes in solving multi design task and architectural problems.
- iii. **PEO 3:** To yield architecture graduates who exemplify leadership skills, virtuous attitude, and professional ethics.
- iv. **PEO 4:** To produce architecture graduates who are skillful on issues pertaining to sustainability of the built environment.
- v. **PEO 5:** To produce graduates with global mindset attaining strong interest on architectural research and long-life learning.

2.3.3 Programme Outcomes

The Programme Outcomes (PO) - upon graduation of Master of Architecture:

- i. Ability to understand and integrate knowledge, concept and theory on philosophy, technology, and environment with sensitivity towards context, place making, social, cultural aspects and human settlement issues.
- ii. Ability to be a team player in preparing project briefs for clients, users and society based on feasibility studies, client's requirements, site and context, as well as budget.
- iii. Ability to conduct research and manage the acquired information to generate, test, analyse and appraise design options according to a systematic methodology in producing coherent, well resolved and innovative design.
- iv. Ability to assimilate knowledge on appropriate building technology based on climatic, visual, thermal, acoustics and energy efficient design considerations and keeping abreast with current issues and state-of-the-art technologies.
- v. Ability to apply structural design and constructional strategies for a complex building or a group of buildings.
- vi. Ability to employ communication methods and media in visual, technical, graphic, verbal and written to present analysis and critical appraisal of a complex design proposal to a range of professional and lay audiences.
- vii. Ability to execute entrepreneurship principles in relation to professional practice on managing projects in accordance with the Malaysian Professional Architects' Code of Ethics.

- viii. Ability to apply the knowledge on regulatory and legislative requirements relevant to the building industry and construction from planning, implementation to completion stage.
- ix. Ability to understand the principals on leadership role in developing, organizing, administering and managing a given project according to the framework of architectural practice and as a key player in local and global environment.

2.3.4 Entry Requirements

Candidates interested to pursue the Master of Architecture degree must fulfill the requirements listed below:

- i. Satisfy the general requirements of USM's Graduate School
- ii. Candidate should hold a good first degree in Bachelor of Science HBP (Architecture), USM or Bachelor of Architecture (equivalent to LAM Part I) from other universities of higher institutions accredited by the Board of Architects Malaysia (LAM)
- iii. Hold a CGPA minimum of 3.30 for the Bachelor of Science HBP (Architecture) or from other universities or institutions with equivalent of LAM Part I does not require any working experience in relevant fields after graduation (a requirement from LAM)
- iv. If candidates CGPA is in the range of 3.00 – 3.29, three (3) months minimum of working experience after graduation is required in relevant fields (a requirement from LAM)
- v. If candidates CGPA is in the range of 2.75 – 2.99, six (6) months minimum of working experience after graduation is required in relevant fields (a requirement from LAM)
- vi. If candidates CGPA is in the range of 2.5 – 2.74, one (1) year minimum of working experience after graduation is required in relevant fields (a requirement from LAM)
- vii. If candidates CGPA is in the range of 2.0 – 2.49, five (5) years minimum of working experience after graduation is required in relevant fields (a requirement from LAM)
- viii. Successful performance in the drawing test and interview process.

2.3.5 Course Structure

The program consists of the following courses:

A. Compulsory Courses (55 units)

Code	Title	Unit	Semester
RAS 505	Architecture Studio 5	7	1
RAS 506	Architecture Studio 6	7	2
RAS 603	Design Thesis 1	7	1
RAS 604	Design Thesis 2	7	2
RAT 530	Energy Efficient Building Design Technology	3	1
RAK 555	Professional Practice in Architecture 1	3	1
RAG 535	BIM Integration in Architecture	3	2
RAT 532	Architecture in Urban Design	3	2
RAT 545	Housing Regulations and Practice	3	2
RAG 663	Building Technology Integration	3	1
RAT 641	Architectural Critics	3	1
RAK 655	Professional Practice in Architecture 2	3	2
RAL 671	Research Methodology in Architecture	3	1

B. Research Project (5 units)

Code	Title	Unit	Semester
RAL 672	Research Project in Architecture	5	2

2.3.6 Course Study Path

Master of Architecture Courses by Semester

Year 1				
Semester I	Units	Semester II	Units	Units By year
RAS 505 Architecture Studio 5	7	RAS 506 Architecture Studio 6	7	
RAT 530 Energy Efficient Building Design Technology	3	RAT 532 Architecture in Urban Design	3	
RAK 555 Professional Practice in Architecture 1	3	RAG 535 BIM Integration in Architecture	3	
		RAT 545 Housing Regulations and Practice	3	
Total Units	13	Total Units	16	29

Year 2				
RAS 603 Design Thesis 1	7	RAS 604 Design Thesis 2	7	
RAG 663 Building Technology Integration	3	RAK 655 Professional Practice in Architecture 2	3	
RAT 641 Architectural Critics	3	RAL 672 Research Project in Architecture	5	
RAL 671 Research Methodology in Architecture	3			
Total Units	16	Total Units	15	31
Overall Units				60

2.3.7 Course Synopsis

A. Compulsory Courses

RAS 505 - Architecture Studio 5

This studio enforces various design process skills from architecture theory and philosophy with medium to high-rise building complexity. Solving array of issues from urban context, aesthetics, function, green technologies and energy efficiency in construction, materials, structure and building services as well basement design with carparks and vertical circulation.

RAS 506 - Architecture Studio 6

This studio emphasize on human settlement and residential building. A minor project as an exercise followed by a major project to design housing development with social, economic, cultural, sustainable issues, sense of place and neighbourhood concept. It train students in thinking out of the box in solving housing problem of affordable homes.

RAS 603 - Design Thesis 1

Design Thesis 1 covers the implementation of architectural design projects proposed by final year students that combine all the knowledge in a specific topic of interest. Emphasis on aspects of practical research, innovation and problem solving, with realistic considerations recognized by the industry, existing acts and the requirements of local authorities in designing a building. Each student needs to identify the thesis topic individually, prepare a project overview, identify issues, conduct a site analysis study for the proposed project, create an appropriate concept and produce a design that has taken into account all aspects. Documentation and communication to convey a network of thoughts, compact and accurate sequence of ideas is a priority. The end result of the project is a set of graphic illustrations containing analysis, synthesis, justification, concepts, approaches, philosophies, architectural principles and a building designed based on these aspects. Students will produce physical or digital drawings and models as well as a development report on the design produced.

RAS 604 -Design Thesis 2

This studio is a continuation of Design Thesis 1 where the proposal in Semester 1 will be enhanced to an optimum level in solving design issues pertaining to the chosen subject matter. Attention is given to aspects of design details, technical specification, construction, structure, building services and environmental sustainability. Each student must highlight a special technology study in character and appropriate to the design issues. The final result of the project is a set of compact and accurate graphical illustrations of architectural design (drawings, physical models, structural and services study, and/or computer modeling/simulation) with a design and technical report.

RAT530 - Energy Efficient Building Design Technology

Expose students to the design element that can reduce building energy consumption for occupants' comforts. These strategies are passively and actively innovative and promote the use of renewable energy. Introduce the criteria of Green Building Index which students need to understand and apply to design project in Studio level 400.

RAG 663 - Building Technology Integration

This course is the advanced level of construction and building components and its integration with technology systems and building services. Beginning with an overview of development and evolution of technology, followed by the optimum integration of structure, construction and materials with building services systems. Emphasis on high-rise and complex buildings as well as

sustainable and green requirements.

RAK 555 - Professional Practice in Architecture 1

Exposure to the aspects of architect's professionalism: The Architect Act of 1967; LAM & PAM registration; the professional code of conduct of behavior and responsibility to society; the work scope and professional fees; the appointment and the relationship with clients, consultants and contractors; stages and the

RAK 655 - Professional Practice in Architecture 2

Exposure to the introductory aspect of buildings' contracts, types of contracts, PAM, JKR, CIDB etc. Special focus on contracts conditions PAM (with/without Quantities) clauses, tender process, terms, preparation of documents, selection and tender's award in project implementation. It also covers planning procedures, UBBL, building and fire control requirements.

RAT 641 - Architectural Critics

A study on building typology becomes a critical subject in architecture and building design by referring to prominent buildings built by renowned architects as the case studies.

RAT532 - Architecture In Urban Design

This course focuses on a study of urban design elements and principles which are linkage theory, place theory, place making and urban systems. The course contents are also imparting study on the traditional and post-independence urban design.

RAG535 - BIM Integration in Architecture

The course expose students to the core concepts of BIM, the knowledge of implementing BIM as a process throughout project life cycle, hands-on experience through project- based learning approach and case studies. Students will develop collaboration skills and critical thinking from modelling architecture, structure, building services, costing and scheduling as well as managing BIM data and processes effectively.

