



# POSTGRADUATE PROGRAMMES Handbook





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# 1

## GENERAL INTRODUCTION

### 1.1. INTRODUCTION

Universiti Teknologi PETRONAS (UTP) was established on January 10, 1997 when PETRONAS was invited by the Malaysian Government to set up a university.

The university was formerly known as The Institute of Technology PETRONAS (ITP) and was a wholly owned subsidiary of PETRONAS. It was registered with the Ministry of Education on April 26, 1995 and obtained approval under the “Essential Higher Education Institute Regulation 1996”. ITP began operations at PETRONAS Management Training Sdn. Bhd. (PERMATA), Kajang, Selangor on July 3, 1995. On July 26, 1995, ITP was registered as a private limited company and transferred its operations to Bandar Seri Iskandar, Perak Darul Ridzuan on July 1, 1996.

### 1.2. UNIVERSITY

#### Vision

A Leader in Technology Education and Centre for Creativity and Innovation.

#### Mission

- i. UTP is an institute of higher learning. We provide opportunities to pursuit of knowledge and expertise for the advancement of engineering, science and technology to enhance the nation’s competitiveness.
- ii. Our objective is to produce well-rounded graduates who are creative and innovative with the potential to become leaders of industry and the nation.
- iii. Our aim is to nurture creativity and innovativeness and expand the frontiers of technology and education for the betterment of society.

#### University Logo



- i. Relates to the concept of renaissance, birth and nurturing of the mind for national advancement of the highest order.
- ii. Simulates the bloom of a floral bud while injecting a graphic outline of the PETRONAS Twin Towers.
- iii. Reflects the beginning of a journey towards new standards in higher education.
- iv. Gold to donate light, and deep pastel blue to signify peace and tranquility.

### **1.3. CENTRE FOR GRADUATE STUDIES**

#### **Statement of Purpose**

Enriching CGS supports and services in Nurturing Excellence and Providing Best Experience.

#### **Contact**

General email: [cgs@utp.edu.my](mailto:cgs@utp.edu.my)

Contact Number: 05 - 368 8193 / 8191 / 8192 / 8255 / 8258

Contact via UTP Unified Customer Services (UCS)

<https://utp.microsoftcrmportals.com/support/>

### **1.4. UNIVERSITY MAIN COMMITTEE**

#### **Senate**

The Senate is an academic body of UTP and is subject to the provisions contained in the constitution, statutes, procedures, and rules of UTP. It is empowered to monitor the development and delivery of academic programmes, research, examinations, awards degrees, diplomas and certificates.

Members of Senate are:

- i. Chairman – Vice Chancellor
- ii. Secretary – Registrar
- iii. Members:
  - Deputy Vice Chancellor, Academic
  - Deputy Vice Chancellor, Research and Innovation
  - Deputy Vice Chancellor, Student Affairs and Alumni
  - Deans
  - Chair of Academic Departments
  - Chief Financial Officer
  - Director of Project Management Office
  - Other members appointed by the Chairman

#### **University Academic Committee**

The University Academic Committee is the body appointed by the Senate to administer academic matters.

Members of the Academic Committee are:

- i. Chairman – Deputy Vice Chancellor, Academic
- ii. Secretary – Senior Manager of Academic Central Services
- iii. Members:
  - Deans
  - Chair of Academic Departments
  - Other members appointed by the Chairman

## **University Examination Committee**

The University Examination Committee is the body appointed by the Senate to administer examination matters.

Members of University Examination Committee are:

- i. Chairman – Deputy Vice Chancellor, Academic
- ii. Secretary – Manager of Registry
- iii. Members:
  - Deans
  - Chair of Academic Departments
  - Other members appointed by the Chairman

## **Academic Appeal Committee**

The Academic Appeal Committee is the body appointed by the Senate to administer appeals with regards to academic matters.

Members of Academic Appeal Committee are:

- i. Chairman – Vice Chancellor
- ii. Secretary – Manager of Registry
- iii. Members:
  - Registrar
  - Representative of Academic Departments
  - Other members appointed by the Chairman

## **Academic Disciplinary Committee**

The Academic Disciplinary Committee is the body appointed by the Senate to administer academic misconduct.

Members of Academic Disciplinary Committee are:

- i. Chairman – Deputy Vice Chancellor, Academic.
- ii. Secretary – Executive of Registry
- iii. Members:
  - Two (2) representatives from relevant Academic Departments
  - One (1) representative from another department
  - One (1) Legal Advisor

## **Graduate Studies Academic Committee**

The Graduate Studies Academic Committee is the body appointed by the Senate to administer academic matters for postgraduate studies.

Members of Academic Disciplinary Committee are:

- i. Chairman – Dean, Centre for Graduate Studies.
- ii. Secretary – Executive of Centre for Graduate Studies
- iii. Members – Departments Chair

## **1.5. DEFINITION**

### **Vice Chancellor**

The Vice Chancellor is the Chief Executive Officer/Managing Director of the University and responsible in determining the University's directions in order to achieve its visions and missions.

