

# PROGRAMME STANDARDS: BUILDING SURVEYING

## STANDARD PROGRAM: UKUR BANGUNAN

This set of Programme Standards has been prepared to enhance the development of educational programmes in building surveying and to maintain the quality of graduates. It is hoped that with this document, higher education providers will be able to provide quality education in building surveying and its related fields.

Standard Program ini disediakan untuk membantu pembangunan program pendidikan dalam bidang ukur bangunan dan menjaga kualiti graduan. Semoga dokumen ini dapat membantu pemberi pendidikan tinggi dalam menyediakan pendidikan yang berkualiti dalam ukur bangunan dan bidang yang berkaitan.

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## FOREWORD

**Building Surveying** field has existed in this country for more than 40 years. However, the development of the Building Surveying profession is rather slow until the programmes were offered by several universities in Malaysia in 1994. The Building Surveying programme has indirectly contributed to the increase of Building Surveying graduates in the construction industry. The demand for Building Surveying profession is in line with the development pattern in developed countries such as the United Kingdom, New Zealand, Australia, Hong Kong and Singapore. The Building Surveying expertise in the field of building control and performance is expected to contribute to a better sustainable building quality.

Input from Building Surveying services are required by both public and private sectors in enhancing living standards. The growth in family size has encouraged many homeowners to upgrade their properties. This indirectly has increased the demand for Building Surveying graduates. The immense development of building surveyors requires a standard guideline for Higher Education Providers (HEPs) in the design of a comprehensive curriculum and thus produces competent graduates in Building Surveying.

In determining the curriculum for Building Surveying programme, the panel of experts in the field has been appointed to develop a programme standards to be used by HEPs in offering Building Surveying programme. The Building Surveying Programme Standards covers the academic qualification at certificate, diploma, bachelor's, master's and doctoral degree levels. This standards document emphasises three scopes of work to reflect the building surveyor expertise, thus fulfill the demand of the current building industry. The scopes are building control and space management; maintenance and conservation of buildings; and risk management and building performance. The Malaysian Qualifications Agency (MQA) took the initiative to develop the programme standards to promote uniformity and meet the requirements of Building Surveying graduates who are conversant and competent.

This effort commenced in January 2012 and was approved by the MQA Council in November 2012. In the development of this programme standards, a series of meetings, workshops and presentations have been conducted to acquire feedback from relevant stakeholders in improving the document.

The MQA wishes to express gratitude and appreciation to the panel members **(Appendix 1)** on the commitment, ideas and effort shown in completing this programme standards document in a timely manner. It is hoped that this programme standards will assist in the offering of Building Surveying programmes in Malaysia.

Thank you.

**Dato' Dr. Syed Ahmad Hussein**

Chief Executive Officer

Malaysian Qualifications Agency (MQA)

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## GLOSSARY

- 1) Credit  
A quantitative measurement that represents the learning volume or the academic load to achieve the respective learning outcomes.
- 2) Common Core  
Specific courses offered by Built Environment programmes.
- 3) Discipline Core  
Specific courses for the discipline of Building Surveying as stipulated and agreed by RISM.
- 4) Internship / Industrial Training  
A period of time within the programme when students are required to be placed in the industry to experience the real working environment and enhance their soft skills.
- 5) Learning Outcomes  
Statements on what a learner should know, understand and do upon the completion of a period of study.
- 6) Programme Aims  
Overarching statements on the purpose, philosophy and rationale in offering the programme.
- 7) Student Learning Time  
A period of time that a student should spend on the learning-teaching activities for a given credit which comprises guided learning, independent learning and assessment.
- 8) Viva  
An oral examination on a student's communication skills and knowledge of relevant facts and research conducted.

## ABBREVIATIONS

ABE	Association of Building Engineers
CGPA	Cumulative Grade Point Average
COPIA	Code of Practice for Institutional Audit
COPPA	Code of Practice for Programme Accreditation
CPD	Continuous Professional Development
GGP	Guidelines to Good Practices
HEI	Higher Education Institution
HEP	Higher Education Provider
ICOMOS	International Council on Monument and Sites
IELTS	International English Language Testing System
MOE	Ministry of Education Malaysia
MQA	Malaysian Qualifications Agency
MQF	Malaysian Qualifications Framework
OBE	Outcome-Based Education
OSHA	Occupational Safety and Health Act
RICS	Royal Institution of Chartered Surveyors UK
RISM	Royal Institution of Surveyors Malaysia
SPM	Sijil Pelajaran Malaysia
STPM	Sijil Tinggi Persekolahan Malaysia
TOEFL	Test of English as a Foreign Language
UBBL	Uniform Building By-Law



## INTRODUCTION

Building Surveying is a profession that provides services in construction and building industry which is currently expanding rapidly in Malaysia. The scope of work starts at the early stages of project planning, development, maintenance management, demolition, redevelopment and conservation of historic buildings. A Bachelor's Degree in Building Surveying programme was introduced at several universities since 1994 to address the shortage of professional Building Surveyors in the country. The programmes offered have been recognised by local and international professional bodies such as the Royal Institution of Surveyors Malaysia (RISM) since 1996 and the Association of Building Engineers (ABE), United Kingdom since 2002 and the Royal Institution of Chartered Surveyors (RICS), United Kingdom since 2006. It is important that a programme standards is developed for HEPs at all levels of study due to the rapid growth and demand for Building Surveying programmes.

Several important documents are referred to ensure that it is equivalent with other practices abroad. Among them are:

1. Malaysian Qualifications Framework (MQF);
2. Code of Practice for Programme Accreditation (COPPA);
3. Code of Practice for Institutional Audit (COPIA);
4. Relevant Guidelines to Good Practices;
5. Accreditation Guidelines by the Royal Institution of Chartered Surveyors (RICS), United Kingdom; and
6. Standard Guide for Built Environment Programme by the Ministry of Education Malaysia.

In Malaysia, a professional Building Surveyor is a person qualified by examination and experience, and a full member of RISM. The main role and responsibilities of a Building Surveyor in Malaysia as prescribed by the RISM cover the following fields:

- Building Control and Space Management
- Risk Control and Building Performance
- Building Maintenance and Conservation

Career as a professional Building Surveyor covers every aspect of building life cycle from the early stages of project planning, development, maintenance management, demolition, redevelopment and conservation of historic buildings. A competent Building Surveyor is able to manage, organise, monitor, evaluate and coordinate the construction work and also acts as the coordinator with other professional services in the building construction industry.

Building Surveying is a field that focuses on the building control and performance to achieve a safe, friendly and well maintained building and infrastructure. This field includes total asset management practice, which begins at the planning stage until the disposal of assets. Building control and performance covers pre, execution and post construction. It also encompasses the operational life cycle of building performance and restoration.

Building Surveying programmes in Malaysia are categorised into several levels of qualifications which are Certificate, Diploma, Bachelor's, Master's and Doctoral Degrees. The Programme Standards outlines the minimum requirements that must be complied by the Higher Education Providers (HEPs) in the design of curriculum, student admission, academic staff recruitment, infrastructure and appropriate learning resources in providing a sound quality management system. Emphasis is also given to the Outcome-Based Education (OBE) approach in the training of students at all levels of study. The Programme Standards does not specify any nomenclatures but refers to local and international practices as shown in **Appendix 2**.

Building Surveying graduates can either work in the public or private sector. In public sector, they are assigned to manage design, implement and supervise systems and work procedures relating to building control and total asset management; or involved in operation and maintenance of infrastructure. In private sector, they can work with the consultants, contractors, owners and developers.

## PROGRAMME AIMS

“A programme’s stated aims reflect what it wants the learner to achieve. It is crucial for these aims to be expressed explicitly and be made known to learners and other stakeholders alike” (COPPA, 2008, pp.10).

It is important to have a clear and appropriate aim in the design of programmes, quality assurance and focus on students' learning experiences. A comprehensive formulation provides apparent understanding of what are to be achieved by a programme.

Programme objectives are specific, achievable, measurable and consistent with the expectation of HEPs and the requirement of stakeholders. They emphasise the accomplishment of graduates in their career and professional development after graduation.

The programme aims for Building Surveying are shown below.

### **CERTIFICATE** (Malaysian Qualifications Framework, MQF Level 3)

Provide graduates with the **basic knowledge** and **practical skills** in Building Surveying and able to communicate and work as a team in the construction industry while pursuing lifelong learning.

### **DIPLOMA** (MQF Level 4)

Provide graduates with the **knowledge** and **practical skills**, able to identify, communicate, and solve problems using critical thinking to support the operation and management in the construction industry while pursuing lifelong learning.

### **BACHELOR’S DEGREE** (MQF Level 6)

Provide **professional** graduates with the **knowledge** and **practical skills** to equip them with **leadership talents** and to communicate **scientifically**; and to plan **creatively**, identify and resolve management operational problems in the construction industry while continuing lifelong learning.

### **MASTER'S DEGREE** (MQF Level 7)

Provide graduates with **advanced knowledge** and to equip them with **leadership talents** and to communicate **scientifically**; and to plan **creatively**, identify and resolve **complex** management operational problems in the construction industry while continuing lifelong learning.

Note:

There are three modes of programmes at Master's Degree level in Building Surveying, namely coursework, mixed-mode and research. It provides graduates with in-depth and advanced knowledge, able to conduct research and solve problems effectively in the field of **Built Environment**.

### **DOCTORAL DEGREE** (MQF Level 8)

Provide graduates with **in-depth knowledge** and **scholar's competence** with leadership qualities and ability to communicate scientifically; and to plan creatively, identify and resolve complex management problems; conduct **contemporary research** and contribute to the advancement of knowledge, culture, ethics and professional in the construction industry while continuing lifelong learning.

## **LEARNING OUTCOMES**

“The quality of a programme is ultimately assessed by the ability of the learner to carry out their expected roles and responsibilities in society. This requires the programme to have a clear statement of the learning outcomes to be achieved by the learner” (COPPA, 2008, pp.11).

“These learning outcomes should cumulatively reflect the eight domains of learning outcomes, which are significant for Malaysia” (MQF, 2007, pp.4).

### **CERTIFICATE**

At the end of the programme, graduates are able to:

- i. demonstrate basic knowledge and skills in areas of specialisation;
- ii. assist to implement support services in the field of specialisation;
- iii. exhibit communication skills and teamwork;
- iv. provide assistance in control of design and building services system;
- v. show awareness and responsibility in social, health and safety, ethics and legal issues;
- vi. display awareness of entrepreneurship and sustainable development; and
- vii. exhibit willingness for career development and lifelong learning.

### **DIPLOMA**

At the end of the programme, graduates are able to:

- i. demonstrate knowledge, skills and appropriate characters of the Building Surveying procedures;
- ii. perform support services in the field of specialisation;
- iii. communicate effectively with the Built Environment community and teamwork;
- iv. respond to control of design and building services system;
- v. conduct assistance to resolve building performance problem;
- vi. demonstrate relevant techniques, resources and equipments;
- vii. exhibit awareness and responsibility in social, health and safety, ethics and legal issues;

- viii. demonstrate awareness of entrepreneurship and sustainable development; and
- ix. indicate readiness for career development and lifelong learning.

### **BACHELOR'S DEGREE**

At the end of the programme, graduates are able to:

- i. apply knowledge, skills and appropriate characters of the Building Surveying procedures;
- ii. coordinate support services in the field of specialisation;
- iii. demonstrate effective communication in the Built Environment community and teamwork;
- iv. recommend to resolve building control and performance problems;
- v. plan and undertake the problem of Building Surveying;
- vi. select and apply relevant techniques, resources and equipments;
- vii. demonstrate awareness and responsibility in social, health and safety, ethics and legal issues;
- viii. promote awareness of entrepreneurship and sustainable development; and
- ix. encourage readiness for career development and lifelong learning.

### **MASTER'S DEGREE**

At the end of the programme, graduates are able to:

- i. synthesise knowledge, skills and appropriate characters of the Building Surveying procedures;
- ii. integrate information and knowledge of the theoretical principles and scientific method to solve problems;
- iii. demonstrate effective communication in the Built Environment community and teamwork;
- iv. suggest building control and performance project;
- v. supervise research and conduct research under supervision;
- vi. develop and apply relevant techniques, resources and equipments;
- vii. promote awareness and responsibility in social, health and safety, ethics and legal issues;
- viii. promote awareness of entrepreneurship and sustainable development; and

- ix. encourage readiness for career development, professional and lifelong learning.

### **DOCTORAL DEGREE**

At the end of the programme, graduates are able to:

- i. contribute knowledge and competent skills in conducting research in the field of Built Environment;
- ii. generate information and knowledge of the theoretical principles and scientific method to solve problems;
- iii. demonstrate effective communication in the Built Environment community and teamwork;
- iv. present and disseminate research findings to practitioners, researchers and community;
- v. supervise research and conduct research with minimal supervision;
- vi. develop and apply relevant techniques, resources and equipments;
- vii. appreciate awareness and responsibility in social, health and safety, ethics and legal issues;
- viii. lead research in professional and ethical manner; and
- ix. generate readiness for career development, professional and lifelong learning.

## **CURRICULUM DESIGN AND DELIVERY**

“The term ‘curriculum design and delivery’ is used interchangeably with the term ‘programme design and delivery’. ‘Programme’ means an arrangement of courses that are structured for a specified duration and the learning volume to achieve the stated learning outcomes to lead to an award of a qualification” (COPPA, 2008, pp.12).

The design and delivery of the curriculum is to provide guidance in terms of total credit hours for the programme at all levels of qualifications; Certificate, Diploma, Bachelor’s, Master’s and Doctoral degrees. This guide is made in accordance with the requirements of local and international professional bodies (RISM, RICS and ABE). This means that the programme offered by the HEPs produces ethical professional graduates in the field of Building Surveying who function effectively as a member of the construction industry and able to face global challenges.

This Programme Standards refers to the Code of Practice for Programme Accreditation (COPPA), Area 2: Curriculum Design and Delivery. The proposed delivery method offers the desired effect to the students in which it must be clear in achieving the course learning outcomes.