RAT 545 - Housing Regulations and Practice

This course introduces related housing laws and regulation including the roles and responsibilities of housing developers, Housing Development (Control and Licensing) Act 1966, relationship between laws and construction players i.e developers, architects, government and housing buyers/owners.

RAL 671 - Research Methodology in Architecture

The course is an exercise in applied research pertaining to a special interest on various topics and current issue applicable to the design issues and problem statements. This course extends over one semester and exposes students to the first part of research work from topic selection, problem identification, literature review until research methodology phase. Students are encouraged to choose a topic relevant to their design thesis (final year project) that will enhance their understanding of design theory and pertinent issues which reflect an area related to Malaysian Architecture.

B. Research Project

RAL 672 - Research Project in Architecture

The course is an exercise in applied research pertaining to a special interest on various topics and current issue applicable to the studio design issues and problem statements. This course extends over one semester after completion of RUL 671 Research Method in Architecture. It exposes students to the correct methodology of research work through data collection, analysis and communication. Students are encouraged to choose a topic relevant to their design thesis that will enhance their understanding of design theory and pertinent issues which reflect an area related to Malaysian Architecture.

2.3.8 Grading System and Graduation Requirements

Students will be conferred the degree after they have successfully accumulated **60 units** from the core and elective courses. Students will be assessed according to the Cumulative Grade Point Average (CGPA) system with the following grades distributions:

Grade	Range Score	Grade Point	Results
A	80 and above	4.00	PASS
A-	70 – 79	3.67	
B+	64 – 69	3.33	
B	58 – 63	3.00	
B-	52 – 57	2.67	
C+	46 – 51	2.33	FAIL
C	40 – 45	2.00	
C-	36 – 39	1.67	
D+	32 – 35	1.33	
D	28 – 31	1.00	
D-	25 – 27	0.67	
F	Below 24	0.00	

Graduation Requirements

For the **Master of Architecture** Programme, the following conditions must be fulfilled for students to graduate:

- i. Fulfil the minimum of 4 semesters and not exceeding 8 semesters maximum of study.
- ii. Fulfil all the overall credits according to the requirements set by the University as well as the credits for all the components set by the school.
- iii. Obtain B- and GPA of 2.67 and above for all courses.
- iv. Obtaining CGPA of 3.00 and above for graduation.

2.4 MASTER OF LANDSCAPE ARCHITECTURE

2.4.1 Introduction

The Master of Landscape Architecture programme at the School of HBP is a professional master programme which is offered to candidates from different backgrounds - Bachelor of Landscape Architecture, and bachelor's degree in other related built environment fields (design and non-design backgrounds).

Landscape Architecture is a discipline of art and science of materialising an outdoor environment comfortable for human habitation. Knowledge and expertise in various disciplines are important to a landscape architect. These will be provided by a unique multidisciplinary curriculum and academic faculty in the School of HBP.

In this multi-disciplinary environment, the Master of Landscape Architecture has gained considerable advantage over other higher educational institutions. USM's School of Biological Science and Centre for Marine and Coastal Studies (CEMACS) provide additional inputs which further enhance the programme.

This Master of Landscape Architecture is offered, with the Programme Educational Objectives (PEO), to produce professional graduates in the field of Landscape Architecture from different backgrounds who are knowledgeable, competent, holistic, creative, respected, with forward-thinking mindset and sensitive to the environment. These characteristics are crucial in every Landscape Architecture graduate to ensure the sustainability of landscape development that can improve the quality of life and the quality of environment for the humans and other creatures.

2.4.2 Programme Outcome

Upon graduation, the graduates of Master of Landscape Architecture are able to:

- i. Master the knowledge and skills in determining the sustainability of development in the context of prioritizing society and achievement.
- ii. Combine the capabilities of planning, designing, building and managing development and landscaping activities.
- iii. Systematically collecting and analyzing field data and scientific studies based on information technology.
- iv. Master the ability to communicate in analyzing, presenting and practicing profession of landscape architect.
- v. Demonstrate leadership characteristics through teamwork and involvement in landscape maintenance and management projects.
- vi. Demonstrate the ability to find and manage information, adapt to current changes, realize the lifelong learning programs and have the ability to pursue higher education.
- vii. Manage landscape industries based on entrepreneurial knowledge with full responsibility and ethics, and able to resolve issues quickly and accurately to produce the best and cost-effective decisions.

2.4.3 Entry Requirements

Candidates interested to pursue the Master of Landscape Architecture degree must fulfill the requirements listed below:

- i. Satisfy the general requirements of USM's graduate school.
- ii. Candidates should hold a first degree with a minimum CGPA of 2.75 and above in **any** of the following:
Either
 - (a) Bachelor of Landscape Architecture.
or
 - (b) Bachelor degree from Universiti Sains Malaysia OR from other universities in related built environment fields (design based) such as Architecture, Interior Architecture, Urban and Regional Planning.
or
 - (c) Bachelor degree from Universiti Sains Malaysia OR from other universities in related built environment fields (non-design based) such as Quantity Survey, Construction Management, Building Surveying, Building Technology, and other related fields such as Engineering, Botany, Horticulture, Geography, Park and Recreation Management, etc.
- iii. Other academic and professional qualifications acceptable by USM.

2.4.4 Course Structure

The full-time programme offers Three (3) Study Tracks for candidates from different backgrounds. The course structure for each Study Track is as below:

Master of Landscape Architecture Programme		Unit
<i>Track 1</i>	<i>For candidates with Bachelor of Landscape Architecture</i>	
	Core Courses	42
	Additional Courses	0
	<i>Pre-requisite Course</i>	<i>3</i>
	Total	42
<i>Track 2</i>	<i>For candidates with Bachelor degree in related built environment fields (design based)</i>	
	Core Courses	42
	Additional Courses	9
	<i>Pre-requisite Course</i>	<i>3</i>
	Total	51
<i>Track 3</i>	<i>For candidates with Bachelor degree in related built environment fields (non-design based)</i>	
	Core Courses	42
	Additional Courses	22
	<i>Pre-requisite Course</i>	<i>3</i>

The program consists of the following courses:

C. Compulsory Courses (42 units)

Code	Title	Unit	Semester
RLS 600	Landscape Architecture Studio 1	5	1
RLS 601	Landscape Architecture Studio 2	5	2
RLK 650	Landscape Resource Management	2	2
RLK 660	GIS and CAD for Landscape Architecture	3	1
RLK 661	Landscape Horticulture	2	2
RLK 663	Landscape Construction	3	1
RLK 664	Hydrology and Watershed Management	2	2
RLS 700	Landscape Architecture Studio 3	5	1
RLS 701	Landscape Architecture Studio 4	5	2
RLK 720	Environmental Impact Assessment	2	2
RLK 750	Legislation Aspects and Professional Practice	2	1
RLL 770	Landscape Architecture Research Project	6	2

D. Audit (Course 3 units)

RLL 777	Research Methodology in Landscape Architecture (<i>pre-requisite course</i>)	3	1
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B. Additional Courses (9 - 22 units)

Code	Title	Unit	Semester
RLS 500	Landscape Architecture Graphic Studio *	5	2
RLK 560	Design Thinking and Graphic Communication *	3	1
RLK 530	Urban Pattern and Design *	3	2
RLK 550	Landscape and Recreational Planning *	2	2
RLK 640	Principles and Philosophy of Landscape Architecture **	2	2
RLK 641	History of Landscape Architecture **	2	1
RLK 662	Landscape Plants **	2	2
RLK 760	Ecology and Built Environment **	3	1

* *Additional courses required for all candidates of Study Track 3*

** *Additional courses required for all candidates of Study Track 2 and 3*

2.4.5 Course Approach

The Master of Landscape Architecture in USM is a taught course programme and is offered as full-time only.

The full-time programme covers a minimum of two-year academic session (4 semesters) and a maximum of four-year academic session (8 semesters) for candidates of study track 1 and 2. While the candidates of study track 3 may take minimum duration of 2.5 years of academic session (5 semesters) and maximum duration of five-year academic session (10 semesters).

The curriculum emphasizes on the Problem Solving-based and Competency-based Learning, especially for Studio courses. Other modes of teaching include lectures, workshops, seminars, discussions, crit sessions, and assignments.

Assessment is made on the basis of coursework and examination at the end of every semester. For research projects, candidates are required to submit a dissertation and attend a viva session.