### **Registrar**

The Registrar is an officer of the University, responsible in administering students' intake, academic records, course registration, examinations, graduation approval and accreditation of Programmes.

### **Deputy Vice Chancellor, Academic**

The Deputy Vice Chancellor, Academic (DVCA) leads the Academic Division of University. DVCA is responsible for all matters involving foundation, undergraduate and postgraduate academic studies.

### **Deputy Vice Chancellor, Research and Innovation**

The Deputy Vice Chancellor, Research and Innovation (DVCRI) leads the Research & Development and Consultancy Division. DVCRI is responsible for all matters involving research, development, and consultancy.

### **Deputy Vice Chancellor, Student Affairs and Alumni**

The Deputy Vice Chancellor, Student Affairs and Alumni (DVCSAA) is responsible for all matters involving facilities, services and structured programmes for all students to support the university's aspiration to produce well-rounded graduates.

### **Dean**

The Dean is a leader in the Faculty or Centre for Graduate Studies.

### **Department Chair**

A Chair of Department (COD) is an officer of the University who heads the academic department. COD is responsible for managing all academic and administration matters of the department.

### **Senior Manager for Centre for Graduate Studies**

The Senior Manager for Centre for Graduate Studies is responsible for managing all academic related services, such as the academic facilities, laboratories, timetabling of courses offered and development of education technology.

**Lecturer**

A lecturer is a person assigned by the respective Chair of Department to manage a certain course and is responsible in delivering course materials, supervising students' projects as well as evaluating students' achievements.

**Tutor**

A tutor is a trainee lecturer/a postgraduate student/any individual assigned by the respective Chair of Department to assist a lecturer in managing a certain course and is responsible for managing and evaluating tutorials for a particular course.

**Laboratory Demonstrator**

A demonstrator is a trainee lecturer/a postgraduate student/any individual assigned by the respective Chair of Department to assist a lecturer in conducting laboratory work/practical training. A demonstrator is responsible for demonstrating the usage of laboratory or computer equipment and evaluating laboratory reports and assignments.

**Student**

A student is an individual who enrolls for any academic programme at the University.





## 2 ACADEMIC GUIDE

### 2.1. ACADEMIC

UTP offers master's degree and PhD degree in various fields of engineering, technology and management. Courses are offered in two modes - coursework and research. For programmes under coursework, it is compulsory for students to attend and pass courses with specific credit hours and carry out a research report. For programmes under research mode, students are required to conduct a full research, complete a dissertation, publish articles and pass viva voce for graduation.

#### 2.1.1. Academic Terms

##### **Programme**

Programme refers to the approved curriculum offered and conducted by the University.

##### **Course**

A course is a subject that carries a unique code and a number of credit hour.

##### **Semester**

A semester is the study period within a year of study.

- i. Programme by Coursework  
A semester for the coursework programme is about four (4) months and normally starts in January, May and September.
- ii. Programme by Research  
A semester for the research programme is about six (6) months and normally starts in January and July.

##### **Modules**

A module contains detail that include the course codes, credit hours, syllabus and the coursework involved.

##### **Candidacy Period of Study**

A student is allowed to register for courses by semester and must complete their studies within the subscribed candidacy period of study.

##### **Curriculum**

Curriculum comprises of courses and other activities that are compulsory for students as determined by the University.

## Credit Hours

A credit hour is a weightage given to a course based on the number of hours per week of lectures, tutorials, research work or laboratory work.

## Core Specialisation Courses

Core Specialisation Courses is a group of courses offered by the respective programme for their students to choose in the area of specialisation that they are interested to pursue at the end of their studies. The courses taken shall contribute to the overall programme structure.

## Dissertation

A dissertation is a writing project for the purpose of assessment derived from literary readings, research using a methodology and sampling to obtain data that can answer all the hypothesis.

## Transcript

A transcript is a complete record of a student's particulars and academic performance.

## 2.1.2.Entry Requirement

### A. English Requirement

Pass English requirement with a minimum score of:

Disciplines	Requirements
Engineering Programmes	IELTS - 5.0 TOEFL - 500
Science/PhD. in Management/PhD. in Social Science & Humanities Programmes	IELTS – 6.0 TOEFL - 550
Information Technology / Information Systems Programmes	IELTS – 6.0 TOEFL - 550

However, this requirement is waived if s candidate;

- has obtained Bachelor / Master or other relevant degree from Malaysian recognized institutions whereby all courses are fully conducted in English or;
- a native of an English-speaking country or;
- graduated from institutions in English speaking countries.