Method of delivery should be synchronised with the progresses of semesters and level of study. Among the proposed delivery methods are as follows:

- i. Lecture
- ii. Tutorial
- iii. Practical
- iv. Studio
- v. Workshop
- vi. Site Academic Visit (cultivating “Learning by Discovery”)
- vii. Industrial Training
- viii. Field Work

HEPs must ensure that each proposed delivery method achieves the specified learning outcomes. The performance of the delivery method on each course is assessed to ensure its effectiveness in achieving the learning outcomes.



This section describes the benchmark statements of the structure and delivery of the Building Surveying programme. Tables 1 to 7 show the benchmark for all levels of qualifications, including the need for various modules (example: General and Core). These statements are described in **Appendix 3** on pages 36 to 40.

**TABLE 1:**

<b>CERTIFICATE</b>		
Minimum Graduating Credits: 60		
	<b>Body of Knowledge</b>	<b>Credit*</b>
<b>COMPULSORY MODULE</b>		
National requirements, HEP requirements and Personal Development	Malay Language, Malaysian Studies, Islamic Studies / Moral, Social Sciences / Humanities Option, Co-Curriculum, English, Communication Skills, Presentation.	9 – 12
<b>CORE MODULE</b>		
I. Common Core	As prescribed by the HEP in accordance with the common core of the Built Environment.	15 – 21
II. Discipline Core	As prescribed by the HEP in accordance with the programme requirements.	24 – 36
<b>INDUSTRIAL TRAINING</b>		
	Placement in suitable workplace.	8 – 12

\* Credit is calculated based on the Minimum Graduating Credits as described above.

**TABLE 2:**

<b>DIPLOMA</b> Minimum Graduating Credits: 90
--

	<b>Body of Knowledge</b>	<b>Credit*</b>
<b>COMPULSORY MODULE</b>		
National requirements, HEP requirements and Personal Development	Malay, Malaysian Studies, Islamic Studies / Moral, Social Sciences / Humanities Option, Co-Curriculum, English, Communication Skills, Presentation.	14 – 18
<b>CORE MODULE</b>		
I. Common Core	As prescribed by the HEP in accordance with the common core of the Built Environment.	22 – 32
II. Discipline Core	As prescribed by the HEP in accordance with the programme requirements.	36 – 54
<b>INDUSTRIAL TRAINING</b>	Placement in suitable workplace.	8 – 12

\* Credit is calculated based on the Minimum Graduating Credits as described above.

TABLE 3:

<b>BACHELOR'S DEGREE</b>
Minimum Graduating Credits: 120

	Body of Knowledge	Credit*
<b>COMPULSORY MODULE</b>		
National requirements, HEP requirements and Personal Development	Malay, Malaysian Studies, Islamic Studies / Moral, Social Sciences / Humanities Option, Co-Curriculum, English, Communication Skills, Presentation.	18 – 24
<b>CORE MODULE</b>		
I. Common Core	As prescribed by the HEP in accordance with the common core of the Built Environment.	30 – 42
II. Discipline Core	As prescribed by the HEP in accordance with the programme requirements.	48 – 72
<b>INDUSTRIAL TRAINING</b>	Placement in suitable workplace.	8 – 12

\* Credit is calculated based on the Minimum Graduating Credits as described above.

TABLE 4:

<b>MASTER'S DEGREE by Coursework</b>
Minimum Graduating Credits: 40

	Body of Knowledge	Credit*
<b>COMPULSORY MODULE</b>	HEP Requirements	6 – 8
<b>CORE MODULE</b>	Core and Elective Courses	32 – 38

\* Credit is calculated based on the Minimum Graduating Credits as described above.

**TABLE 5:**

<b>MASTER'S DEGREE by Mixed Mode</b> Minimum Graduating Credits: 40
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	Body of Knowledge	Credit*
<b>COMPULSORY MODULE</b>		
	HEP Requirements	20 – 28
<b>CORE MODULE</b>	Core and Elective Courses	12 – 20

\* Credit is calculated based on the Minimum Graduating Credits as described above.

**TABLE 6:**

<b>MASTER'S DEGREE by Research</b> Minimum Graduating Credits: No given credit value
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Research Methodology or relevant prerequisite modules as required by the HEP.
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**TABLE 7:**

<b>DOCTORAL DEGREE</b> Minimum Graduating Credits: No given credit value
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Research Methodology or relevant prerequisite modules as required by the HEP.
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## ASSESSMENT OF STUDENT LEARNING

“Student assessment is a crucial aspect of quality assurance because it drives student learning and is one of the measures to show the achievement of learning outcomes. The achievement of learning outcomes stipulated for the programme is the basis in awarding qualifications. Hence, methods of student assessment have to be clear, consistent, effective, reliable and in line with current practices and must clearly support the achievement of learning outcomes” (COPPA, 2008, pp.15).

The methods of assessment depend on the specific requirements of each module. However, as a general guide, the following must be considered:

- i. Summative and formative assessments;
- ii. Knowledge and understanding (cognitive domain) should be assessed through written, oral or other suitable means but practical skills should be assessed by practical evaluation such as laboratory, workshop, computer-based simulation and project work;
- iii. For modules requiring significant practical skills, a pass grade in practical evaluation is compulsory (A PASS grade implies that the examiner, using an appropriate assessment tool, is satisfied that the candidate has met the learning outcomes of the particular module.);
- iv. Candidates are required to pass the continuous and final assessment (A PASS grade implies that the examiner, using an appropriate assessment tool, is satisfied that the candidate has met the learning outcomes of the particular module.); and
- v. The following types of assessment indicated are merely examples. HEPs are encouraged to use a variety of methods and appropriate instruments for measuring learning outcomes and competencies.

Generally, students shall be evaluated where appropriate through:

- i. Examination  
Open book, Viva, Mid-Semester, End-Semester;
- ii. Coursework  
Assignment, Laboratory Report;
- iii. Project  
Individual or Group, Presentation; and

iv. Others

Class Participation, Group Activity, Critic of Paperwork, Seminar, Site Visit, Field Work.

The proposed assessments of student learning for each level of qualifications are as follows:

<b>QUALIFICATIONS</b>	<b>CONTINUOUS ASSESSMENT (%)</b>	<b>FINAL ASSESSMENT (%)</b>	<b>OTHER APPROPRIATE FORMS OF ASSESSMENT</b>
Certificate	50 – 70	30 – 50	Written Oral Practical Conservation of Craft Work Project* Report* Oral Presentation Log Book*
Diploma	30 – 50	50 – 70	Written Oral Practical Project* Report* Oral Presentation Log Book*
Bachelor's Degree	40 – 70	30 – 60	Written Oral Practical Report* Final Year Project* Design Project* Oral Presentation Log Book* Field Integration Study

QUALIFICATIONS	CONTINUOUS ASSESSMENT (%)	FINAL ASSESSMENT (%)	OTHER APPROPRIATE FORMS OF ASSESSMENT
Master's Degree by Coursework	50 – 70	30 – 50	Written Project Dissertation* Presentation Laboratory Work Report* Project Simulation*
Master's Degree by Mixed Mode	30 – 50	50 – 70	Written Critique of Paperwork Project Paper* Presentation Dissertation*
Master's Degree by Research	100	-	Critique of Paperwork Presentation Thesis (TWO Examiners)** Viva
Doctoral Degree	100	-	Critique of Paperwork Presentation Thesis (THREE Examiners)*** Viva

Note:

The distribution of continuous and final assessments should be determined by the HEPs to reflect the requirements of learning outcomes.

\*100% continuous assessment

\*\*At least ONE external examiner

\*\*\*At least TWO external examiners

## STUDENT SELECTION

This section of the Programme Standards document concerns the recruitment of students into the individual programme of study. In general, admission policies of the Programme need to comply with the prevailing policies of the Malaysian Ministry of Education (MOE). "There are varying views on the best method of student selection. Whatever the method used, the Higher Education Provider (HEP) must be able to defend its consistency. The number of students to be admitted to the Programme is determined by the capacity of the HEP and the number of qualified applicants. HEP admission and retention policies must not be compromised for the sole purpose of maintaining a desired enrolment. If HEP operates geographically separated campuses or if the Programme is a collaborative one, the selection and assignment of all students must be consistent with national policies" (COPPA, 2008, pp.17).

The selection of candidates for admission to a programme of study in Higher Education Providers (HEPs) is increasingly complex due to the growing number and diversity of qualified candidates and the criteria of programme admission.

Therefore, this policy is created to increase the fair chances and healthy competition for students to achieve academic excellence and personal development. The selection of programmes should be congruent with the academic achievement and curriculum. Applicants must fulfil the general and specific requirements of the programme and the selection criteria.

Among the factors considered in the selection of Sijil Pelajaran Malaysia (SPM), Sijil Tinggi Persekolahan Malaysia (STPM) candidates and its equivalent are:

- the candidates achievement of SPM and STPM;
- the combination of SPM or STPM subjects;
- subject grade relevant to the programme applied;
- special requirements set by the programme offered;
- achievement in extra-curricular activities; and
- achievement in English language.



Note:

For disabled students, HEPs are responsible for informing limitation on job opportunities.

### **CERTIFICATE**

**A pass in SPM** or its equivalent, with at least ONE credit in any subject and a pass in Mathematics or any other subjects related to science / technical / vocational.

OR

**Sijil Kemahiran Malaysia Level 2** and a pass in SPM.

### **DIPLOMA**

**A pass in SPM** or its equivalent, with at least credits in THREE subjects, including Mathematics, English and any ONE subject related to science / technical / vocational;

OR

**A pass in STPM** or its equivalent, with passes in Mathematics, English and any ONE subject related to science / technical / vocational at SPM level;

OR

**A recognised Certificate in Built Environment** or recognised equivalent qualifications, with minimum CGPA of 2.5;

(Candidates with CGPA below 2.5 but above 2.0 must have at least one year of relevant working experience).

OR

**Sijil Kemahiran Malaysia Level 3** with one year of relevant working experience and a pass in SPM with minimum ONE credit.

(HEPs are to offer bridging programme as enhancement if required).

Note:

For International students, Test of English as a Foreign Language (TOEFL) score of 500 or International English Language Testing System (IELTS) score of 5.0 or its equivalent. If a student does not meet this requirement, HEPs must offer English proficiency courses to ensure that the student's proficiency is sufficient to meet the needs of the programme. This is normally conducted through an assessment process.

### **BACHELOR'S DEGREE**

**A pass in STPM** or its equivalent, with a minimum Grade C in any two subjects AND **A pass in SPM** or its equivalent, with at least passes in Mathematics, English and any ONE subject related to science/technical/vocational;

OR

**A recognised Diploma in Building Surveying** or recognised equivalent qualifications, with minimum CGPA of 2.5;

(Candidates with CGPA below 2.5 but above 2.0 must have at least one year of relevant working experience).

OR

**A recognised Diploma in Built Environment** or recognised equivalent qualifications, with minimum CGPA of 2.5;

(Candidates with CGPA below 2.5 but above 2.0 must have at least one year of relevant working experience. HEPs are to determine the initial commencement level of study).

OR

**A pass in recognised Matriculation / Foundation** or recognised equivalent

qualifications, with a minimum CGPA of 2.0.

Note:

For International students, TOEFL score of 500 or IELTS score of 5.0 or its equivalent. If a student does not meet this requirement, HEPs must offer English proficiency courses to ensure that the student's proficiency is sufficient to meet the needs of the programme. This is normally conducted through an assessment process.

#### **MASTER'S DEGREE BY COURSEWORK OR MIXED MODE**

**A recognised Bachelor's Degree in Building Surveying** or recognised equivalent qualifications, with minimum CGPA 2.5;  
(Candidates with CGPA below 2.5 but above 2.0 must have at least a year of relevant working experience).

Note:

For International students, TOEFL score of 500 or IELTS score of 5.0 or its equivalent. If a student does not meet this requirement, HEPs must offer English proficiency courses to ensure that the student's proficiency is sufficient to meet the needs of the programme. This is normally conducted through an assessment process.

#### **MASTER'S DEGREE BY RESEARCH**

**A recognised Bachelor's Degree** or recognised equivalent qualifications, with minimum CGPA of 2.75;

*OR*

Other equivalent qualifications recognised by the **University Senate / University Board of Directors** from time to time.

Note:

For International students, TOEFL score of 500 or IELTS score of 5.0 or its

equivalent. If a student does not meet this requirement, HEPs must offer English proficiency courses to ensure that the student's proficiency is sufficient to meet the needs of the programme. This is normally conducted through an assessment process.

### **DOCTORAL DEGREE**

**A recognised Master's Degree in Building Surveying** or recognised equivalent qualifications;

OR

Other equivalent qualifications recognised by the **University Senate / University Board of Directors** from time to time.

Note:

- For international students, TOEFL score of 500 or IELTS score of 5.0 or equivalent. If a student does not meet this requirement, HEPs must offer English proficiency courses to ensure that the student's proficiency is sufficient to meet the needs of the programme. This is normally conducted through an assessment process.
  
- Candidates registered for Master's Degree by Research may choose to convert their registration to Doctoral Degree subjected to the following:
  - i. competency level and the ability to perform research at Doctoral level; and
  - ii. approval by the University Senate.

## ACADEMIC STAFF

“The quality of the academic staff is one of the most important components in assuring the quality of Higher Education and thus every effort must be made to establish proper and effective recruitment, service, development and appraisal policies that are conducive to staff productivity” (COPPA, 2008, pp.21).

This section describes the benchmarked statements for academic staff intake. In an effort to achieve the HEPs quality status, conditions were set up to meet the Ministry of Education (MOE) requirements. The aim is to produce world class HEPs through centre of excellence which focus on continuous improvement.

The academic staff qualifications are as follows:

### CERTIFICATE

- **A recognised Diploma in Building Surveying** or recognised equivalent qualifications;

OR

**A recognised Certificate in Building Surveying** with FIVE years of relevant working experience or sufficient skills in the relevant field.

(Not to exceed 50% of the total academic staff)

- 30% of the academic staff must have at least TWO years of relevant working experience.
- Overall Academic Staff - Student ratio – 1:25.
- Teaching faculty – At least 60% full-time academic staff.
- Continuous Professional Development (CPD) for full-time academic staff according to their specialisation requires at least 40 hours of relevant training per year.

**DIPLOMA**

- **A recognised Bachelor's Degree in Building Surveying** or its recognised equivalent qualifications;

*OR*

**A recognised Diploma in Building Surveying** with FIVE years of relevant working experience or sufficient skills in the related field.