Master of Landscape Architecture Courses by Semester

YEAR 1			
Semester 2			Units
		RLS 500 - Landscape Architecture Graphic Studio	5
		RLK 530 - Urban Pattern and Design *	3
		RLK 550 - Landscape and Recreational Planning *	2
Total Units			10
YEAR 2			
Semester 1	Units	Semester 2	Units
RLS 600 - Landscape Architecture Studio 1	5	RLS 601 - Landscape Architecture Studio 2	5
RLK 662 - Landscape Plants **	2	RLK 640 - Principles and Philosophy of Landscape Architecture **	2
RLK 663 - Landscape Construction	3	RLK 650 - Landscape Resource Management	2
RLK 641 - History of Landscape Architecture**	2	RLK 660 - GIS and CAD for Landscape Architecture	3
RLK 660 - GIS and CAD for Landscape Architecture	3	RLK 661 - Landscape Horticulture	2
RLK 560 – Design Thinking and Graphic Communication *	3	RLK 664 - Hydrology and Watershed Management	2
		RLK 662 - Landscape Plants **	2
Total Units		Total Units	
	18		18
YEAR 3			
Semester 1	Units	Semester 2	Units
RLS 700 - Landscape Architecture Studio 3	5	RLS 701 - Landscape Architecture Studio 4	5
RLK 750 - Legislation Aspects and Professional Practice	2	RLK 720 - Environmental Impact Assessment	2
RLK 760 - Ecology and Built Environment**	3	RLL 770 - Landscape Architecture Research Project	6
RLL 777 - Research Methodology in Landscape Architecture	3		
Total Units		Total Units	
	13		13

* Additional courses required for all candidates of Study Track 3

** Additional courses required for all candidates of Study Track 2 and 3

2.4.6 Course Synopsis

A. Compulsory Courses

RLS 600 - Landscape Architecture Studio 1

This course focus on the importance of form, function and aesthetic in landscape design that combine hardscape and softscape elements as the main components, covering small to medium scales projects. Ability to various tools, technique, graphic medium, inclusive perspective drawing and 3D model making.

RLS 601 - Landscape Architecture Studio 2

This course emphasizes on the arrangement of planting composition in landscape as well as the construction and details of timber structures. It also involve costing development and preparation of tender document.

RLK 650 - Landscape Resource Management

The course is an introduction to landscape resource management, concept, issues, opportunities, processes and application in the context of urban, countryside and ecological sensitive areas. Emphasis is given on the management of landscape resources in Malaysia and comparison with those in other developed nation. Discussions will be on methods, values, priorities, ethics and legislatures that influence the above aspects. Malaysia landscape management policy will also be discussed. The course will expose the students to resource management issues in development in sensitive areas like coastal areas and wetlands. Laws related to resource management including Environmental Quality Act will also be discussed. Case study field trip to places with resource management issues or cases with exemplary resource management methods are also part of the course content.

RLK 660 - GIS and CAD for Landscape Architecture

The purpose of this course is to provide understanding and overview of the Geographic Information System (GIS) and Computer-Aided Design (CAD) applications in landscape architecture as a communication tool in the presentation of landscape design. This course utilizes computer applications (GIS, CAD, Sketchup) and GPS equipment as tools to collect, process, manage, analyze and present landscape architectural's data, plan and drawing. Hands-on learning approach is applied.

RLK 661 - Landscape Horticulture

The course provides the opportunity to students to identify, to appreciate and to learn the use tropical ornamental plant materials as softscape. Students are exposed to plant propagation and planting method, management and maintenance of landscape plants and nursery management, all focusing on sustainable methods. Emphasis is also given on landscape designing skill using tropical ornamental plants, using plants for temperature control and improvement of visual and environmental quality. Students are also required to prepare landscape development plans for residential projects to more complex projects.

RLK 663 - Landscape Construction

The course teach students to the principles of site grading and landscape construction, and the techniques of designing hard surfaces in using landscape building materials. Knowledges in relation to design theories which include concrete design, grading methods and exercises that emphasize on materials, functionality, construction, drainage and costing. Site grading, earthworks and construction will emphasizes the understanding and manipulating of landform as a basic component of landscape design.

RLK 664 - Hydrology and Watershed Management

This course is intended to exposed the students the hydrology and the management of a watershed area. The understanding of hydrology is fundamental to the planning and management of watershed areas, which covers morphology of a drainage basin, and hydrological calculation. Students will be exposed also to the MSMA and the design and calculation of sprinkler irrigation system and drainage in an urban landscape setting.

RLS 700 - Landscape Architecture Studio 3

This course focuses on design solutions for large scale landscape encompassing physical, socio-cultural, socio-economic, political and environmental factors. Students will choose an area or a district and undergo landscape planning and design process from inventory through to master plan and detail drawings.

RLS 701 - Landscape Architecture Studio 4

This course focuses on design solutions for large scale landscape encompassing socio-economic, political and environmental factors. Students will choose an area or a district and undergo landscape planning and design process from inventory through to master plan and detail drawings.

RLK 720 - Environmental Impact Assessment

This course is intended to expose students to environmental sustainability values with respect to land development in general. Emphasis is given to Environmental Impact Assessment techniques. References and comparisons will be made with various techniques of Environmental Impact Assessment in Malaysia and abroad. Social Impact Assessment and Visual Impact Assessment will also be included in the discussion.

RLK 750 - Legislation Aspects and Professional Practice

The course focuses on the duties of a Landscape Designer as a professional and his role with other professionals. In addition to law, students are exposed to the development process from the production of design drawing to actual construction. The course will put emphasis on the preparation of proposed landscape development report, estimation of development course, contract preparation and specifications.

RLL 770 - Landscape Architecture Research Project

This course train students to conduct research in areas related to the profession of landscape architecture. Typical topics are visual impact assessment, cultural landscape, planning, design, management, construction, landscape ecology, environmental study modeling, and tropical plant study. Thesis or research projects should exhibit creativity, critical and analytical thinking, and scholarly executed.

RLK 777 – Research Methodology in Landscape Architecture (Pre-requisite course)

This course explains the process and method of conducting research systematically from identifying research problem to literature search, techniques in conducting data collection and data analysis. This course also emphasizes on the development of research proposal and the importance of good management of research data and information.

B. Additional Courses

RLS 500 - Landscape Architecture Graphic Studio

This course exposes the students to the media of graphic presentation. It involves the preparation of technical drawings, perspectives, drawing techniques and scale model making of an outdoor environment.

RLK 560 – Design Thinking and Graphic Communication

Graphic communication is the essential language in landscape architectural design. Visual and verbal communication relies on student abilities to develop ideas and presenting them through various means during a different phase of the design process. This course provides students with alternative approaches in decision making called design thinking by understanding the existing problems through the exploration of the landscape architectural design process.

RLK 530 - Urban Pattern and Design

This course focuses on the definition of urban patterns. It also introduces the types of urban physical patterns that exist throughout the world. This course also emphasizes how each of these patterns is derived from the diversity of functions and urban elements that have made each city's pattern unique and functioning with its own system. Major components and elements on the formation of urban area such as financial centre, central business district, retail area, wholesale area, open spaces, recreational spaces, administrative centre, residential area, extended urban area, urban fringes, major corridors, and other districts in a city. Forms, arts, socio-culture, and politics that influence growth of an urban area will also be discussed.

RLK 550 - Landscape and Recreational Planning

Landscape and Recreational Planning is a course that emphasizes on the aspect of human and its environment which deals specifically to the assessment aspects, planning, design, and management in landscape and recreational planning. This course will give emphasis to issues related to landscape and recreational planning, environmental issues, ecological impacts of recreation, citizen participation in recreational planning, opportunities in designing and planning a recreation area based on the concept of “Design With Nature”. Methods and techniques in recreational planning, carrying capacity using the approach of “Limits of Acceptable Changes” will also be discussed. Students will also be exposed to conflicts and collaboration and communication between stakeholders that exist in recreational planning, and lastly, lectures will also discuss on the aspect of recreation and landscape management.

RLK 640 - Principles and Philosophy of Landscape Architecture

The purpose of this course is to provide understanding on the theories, principles and philosophy of landscape architecture from the perspective of landscape historical development and its application in current landscape architecture. Students will be exposed to the design terminology in landscape architecture that involve theories and principles. As well as the philosophical emphasis in landscape development from past to present time which focus on ideas evolution, design outcomes, organizational processes, recreational aspect, aesthetics and utilities.

RLK 641 - History of Landscape Architecture

The course focuses on the theory of landscape design from the perspective of landscape historical development. Emphasis is given towards design from pre-historic to the 20th century civilization, focusing on culture and the norms of a civilisation. Students are exposed to landscape architecture design terminologies from the perspectives of process organization, utility, esthetic and recreation.

RLK 662 - Landscape Plants

This course introduce tropical plant materials with emphasis on its relationship with local cultures, origin, and its unique characters suitable for landscape design. Both native and introduced species of big trees, shrubs, herbs, indoor plants and turf grasses will be discussed. Students will be able to understand the suitability of plants in design composition as well as site physical and climatic conditions.