(Not to exceed 30% of the total academic staff)

- 30% of the academic staff must have at least TWO years of working experience in related industry.
- Overall Academic Staff - Student ratio – 1:20.
- Teaching faculty – At least 60% full-time academic staff.
- Continuous Professional Development (CPD) for full-time academic staff according to their specialisation requires at least 40 hours of relevant training per year.

**BACHELOR'S DEGREE**

- **A recognised Master's Degree in Built Environment** or its recognised equivalent qualifications AND **A recognised Bachelor's Degree in Building Surveying**;

*OR*

**A recognised Master's Degree in the relevant field** or its recognised equivalent qualifications;

(Not to exceed 30% of the total academic staff)

OR

**A recognised Bachelor's Degree in Building Surveying** or its recognised equivalent qualifications, with FIVE years of relevant working experience or sufficient skills in the relevant field.

(Not to exceed 30% of the total academic staff)

- 30% of the academic staff must have at least TWO years of working experience in related industry.
- Overall academic staff - Student ratio – 1:15 or better.
- Teaching faculty – At least 60% full-time academic staff.
- Continuous Professional Development (CPD) for full-time academic staff according to their specialisation requires at least 40 hours of relevant training per year.

#### **MASTER'S DEGREE BY COURSEWORK AND MIXED MODE**

- **A recognised Doctoral Degree in Built Environment** or its recognised equivalent qualifications;  
(60% of the academic staff involved in programme delivery).

OR

**A recognised Master's Degree in Building Surveying** with FIVE years of working experience.

- The main project supervisor must be a full-time academic staff of the HEP.
- Overall academic staff-Student ratio – 1:15 or better.

- Teaching faculty – At least 50% full-time academic staff.
- Continuous Professional Development (CPD) for full-time academic staff according to their specialisation requires at least 40 hours of relevant training per year.

#### **MASTER'S DEGREE BY RESEARCH**

- **A recognised Doctoral Degree in Building Surveying** or its recognised equivalent qualifications;

*OR*

**A recognised Master's Degree in the relevant field** or its recognised equivalent qualifications, with FIVE years of relevant research experience.

- The main project supervisor must be a full-time academic staff of the HEP.
- Continuous Professional Development (CPD) for full-time academic staff according to their specialisation requires at least 40 hours of relevant training per year.

#### **DOCTORAL DEGREE**

- **A recognised Doctoral Degree in Built Environment** or its recognised equivalent qualifications;

*OR*

**A recognised Master's Degree in the relevant field** or its recognised equivalent qualifications, with TEN years of relevant research experience. The academic staff can only be appointed as co-supervisor to the main supervisor with Doctoral Degree qualification.



- The main project supervisor must be a full-time academic staff of the HEP.
- Continuous Professional Development (CPD) for full-time academic staff according to their specialisation requires at least 40 hours of relevant training per year.

## **EDUCATIONAL RESOURCES**

“Adequate educational resources are necessary to support the teaching learning activities of the programme. These resources include finance, expertise, physical infrastructure, information and communication technology, and research facilities. The physical facilities of a programme are largely guided by the needs of the specific field of study” (COPPA, 2008, pp.23).

HEPs must comply with the Occupational Safety and Health Act (OSHA) 1994 (Act 514) and current legal requirements (e.g. Act 133 and Uniform Building By-Law (UBBL, 1984), assign adequate space and resources according to the number of students.

HEPs are required to provide sufficient resources to support teaching and learning in various fields and qualification levels as stated below:

### **CERTIFICATE and DIPLOMA**

The following facilities are required:

- Lecture Room (with sufficient audio visual facilities)
- Computer Laboratory
- Laboratory / Workshop / Studio (accordance with requirements)
- Seminar Room
- Library Facilities (including on-line resources)
  - o Relevant Book and Journal
  - o Manual (e.g. Equipment and Material)
  - o Industrial Standards (e.g. Malaysian Standards and British Standard European)
  - o Industrial Publication (e.g. RISM and RICS Journal)
  - o Code of Practice (e.g. CP BS101)
  - o Act and related Law (e.g. Street and Drainage Act 1974; Uniform Building By-Law 1984)
  - o Professionalism Scope for Conservation Works (e.g. International Council on Monument and Sites (ICOMOS) Guidelines For Education & Training, (Colombo 1993))

- Internet Access
- Sufficient access to relevant software and hardware according to the needs of the programme

### **BACHELOR'S, MASTER'S and DOCTORAL DEGREE**

The following **GENERAL** facilities are required:

- Lecture Room (with sufficient audio visual facilities)
- Laboratory / Workshop / Studio (accordance with requirements)  
Example:
  - Computer Laboratory
  - Specialised Lab (e.g. Testing Lab)
  - Workshop (e.g. Building Workshop)
- Tutorial / Discussion Room
- Resource Centre
- Library Facilities (including on-line resources)
  - Relevant Book and Journal
  - Manual
  - Industrial Standards (e.g. Malaysian Standards and British Standard European)
  - Industrial Publication (e.g. RISM and RICS Journals)
  - Codes of Practice (e.g. CP BS101)
  - Act and related Law (e.g. Street and Drainage Act 1974; Uniform Building By-Law 1984)
  - Professionalism Scope of Conservation Works (example: International Council on Monument and Sites (ICOMOS) Guidelines For Education & Training, para 5 (Colombo 1993))
- Internet Access
- Sufficient access to relevant software and hardware according to the needs of the programme
- Experimental laboratory must be specific to the technical fields under the programme

The programme Learning Outcomes may depend on the student **INDIVIDUAL** access to practise or fulfill actual man-hour on particular equipment.

HEPs must provide access to related laboratory facilities on their premises or through outsourced facilities. Evidences of these are required.

The following **SPECIFIC** facilities are required:

#### **BACHELOR'S DEGREE**

- General or specialised component / equipment similar to industrial use.  
(1 set of equipment should be allocated to a group of not more than 5 students for a practical session)

#### **MASTER'S and DOCTORAL DEGREE**

- Specialised laboratory for postgraduate research related to the programme;  
and
- An individual workstation will be allocated for Master's and Doctoral Degrees by **Research**.

## PROGRAMME MONITORING AND REVIEW

“Quality enhancement calls for programmes to be regularly monitored, reviewed and evaluated. This includes the monitoring, reviewing and evaluating of institutional structures and processes (administrative structure, leadership and governance, planning and review mechanisms), curriculum components (syllabi, teaching methodologies, learning outcomes) as well as student progress, employability and performance.

Feedback from multiple sources - students, alumni, academic staff, employers, professional bodies, parents - assist in enhancing the quality of the programme. Feedback can also be obtained from an analysis of student performance and from longitudinal studies.

Measures of student performance would include the average study duration, assessment scores, passing rate at examinations, success and dropout rates, students’ and alumni’s report about their learning experiences, as well as time spent by students in areas of special interest. Evaluation of student performance in examinations can reveal very useful information. If student selection has been correctly done, a high failure rate in a programme indicates something amiss in the curriculum content, teaching-learning activities or assessment system. The programme committees need to monitor the performance rate in each course and investigate if the rate is too high or too low.

Student feedback, for example, through questionnaires and representation in programme committees, is useful for identifying specific problems and for continual improvement of the programme.

One method to evaluate programme effectiveness is a longitudinal study of the graduates. The department should have mechanisms for monitoring the performance of its graduates and for obtaining the perceptions of society and employers on the strengths and weaknesses of the graduates and to respond appropriately” (COPPA, 2008, pp.27).

## **LEADERSHIP, GOVERNANCE AND ADMINISTRATION**

“There are many ways of administering an educational institution and the methods of management differ between Higher Education Providers (HEPs). Nevertheless, governance that reflects the leadership of an academic organisation must emphasise excellence and scholarship. At the departmental level, it is crucial that the leadership provides clear guidelines and direction, builds relationships amongst the different constituents based on collegiality and transparency, manages finances and other resources with accountability, forges partnership with significant stakeholders in educational delivery, research and consultancy and dedicates itself to academic and scholarly endeavours. Whilst formalised arrangements can protect these relationships, they are best developed by a culture of reciprocity, mutuality and open communication” (COPPA, 2008, pp.28).

This document will not raise issues pertaining to governance and administration as these are at the institutional rather than at the programme level. The leadership issue of an academic programme focuses on the needs of experts in a particular field of study that monitors and revamps the curriculum in line with the development in the particular field.

HEPs need to differentiate the academic and administrative leadership where the staff are likely qualified but not in the area of programme specialisation.

Academic leadership in HEPs must meet the following qualifications and experiences:

### **CERTIFICATE**

**Diploma of Building Surveying** and THREE years relevant experience;

OR

**Related Diploma** and a member of relevant professional bodies in Building Surveying.

**DIPLOMA**

**Bachelor's Degree of Building Surveying** and THREE years relevant experience;

OR

**Related Bachelor's Degree** and a member of relevant professional bodies in Building Surveying.

**BACHELOR'S DEGREE**

**Master's Degree in Building Surveying** and THREE years relevant experience;

OR

**Related Master's Degree** and a member of relevant professional bodies in Building Surveying.

**31****MASTER'S DEGREE**

**Doctoral Degree** in the relevant field;

OR

**Master's Degree in Built Environment** and FIVE years relevant experience.

**DOCTORAL DEGREE**

**Related Doctoral Degree** and FIVE years relevant experience.

## CONTINUAL QUALITY IMPROVEMENT

“Increasingly, society demands greater accountability from HEPs. Needs are constantly changing because of the advancements in science and technology, and the explosive growth in global knowledge, which are rapidly and widely disseminated. In facing these challenges, HEPs have little choice but to become dynamic learning organisations that need to continually and systematically review and monitor the various issues so as to meet the demands of the constantly changing environment” (COPPA, 2008, pp.30).

HEPs are expected to provide evidence of their ability to keep up with changes in the field and their stakeholders’ needs. This can be demonstrated but not limited to:

- 1) review of core courses every two years to ensure the course objectives are achieved;
- 2) curriculum to be reviewed at least once every two - years for programmes at Certificate and Master’s Degree levels; three years for Diploma and four years for Bachelor’s Degree level;
- 3) quality evaluation process by external examiners (local and international) shall be conducted minimum once for each cohort;
- 4) quality evaluation process by industry advisor will be conducted minimum once for each cohort;
- 5) equipment calibration at regular interval;
- 6) involvement with the construction industry and development control agencies;
- 7) continuous review of practical and industrial attachment record;
- 8) dialogue with stakeholders;
- 9) academic staff participation in conferences, seminars, workshops and related courses;
- 10) presentations by invited speakers (experts) either local or international; and
- 11) organisation of conferences, seminars and workshops.



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5. Royal Institution of Surveyors Malaysia (2005). *Manual Akreditasi Program Ukur Bangunan*. Malaysia.

**PANEL MEMBERS**

NO.	NAME	ORGANISATION
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2.	Ahmad Ezanee bin Hashim (Assoc. Prof. Dr. Sr)	Universiti Teknologi MARA
3.	Azlan Shah bin Ali (Assoc. Prof. Dr. Sr) – Chairperson	Universiti Malaya
4.	Christina Edmund Rambayan (Sr)	Jabatan Kerja Raya (JKR) Negeri Selangor
5.	Husin bin Mohd Dini (Prof. Dr. Sr)	Twintech International University College Of Technology
6.	Mohd Amin bin Mohd Din (Brig. Jeneral Sr)	Royal Institution of Surveyors Malaysia (RISM)
7.	Mohd Zahry bin Shaikh Abdul Rahman (Sr)	Universiti Sains Malaysia
8.	Norizan binti Sulaiman (Sr)	Dewan Bandaraya Kuala Lumpur (DBKL)

## PROGRAMME NOMENCLATURES

### CERTIFICATE (MQF Level 3)

- Certificate in Building Surveying
- Certificate in Building Maintenance
- Certificate in Building Control
- Certificate in Building Conservation

### DIPLOMA (MQF Level 4)

- Diploma in Building Surveying
- Diploma in Building Maintenance
- Diploma in Building Control
- Diploma in Building Conservation

### BACHELOR'S DEGREE (MQF Level 6)

- Bachelor of Building Surveying
- Bachelor of Science (Building Surveying)
- Bachelor of Science (Housing, Building and Planning) (Building Surveying)

### MASTER'S DEGREE (MQF Level 7)

- Master's of Science in Building Surveying
- Master's of Science in Facility Management
- Master's of Science in Facility and Maintenance Management
- Master's of Science in Building Maintenance
- Master's of Science in Building Control
- Master's of Science in Building Conservation
- Master's of Science in Heritage and Conservation

### DOCTORAL DEGREE (MQF Level 8)

- Doctoral Degree
- Doctoral Degree in Built Environment
- Doctoral Degree of Building Surveying

**BODY OF KNOWLEDGE****COURSES IN BUILDING SURVEYING PROGRAMME****A. COMMON CORE (25-35% of the programme content)**

The common core courses cover all or a part of the following:

- i. construction material
- ii. environmental physic
- iii. professional practice
- iv. construction engineering
- v. mathematics
- vi. project and facility management
- vii. building services
- viii. contract and procurement
- ix. building design
- x. science
- xi. building technology

**B. DISCIPLINE CORE (40-60% of the programme content)**

The discipline core courses cover the following fields:

- i. Building Control and Space Management
- ii. Risk Control and Building Performance
- iii. Building Maintenance and Conservation

Note:

- Each discipline core must cover at least 20% of total discipline core courses.
- Each discipline core course offered must be of minimum 3 credits.