RLK 760 - Ecology and Built Environment

This course focuses on the major concepts and principles of ecology, the sciences concerning the relationship between organisms which include plants and homo sapiens, and the biotic and abiotic components of their habitats. The main topics includes, emphasis on flora and fauna, the environment and its interaction; plants community – habits and structure, temporal changes in plants community; eco-system – concept, energy flow in food chains and different trophics level, the main biogeochemical cycles; introduction to Malaysian plant kingdom – highlands, flood plains, marshy areas and human intervention to the ecosystem.

2.4.7 Grading System and Graduation Requirement

Master of Landscape Architecture degree is conferred to candidates who have accumulated **42 units** (for Study Track 1), or **51 units** (for Study Track 2), or **64 units** (for Study Track 3). Candidates will be assessed according to the Cumulative Grade Point Average (CGPA) system with the following grades distributions:

Grade	Range Score	Grade Point	Explanation
A	80 and above	4.00	PASS
A-	70 – 79	3.67	
B+	64 – 69	3.33	
B	58 – 63	3.00	
B-	52 – 57	2.67	
C+	46 – 51	2.33	
C	40 – 45	2.00	FAIL
C-	36 – 39	1.67	
D+	32 – 35	1.33	
D	28 – 31	1.00	
D-	25 – 27	0.67	
F	Below 24	0.00	

* *Passing grade for each course is C+. For graduation purposes, students must obtain a minimum CGPA of 3.00 over 4.00.*

**MASTER OF
SCIENCE
PROGRAMMES BY
MIX MODE**

3.1 MASTER OF SCIENCE (TOURISM DEVELOPMENT)

3.1.1 Introduction

The MSc. Tourism Development programme is distinctive due to its focus on tourism development in the context of sustainability. This programme with its multidisciplinary approach is designed for those with an interest in tourism planning and development. The hybrid School of Housing, Building and Planning has the advantage of a diversity of expertise, whereby can provide different dimensions of knowledge in tourism planning and development. The strategic location of Universiti Sains Malaysia close to the World Heritage Site of George Town is an added value that provides students with the opportunity to engage with key stakeholders in research projects and academic visits.

The mixed-mode programme provides a balance of taught courses and research project. The main objectives of this programme are to broaden the students' understanding on the theoretical and applied of tourism planning and development. This program enables the students to focus on both the macro to the micro-level and explore theoretical and practical issues facing the private and public sectors concerning the tourism industry.

The program is delivered in an integrated approach in a wide variety of built environment field specifically; tourism planning, infrastructure and amenities for tourism, tourism business and entrepreneurship, policy and tourism laws, sustainability practice in tourism and different types of tourism such as urban tourism, heritage and culture, ecotourism, rural tourism, coastal and island tourism.

3.1.2 Career Prospects

- i. The specialisation in tourism planning and development gives our graduates the edge in professionally dealing with various stakeholders.
- ii. This programme equips students with the knowledge and skills to advance their career at the managerial level, secure employment in specialist areas, either private or public sectors and prepares them to pursue their PhD degree.

3.1.3 Entry Requirements

- i. Bachelor's degree in related area.
 - (a) CGPA of at least 2.75 / 4.00; or
 - (b) CGPA between 2.50 - 2.74 with the following additional conditions: or
 - Research experience for at least one year; or
 - Work experience in related field for at least one year; or
 - At least one (1) academic publication in the relevant field; or
 - Grade B for major / elective courses; or
 - Grade B+ for final year project
 - (c) CGPA between 2.00 - 2.49 (Bachelor's Degree with Honours) with the following additional conditions: or
 - Research experience for at least five (5) years; or
 - Work experience in related field for at least five (5) years; AND
 - At least one (1) academic publication in the relevant field; or
 - Grade B for major / elective courses; or
 - Grade B+ for final year project
- ii. Preference is given to those who have relevant working experience.

3.1.4 Course Structure

The program consists of the following courses:-

A. Theory Courses (20 units)

Code	Title	Units	Semester
RTK 531	Tourism Planning and Development	3	1
RTK 532	Tourism Policy and Organization	3	1
RTK 533	The Design of Tourism & Recreational Projects	3	1
RTK 534	Sustainable Tourism Development	3	2
RTK 535	Research Methods and Techniques	3	1
RTK 536	Infrastructure and Tourism Services	3	2
RTK 537	The Business and Economy of Tourism	2	2

B. Workshops (2 units)

Code	Title	Units	Semester
RTK 538	Tourism Workshop	2	2

C. Research (22 units)

Code	Title	Units	Semester
RTK 572	Research Project in Tourism	22	1, 2 & KSCP

3.1.5 Course Approach

The MSc. in Tourism Development offers full-time and part-time modes. The full-time mode offers a minimum duration of one academic session (2 semesters) and a maximum duration of two academic sessions (4 semesters). While in the part-time mode, the student may take a minimum duration of 2 academic sessions (4 semesters) or the maximum duration of 4 academic sessions (8 semesters).

Duration studies are as below:

Mode	Minimum Duration	Maximum Duration
Full-time	1 year (2 semester)	2 years (4 semester)
Part-time*	2 years (4 semester)	4 years (8 semester)

Note: This programme is offered full-time and part-time. However, the classes will be conducted during weekdays. The schedule of classes is 2 to 3 days a week but the part-timer students may take 1 day a week (duration time to graduate will be longer).

3.1.6 Course Synopsis

A. Theory Courses

RTK 531 - Tourism Planning and Development

This course introduces basic planning principles and tourism development and emphasizes theories, models and fundamentals in the tourism system and development. It covers the topics of tourism sustainable tourism, current trends and future direction of tourism development and its impacts. Discussions also focus on the positioning of tourism product, tourism development process, tourism development strategies at national, regional, state and local levels.

RTK 532 - Tourism Policy and International Organisation

This course aims to expose the students to the involvement of government in tourism and tourism policy at a different scale, specifically local (destination), state, national, supranational and global level. The related organisations from macro to micro-level will enhance the understanding of the broad scope of tourism concerning policy. The interrelated organisations and departments at the federal, state and local level in the various setting of tourism destination will be discussed in terms of issues and conflicts in developing the tourism policy and implementation and monitoring mechanism. The module also explains the roles, functions and relationship of the public and private sector in tourism and the power conflict between these two sectors.

RTK 533 - The Design of Tourism and Recreational Projects

This course enhances the understanding of the process, important aspects and analysis of tourism and recreational projects. Elements such as physical aspects and competitiveness of projects will be discussed. Discussions on the concept, principle, site-analysis of tourism and recreational projects will be covered in this module. The students will be exposed to tourism impact assessment; environmental impact assessment and social impact assessment. It is essential for design evaluation and analysis to be sustainable to attract tourist interest by taking into consideration several factors such as land area, environment, population density and other criteria.

RTK 534 - Sustainable Tourism Development

Tourism development generates local economy, businesses and employment opportunities as well as increases national revenue through taxation and foreign exchange. This module enables the students to establish an understanding of the principles, concept and approaches of sustainable tourism. Sustainable tourism development recognises the necessity to ensure a sustainable future, meets the needs of the tourism industry today and does not compromise the ability of this and future generations to consume the environment. This course aims to stimulate critical thinking and the ability to analyse the current trend of sustainable tourism development such as culture and heritage tourism, community-based tourism, rural tourism and ecotourism.

RTK 535 - Research Methods and Techniques

This course introduces students to the concept, principles, and elements of scientific research; vis-à-vis the planning process, research execution and report writing. It also focuses on the formulation of research design and methods for data collection and data analysis. This course exposes students to the norms and style of academic writing.

RTK 536 - Infrastructure and Tourism Services

The course objective is to introduce the main aspects of the development of infrastructure and service for tourism projects. Elements such as design, feasibility and competitiveness of projects are included in the lecture. Students are also exposed to the socio-economic aspect of projects through consideration of tourist and local needs.

RTK 537 - The Business and Economy of Tourism

This course introduces tourism as a form of economic activity, types of business activity (different sectors and business models) and form of business organisation (multinational and SMEs). Aspects of tourism management such as marketing, promotion, tourism satellite account, networking and linkages will be exposed to the students. The course provides inputs from the major industries panels in the tourism sector. An evaluation of the main components of the economy is essential to identify the source of finance, expenditure and contribution of the tourism sector to the national revenue.

B. Workshops

RTK 538 - Tourism Workshop

This course involves students in hands-on projects such as workshop, seminar, forum, small project, and others. Students, on their initiative, are required to plan and execute the project. The selection of the project theme is based on the current issues in the field of tourism planning and development. The project involves participation by experts from the industry, academics, and NGOs as resource person, supervisor, or keynote speaker. The course enhances student's problem solving, communication, teamwork and leadership skills. The engagement with participants and the delivery of the project will be evaluated.