**Examples of common core courses** for Building Surveying programme are as follows:

**PROPOSED COURSE TITLE**

1. Data Analysis
2. Computer Application
3. Building Economic
4. Elective course
5. Environmental Physic
6. Construction Quantification
7. Specification, Cost and Contract Procedures
8. Industrial Training
9. Legal Studies
10. Asset Management
11. Building Facilities Management
12. Safety Management
13. Integrated Project Management
14. Construction Management
15. Building Services I
16. Building Services II
17. Structure I
18. Structure II
19. Construction Technology I
20. Construction Technology II
21. Construction Technology III

**Examples of discipline core courses** of Building Surveying programme are as follows:

PROPOSED COURSE TITLE	FIELD
1. Building Fire Audit 2. Building Defect and Diagnosis 3. Building Measurement and Analysis	Risk Control and Building Performance
4. Space Management 5. Building Surveying Practice I: Design 6. Building Surveying Practice II: Building Control 7. Building Law	Building Control and Space Management
8. Building Maintenance 9. Maintenance Management 10. Maintenance Technique 11. Building Surveying Practice III: Project Management 12. Building Surveying Practice IV: Conservation	Building Maintenance and Conservation
13. Building Surveying Research Project	Risk Control and Building Performance / Building Maintenance and Conservation / Building Control and Space Management

The main content of the discipline core courses are as follows:

**i. Building Control and Space Management**

- o Building and Common Property Act 2007 (Act 663)
- o Strata Titles Act 1985 (Act 318)
- o Street, Drainage and Building Act 1974 (Act 133)
- o Local Government Act (Act 171)
- o Occupational Health and Safety Act 1994 (Act 514)
- o Town and Country Planning Act 1976 (Act 172)
- o National Heritage Act 2005 (Act 645)
- o Uniform Building By Law 1984
- o Space Planning Guidelines (Economic Planning Unit)
- o Hands-on building plan checking
- o Hands-on space checking
- o Procedures for obtaining a development order
- o Authorisation procedure for construction
- o Procedures acceptance of a building
- o Expert witness

**ii. Risk Control and Building Performance**

- o Building fire audit
- o Methods of building inspections
- o Building defects
- o Code of Practice for Building Surveyor
- o Building inspection report
- o Building pathology
- o Sustainable building
- o Building performance evaluation
- o Building demolition procedures

### iii. **Building Maintenance and Conservation**

- o Types of maintenance
- o Building life cycle
- o Measured drawing
- o Asset and facilities management
- o Project management for refurbishment
- o Building maintenance budget
- o Computer aided in maintenance
- o Planning in building maintenance
- o Building maintenance report
- o Building maintenance specification and procurement
- o Technical and conservation procedures
- o Maintenance technology





# STANDARD PROGRAM: UKUR BANGUNAN

## PROGRAMME STANDARDS: BUILDING SURVEYING

Standard Program ini disediakan untuk membantu pembangunan program pendidikan dalam bidang ukur bangunan dan menjaga kualiti graduan. Semoga dokumen ini dapat membantu pemberi pendidikan tinggi dalam menyediakan pendidikan yang berkualiti dalam ukur bangunan dan bidang yang berkaitan.

This set of Programme Standards has been prepared to enhance the development of educational programmes in building surveying and to maintain the quality of graduates. It is hoped that with this document, higher education providers will be able to provide quality education in building surveying and its related fields.

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Bahagian Standard

Agensi Kelayakan Malaysia

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## PRAKATA

Bidang **Ukur Bangunan** telah wujud di negara ini lebih dari 40 tahun. Walau bagaimanapun, perkembangan profesyen ukur bangunan agak perlahan sehinggalah program ukur bangunan ditawarkan oleh beberapa buah universiti di Malaysia dalam tahun 1994. Penawaran program ukur bangunan ini secara tidak langsung telah menyumbang kepada perkembangan yang positif dalam pertambahan graduan ukur bangunan di industri pembinaan. Pemintaan yang tinggi terhadap graduan ukur bangunan selaras dengan perkembangan profesyen ini di negara maju lain seperti United Kingdom, New Zealand, Australia, Hong Kong dan Singapura. Kepakaran juruukur bangunan dalam bidang kawalan dan prestasi bangunan dijangka dapat menyumbang kepada pembinaan bangunan yang berkualiti dan lestari.

Input daripada perkhidmatan juruukur bangunan diperlukan oleh pihak awam dan swasta dalam menambahbaik taraf hidup. Peningkatan dalam saiz keluarga telah mendorong ramai pemilik rumah untuk menaik taraf kediaman. Secara tidak langsung, ini meningkatkan permintaan terhadap graduan ukur bangunan. Perkembangan pesat ukur bangunan memerlukan satu garis panduan yang standard bagi Pemberi Pendidikan Tinggi (PPT) dalam mereka bentuk kurikulum yang komprehensif dan seterusnya melahirkan graduan ukur bangunan yang kompeten.

Dalam menentukan kurikulum bidang ukur bangunan, sekumpulan panel pakar dalam bidang tersebut telah dilantik bagi membangunkan standard program yang dapat diguna pakai oleh PPT dalam menawarkan program ukur bangunan. Standard Program Ukur Bangunan meliputi tahap kelayakan akademik daripada sijil, diploma, ijazah sarjana muda, ijazah sarjana dan ijazah kedoktoran. Dokumen standard ini menekankan tiga skop kerja bagi mencerminkan kepakaran juruukur bangunan seterusnya memenuhi keperluan terkini industri pembinaan. Skop tersebut adalah kawalan bangunan dan pengurusan ruang; penyenggaraan dan konservasi bangunan; serta pengurusan risiko dan prestasi bangunan. Pihak Agensi Kelayakan Malaysia (MQA) mengambil inisiatif membangunkan standard program ini bagi melihat keseragaman dan memenuhi keperluan graduan ukur bangunan yang berpengetahuan dan mahir.

Usaha ini bermula dari Januari 2012 dan mendapat kelulusan Majlis MQA pada November 2012. Dalam pembangunan standard program ini, beberapa siri mesyuarat, bengkel serta pembentangan telah diadakan bagi mendapatkan maklum balas daripada pihak berkepentingan berkaitan untuk menambah baik dokumen.

Pihak MQA ingin mengucapkan ribuan terima kasih dan penghargaan kepada barisan panel (**Lampiran 1**) atas komitmen, buah fikiran serta usaha yang ditunjukkan dalam menyiapkan dokumen standard program ini dalam masa yang ditetapkan. Adalah menjadi harapan agar standard program ini dapat membantu dalam penawaran program Ukur Bangunan di Malaysia.

Sekian, terima kasih.

**Dato' Dr. Syed Ahmad Hussein**

Ketua Pegawai Eksekutif

Agensi Kelayakan Malaysia (MQA)

2013



## GLOSARI

- 1) Hasil Pembelajaran  
Pernyataan tentang apa yang pelajar perlu tahu, faham dan boleh lakukan apabila tamat suatu tempoh pengajian.
- 2) Jam Pembelajaran Pelajar  
Masa yang diperuntukkan oleh pelajar atas aktiviti pembelajaran-pengajaran yang telah ditetapkan kredit di mana ia meliputi pembelajaran berpandu, pembelajaran sendiri dan penilaian.
- 3) Kredit  
Ukuran kuantitatif yang melambangkan masa atau beban pembelajaran untuk mencapai hasil pembelajaran tertentu.
- 4) Latihan Industri / Sangkutan Industri / Latihan Amali  
Satu jangkamasa yang ditetapkan dalam satu program yang memerlukan pelajar ditempatkan dalam suatu industri bagi membolehkannya mendapat pengalaman industri dan juga untuk mengukuhkan kemahiran insaniah.
- 5) Matlamat Program  
Satu pernyataan menyeluruh tentang tujuan, falsafah dan rasional dalam penawaran sesuatu program.
- 6) Teras Disiplin  
Kursus spesifik bagi disiplin Ukur Bangunan yang telah dipersetujui dan digariskan oleh RISM.
- 7) Teras Umum  
Kursus spesifik yang ditawarkan oleh program Alam Bina.
- 8) Viva  
Peperiksaan lisan yang menilai kemahiran berkomunikasi dan pengetahuan ilmiah pelajar tentang fakta berkaitan serta penyelidikan yang telah dijalankan.

## SINGKATAN

COPIA	Kod Amalan Audit Institusi
COPPA	Kod Amalan Akreditasi Program
CPD	Pembangunan Profesional Berterusan
GGP	Garis Panduan Amalan Baik
IELTS	Sistem Pengujian Bahasa Inggeris Antarabangsa
IPT	Institut Pengajian Tinggi
KKM	Kerangka Kelayakan Malaysia
KPM	Kementerian Pendidikan Malaysia
LPU	Lembaga Pengurusan Universiti
MQA	Agensi Kelayakan Malaysia
MS	Standard Malaysia
NIOSH	Institut Keselamatan dan Kesihatan Pekerjaan Kebangsaan
OBE	Pendidikan Berasaskan Hasil
OSHA	Akta Keselamatan dan Kesihatan Pekerjaan
PBL	Pembelajaran Berasaskan Masalah
PNGK	Purata Nilai Gred Kumulatif
PPT	Pemberi Pendidikan Tinggi
RICS	Royal Institution of Chartered Surveyors UK
RISM	Pertubuhan Juruukur DiRaja Malaysia
SIRIM	Institut Piawaian dan Penyelidikan Industri Malaysia
SLT	Jam Pembelajaran Pelajar
SP	Standard Program
SPM	Sijil Pelajaran Malaysia
STPM	Sijil Tinggi Persekolahan Malaysia
TOEFL	Ujian Bahasa Inggeris sebagai Bahasa Asing / Luar
UUKBS	Undang-undang Kecil Bangunan Seragam



## PENGENALAN

**Ukur Bangunan** adalah profesion yang berkembang pesat di Malaysia dan merupakan profesion yang menyediakan perkhidmatan dalam sektor pembinaan dan bangunan. Skop kerja bermula daripada peringkat awal perancangan projek, pembangunan, pengurusan penyenggaraan, perobohan bangunan, pembangunan semula serta pemuliharaan bangunan bersejarah. Untuk menangani kekurangan Juruukur Bangunan profesional di negara ini, program Ukur Bangunan di peringkat Ijazah pertama telah diperkenalkan di beberapa buah universiti mulai tahun 1994. Program yang ditawarkan ini telah diiktiraf oleh badan-badan profesional tempatan dan luar negara iaitu Pertubuhan Juruukur DiRaja Malaysia (RISM) mulai 1996, *Association of Building Engineers* (ABE), United Kingdom mulai 2002 dan *Royal Institution of Chartered Surveyors* (RICS), United Kingdom mulai 2006. Dengan perkembangan dan permintaan yang pesat ini, maka adalah penting satu standard program dibangunkan untuk diguna pakai oleh Pemberi Pendidikan Tinggi (PPT) bagi semua peringkat kelayakan program Ukur Bangunan.

### 1

Dalam menyediakan dokumen ini, beberapa dokumen utama dirujuk untuk memastikan ia setaraf dengan amalan di luar negara serta diselaraskan dengan keperluan badan profesional berkaitan. Antaranya adalah:

1. Kerangka Kelayakan Malaysia (MQF)
2. Kod Amalan Akreditasi Program (COPPA)
3. Kod Amalan Audit Institusi (COPIA)
4. Garis Panduan Amalan Baik (GGP) yang relevan
5. Garis Panduan Akreditasi *Royal Institution of Chartered Surveyors* (RICS), UK
6. Panduan Standard Program Alam Bina, Kementerian Pendidikan Malaysia

Di Malaysia, seorang Juruukur Bangunan profesional adalah seorang yang berkeelayakan melalui peperiksaan dan pengalaman serta ahli penuh RISM. Peranan dan tanggungjawab utama seorang Juruukur Bangunan di Malaysia sebagaimana yang ditetapkan oleh RISM meliputi bidang berikut:

- Kawalan Bangunan dan Pengurusan Ruang
- Kawalan Risiko dan Prestasi Bangunan

- Penyenggaraan dan Pemeliharaan Bangunan

Kerjaya sebagai seorang Juruukur Bangunan profesional merangkumi setiap aspek kitaran hayat bangunan daripada peringkat awal perancangan projek, pembangunan, pengurusan penyenggaraan, perobohan bangunan, pembangunan semula serta pemeliharaan bangunan bersejarah. Seorang Juruukur Bangunan yang kompeten mampu mengurus, mengatur, memantau, menilai dan menyelaras kerja pembinaan dan juga bertindak sebagai penghubung utama kepada perkhidmatan profesional lain dalam industri pembinaan bangunan.

Ukur Bangunan adalah bidang yang menumpu kepada kawalan dan prestasi bangunan untuk menghasilkan bangunan dan infrastruktur yang selamat, mesra dan disenggara dengan baik. Bidang ini juga meliputi amalan pengurusan aset menyeluruh, yang bermula pada peringkat perancangan sehingga pelupusan aset. Kawalan dan prestasi bangunan ini meliputi kerja kawalan bangunan pada peringkat sebelum, semasa dan selepas pembinaan. Ia juga meliputi fasa prestasi bangunan dalam jangka hayat operasi dan pemeliharaan bangunan.

Program Ukur Bangunan di Malaysia dikategorikan kepada beberapa tahap kelayakan iaitu, Sijil, Diploma, Ijazah Sarjana Muda, Ijazah Sarjana dan Ijazah Kedoktoran. Dokumen Standard Program ini menggariskan keperluan minimum yang mesti dipatuhi oleh PPT dalam reka bentuk kurikulum, kemasukan pelajar, pengambilan staf akademik, penyediaan infrastruktur dan sumber pembelajaran yang sesuai, di samping menyediakan sistem pengurusan kualiti yang mantap. Penekanan juga diberikan kepada pendekatan Pendidikan Berasaskan Hasil (OBE) dalam melatih pelajar pada setiap peringkat pengajian. Dokumen Standard Program ini tidak menetapkan sebarang penamaan tetapi menyenaraikan penamaan mengikut amalan baik tempatan dan antarabangsa seperti dalam **Lampiran 2**.

Graduan bidang ini boleh bekerja sama ada dalam sektor awam atau swasta. Dalam sektor awam, mereka ditugaskan untuk mengawal reka bentuk, melaksanakan dan menyelia sistem dan prosedur kerja berkaitan kawalan bangunan dan pengurusan aset menyeluruh atau terlibat dalam operasi dan penyenggaraan infrastruktur. Dalam sektor swasta mereka boleh bekerja dengan pihak perunding, kontraktor, pemilik dan pemaju.

## MATLAMAT PROGRAM

“Matlamat sesuatu program menggambarkan apa yang perlu dicapai oleh pelajar. Adalah penting matlamat ini disebar luas dengan jelas kepada pelajar dan pihak berkepentingan yang lain” (COPPA, 2010, ms.16).

Matlamat yang jelas serta bersesuaian merupakan elemen yang penting dalam reka bentuk program, jaminan kualiti dan tumpuan terhadap pengalaman pembelajaran pelajar. Formulasi matlamat yang baik boleh memberikan pemahaman yang jelas berkenaan apa yang ingin dicapai oleh sesuatu program.

Objektif program adalah tujuan spesifik, boleh dicapai, boleh diukur, konsisten dengan hasrat PPT dan memenuhi keperluan pihak berkepentingan. Ia juga menekankan pencapaian graduan dalam pembangunan kerjaya dan profesional selepas bergraduat.

Senarai matlamat bagi program Ukur Bangunan adalah seperti di bawah.

### SIJIL (Kerangka Kelayakan Malaysia, KKM Tahap 3)

Menyediakan graduan yang mempunyai **pengetahuan asas ukur bangunan** dan **kemahiran amali** serta berkebolehan berkomunikasi dan bekerja sebagai satu pasukan dalam membantu aktiviti operasi industri binaan di samping meneruskan pembelajaran sepanjang hayat.

### DIPLOMA (KKM Tahap 4)

Menyediakan graduan yang mempunyai **pengetahuan** dan **kemahiran amali**, berupaya mengenal pasti, berkomunikasi, serta menyelesaikan masalah dengan menggunakan **pemikiran kritis** dalam menyokong operasi dan pengurusan industri binaan di samping meneruskan pembelajaran sepanjang hayat.

### IJAZAH SARJANA MUDA (KKM Tahap 6)

Menyediakan graduan **profesional** yang mempunyai **pengetahuan** dan **kemahiran amali** untuk melengkapkan mereka dengan **sifat kepimpinan** serta membolehkan mereka berkomunikasi secara **saintifik** dan **kreatif** bagi merancang, mengenal pasti

dan menyelesaikan masalah operasi dan pengurusan industri binaan di samping meneruskan pembelajaran sepanjang hayat.

#### **IJAZAH SARJANA** (KKM Tahap 7)

Menyediakan graduan yang mempunyai **pengetahuan lanjutan** untuk melengkapkan mereka dengan sifat kepimpinan, kebolehan berkomunikasi secara saintifik dan kreatif dalam merancang, mengenal pasti dan menyelesaikan masalah operasi yang **kompleks** dan pengurusan industri binaan di samping meneruskan pembelajaran sepanjang hayat.

Nota:

Terdapat tiga kaedah penawaran program Ukur Bangunan pada tahap Ijazah Sarjana iaitu secara kerja kursus, mod campuran dan penyelidikan. Ia menyediakan graduan yang mempunyai pengetahuan lanjutan dan mendalam, mampu menjalankan penyelidikan serta dapat menyelesaikan masalah secara berkesan dalam bidang **Alam Bina**.

#### **IJAZAH KEDOKTORAN** (KKM Tahap 8)

Menyediakan graduan yang mempunyai **pengetahuan mendalam** dan **kesarjanaan** dengan sifat kepimpinan, kebolehan berkomunikasi secara saintifik dan kreatif dalam merancang, mengenal pasti dan menyelesaikan masalah, menjalankan **penyelidikan terkini** serta memberi sumbangan kepada kemajuan pengetahuan, budaya, etika dan profesional di samping meneruskan pembelajaran sepanjang hayat.

## HASIL PEMBELAJARAN

“Kualiti program akhirnya akan ditentukan oleh keupayaan pelajar melaksanakan peranan dan tanggungjawab yang diharapkan dalam masyarakat. Hal ini memerlukan satu pernyataan jelas tentang hasil pembelajaran yang diharap dicapai oleh pelajar tersebut” (COPPA, 2008, ms.15).

“Hasil pembelajaran secara kumulatif harus mencerminkan lapan domain hasil pembelajaran yang penting bagi Malaysia” (MQF, 2007, Perenggan 15, ms. 4).

### SIJIL

Pada akhir program, graduan berupaya:

- i. menunjukkan penguasaan pengetahuan dan kemahiran asas dalam bidang pengkhususan;
- ii. membantu melaksanakan khidmat sokongan dalam bidang pengkhususan;
- iii. mempamerkan kemahiran berkomunikasi dan kerja berpasukan;
- iv. membantu memberi maklum balas kawalan reka bentuk dan sistem perkhidmatan bangunan;
- v. mempamerkan kesedaran dan tanggungjawab terhadap isu berkaitan kemasyarakatan, kesihatan dan keselamatan, etika dan perundangan;
- vi. mempamerkan kesedaran terhadap keusahawanan dan pembangunan lestari; dan
- vii. mempamerkan kesediaan pembangunan kerjaya dan pembelajaran sepanjang hayat.

### DIPLOMA

Pada akhir program, graduan berupaya:

- i. menunjukkan penguasaan pengetahuan, kemahiran dan kecenderungan yang bersesuaian terhadap prosedur Ukur Bangunan;
- ii. melaksanakan khidmat sokongan dalam bidang pengkhususan;
- iii. berkomunikasi secara berkesan dengan komuniti Alam Bina dan kerja berpasukan;
- iv. memberi maklum balas kawalan reka bentuk dan sistem perkhidmatan bangunan;

- v. membantu menjalankan kajian dalam penyelesaian masalah prestasi bangunan;
- vi. menggunakan teknik, sumber dan peralatan ukur bangunan yang sesuai;
- vii. menunjukkan kesedaran dan tanggungjawab terhadap isu berkaitan kemasyarakatan, kesihatan, keselamatan, etika dan perundangan;
- viii. menunjukkan kesedaran terhadap keusahawanan dan pembangunan lestari; dan
- ix. menunjukkan kesediaan pembangunan kerjaya dan pembelajaran sepanjang hayat.

### **IJAZAH SARJANA MUDA**

Pada akhir program, graduan berupaya:

- i. mengaplikasi penguasaan pengetahuan, kemahiran dan kecenderungan yang bersesuaian terhadap prosedur Ukur Bangunan;
- ii. menyelaras khidmat sokongan dalam bidang pengkhususan;
- iii. menunjukkan kemahiran berkomunikasi dengan komuniti Alam Bina dan kerja berpasukan;
- iv. mencadangkan penyelesaian masalah kawalan dan prestasi bangunan;
- v. merancang dan melaksanakan kajian terhadap masalah Ukur Bangunan;
- vi. memilih dan menggunakan teknik, sumber, dan peralatan ukur bangunan yang sesuai;
- vii. mengamalkan kesedaran dan tanggungjawab terhadap isu berkaitan kemasyarakatan, kesihatan, keselamatan, etika dan perundangan;
- viii. memupuk kesedaran terhadap keusahawanan dan pembangunan lestari; dan
- ix. memupuk kesediaan pembangunan kerjaya dan pembelajaran sepanjang hayat.

### **IJAZAH SARJANA**

Pada akhir program, graduan berupaya:

- i. mensintesis pengetahuan, kemahiran dan kecenderungan yang bersesuaian terhadap prosedur Ukur Bangunan;

- ii. mengintegrasikan maklumat dan pengetahuan tentang prinsip teori dan kaedah saintifik untuk penyelesaian masalah;
- iii. menunjukkan kemahiran berkomunikasi dengan komuniti Alam Bina dan kerja berpasukan;
- iv. mengusul projek dalam konteks kawalan dan prestasi bangunan;
- v. menyelia penyelidikan dan menjalankan penyelidikan di bawah seliaan;
- vi. membangun dan mengaplikasikan teknik, sumber, dan peralatan ukur bangunan yang sesuai;
- vii. memupuk kesedaran dan tanggungjawab terhadap isu berkaitan masyarakat, kesihatan, keselamatan, etika dan perundangan;
- viii. memupuk kesedaran terhadap keusahawanan dan pembangunan lestari; dan
- ix. memupuk kesediaan pembangunan kerjaya dan profesional serta pembelajaran sepanjang hayat.

### **IJAZAH KEDOKTORAN**

Pada akhir program, graduan berupaya:

- i. menyumbang pengetahuan dan kemahiran yang kompeten dalam menjalankan penyelidikan dalam bidang Alam Bina;
- ii. menjana maklumat dan pengetahuan tentang prinsip teori dengan kaedah saintifik untuk penyelesaian masalah;
- iii. menunjukkan kemahiran berkomunikasi dengan komuniti Alam Bina dan masyarakat serta kerja berpasukan;
- iv. membentang dan menyebarkan penemuan ilmu asli hasil penyelidikan kepada pengamal, penyelidik dan masyarakat;
- v. menyelia penyelidikan dan menjalankan penyelidikan dengan seliaan minimum;
- vi. membangun dan mengaplikasikan teknik, sumber dan peralatan ukur bangunan yang sesuai;
- vii. menghayati kesedaran dan tanggungjawab terhadap isu berkaitan masyarakat, kesihatan, keselamatan, etika dan perundangan;
- viii. mengetuai penyelidikan secara profesional dan beretika; dan
- ix. menjana kesediaan pembangunan kerjaya dan profesional serta pembelajaran sepanjang hayat.

## REKA BENTUK DAN PENYAMPAIAN KURIKULUM

“Istilah ‘reka bentuk dan penyampaian kurikulum’ digunakan secara bertukar ganti dengan istilah ‘reka bentuk dan penyampaian program’. ‘Program’ bermaksud susunan modul yang distruktur untuk suatu tempoh tertentu dan peringkat pembelajaran, bertujuan mencapai hasil pembelajaran yang telah ditentukan dan yang lazimnya menjurus kepada penganugerahan suatu kelayakan” (COPPA, 2010, ms.18).

Reka bentuk dan penyampaian kurikulum bertujuan bagi memberi panduan dari segi jumlah jam kredit bagi program pada semua peringkat kelayakan; Sijil, Diploma, Ijazah Sarjana Muda, Sarjana dan Kedoktoran. Panduan ini dibuat selaras dengan keperluan badan profesional tempatan dan antarabangsa (RISM, RICS dan ABE). Ini bertujuan supaya program yang ditawarkan oleh PPT dapat menghasilkan graduan dalam bidang Ukur Bangunan yang profesional dan beretika yang dapat berfungsi secara efektif sebagai ahli dalam industri binaan dan mampu menghadapi cabaran global.

Bagi tujuan dokumen Standard Program ini, rujukan dibuat kepada Kod Amalan Akreditasi Program (COPPA), Bidang 2: Reka Bentuk dan Penyampaian Kurikulum. Kaedah penyampaian yang dicadangkan hendaklah dapat memberi kesan yang dikehendaki kepada pelajar di mana ianya mesti jelas dan menunjukkan peningkatan pencapaian hasil pembelajaran sesuatu kursus.

Kaedah penyampaian perlu diselaraskan dengan peningkatan tahap semester dan peringkat pengajian. Antara kaedah penyampaian yang dicadangkan adalah seperti berikut:

- i. Kuliah
- ii. Tutorial
- iii. Amali
- iv. Studio
- v. Bengkel
- vi. Lawatan Tapak (memupuk “*Learning by Discovery*”)
- vii. Latihan Industri
- viii. Kerja Lapangan



PPT haruslah memastikan setiap kaedah penyampaian yang dicadangkan dapat mencapai hasil pembelajaran yang ditetapkan. Penilaian terhadap kaedah penyampaian dilakukan ke atas setiap kursus yang dijalankan supaya kaedah penyampaian yang digunakan berkesan dan mencapai hasil pembelajaran.

Bahagian ini mengandungi pernyataan tanda aras berkenaan struktur dan penyampaian program bagi bidang Ukur Bangunan. Jadual 1 hingga 7 menunjukkan tanda aras untuk semua tahap kelayakan termasuk keperluan untuk pelbagai modul (contoh: Umum dan Teras). Pernyataan ini dijelaskan dalam **Lampiran 3** pada muka surat 37 hingga 39.

**JADUAL 1:**

<b>SIJIL</b>		
Kredit Bergraduat Minimum: 60		
<b>MODUL WAJIB</b>	<b>Badan Pengetahuan</b>	<b>Kredit*</b>
Keperluan Kebangsaan, PPT dan Pembangunan Peribadi	Bahasa Kebangsaan, Pengajian Malaysia, Pengajian Islam / Pendidikan Moral, Sains Sosial / Pilihan Kemanusiaan, Ko-Kurikulum, Bahasa Inggeris, Kemahiran Komunikasi – Penyampaian.	9-12
<b>MODUL TERAS</b>		
I. Teras Umum	Ditetapkan oleh PPT mengikut keperluan teras umum Alam Bina.	15-21
II. Teras Disiplin	Ditetapkan oleh PPT mengikut keperluan program.	24-36
<b>LATIHAN INDUSTRI</b>	Penempatan di tempat kerja yang bersesuaian.	8-12

\*Kredit dikira berdasarkan Kredit Bergraduat Minimum yang dinyatakan di atas.

**JADUAL 2:**

<b>DIPLOMA</b> Kredit Bergraduat Minimum: 90
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	<b>Badan Pengetahuan</b>	<b>Kredit*</b>
<b>MODUL WAJIB</b>		
Keperluan Kebangsaan, PPT dan Pembangunan Peribadi	Bahasa Kebangsaan, Pengajian Malaysia, Pengajian Islam / Pendidikan Moral, Sains Sosial / Pilihan Kemanusiaan, Ko-Kurikulum, Bahasa Inggeris, Kemahiran Komunikasi – Penyampaian.	14-18
<b>MODUL TERAS</b>		
I. Teras Umum	Ditetapkan oleh PPT mengikut keperluan teras umum Alam Bina.	22-32
II. Teras Disiplin	Ditetapkan oleh PPT mengikut keperluan program.	36-54
<b>LATIHAN INDUSTRI</b>	Penempatan di tempat kerja yang bersesuaian.	8-12

\*Kredit dikira berdasarkan Kredit Bergraduat Minimum yang dinyatakan di atas.