C. Research

RTK 572 - Research Projects in Tourism

This course is designed to provide students with the necessary skills to do a research in the tourism field particularly and in other fields generally. In detail, this course helps students to understand the implementation of theories/models in a research framework, and the suitability of a research method with the selected research objective(s); to achieve research objectives and to answer research questions.

3.1.7 Grading System and Graduation Requirement

- i) **All Theory Courses (7 subjects- 3 unit and 2 unit)**
 - a. Coursework 60% (quiz, test, assignment, oral presentation, case study and written report).
 - b. Final Exam 40%
- ii) **Workshop (1 subject- 2 unit)**
 - a. Organising the seminar/workshop.
 - b. The course will be evaluated by the written proposal, secretariat committees' team, promotion, sponsorship, documentation, venue, tentative event, foods, souvenirs, speakers and audience.
- iii) **Research Project –Dissertation (22 unit)**
 - a. The students are required to conduct research related to tourism topic and assist by appointed supervisor. 4 sessions of presentation - **research proposal, literature review and research framework, methodology, analysis & finding** (the panel will give the feedback and advice in conducting the research).
 - b. **A viva session** will be conducted in the final semester with 1 external examiner and 2 internal examiners.
 - c. The final output is the dissertation (compulsory), and 1 article for publication (optional).

Students will be conferred the degree after they have successfully accumulated **all courses (44 units)**. Students will be assessed according to the Cumulative Grade Point Average (CGPA) system with the following grades distributions:

Grade	Range Score	Grade Point	Explanation
A	80 and above	4.00	PASS
A-	70 – 79	3.67	
B+	64 – 69	3.33	
B	58 – 63	3.00	
B-	52 – 57	2.67	
C+	46 – 51	2.33	
C	40 – 45	2.00	FAIL
C-	36 – 39	1.67	
D+	32 – 35	1.33	
D	28 – 31	1.00	
D-	25 – 27	0.67	
F	Below 24	0.00	

* *Passing grade for each course is C+. For graduation purposes, students must obtain a minimum CGPA of 3.00 over 4.00*

3.2 MASTER OF SCIENCE (BUILDING TECHNOLOGY) (MM)

3.2.1 Introduction

The main objective of the programme is to train graduates with expertise in science and technology of building construction and management aspects, infrastructure, building system and structure, material technology, building services and maintenance, geotechnics, and geosystem, as well as building energy studies.

This mixed-mode structure is tailor-made to assist candidates who are aspired to further their studies toward PhD.

3.2.2 Program Outcome

At the end of this programme, students will be able to understand and apply the concept, tools and techniques as well the additional skills in the major focus of science and technology in building perspective. In later phases, students can apply their skills and knowledge to the roles of advisor, administrator, manager or researcher.

- i. Acquire scientific knowledge and skills that incorporate sustainable construction and building technology practices.
- ii. Master skills in the process of scientific research, including research methodologies, analyse research data systematically via the application of information technology.
- iii. Assemble relevant remedial for construction and building technology issues as well as organize resources successfully in compliance with the industry needs.
- iv. Exhibit communication skills, ethics and professionalism in gathering, presenting and practicing knowledge obtained as well as undertaking responsibilities of a Building Technologist.
- v. Solve construction and building technology problems accurately towards achieving the most applicable and cost-effective solutions.
- vi. Demonstrate the ability to find and manage information, adapting to change and involve in lifelong learning programs and able to pursue higher education and qualifications.
- vii. Produce graduates who are independent, committed, skilled and able to adapt the current technologies and possess analytical and holistic approach.
- viii. Manifest personal skills and leadership qualities through individual and teamwork projects in building technology practices.

3.2.3 Entry Requirements

Applicants should possess the following:

- i. Satisfy the general requirements of USM's graduate school.
- ii. Candidates should hold a first degree with a minimum CGPA of 2.75 and above in **any** of the following:

Either

- (a) BSc. (Hons) Housing, Building and Planning, Universiti Sains Malaysia.

or

Honours degree from Universiti Sains Malaysia OR degree from other universities in related construction fields approved by Universiti Sains Malaysia such as Built Environment, Civil Engineering and Building Engineering.

or

Other academic or professional qualifications acceptable by USM.

3.2.4 Course Structure

The program consists of the following courses:

A. Compulsory Courses (8 units)

Code	Title	Units	Semester
REG 562	Building Services Technology	4	1
REG 563	Sustainable Infrastructure	4	1

B. Graduation Requirement (3 units)

Code	Title	Units	Semester
REL 574*	Research Methodology in Building Technology	3	1

* REL574 is a graduation requirement and not counted in total units

C. Dissertation (28 units)

Code	Title	Units	Semester
REL 573	Building Technology Dissertation	28	1, 2 & KSCP

D. Elective Courses* (4 units)

Code	Title	Units	Semester
REG 564	Sustainable Buildings	4	1
REG 566	Building Pathology and Maintenance	4	2
REG 567	Advanced Construction Materials	4	2
RMT 558	Construction and Facilities Management	4	2

- * Students are required to obtain a minimum of 4 units from elective courses.

3.2.5 Course Approach

The full-time programme covers a minimum of one-year academic session, or equivalent to two semesters (including submission of research project report).

The part-time programme covers a minimum of two-year academic sessions, or equivalent to four semesters (including submission of research project report).

The courses are conducted by full-time academic staff with the support of visiting lecturers, professors and relevant practicing professionals. Modes of teaching include lectures, tutorials, discussions, seminars, case studies and project assignments.

Assessment is made on the basis of assignments, coursework and examination. For research projects, candidates are required to submit a formal report and attend a viva session at the end of the final semester.

Master of Science (Building Technology) is conferred to candidates who have accumulated not less than 40 credit units. The students are required to complete two courses listed as compulsory, one course from elective courses, graduation requirement and a dissertation.

Full Time Studies

Semester I	Semester II	Semester KSCP	Remarks
REG 562/4 REG 563/4 REL 574/3 REL 573	REL 573 1 elective course/4	REL 573/28	* REL574 is a graduation requirement and not counted in total units * REL573 is a one Academic Session courses (Semester I, II & KSCP). Cumulative unit will be counted on the KSCP semester
8 Units	4 Units	28 Units	Total Units = 40 Units

- * Students are required to obtain a minimum of 4 units from elective courses.

Part Time Studies

Year 1			
Semester I	Semester II	Semester KSCP	Remarks
REG 562/4 REG 563/4 REL 574/3	1 elective course/4	-	* REL574 is a graduation requirement and not counted in total units
8 Units	4 Units	-	Total Units = 12 Units
Year 2			
Semester I	Semester II	Semester KSCP	Remarks

REL 573	REL 573	REL 573/28	* REL573 is a one Academic Session courses (Semester I, II & KSCP). Cumulative unit will be counted on the KSCP semester
		28 units	Total Units = 28 Units
Total Units = 40 Units			

* Students are required to obtain a minimum of 4 units from elective courses.

3.2.6 Course Synopsis

A. Compulsory Courses

REG 562 - Building Services Technology

This course provides exposure to advanced knowledge on the category, design, technology and management of building service systems.

REG 563 - Sustainable Infrastructure

This course provides the exposure to the advanced knowledge on types, systems, technology and materials to design new, rehabilitate old, and optimize existing infrastructures according to the latest global sustainable development principles.

B. Graduation Requirement

REL 574 - Research Methodology in Building Technology

This course explains the process and method of conducting research systematically from identifying research problem to literature search, techniques in conducting data collection and data analysis. This course also emphasises on the development of research proposal and the importance of good management of research data and information

C. Dissertation

REL 573 –Building Technology Dissertation

This course provides students with knowledge in planning and conducting research on topics related to building technology, with supervision from lecturers. The objective of this course is to provide exposure to students in the process of conducting research and acquire the necessary research skills to contribute to building technology fields.

D. Elective Courses

REG 564 - Sustainable Buildings

This course emphasizes on the concept, methodologies and strategies to achieve sustainable buildings, including various standard evaluation techniques applied in determining the level of sustainability in buildings.

REG 566 - Building Pathology and Maintenance

This course discusses building pathology including a holistic approach to building and structure repair. This involves a detailed understanding of how the structure was constructed, the materials being constructed, how it was used, how it has progressed over time, and all the factors that influence its current state.

REG 567 - Advanced Construction Materials

This course provides exposure to the physical and mechanical properties of advanced building materials as well as their use in the building construction industry. Performance, resilience, sources of damage and resistance to environmental factors are also taken into account.

RMT558 - Construction and Facilities Management

This course will discuss and examine the management techniques and approaches in planning, scheduling, monitoring and controlling construction projects. On-site management and project team organizational aspects will also be focused on with particular emphasis on construction-based activities. The Facilities Management segment gives an overview of management decisions during the occupancy stage through the organisational and facilities' change cycles.

3.2.7 Grading System and Graduation Requirement

Students will be conferred the degree after they have successfully accumulated **40 units** from the core and elective courses, graduation requirement and dissertation. Students will be assessed according to the Cumulative Grade Point Average (CGPA) system with the following grades distributions:

Grade	Range Score	Grade Point	Explanation
A	80 and above	4.00	PASS
A-	70 – 79	3.67	
B+	64 – 69	3.33	
B	58 – 63	3.00	
B-	52 – 57	2.67	
C+	46 – 51	2.33	
C	40 – 45	2.00	FAIL
C-	36 – 39	1.67	
D+	32 – 35	1.33	
D	28 – 31	1.00	
D-	25 – 27	0.67	
F	Below 24	0.00	

* *Passing grade for each course is C+. For graduation purposes, students must obtain a minimum CGPA of 3.00 over 4.00.*

4.0 POSTGRADUATE PROGRAMMES BY RESEARCH

The Master of Science and Doctor of Philosophy are research programmes offered throughout the year. These programmes are offered as full-time and part-time modes to qualified Malaysian and international students to do independent research supervised by respective lecturers in various major fields the built environment. Upon graduation, students will be exposed to specific theories and knowledge of the industry to support their employment in various relevant sectors. There are seven Master of Science and Doctor of Philosophy programmes offered by the school. The programmes are:-

1. Building Technology
2. Urban and Regional Planning
3. Project Management
4. Architecture
5. Landscape Architecture
6. Interior Design
7. Housing
8. Quantity Surveying
9. Tourism Development
10. Building Surveying

GENERAL ADMISSION REQUIREMENTS

MASTER	PhD / DOCTORATE
<p style="text-align: center;">Qualifications (any of the below):</p> <p>I. Bachelor degree</p> <p>A) CGPA of at least 2.75/4.00; or B) CGPA of 2.50 - 2.74/4.00 with; or</p> <ul style="list-style-type: none"> • Research experience – 1 year; or • Professional experience in related field- 1 year; or • One(1) academic publication in related field; or • Grade B for major/ elective courses; or • Grade B+ for final year project. <p>C) CGPA of 2.00 - 2.49/4.00 (<u>Honours degree</u>) with; or</p> <ul style="list-style-type: none"> • Research experience - 5 years; or • Professional experience in related field - 5 years, AND • One (1) academic publications in related field; or • Grade B for major/elective courses; or • Grade B+ for final year project. 	<p style="text-align: center;">Qualifications (any of the below):</p> <p>I. Master degree (Coursework or Mixed Mode)</p> <p>A) CGPA of at least 3.00 / 4.00; or B) CGPA of 2.50 - 2.99 with; or</p> <ul style="list-style-type: none"> • Research experience – 2 years; or • Professional experience in related field – 2 years; or • Two (2) academic publications in the field; or • Grade B+ for major/elective courses; or • Grade B+ for Coursework Mode or P for Mixed Mode dissertation/project; <p>II. Master degree (Research Mode) <i>For non-CGPA qualifications, please refer to IPS for confirmation.</i></p>

II. APEL A Certificate (APEL T-7)
<http://www2.mqa.gov.my/APEL/>
For non-CGPA qualifications, please refer to IPS for confirmation.

**DEGREE PROGRAMME CODES AND FIELD CODES
SCHOOL OF HOUSING, BUILDING AND PLANNING**

Research Program <i>Rancangan Penyelidikan</i>	Programme Code <i>Kod Rancangan</i>	Code <i>Kod</i>	Research Field	<i>Bidang Penyelidikan</i>
Building Technology <i>Teknologi Bangunan</i>	HBP01	01	Building Infrastructure	<i>Infrastruktur Bangunan</i>
	HBP01	02	Water Reticulation and Distribution System	<i>Sistem Rangkaian dan Bekalan Air</i>
	HBP01	06	Construction Materials and Technology	<i>Teknologi Bahan dan Binaan</i>
	HBP01	08	Lightweight Concrete	<i>Konkrit Ringan</i>
	HBP01	09	Reinforced Concrete Structures	<i>Struktur Konkrit Tetulang</i>
	HBP01	10	Structural Analysis, Design Optimisation and Assessment	<i>Analisis, Pengoptimuman Rekabentuk dan Penilaian Struktur</i>
	HBP01	11	Geotechnology	<i>Geoteknologi</i>
	HBP01	14	Building Services and Engineering	<i>Kejuruteraan dan Perkhidmatan Bangunan</i>
	HBP01	15	Fire Safety	<i>Keselamatan Kebakaran</i>
	HBP01	16	Thermal Comfort	<i>Keselesaan Terma</i>
	HBP01	17	Ventilation and Air-conditioning	<i>Pengudaraan dan Penyamanan Udara</i>
	HBP01	18	Energy Conservation	<i>Pemuliharaan Tenaga</i>
	HBP01	19	Services Management	<i>Pengurusan Perkhidmatan</i>
	HBP01	20	Maintenance	<i>Penyelenggaraan</i>
	HBP01	21	Impact Assessment	<i>Penilaian Impak</i>
	HBP01	22	Environmental Management	<i>Pengurusan Persekitaran</i>
	HBP01	23	Building Science	<i>Sains Bangunan</i>
	HBP01	27	Occupational Safety and Health	<i>Keselamatan dan Kesihatan Pekerjaan</i>
	HBP01	28	Industrialised Building Systems (IBS)	<i>Sistem Pembinaan Berindustri</i>
HBP01	29	Building energy simulation.	<i>Simulasi Tenaga Bangunan</i>	

	HBP01	34	Finite Element Analysis	<i>Analisis Elemen Terhad</i>
	HBP01	36	Transport system Studies	<i>Kajian sistem pengangkutan</i>
	HBP01	37	Transport Facilities Management	<i>Pengurusan Kemudahan Pengangkutan</i>
	HBP01	38	Building Quality and Assessment	<i>Penilaian dan Kualiti Bangunan</i>
	HBP01	39	<i>Urban Infrastructure</i>	<i>Infrastruktur Bandar</i>
	HBP01	40	<i>Road and Transportation</i>	<i>Jalan dan Pengangkutan</i>
	HBP01	41	<i>Sensors and Instrumentation for Civil Infrastructure</i>	<i>Sensors and Instrumentation for Civil Infrastructure</i>
	HBP01	43	<i>Sustainable Construction Materials Highway and Pavement Engineering</i>	<i>Kelestarian Bahan Binaan Kejuruteraan Lebuhraya Dan Turapan</i>
	HBP01	44	Risk Assessment and Management	<i>Penilaian dan Pengurusan Risiko</i>
	HBP01	45	Lean Construction Studies	<i>Kajian Pembinaan Berhemat</i>
	HBP01	46	Wastewater Management	<i>Pengurusan Air Sisa</i>
	HBP01	47	Construction Waste and Demolition Management	<i>Pengurusan Sisa pembinaan dan perobohan</i>
	HBP01	48	Building Quality Control	<i>Kawalan Kualiti Bangunan</i>
Urban and Regional Planning <i>Perancangan Bandar dan Wilayah</i>	HBP02	01	Community Planning and Development	<i>Perancangan dan Pembangunan Komuniti</i>
	HBP02	02	Housing Issues	<i>Isu-Isu Perumahan</i>
	HBP02	03	<i>Social Planning and Development</i>	<i>Perancangan dan Pembangunan Sosial</i>
	HBP02	04	GIS in Planning	<i>GIS dalam Perancangan</i>
	HBP02	05	Rural Planning and Development	<i>Perancangan dan Pembangunan Luar Bandar</i>
	HBP02	06	Sustainable Development	<i>Pembangunan Lestari</i>
	HBP02	07	Conservation and Preservation	<i>Pemuliharaan dan Pemeliharaan</i>
	HBP02	08	Urban Planning and Management	<i>Pengurusan dan Perancangan Bandar</i>
	HBP02	09	Urban and Rural Poverty	<i>Kemiskinan Bandar dan Luar Bandar</i>
	HBP02	10	Urban Studies	<i>Pengajian Bandar</i>
	HBP02	11	Environmental Planning	<i>Perancangan Alam Sekitar</i>