JADUAL 3:

<b>IJAZAH SARJANA MUDA</b>		
Kredit Bergraduat Minimum: 120		

	<b>Badan Pengetahuan</b>	<b>Kredit*</b>
<b>MODUL WAJIB</b>		
Keperluan Kebangsaan, PPT dan Pembangunan Peribadi	Bahasa Kebangsaan, Pengajian Malaysia, Pengajian Islam / Pendidikan Moral, Sains Sosial / Pilihan Kemanusiaan, Ko-Kurikulum, Bahasa Inggeris, Kemahiran Komunikasi – Penyampaian.	18-24
<b>MODUL TERAS</b>		
I. Teras Umum	Ditetapkan oleh PPT mengikut keperluan teras umum Alam Bina.	30-42
II. Teras Disiplin	Ditetapkan oleh PPT mengikut keperluan program.	48-72
<b>LATIHAN INDUSTRI</b>	Penempatan di tempat kerja yang bersesuaian.	8-12

\*Kredit dikira berdasarkan Kredit Bergraduat Minimum yang dinyatakan di atas.

JADUAL 4:

<b>IJAZAH SARJANA secara Kerja Kursus</b>		
Kredit Bergraduat Minimum: 40		

	<b>Badan Pengetahuan</b>	<b>Kredit*</b>
<b>MODUL WAJIB</b>	Keperluan PPT	6-8
<b>MODUL TERAS</b>	Teras Program dan Elektif	32-38

\*Kredit dikira berdasarkan Kredit Bergraduat Minimum yang dinyatakan di atas.

**JADUAL 5:**

<b>IJAZAH SARJANA secara Mod Campuran</b>		
Kredit Bergraduat Minimum: 40		
	<b>Badan Pengetahuan</b>	<b>Kredit*</b>
<b>MODUL WAJIB</b>	Keperluan PPT	20-28
<b>MODUL TERAS</b>	Teras Program dan Elektif	12-20

\*Kredit dikira berdasarkan Kredit Bergraduat Minimum yang dinyatakan di atas.

**JADUAL 6:**

<b>IJAZAH SARJANA secara Penyelidikan</b>
Kredit Bergraduat Minimum: Tiada nilai kredit diberikan

Metodologi Penyelidikan atau modul prasyarat berkaitan seperti yang diperlukan oleh PPT.
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**JADUAL 7:**

<b>IJAZAH KEDOKTORAN</b>
Kredit Bergraduat Minimum: Tiada nilai kredit diberikan

Metodologi Penyelidikan atau modul prasyarat berkaitan seperti yang diperlukan oleh PPT.
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## PENILAIAN PEMBELAJARAN PELAJAR

“Penilaian pelajar merupakan satu aspek yang cukup penting dalam jaminan kualiti disebabkan ia mampu mendorong pembelajaran. Ia merupakan salah satu langkah yang amat berguna untuk menunjukkan pencapaian hasil pembelajaran. Hasil penilaian ini juga merupakan asas penganugerahan kelayakan. Justeru, kaedah penilaian pelajar perlulah jelas, konsisten, berkesan, dipercayai serta selari dengan amalan-amalan terkini dan mesti secara jelas membantu pencapaian hasil pembelajaran” (COPPA, 2010, ms.22).

Kaedah penilaian khusus akan bergantung kepada keperluan spesifik setiap kursus. Walau bagaimanapun, sebagai panduan umum, perkara berikut perlu diambil kira:

- i. Penilaian sumatif dan formatif;
- ii. Pengetahuan dan pemahaman (domain kognitif) perlu dinilai melalui penulisan, lisan atau kaedah lain yang sesuai tetapi kemahiran amali perlu dinilai melalui kaedah penilaian amali seperti kerja makmal, bengkel, simulasi berkomputer dan kerja projek;
- iii. Kelulusan penilaian amali adalah wajib bagi kursus yang memerlukan kemahiran amali yang signifikan (Gred LULUS bermaksud pemeriksa berpuas hati bahawa calon telah memenuhi hasil pembelajaran kursus tersebut berdasarkan pada instrumen penilaian yang sesuai);
- iv. Calon dikehendaki lulus penilaian berterusan dan penilaian akhir (Gred LULUS bermaksud pemeriksa berpuas hati bahawa calon telah memenuhi hasil pembelajaran kursus tersebut berdasarkan pada instrumen penilaian yang sesuai); dan
- v. Jenis penilaian yang dicadangkan dalam dokumen ini adalah sebagai contoh sahaja. PPT digalakkan untuk menggunakan pelbagai kaedah dan instrumen yang bersesuaian bagi menilai hasil pembelajaran dan kompetensi.

Umumnya, pelajar akan dinilai mengikut kesesuaian melalui:

- i. Peperiksaan  
*Open book, Viva, Pertengahan Semester, Akhir Semester;*
- ii. Kerja Kursus  
*Tugasan, Laporan Makmal;*
- iii. Projek

- Individu atau Kumpulan, Pembentangan; dan
- iv. Lain-lain  
 Penglibatan dalam kelas, Aktiviti Kumpulan, Kritikan Kertas Kerja, Seminar, Lawatan Tapak, Kerja Lapangan.

Cadangan penilaian pembelajaran pelajar untuk setiap tahap kelayakan adalah seperti berikut:

KELAYAKAN	PENILAIAN BERTERUSAN (%)	PENILAIAN AKHIR (%)	CADANGAN PENILAIAN
Sijil	50-70	30-50	Bertulis Lisan Amali Pemeliharaan Kerja Kraf Projek* Laporan* Pembentangan Lisan Buku Log*
Diploma	30-50	50-70	Bertulis Lisan Amali Projek* Laporan* Pembentangan Lisan Buku Log*
Ijazah Sarjana Muda	40-70	30-60	Bertulis Lisan Amali Laporan* Projek Tahun Akhir* Projek Reka Bentuk* Pembentangan Lisan Buku Log*

KELAYAKAN	PENILAIAN BERTERUSAN (%)	PENILAIAN AKHIR (%)	CADANGAN PENILAIAN
			Kajian Integrasi Lapangan
Ijazah Sarjana secara Kerja Kursus	50-70	30-50	Bertulis Disertasi Projek* Pembentangan Kerja Makmal Laporan* Simulasi Projek*
Ijazah Sarjana secara Mod Campuran	30-50	50-70	Bertulis Kritikan Kertas Kerja Kertas Projek* Pembentangan Disertasi*
Ijazah Sarjana secara Penyelidikan	100	-	Kritikan Kertas Kerja Pembentangan Tesis (DUA pemeriksa)** Viva
Ijazah Kedoktoran secara Penyelidikan	100	-	Kritikan Kertas Kerja Pembentangan Tesis (TIGA pemeriksa)*** Viva

Nota:

Pengagihan penilaian berterusan dan akhir perlu ditentukan oleh PPT berkenaan sesuai dengan keperluan hasil pembelajaran.

\*100% penilaian berterusan

\*\*sekurang-kurangnya SATU pemeriksa luar

\*\*\*sekurang-kurangnya DUA pemeriksa luar

## PEMILIHAN PELAJAR

Bahagian ini adalah berkaitan dengan pengambilan pelajar untuk program pengajian. Pada amnya, polisi kemasukan pelajar adalah berdasarkan polisi yang ditetapkan oleh Kementerian Pendidikan Malaysia. “Terdapat perbezaan pandangan tentang kaedah terbaik pemilihan pelajar. Namun, apa jua kaedah yang digunakan, pihak Pemberi Pendidikan Tinggi (PPT) mestilah berupaya untuk mempertahankan ketekalannya. Bilangan pelajar yang bakal diterima masuk ke sesuatu program ditentukan oleh kapasiti PPT berkenaan dan bilangan pemohon yang berkeelayakan. Dasar kemasukan dan pengekalan pelajar sesebuah PPT itu tidak harus dikompromi semata-mata kerana hasrat PPT untuk mengekalkan bilangan pengambilan pelajar yang tertentu. Sekiranya PPT itu mengendalikan beberapa kampus yang berbeza lokasinya, atau sekiranya sesuatu program itu merupakan program yang dikendalikan secara kerjasama, pemilihan dan penempatan semua pelajar mestilah konsisten dengan dasar kebangsaan” (COPPA, 2010, ms.24).

Pemilihan calon untuk mendaftar dalam sesuatu program pengajian di IPT adalah semakin kompleks berikutan peningkatan jumlah calon yang berkeelayakan dengan kepelbagaian program serta kriteria kemasukan yang perlu diselaraskan.

Oleh itu, dasar ini diwujudkan bertujuan memberi peluang yang adil dan menggalakkan daya saing yang sihat kepada calon untuk mencapai kecemerlangan akademik dan sahsiah diri. Pemilihan program pengajian adalah seiring dengan pencapaian akademik serta kokurikulum. Calon perlu memenuhi syarat am dan khas program serta kriteria pemilihan yang ditetapkan.

Antara faktor yang dipertimbangkan dalam pemilihan calon Ipeasan Sijil Pelajaran Malaysia (SPM), Sijil Tinggi Persekolahan Malaysia (STPM) atau setara ialah:

- pencapaian SPM dan STPM;
- gabungan mata pelajaran SPM atau STPM;
- gred mata pelajaran bersesuaian dengan program yang dipohon;
- syarat khas yang ditetapkan bagi program yang ditawarkan;
- pencapaian dalam kegiatan kokurikulum; dan
- pencapaian dalam Bahasa Inggeris.



Nota:

Sekiranya terdapat calon yang dikenal pasti dengan kelainan upaya, pihak PPT bertanggungjawab untuk memaklumkan kepada calon tersebut tentang had peluang pekerjaan.

### **SIJIL**

**Lulus SPM** atau yang setaraf, dengan sekurang-kurangnya SATU kredit dalam mana-mana mata pelajaran dan lulus Matematik atau mata pelajaran lain berkaitan sains / teknikal / vokasional;

*ATAU*

**Sijil Kemahiran Malaysia Tahap 2 dan Lulus SPM.**

### **DIPLOMA**

**Lulus SPM** atau yang setaraf, dengan sekurang-kurangnya TIGA kredit dalam mana-mana mata pelajaran dan lulus Matematik, Bahasa Inggeris dan mana-mana mata pelajaran lain berkaitan sains / teknikal / vokasional;

*ATAU*

**Lulus STPM** atau yang setaraf, dan lulus Matematik, Bahasa Inggeris dan satu mata pelajaran berkaitan sains / teknikal / vokasional pada peringkat SPM;

*ATAU*

**Sijil dalam bidang Alam Bina yang diiktiraf** atau kelayakan yang diiktiraf setaraf, dengan pencapaian minima PNGK 2.5;

(Calon yang pencapaian PNGK kurang daripada 2.5 tetapi melebihi 2.0 perlu mempunyai pengalaman bekerja berkaitan minimum satu tahun).

*ATAU*

**Sijil Kemahiran Malaysia Tahap 3** dengan pengalaman bekerja dalam bidang berkaitan minimum satu tahun dan Lulus SPM dengan sekurang-kurangnya SATU kredit.

(PPT diminta menyediakan program *bridging* sebagai program pengukuhan mengikut keperluan).

Nota:

Bagi pelajar antarabangsa, skor minimum *Test of English as a Foreign Language (TOEFL)* 500 atau skor *International English Language Testing System (IELTS)* 5.0 atau yang setaraf. Sekiranya calon tidak memenuhi kriteria tersebut, PPT mesti menawarkan kursus kemahiran Bahasa Inggeris untuk memastikan kelancaran bahasa oleh calon memadai untuk memenuhi keperluan program. Hal ini biasanya dilakukan melalui proses penilaian.

### **IJAZAH SARJANA MUDA**

**Lulus STPM** atau yang setaraf, dengan minimum Gred C dalam dua mata pelajaran **DAN Lulus SPM** atau yang setaraf, dengan sekurang-kurangnya lulus Matematik, Bahasa Inggeris dan mana-mana satu matapelajaran sains/teknikal/vokasional;

ATAU

**Diploma dalam bidang Ukur Bangunan yang diiktiraf** atau kelayakan yang diiktiraf setaraf, dengan pencapaian minima PNGK 2.5;

(Calon yang pencapaian PNGK kurang daripada 2.5 tetapi melebihi 2.0 perlu mempunyai pengalaman bekerja berkaitan minimum satu tahun).

ATAU

**Diploma dalam bidang Alam Bina yang diiktiraf** atau kelayakan yang diiktiraf setaraf, dengan pencapaian minimum PNGK 2.5;

(Calon yang pencapaian PNGK kurang daripada 2.5 tetapi melebihi 2.0 perlu mempunyai pengalaman bekerja berkaitan minimum satu tahun. PPT perlu menentukan tahap permulaan pengajian).

ATAU

**Lulus program Matrikulasi / Program Asas yang diiktiraf oleh kerajaan** atau kelayakan yang diiktiraf setaraf, dengan pencapaian minima PNGK 2.0.

Nota:

Bagi pelajar antarabangsa, skor minimum TOEFL 500 ATAU skor IELTS 5.0 ATAU yang setaraf. Sekiranya calon tidak memenuhi kriteria tersebut, PPT mesti menawarkan kursus kemahiran Bahasa Inggeris untuk memastikan kelancaran bahasa memadai untuk memenuhi keperluan program. Hal ini biasanya dilakukan melalui proses penilaian.

### **IJAZAH SARJANA SECARA KERJA KURSUS ATAU MOD CAMPURAN**

**Ijazah Sarjana Muda dalam bidang Ukur Bangunan yang diiktiraf** atau kelayakan yang diiktiraf setaraf, dengan pencapaian minimum PNGK 2.5;

(Calon yang pencapaian PNGK kurang daripada 2.5 tetapi melebihi 2.0 perlu mempunyai pengalaman bekerja berkaitan minimum satu tahun).

Nota:

Bagi pelajar antarabangsa, skor minimum *TOEFL* 500 ATAU skor *IELTS* 5.0 ATAU yang setaraf. Sekiranya calon tidak memenuhi kriteria tersebut, PPT mesti menawarkan kursus kemahiran Bahasa Inggeris untuk memastikan kelancaran bahasa memadai untuk memenuhi keperluan program. Hal ini biasanya dilakukan melalui proses penilaian.

### **IJAZAH SARJANA SECARA PENYELIDIKAN**

**Ijazah Sarjana Muda yang diiktiraf** atau kelayakan yang diiktiraf setaraf, dengan pencapaian minimum PNGK 2.75;

ATAU

Lain-lain kelulusan yang diiktiraf setaraf oleh **Senat Universiti/Lembaga Pengurusan Universiti (LPU)** dari masa ke semasa.

Nota:

Bagi pelajar antarabangsa, skor minimum *TOEFL* 500 ATAU skor *IELTS* 5.0 ATAU yang setaraf. Sekiranya calon tidak memenuhi kriteria tersebut, PPT mesti menawarkan kursus kemahiran Bahasa Inggeris untuk memastikan kelancaran bahasa memadai untuk memenuhi keperluan program. Hal ini biasanya dilakukan melalui proses penilaian.

### **IJAZAH KEDOKTORAN**

**Ijazah Sarjana dalam bidang Ukur Bangunan yang diiktiraf** atau kelayakan yang diiktiraf setaraf;

ATAU

Lain-lain kelulusan yang diiktiraf setaraf oleh **Senat Universiti / LPU** dari masa ke semasa.

Nota:

- Bagi pelajar antarabangsa, skor minimum *TOEFL* 500 ATAU skor *IELTS* 5.0 ATAU yang setaraf. Sekiranya calon tidak memenuhi kriteria tersebut, PPT mesti menawarkan kursus kemahiran Bahasa Inggeris untuk memastikan kelancaran bahasa memadai untuk memenuhi keperluan program. Hal ini biasanya dilakukan melalui proses penilaian.
  
- Calon yang berdaftar untuk pengajian Ijazah Sarjana secara Penyelidikan boleh memohon untuk menukar pendaftaran ke peringkat Ijazah Kedoktoran tertakluk kepada:
  - i. tahap kompetensi dan kebolehan calon dalam menjalankan penyelidikan pada peringkat Ijazah Kedoktoran; dan
  - ii. diluluskan oleh Senat Universiti.

## STAF AKADEMIK

“Kualiti staf akademik adalah salah satu komponen yang amat penting dalam memastikan kualiti pendidikan tinggi. Oleh itu, segala usaha perlulah diambil bagi memastikan dasar berhubung pengambilan staf yang tepat dan berkesan, perkhidmatan, pembangunan dan penilaian tenaga akademik yang kondusif terhadap produktiviti staf” (COPPA, 2010, ms.29).

Seksyen ini mengandungi pernyataan tanda aras berkenaan pengambilan staf akademik. Dalam usaha untuk mencapai status PPT yang berkualiti, beberapa syarat bagi perantikan staf akademik ditetapkan selaras dengan kehendak Kementerian Pendidikan Malaysia (KPM). Matlamatnya adalah untuk menghasilkan PPT yang bertaraf dunia melalui pusat kecemerlangan insan dengan memfokuskan penambahbaikan yang berterusan.

Kelayakan staf akademik adalah seperti berikut:

### SIJIL

- **Diploma dalam bidang Ukur Bangunan** yang diiktiraf atau kelayakan yang diiktiraf setaraf;

*ATAU*

**Sijil dalam bidang Ukur Bangunan** yang diiktiraf DAN mempunyai LIMA tahun pengalaman bekerja di industri berkaitan atau memiliki kemahiran dalam bidang yang berkaitan.

(Tidak boleh melebihi 50% daripada jumlah staf akademik)

- 30% daripada bilangan staf akademik mesti mempunyai sekurang-kurangnya DUA tahun pengalaman bekerja dalam industri berkaitan.
- Nisbah keseluruhan staf akademik pada pelajar – 1:25.
- Sekurang-kurangnya 60% adalah staf akademik sepenuh masa.

- Pembangunan Profesional Berterusan untuk staf akademik sepenuh masa mengikut pengkhususan sekurang-kurangnya 40 jam latihan yang berkaitan dalam setahun.

### **DIPLOMA**

- **Ijazah Sarjana Muda dalam bidang Ukur Bangunan yang diiktiraf** atau kelayakan yang diiktiraf setaraf;

*ATAU*

**Diploma dalam bidang Ukur Bangunan yang diiktiraf** DAN mempunyai LIMA tahun pengalaman bekerja di industri berkaitan atau memiliki kemahiran dalam bidang yang berkaitan.

(Tidak boleh melebihi 30% daripada jumlah staf akademik)

- 30% daripada bilangan staf akademik mesti mempunyai sekurang-kurangnya DUA tahun pengalaman bekerja dalam industri berkaitan.
- Nisbah keseluruhan staf akademik pada pelajar – 1:20.
- Sekurang-kurangnya 60% adalah staf akademik sepenuh masa.
- Pembangunan Profesional Berterusan untuk staf akademik sepenuh masa mengikut pengkhususan sekurang-kurangnya 40 jam latihan yang berkaitan dalam setahun.

### **IJAZAH SARJANA MUDA**

- **Ijazah Sarjana dalam bidang Alam Bina yang diiktiraf** atau kelayakan yang diiktiraf setaraf DAN **Ijazah Sarjana Muda dalam bidang Ukur Bangunan**;

ATAU

**Ijazah Sarjana dalam bidang berkaitan yang diiktiraf** atau kelayakan yang diiktiraf setaraf;

(Tidak boleh melebihi 30% daripada jumlah staf akademik)

ATAU

**Ijazah Sarjana Muda dalam bidang Ukur Bangunan yang diiktiraf** atau kelayakan yang diiktiraf setaraf DAN mempunyai LIMA tahun pengalaman bekerja di industri berkaitan atau memiliki kemahiran dalam bidang yang berkaitan.

(Tidak boleh melebihi 30% daripada jumlah staf akademik)

- 30% daripada bilangan staf akademik mesti mempunyai sekurang-kurangnya DUA tahun pengalaman bekerja dalam industri berkaitan.
- Nisbah keseluruhan staf akademik pada pelajar – 1:15 atau lebih baik.
- Sekurang-kurangnya 60% staf akademik sepenuh masa.
- Pembangunan Profesional Berterusan untuk staf akademik sepenuh masa mengikut pengkhususan sekurang-kurangnya 40 jam latihan yang berkaitan dalam setahun.

#### **IJAZAH SARJANA SECARA KERJA KURSUS DAN MOD CAMPURAN**

- **Ijazah Kedoktoran dalam bidang Alam Bina yang diiktiraf** atau kelayakan yang diiktiraf setaraf;  
(60% daripada jumlah staf akademik terlibat dalam penyampaian program)

ATAU

**Ijazah Sarjana dalam bidang Ukur Bangunan yang diiktiraf** DAN mempunyai LIMA tahun pengalaman bekerja.

- Penyelia projek mesti terdiri daripada staf akademik sepenuh masa PPT.
- Nisbah keseluruhan staf akademik pada pelajar – 1:15.
- Sekurang-kurangnya 50% daripada bilangan staf akademik adalah sepenuh masa.
- Pembangunan Profesional Berterusan untuk staf sepenuh masa mengikut pengkhususan sekurang-kurangnya 40 jam latihan yang berkaitan dalam setahun.

#### **IJAZAH SARJANA SECARA PENYELIDIKAN**

- **Ijazah Kedoktoran dalam bidang Ukur Bangunan yang diiktiraf** atau kelayakan yang diiktiraf setaraf;

*ATAU*

**Ijazah Sarjana dalam bidang berkaitan yang diiktiraf** atau kelayakan yang diiktiraf setaraf, DAN mempunyai LIMA tahun pengalaman penyelidikan yang berkaitan.

- Penyelia utama projek mesti terdiri daripada staf akademik sepenuh masa PPT.
- Pembangunan Profesional Berterusan untuk staf akademik sepenuh masa mengikut pengkhususan sekurang-kurangnya 40 jam latihan yang berkaitan dalam setahun.

#### **IJAZAH KEDOKTORAN**

- **Ijazah Kedoktoran dalam bidang Alam Bina yang diiktiraf** atau kelayakan yang diiktiraf setaraf;

*ATAU*

**Ijazah Sarjana dalam bidang berkaitan yang diiktiraf** atau kelayakan yang diiktiraf setaraf DAN mempunyai SEPULUH tahun pengalaman penyelidikan



yang berkaitan. Staf akademik berkenaan hanya boleh dilantik sebagai penyelia bersama kepada penyelia utama yang memiliki Ijazah Kedoktoran.

- Penyelia utama projek mesti terdiri daripada staf akademik sepenuh masa PPT.
- Pembangunan Profesional Berterusan untuk staf akademik sepenuh masa mengikut pengkhususan sekurang-kurangnya 40 jam latihan yang berkaitan dalam setahun.

## SUMBER PENDIDIKAN

“Sumber pendidikan yang secukupnya adalah perlu untuk menyokong segala kegiatan pengajaran-pembelajaran sesuatu program. Sumber ini termasuk kewangan, kepakaran, infrastruktur fizikal, teknologi maklumat dan komunikasi, dan kemudahan penyelidikan. Kemudahan fizikal sesuatu program biasanya ditentukan oleh keperluan sesuatu bidang pengajian” (COPPA, 2010, ms.32).

PPT mesti mematuhi Akta Keselamatan dan Kesihatan Pekerjaan (*Occupational Safety and Health Act - OSHA*) 1994 (Akta 514) dan keperluan perundangan semasa (contoh: Akta 133 dan Undang-undang Kecil Bangunan Seragam (UUKBS) 1984) dalam menyediakan ruang dan sumber yang mencukupi sesuai dengan bilangan pelajar.

PPT perlu menyediakan sumber yang mencukupi untuk menyokong pengajaran dan pembelajaran bidang berkenaan mengikut tahap kelayakan berbeza seperti yang dinyatakan di bawah:

### SIJIL dan DIPLOMA

Kemudahan berikut adalah diperlukan:

- Bilik Kuliah (dengan kemudahan audio visual yang mencukupi)
- Makmal Komputer
- Makmal / Bengkel / Studio (mengikut keperluan program)
- Bilik Seminar
- Kemudahan Perpustakaan (termasuk bahan *on-line*)
  - o Buku dan Jurnal yang berkaitan
  - o Manual (contoh: Peralatan dan Bahan)
  - o Standard Industri (contoh: Standard Malaysia dan Standard British Eropah)
  - o Penerbitan Industri (contoh: Jurnal RISM dan Jurnal RICS)
  - o Kod Amalan (contoh: CP BS101)
  - o Akta dan Undang-undang berkaitan (contoh: Akta Bangunan, Parit dan Jalan 1974; Undang-undang Kecil Bangunan Seragam 1984)

- o Skop Profesionalisme Bagi Kerja Pemeliharaan (contoh: *International Council on Monument and Sites (ICOMOS) Guidelines For Education & Training, (Colombo 1993)*)
- Capaian Internet
- Kemudahan perisian dan perkakasan yang mencukupi mengikut keperluan program

### **IJAZAH SARJANA MUDA, IJAZAH SARJANA dan IJAZAH KEDOKTORAN**

Kemudahan **UMUM** berikut adalah diperlukan:

- Bilik Kuliah (dengan kemudahan audio visual yang mencukupi)
- Makmal / Bengkel / Studio (mengikut keperluan program)  
Contoh:
  - o Makmal Komputer
  - o Makmal Khusus (contoh: Makmal Pengujian)
  - o Bengkel (contoh: Bengkel Binaan)
- Bilik Tutorial / Perbincangan
- Pusat Sumber
- Kemudahan Perpustakaan (termasuk bahan *on-line*)
  - o Buku dan Jurnal yang relevan
  - o Manual
  - o Standard Industri (contoh: Standard Malaysia dan Standard British Eropah)
  - o Penerbitan Industri (contoh: Jurnal RISM dan Jurnal RICS)
  - o Kod Amalan (contoh: CP BS101)
  - o Akta dan Undang-undang berkaitan (contoh: Akta Bangunan, Parit dan Jalan 1974; Undang-undang Kecil Bangunan Seragam 1984)
  - o Skop Profesionalisme Bagi Kerja-Kerja Konservasi (contoh: *International Council on Monument and Sites (ICOMOS) Guidelines For Education & Training, para 5 (Colombo 1993)*)
- Capaian Internet
- Kemudahan perisian dan perkakasan yang mencukupi mengikut keperluan program
- Makmal uji kaji mestilah dikhususkan kepada bidang teknikal di bawah program berkenaan

Bergantung kepada Hasil Pembelajaran program, pelajar mungkin perlu mengakses secara **INDIVIDU** untuk berlatih atau memenuhi jam kerja yang ditetapkan bagi sesuatu peralatan.

PPT mesti menyediakan akses kepada kemudahan makmal yang berkaitan di premis atau pun melalui penggunaan kemudahan di luar. Bukti penggunaan makmal tersebut diperlukan.

Kemudahan **KHUSUS** berikut adalah diperlukan:

#### **IJAZAH SARJANA MUDA**

- Komponen atau peralatan umum / khusus seperti yang digunakan di industri.  
(1 set peralatan perlu diperuntukkan kepada 1 kumpulan tidak melebihi 5 orang pelajar bagi satu sesi amali)

#### **IJAZAH SARJANA dan IJAZAH KEDOKTORAN**

- Makmal khusus untuk bidang penyelidikan pasca siswazah berkaitan dengan program; dan
- Ruang kerja individu boleh disediakan untuk Ijazah Sarjana dan Kedoktoran secara **Penyelidikan**.

## PEMANTAUAN DAN SEMAKAN PROGRAM

“Penambahbaikan kualiti menuntut agar program sering dipantau, disemak dan dinilai. Kegiatan ini mencakupi memantau, menyemak dan menilai struktur dan proses institusi (struktur pentadbiran, kepimpinan dan governan, mekanisme perancangan dan semakan), komponen kurikulum (sukatan pelajaran, kaedah pengajaran, hasil pembelajaran), di samping kemajuan, prestasi dan kebolehpasaran pelajar.

Maklum balas daripada pelbagai sumber, seperti pelajar, alumni, staf akademik, majikan, badan profesional dan ibu bapa akan membantu dalam meningkatkan kualiti program. Maklum balas juga boleh diperolehi melalui analisis prestasi pelajar dan daripada kajian datar.

Prestasi pelajar boleh diukur melalui purata tempoh pengajian, markah penilaian, kadar kelulusan dalam peperiksaan, kadar kejayaan dan keciciran, laporan pelajar dan alumni berhubung pengalaman pembelajaran mereka, di samping waktu yang digunakan pelajar dalam bidang minat tertentu mereka. Penilaian terhadap prestasi pelajar dalam peperiksaan dapat menghasilkan maklumat yang berguna. Di mana pemilihan pelajar telah dilakukan dengan sempurna, kadar kegagalan yang tinggi dalam sesuatu program menggambarkan wujudnya kesilapan sama ada dalam kandungan kurikulum berkenaan, dalam kegiatan pengajaran-pembelajaran atau dalam sistem penilaian. Jawatankuasa program perlulah memantau kadar prestasi setiap kursus dan menyiasat sekiranya didapati kadar tersebut terlalu tinggi atau terlalu rendah.