	HBP02	12	Tourism Planning	<i>Perancangan Pelancongan</i>
	HBP02	14	Transport Planning	<i>Perancangan Pengangkutan</i>
	HBP02	16	Social Impact Assessment	Penilaian Impak Sosial
	HBP02	17	Transportation Impact Assessment	Penilaian Impak Pengangkutan
	HBP02	18	Regional Planning	Perancangan Wilayah
	HBP02	19	Urban Design in Planning	Reka Bentuk Bandar dalam Perancangan
	HBP02	20	Social resource Planning	Perancangan Sumber Sosial
	HBP02	21	Natural Resource Planning	Perancangan Sumber Alam
Project Management <i>Pengurusan Projek</i>	HBP03	01	Project Management	<i>Pengurusan Projek</i>
	HBP03	02	Financial Management	<i>Pengurusan Kewangan</i>
	HBP03	03	Development Management	<i>Pengurusan Pembangunan</i>
	HBP03	04	Knowledge Management	<i>Pengurusan Pengetahuan</i>
	HBP03	05	Property and Facilities Management	<i>Pengurusan Harta dan Fasiliti</i>
	HBP03	06	Construction Economics	<i>Ekonomi Binaan</i>
	HBP03	07	Marketing in Construction Project Management	<i>Pemasaran Dalam Pengurusan Projek Binaan</i>
	HBP03	08	Risk Management	<i>Pengurusan Risiko</i>
	HBP03	09	Occupational, Health and Safety Management	<i>Pengurusan Pekerjaan, Kesihatan dan Keselamatan</i>
	HBP03	10	Quality Management	<i>Pengurusan Kualiti</i>
	HBP03	11	Property Management	<i>Pengurusan Harta Tanah</i>
	HBP03	12	Productivity Studies	<i>Pengurusan Kajian Produktiviti</i>
	HBP03	13	Site Management	<i>Pengurusan Tapak</i>
	HBP03	17	Entrepreneurship Studies	<i>Pengajian Keusahawanan</i>
	HBP03	18	Corporate Strategic Management	<i>Pengurusan Strategi Korporat</i>
HBP03	20	Supply Chain Management	<i>Pengurusan Rangkaian Bekalan</i>	
HBP03	21	Lean Construction Project Management	<i>Pengurusan Projek Pembinaan Berhemat</i>	

	HBP03	23	Sustainable Construction Project Management	<i>Pengurusan Projek Binaan Mapan/Lestari</i>
	HBP03	28	Investment Management	<i>Pengurusan Pelaburan</i>
	HBP03	29	Portfolio Management	<i>Pengurusan Portfolio</i>
	HBP03	30	Construction Laws	<i>Undang-Undang Binaan</i>
	HBP03	32	Innovation in Construction Project Management	<i>Innovasi dalam Pengurusan Projek Binaan</i>
	HBP03	33	Procurement strategy in Construction	<i>Strategi Perolehan dalam Pembinaan</i>
	HBP03	34	Organisational Studies	<i>Kajian Organisasi</i>
	HBP03	35	Contract Management	<i>Pengurusan Kontrak</i>
	HBP03	36	Dispute Resolutions in Construction	<i>Penyelesaian Pertikaian dalam Pembinaan</i>
	HBP03	37	Value Management in Projects	<i>Pengurusan Nilai dalam Projek</i>
	HBP03	38	Housing Development and Management	<i>Pembangunan dan Pengurusan Perumahan</i>
	HBP03	39	Building Conservation Management	<i>Pengurusan Pemuliharaan Bangunan</i>
	HBP03	40	Digital Technology in Construction Project Management	<i>Teknologi Digital Dalam Pengurusan Projek Binaan</i>
Architecture Seni Bina	HBP04	01	Building Energy and Energy Efficiency	<i>Tenaga Bangunan Dan Kecekapan Tenaga</i>
	HBP04	02	Environmental Design: Lighting	<i>Rekabentuk Persekitaran: Pencahayaan</i>
	HBP04	03	Environmental Design: Acoustic	<i>Rekabentuk Persekitaran: Akustik</i>
	HBP04	04	Environmental Design: Thermal Comfort	<i>Rekabentuk Persekitaran: Keselesaan Terma</i>
	HBP04	05	Architecture History and Theory	<i>Sejarah dan Teori Seni Bina</i>
	HBP04	06	Vernacular Architecture	<i>Seni Bina Vernakular</i>
	HBP04	07	Sustainable Architecture	<i>Seni Bina Mapan</i>
	HBP04	08	Housing Design	<i>Rekabentuk Perumahan</i>
	HBP04	09	Computer Aided Design (CAD)	<i>Rekabentuk Bantuan Komputer</i>
	HBP04	10	Human Factors in Architecture	<i>Faktor Kemanusiaan Dalam Seni Bina</i>
	HBP04	11	Architecture Design	<i>Rekabentuk Seni Bina</i>
	HBP04	12	Fire Safety Design	<i>Rekabentuk Keselamatan Kebakaran</i>

HBP04	13	Architectural Materials and Technology	<i>Bahan dan Teknologi Senibina</i>
HBP04	14	Architecture Management and Practice	<i>Pengurusan dan Praktis Seni Bina</i>
HBP04	15	Architecture Pedagogy	<i>Pedagogi Seni Bina</i>
HBP04	18	Building Performance	<i>Prestasi Bangunan</i>
HBP04	19	Intelligent Building Design	<i>Rekabentuk Bangunan Bestari</i>
HBP04	20	Design of High-Rise Building	<i>Rekabentuk Bangunan Tinggi</i>
HBP04	21	Urban Design	<i>Rekabentuk Bandar</i>
HBP04	22	Urban Management	<i>Pengurusan Bandar</i>
HBP04	23	Urban Conservation	<i>Pemuliharaan Bandar</i>
HBP04	24	Urban Culture	<i>Budaya Bandar</i>
HBP04	25	Building Energy Simulation	<i>Simulasi Tenaga Bangunan</i>
HBP04	26	Building Information Modelling (BIM)	<i>Model Maklumat Bangunan (BIM)</i>
HBP04	27	Environmental Design: Thermal Energy Storage	<i>Rekabentuk Persekitaran: Penyimpanan Tenaga Thermal</i>
HBP04	28	Indoor Environmental Quality	<i>Kualiti Persekitaran Dalaman</i>
HBP04	29	Universal Design	<i>Rekabentuk Sejagat</i>
HBP04	30	Digital Architecture	<i>Senibina Digital</i>
HBP04	31	Heritage and Conservation	<i>Warisan dan Pemuliharaan</i>
HBP04	32	Building Sciences	<i>Sains Bangunan</i>
HBP04	33	Environmental Behaviour and Sciences	<i>Perilaku dan Sains Persekitaran</i>
HBP04	34	Biofacade and Urban Greening	<i>Biofacade dan Penghijauan Bandar</i>
HBP04	35	Disaster Responsive Architecture Design	<i>Rekabentuk Seni Bina Responsif Bencana</i>
HBP04	36	Adverse-Environment Sensitive Architecture	<i>Seni Bina Sensitif Persekitaran Mencabar</i>

Landscape Architecture <i>Seni Bina Lanskap</i>	HBP05	01	Crime and the Environment	<i>Jenayah dan Alam Sekitar</i>
	HBP05	02	<i>Green Open Space</i>	<i>Ruang Terbuka Hijau</i>
	HBP05	03	<i>Recreation and Park Design</i>	<i>Rekreasi dan Reka Bentuk Taman</i>
	HBP05	05	Landscape Resource Management and Planning	<i>Perancangan dan Pengurusan sumber Lanskap</i>
	HBP05	06	Landscape and Environmental planning	<i>Perancangan Lanskap dan Alam Sekitar</i>
	HBP05	07	Landscape Technology	<i>Teknologi Lanskap</i>
	HBP05	09	<i>Landscape Character Assessment (LCA)</i>	<i>Penilaian Karakter Lanskap</i>
	HBP05	10	Children's Environment	<i>Persekitaran Kanak-Kanak</i>
	HBP05	11	Cultural Landscape	<i>Lanskap Budaya</i>
	HBP05	12	Energy-efficient Landscape Design	<i>Reka Bentuk Lanskap Cepak Tenaga</i>
	HBP05	13	Environmental Behaviour Studies	<i>Kajian Tingkah Laku Alam Sekitar</i>
	HBP05	14	Heritage Landscape and Conservation	<i>Lanskap Warisan dan Pemuliharaan</i>
	HBP05	15	Public Participation in Landscape	<i>Penyertaan Awam dalam Lanskap</i>
	HBP05	16	Restorative Environment	<i>Persekitaran Pemulihan</i>
	HBP05	17	Sustainable Landscape Development	<i>Pembangunan Lanskap Lestari</i>
	HBP05	18	Urban Landscape Design	<i>Reka Bentuk Lanskap Bandar</i>
	HBP05	19	Vernacular Landscape	<i>Lanskap Vernakular</i>
	HBP05	20	<i>Waterfront and River Corridor Landscape</i>	<i>'Waterfront' dan Lanskap Koridor Sungai</i>
	HBP05	21	<i>Landscape Architectural Management</i>	<i>Pengurusan Seni Bina Lanskap</i>
	Interior Design <i>Rekabentuk Dalaman</i>	HBP06	01	Exhibition Display
HBP06		02	Interior Lighting	<i>Pencahayaan Dalaman</i>
HBP06		03	Human Comfort	<i>Keselesaan Penghuni</i>
HBP06		04	Design Management	<i>Pengurusan Reka bentuk</i>
HBP06		06	Interior Design Management	<i>Pengurusan Reka bentuk Dalaman</i>
HBP06		07	Design with Cultural Influence	<i>Pengaruh Budaya di Dalam Reka bentuk</i>
HBP06		08	Theory in Design	<i>Teori Reka bentuk</i>