Maklum balas daripada pelajar, yang diperolehi misalnya melalui soal selidik dan perwakilan dalam jawatankuasa program, berguna untuk mengenal pasti masalah tertentu dan untuk menambah baik program. Satu kaedah menilai keberkesanan program ialah kajian datar siswazah berkenaan. Jabatan perlu mempunyai mekanisme untuk memantau prestasi siswazah dan untuk memperoleh persepsi masyarakat dan majikan terhadap kekuatan dan kelemahan siswazah, dan untuk bertindak balas sewajarnya” (COPPA, 2010, ms.36).

## **KEPEMIMPINAN, GOVERNAN DAN PENTADBIRAN**

“Terdapat pelbagai cara mentadbir sesebuah Institusi Pendidikan dan kaedah pengurusannya berbeza antara Pemberi Pendidikan Tinggi (PPT). Walaupun begitu, governan yang mencerminkan kepimpinan sesebuah organisasi pendidikan mestilah menumpukan penekanan ke atas aspek kecemerlangan dan kesarjanaan. Di peringkat jabatan, adalah amat penting bagi kepimpinan menyediakan garis panduan dan hala tuju yang jelas di samping membina perhubungan antara pelbagai kumpulan berdasarkan semangat keserakanan dan ketelusan, mengurus kewangan dan sumber-sumber lain dengan penuh tanggungjawab dan mengadakan perkongsian bersama pihak berkepentingan utama dalam bidang penyampaian, penyelidikan serta perundingan pendidikan. Kepimpinan jabatan hendaklah sentiasa mencurahkan dedikasi dalam segala usaha akademik dan kesarjanaan. Walaupun ikatan yang formal dapat menjamin dan mempertahankan hubungan-hubungan sebegini, ia paling berkesan dibangunkan melalui satu budaya hubungan timbal balik permuafakatan dan komunikasi terbuka” (COPPA, 2010, ms.38).

Dokumen ini tidak akan membangkitkan sebarang isu governan dan pentadbiran memandangkan ia lebih tertumpu di peringkat institusi berbanding dengan program. Isu kepimpinan sesuatu program akademik bertumpu kepada keperluan tenaga pakar dalam sesuatu bidang pengajian yang mampu memantau dan merombak kurikulum sejajar dengan perkembangan dalam bidang tersebut.

PPT perlu membezakan antara kepimpinan akademik dan pentadbiran yang berkemungkinan penjawatnya berkelayakan tetapi tidak dalam bidang pengkhususan program.

Spesifik kepada tahap kelayakan yang ditawarkan di sesebuah PPT, kepimpinan program akademik mesti menepati kelayakan dan pengalaman berikut:

### **SIJIL**

**Diploma Ukur Bangunan** dan TIGA tahun pengalaman berkaitan;

*ATAU*

**Diploma berkaitan** dan ahli pertubuhan/badan ikhtisas/profesional yang berkaitan dalam bidang Ukur Bangunan.

#### **DIPLOMA**

**Ijazah Sarjana Muda Ukur Bangunan** dan TIGA tahun pengalaman berkaitan;

*ATAU*

**Ijazah Sarjana Muda berkaitan** dan ahli pertubuhan/badan ikhtisas/profesional yang berkaitan dalam bidang Ukur Bangunan.

#### **IJAZAH SARJANA MUDA**

**Ijazah Sarjana Ukur Bangunan** dan TIGA tahun pengalaman berkaitan;

*ATAU*

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**Ijazah Sarjana berkaitan** dan ahli pertubuhan/badan ikhtisas/profesional yang berkaitan dalam bidang Ukur Bangunan.

#### **IJAZAH SARJANA**

**Ijazah Kedoktoran** dalam bidang berkaitan;

*ATAU*

**Ijazah Sarjana dalam bidang Alam Bina** dan LIMA tahun pengalaman berkaitan.

#### **IJAZAH KEDOKTORAN**

**Ijazah Kedoktoran berkaitan** dan LIMA tahun pengalaman berkaitan.

## **PENAMBAHBAIKAN KUALITI BERTERUSAN**

“Tuntutan masyarakat terhadap akauntibiliti PPT terus meningkat. Keperluan terus berubah, disebabkan kemajuan dalam sains dan teknologi dan ledakan pertumbuhan pengetahuan global yang semakin pantas serta luas tersebar. Dalam menghadapi segala cabaran ini, PPT tidak mempunyai pilihan selain menjadi organisasi pendidikan dinamik yang perlu secara sistematik dan berterusan, memantau dan mengkaji pelbagai isu demi merealisasikan segala tuntutan persekitaran yang sentiasa berubah ini” (COPPA, 2010, ms.41).

PPT dijangka akan memberi bukti keupayaan untuk bersaing dengan perubahan dalam bidang dan keperluan pihak berkepentingan. Ini boleh dibuktikan oleh, tetapi tidak terhad kepada:

- 1) kajian semula kursus teras setiap dua tahun bagi memastikan objektif kursus dicapai;
- 2) kajian semula kurikulum, sekurang-kurangnya sekali setiap dua tahun bagi program di peringkat Sijil dan Sarjana; tiga tahun di peringkat Diploma dan empat tahun di peringkat Sarjana Muda;
- 3) proses penilaian kualiti oleh pemeriksa luar (dalam dan luar negara) minimum sekali bagi setiap pengambilan pelajar;
- 4) proses penilaian kualiti oleh penasihat industri minimum sekali bagi setiap pengambilan pelajar;
- 5) penentukuran peralatan secara berkala;
- 6) penglibatan dengan industri binaan dan agensi kawalan pembangunan;
- 7) penyemakan berterusan amalan dan rekod sangkutan industri;
- 8) sesi dialog bersama pihak berkepentingan;
- 9) penyertaan staf akademik dalam persidangan, seminar, bengkel dan kursus berkaitan;
- 10) pembentangan oleh penceramah (pakar) jemputan sama ada dalam atau luar negara; dan
- 11) penganjuran persidangan, seminar dan bengkel.



## RUJUKAN

1. Agensi Kelayakan Malaysia (2007). *Kerangka Kelayakan Malaysia - KKM*. Petaling Jaya, Malaysia.
2. Agensi Kelayakan Malaysia (2008). *Kod Amalan Akreditasi Program - COPPA*. Petaling Jaya, Malaysia.
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**AHLI PANEL**

BIL.	NAMA	ORGANISASI
1.	Adi Irfan bin Che Ani (Prof. Madya Dr. Sr)	Pertubuhan Juruukur DiRaja Malaysia
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3.	Azlan Shah bin Ali (Prof. Madya Dr. Sr) – Pengerusi	Universiti Malaya
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6.	Mohd Amin bin Mohd Din (Brig. Jeneral Sr)	Pertubuhan Juruukur DiRaja Malaysia
7.	Mohd Zahry bin Shaikh Abdul Rahman (Sr)	Universiti Sains Malaysia
8.	Norizan binti Sulaiman (Sr)	Dewan Bandaraya Kuala Lumpur (DBKL)

**PENAMAAN PROGRAM****SIJIL (KKM Tahap 3)**

- Sijil Ukur Bangunan
- Sijil Penyenggaraan Bangunan
- Sijil Kawalan Bangunan
- Sijil Pemeliharaan Bangunan

**DIPLOMA (KKM Tahap 4)**

- Diploma Ukur Bangunan
- Diploma Penyenggaraan Bangunan
- Diploma Kawalan Bangunan
- Diploma Pemeliharaan Bangunan

**IJAZAH SARJANA MUDA (KKM Tahap 6)**

- Ijazah Sarjana Muda Ukur Bangunan
- Ijazah Sarjana Muda Sains (Ukur Bangunan)
- Ijazah Sarjana Muda Sains (Perumahan, Bangunan dan Perancangan) (Ukur Bangunan)

**IJAZAH SARJANA (KKM Tahap 7)**

- Ijazah Sarjana Sains Ukur Bangunan
- Ijazah Sarjana Sains Pengurusan Fasiliti
- Ijazah Sarjana Sains Pengurusan Fasiliti dan Penyenggaraan
- Ijazah Sarjana Sains Penyenggaraan Bangunan
- Ijazah Sarjana Sains Kawalan Bangunan
- Ijazah Sarjana Sains Pemeliharaan Bangunan
- Ijazah Sarjana Sains Warisan dan Pemeliharaan

**IJAZAH KEDOKTORAN (KKM Tahap 8)**

- Ijazah Kedoktoran
- Ijazah Kedoktoran Alam Bina
- Ijazah Kedoktoran Ukur Bangunan

## **BADAN PENGETAHUAN**

### **KURSUS DALAM PROGRAM UKUR BANGUNAN**

#### **A. TERAS UMUM (25 - 35% kandungan program)**

Kursus teras umum meliputi semua atau sebahagian dari perkara berikut:

- i. bahan binaan
- ii. fizik persekitaraan
- iii. amalan profesional
- iv. kejuruteraan pembinaan
- v. matematik
- vi. pengurusan projek dan fasiliti
- vii. perkhidmatan bangunan
- viii. perolehan dan kontrak
- ix. reka bentuk bangunan
- x. sains
- xi. teknologi bangunan

#### **B. TERAS DISIPLIN (40 - 60% kandungan program)**

Kursus teras disiplin meliputi semua bidang berikut:

- i. Kawalan Bangunan dan Pengurusan Ruang
- ii. Kawalan Risiko dan Prestasi Bangunan
- iii. Penyenggaraan dan Pemeliharaan Bangunan

Nota:

- Setiap bidang teras disiplin mesti sekurang-kurangnya meliputi 20% dari jumlah kursus teras disiplin.
- Setiap kursus teras disiplin mesti minimum 3 kredit.

**Contoh kursus teras umum** bagi program Ukur Bangunan adalah seperti berikut:

**CADANGAN TAJUK KURSUS**

1. Analisis Data
2. Aplikasi Komputer
3. Ekonomi Bangunan
4. Kursus Elektif
5. Fizik Persekitaran
6. Kuantifikasi Pembinaan
7. Spesifikasi, Kos dan Prosedur Kontrak
8. Latihan Industri
9. Pengajian Undang-undang
10. Pengurusan Aset
11. Pengurusan Fasiliti Bangunan
12. Pengurusan Keselamatan
13. Pengurusan Projek Bersepadu
14. Pengurusan Pembinaan
15. Perkhidmatan Bangunan I
16. Perkhidmatan Bangunan II
17. Struktur I
18. Struktur II
19. Teknologi Pembinaan I
20. Teknologi Pembinaan II
21. Teknologi Pembinaan III

**Contoh kursus teras disiplin** bagi program Ukur Bangunan adalah seperti berikut:

CADANGAN TAJUK KURSUS	BIDANG
1. Audit Kebakaran untuk Bangunan 2. Kecacatan dan Diagnosis Bangunan 3. Pengukuran dan Analisis Bangunan	Kawalan Risiko dan Prestasi Bangunan
4. Pengurusan Ruang 5. Praktis Ukur Bangunan I: Reka bentuk 6. Praktis Ukur Bangunan II: Kawalan Bangunan 7. Undang-undang Bangunan	Kawalan Bangunan dan Pengurusan Ruang
8. Penyenggaraan Bangunan 9. Pengurusan Penyenggaraan 10. Teknik Pengurusan 11. Praktis Ukur Bangunan III: Pengurusan Projek 12. Praktis Ukur Bangunan IV: Pemeliharaan	Penyenggaraan dan Pemeliharaan Bangunan
13. Projek Ilmiah Ukur Bangunan	Kawalan Risiko dan Prestasi Bangunan / Penyenggaraan dan Pemeliharaan Bangunan / Kawalan Bangunan dan Pengurusan Ruang

Kandungan utama bagi kursus teras disiplin adalah seperti berikut:

**i. Kawalan Bangunan dan Pengurusan Ruang**

- o Akta Bangunan dan Harta Bersama (Penyenggaraan dan Pengurusan) 2007 (Akta 663)
- o Akta Hak Milik Strata 1985 (Akta 318)
- o Akta Jalan, Parit dan Bangunan 1974 (Akta 133)
- o Akta Kerajaan Tempatan (Akta 171)
- o Akta Keselamatan dan Kesihatan Pekerjaan 1994 (Akta 514)
- o Akta Perancang Bandar dan Desa 1976 (Akta 172)
- o Akta Warisan Kebangsaan 2005 (Akta 645)
- o Garis Panduan Perancangan Ruang (Unit Perancang Ekonomi)
- o Pemeriksaan amali pelan bangunan
- o Pemeriksaan amali ruang
- o Prosedur bagi mendapatkan perintah pembangunan
- o Prosedur kebenaran mendirikan bangunan
- o Prosedur penerimaan bangunan
- o Saksi pakar
- o Undang-undang Kecil Bangunan Seragam 1984

**ii. Kawalan Risiko dan Prestasi Bangunan**

- o Audit kebakaran bangunan
- o Kaedah pemeriksaan bangunan
- o Kecacatan bangunan
- o Kod Amalan Juruukur Bangunan
- o Laporan pemeriksaan bangunan
- o Patologi bangunan
- o Kelestarian bangunan
- o Penilaian prestasi bangunan
- o Prosedur perobohan bangunan

**iii. Penyenggaraan dan Pemeliharaan Bangunan**

- o Jenis penyenggaraan
- o Kitar hayat bangunan
- o Lukisan terukur

- o Pengurusan aset dan fasiliti
- o Pengurusan projek untuk penambahbaikan/pemeliharaan
- o Bajet penyenggaraan bangunan
- o Penyenggaraan berbantuan komputer
- o Laporan penyenggaraan bangunan
- o Rekod dan laporan penyenggaraan bangunan
- o Spesifikasi dan perolehan penyenggaraan bangunan
- o Teknik dan prosedur pemeliharaan
- o Teknologi penyenggaraan







Agensi Kelayakan Malaysia  
Malaysian Qualifications Agency

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