	HBP06	11	Building Preservation	<i>Pemuliharaan Bangunan</i>
	HBP06	14	Design and Heritage	<i>Reka Bentuk dan Warisan</i>
	HBP06	15	Design Haptic-Design with Senses	<i>Reka Bentuk dengan Deria</i>
	HBP06	16	Building and Spatial Evaluation	<i>Penilaian Bangunan dan Ruang</i>
	HBP06	17	Minimalism Philosophy and Practice	<i>Falsafah dan Amalan Minimalisme</i>
	HBP06	18	Interior Defect and Maintenance	<i>Kecacatan Dalaman dan Penyelenggaraan</i>
Housing <i>Perumahan</i>	HBP07	01	Affordable Housing	<i>Perumahan Mampu Milik</i>
	HBP07	02	Social Housing (Residential Neighbourhood and Mobility)	<i>Perumahan Sosial (Kejiranan dan Mobiliti Kediaman)</i>
	HBP07	03	Security and Community Development	<i>Pembangunan Keselamatan dan Komuniti</i>
	HBP07	04	Housing Delivery System	<i>Sistem Penyerahan Perumahan</i>
	HBP07	05	Housing Design and Construction	<i>Rekabentuk dan Pembinaan Perumahan</i>
	HBP07	06	Housing Market	<i>Pasaran Perumahan</i>
Quantity Surveying <i>Ukur Bahan</i>	HBP08	01	Value Management	<i>Pengurusan Nilai</i>
	HBP08	02	Cost Management	<i>Pengurusan Kos</i>
	HBP08	03	Design Economics and Management	<i>Ekonomi Rekabentuk dan Pengurusan</i>
	HBP08	04	<i>Internationalisation in Built Environment</i>	<i>Pengantarabangsa Dalam Alam Bina</i>
	HBP08	05	ICT and Innovation in Construction	<i>ICT dan Inovasi Dalam Pembinaan</i>
	HBP08	06	Organisation Sustainability	<i>Kelestarian Organisasi</i>
	HBP08	07	Alternative Dispute Resolution	<i>Penyelesaian Masalah Alternatif</i>
	HBP08	08	Construction Contracts	<i>Kontrak Binaan</i>
	HBP08	09	Strategic Planning and Firm Performance	<i>Pengurusan Strategi dan Prestasi Firma</i>
	HBP08	10	Human Behaviour in Building	<i>Tingkah-laku Manusia Dalam Bangunan</i>
	HBP08	11	SMEs in Construction and Real Estate	<i>PKS Dalam Pembinaan dan Hartanah</i>
	HBP08	12	Construction and Real Estate Entrepreneur	<i>Keusahawanan Pembinaan dan Hartanah</i>

	HBP08	13	Procurement Management	<i>Pengurusan Pemerolehan</i>
	HBP08	14	<i>BIM In Construction</i>	<i>BIM dalam Pembinaan</i>
	HBP08	15	Gender Research in Construction	<i>Penyelidikan Jantina dalam Pembinaan</i>
	HBP08	17	<i>Heritage Economics</i>	<i>Ekonomi Warisan</i>
	HBP08	18	Sustainable and Green construction	<i>Pembinaan Lestari dan Hijau</i>
	HBP08	19	<i>Environment Issues in Construction</i>	<i>Isu-Isu Alam Sekitar Dalam Pembinaan</i>
	HBP08	20	World Heritage Site Management	<i>Pengurusan Tapak Warisan Dunia</i>
Tourism Development <i>Pembangunan Pelancongan</i>	HBP09	02	Heritage Tourism	<i>Pelancongan Warisan</i>
	HBP09	03	Cultural Tourism	<i>Pelancongan Budaya</i>
	HBP09	04	Ecotourism / Nature Tourism	<i>Ekopelancongan/Pelancongan Semulajadi</i>
	HBP09	05	Special Interest and Alternative Tourism	<i>Pelancongan Minat Khas dan Pelancongan Alternatif</i>
	HBP09	06	Border and Regional Tourism	<i>Pelancongan Sempadan dan Wilayah</i>
	HBP09	07	Community Participation in Tourism	<i>Penyertaan Penduduk dalam Pelancongan</i>
	HBP09	08	Resort and Park Development	<i>Pembangunan Resort dan Taman</i>
	HBP09	09	Tourism Infrastructure	<i>Infrastruktur Pelancongan</i>
	HBP09	10	Tourism Policy	<i>Dasar Pelancongan</i>
	HBP09	11	Tourism Organization	<i>Organisasi Pelancongan</i>
	HBP09	12	Tourism Business and Marketing	<i>Pelancongan Perniagaan dan Pemasaran</i>
	HBP09	13	Sustainable Tourism Development	<i>Pembangunan Pelancongan Mapan</i>
	HBP09	14	Tourism Management	<i>Pengurusan Pelancongan</i>
	HBP09	15	Hospitality Management	<i>Pengurusan Hospitaliti</i>
HBP09	16	Tourism Planning	<i>Perancangan Pelancongan</i>	
HBP09	17	Tourism and Hospitality Management	<i>Pengurusan Pelancongan dan Hospitaliti</i>	

Building Surveying Ukur Bangunan	HBP10	01	Building Fire Audit	<i>Pengauditan Kebakaran Bangunan</i>
	HBP10	02	Building Pathology	<i>Patologi Bangunan</i>
	HBP10	03	Space Management	<i>Pengurusan Ruang</i>
	HBP10	04	Risk Management	<i>Pengurusan Risiko</i>
	HBP10	05	Adaptive Reuse	<i>Penggunaan Semula</i>
	HBP10	06	Building Refurbishment	<i>Pengubahsuaian Bangunan</i>
	HBP10	07	Building Conservation	<i>Pemuliharaan Bangunan</i>
	HBP10	08	Asset and Facilities Management	<i>Pengurusan Aset dan Fasiliti</i>
	HBP10	09	Building Maintenance	<i>Penyenggaraan Bangunan</i>
	HBP10	10	Building Service Audit	<i>Audit Perkhidmatan Bangunan</i>
	HBP10	11	Best Practice in Building Surveying	<i>Amalan terbaik Ukur Bangunan</i>
	HBP10	12	Occupational Safety and Health	<i>Keselamatan dan Kesihatan Pekerjaan</i>
	HBP10	13	Sustainable Building Management	<i>Pengurusan Bangunan Lestari</i>
	HBP10	14	Green Building	<i>Bangunan Hijau</i>

5.0 ADDITIONAL INFORMATION

5.1 LANGUAGE REQUIREMENTS FOR INTERNATIONAL CANDIDATES

The minimum score for each programme can be vary from the below list, candidates are required to check for each programme requirements.

A minimum score of 35 for TOEFL (Internet-based); **or**
<https://www.ets.org/>

A minimum of Band 5 for IELTS; **or**
<https://www.ielts.org/>

A minimum score of 36 for PTE; **or**
<https://pearsonpte.com/>

A minimum score of 154 for CAE/CPE; **or**
<https://www.cambridgeenglish.org/>

A minimum of Band 2 for MUET <http://online.mpm.edu.my/en/web/guest/pendaftaran-calon-persendirian>

Exemption is given to candidate if:

English is the candidate's mother tongue or National Language; **or**

Candidate graduated from an Institution of Higher Learning in which the medium of instruction at Bachelor and/or Master degree level is English (statement of proof required)

5.2 APPLICATION

Interested candidates should enquire the following address:

Dean
Institute of Postgraduate Studies
Universiti Sains Malaysia
11800 Pulau Pinang

Telephone : 604-6532941/604-6532994
Fax : 604-6532931
Email : dean_ips@usm.my

Application forms and other details can be obtained from:

<http://www.ips.usm.my>

5.3 FINANCIAL ASSISTANCE

The School of Housing, Building and Planning is unable to provide financial assistance to those candidates who are successful in their application. However, limited opportunities may be available for candidate to be appointed on temporary basis as graduate assistant or research assistant in the school.

More information and inquiries regarding financial assistance can be obtained from the Institute of Postgraduate Studies, Universiti Sains Malaysia: <http://www.ips.usm.my>

5.4 FURTHER INFORMATION

For further information and enquiries, contact:

Dean
School of Housing, Building and Planning
Universiti Sains Malaysia
11800 Pulau Pinang

Telephone : 604-6533173
Fax : 604-6576523
Homepage : <http://www.hbp.usm.my>