**B. Master Programme**

**i. Bachelor Degree**

**Master Programme by Coursework**

Disciplines	Requirements
Engineering / Science / Business Studies	Candidates must hold a BSc Degree with minimum CGPA 2.50/4.00, 62.5% or equivalent in the relevant field from a recognized university
Computing	Candidates must hold a BSc Degree with minimum CGPA 2.75/4.00, 75% or equivalent in the relevant field from a recognized university

**Master Programme by Research**

Disciplines	Requirements
Engineering	Candidates must hold a BSc Degree with minimum CGPA 2.50/4.00, 62.5% or equivalent in the relevant field from a recognized university
Science / Management / Social Science & Humanities	Candidates must hold a BSc Degree with minimum CGPA 2.75/4.00, 68.75% or equivalent in the relevant field from a recognized university
Information Technology / Information Systems	Candidates must hold a BSc Degree with minimum CGPA 3.00/4.00, 75% or equivalent in the relevant field from a recognized university
With relevant experience	Candidates must hold a BSc Degree or equivalent in the relevant field from a recognized university with minimum CGPA of 2.0 and have a minimum of 5 years working experience in relevant field.

**ii. APEL A Certificate (APEL T-7)**

Senate have approved postgraduate entry requirement using APEL A effective July 2020 intake. APEL provides an opportunity for individuals with working experience but lack of formal academic qualifications to pursue their studies in Higher Education Institutions (HEIs). In general, knowledge obtained through formal education and working experience will be both assessed in APEL's assessment.

**iii. Other Entry Qualification**

**i. Qualification below entry requirements**

Senate have approved the mechanism for evaluation of candidate who does not meet the minimum CGPA entry requirement to enrol in Master

level across all programmes subject to having 5 years working experience and Pass Internal Rigorous Assessment (IRA).

ii. **Background qualification in different discipline**

Senate have approved pre-requisite course requirement for candidates with academic qualifications in different disciplines which comprises of one (1) fundamental course and one (1) application course. The courses are to be conducted in modular mode via UTP online platform. The passing grade requirement for pre-requisite course is a minimum Grade B (65%) and the course fees are to be borne by the student.

ii. **Integrated Programme between Bachelor to Master Study Level**

Senate have approved to implement vertical credit transfer based on circulation made by Malaysian Qualification Agency (MQA) to consider course exemption through integrated programs MQF 6 (Bachelor Degree) and MQF 7 (Master Degree) which allow postgraduate students to complete a degree within a shorter time.

**C. PhD Programme**

i. **Fresh Graduate from MSc by Coursework**

Candidates must hold a Master Degree with minimum CGPA 2.50/4.00 in the relevant field OR equivalent from a recognized university.

ii. **Fresh Graduate from MSc by Research**

Candidates must hold a Master Degree in the relevant field OR equivalent from a recognized university.

iii. **Graduate with Relevant Working Experience**

Candidates must hold a Master Degree in the relevant field OR equivalent from a recognized university and have a minimum 5 years working experience\*.

\*Working experience in relevant field will be an added advantage.

iv. **Direct Entry**

University Senate have approved admission to PhD programme for outstanding graduate at bachelor's degree effective July 2020 intake with the following condition:

- i. First Class Bachelor Degree OR Graduate with final CGPA 3.67 and above or equivalents from academic programme or Technical and Vocational Education and Training (TVET);
- ii. Pass the Internal Rigorous Assessment (IRA) by University;
- iii. Approved by Registrar.

### **2.1.3.Modes of Delivery**

#### **Supervisory**

A lecturer acts as a facilitator when supervising students' project.

#### **Lectures and Tutorials**

- i. A lecture is an oral course presentation conducted by a lecturer.
- ii. A tutorial is an oral course presentation conducted by a tutor or lecturer to complement the lectures and to enhance the students' understanding of the subject matter.

#### **Laboratory Work**

Laboratory work is a practical approach to enable students to gain practical experience.

#### **Student Research Attachment**

Research attachment is a collaboration between the University and other universities or research institute. This collaboration provides the research opportunities for the students to enhance the research experience as well as create a linkage between two research bodies.

#### **E-Learning/Open and Distance Learning (ODL)**

E-Learning is an online learning method whereby students can access their course materials via the web.

#### **Adjunct Lecturer/Professor**

An adjunct lecturer/professor is an industrial expert appointed by the University to deliver lectures on topics related to the course content.

### **2.1.4.Final Assessment**

#### **Examiner**

An examiner is a lecturer or an appointed qualified person (internal/external) conducting academic assessment.

#### **Invigilator**

An invigilator is a qualified individual appointed by the University to invigilate a particular examination.

#### **Grade**

A grade is an assessment in a form of a letter signifying a student's performance in a particular course.

## **Grade Points**

A grade point is the point given to a course based on the grade obtained multiplied by the credit hours allocated to it.

## **Grade Point Average (GPA)**

A GPA obtained by a student at the end of a semester is calculated as follow:

$$\text{GPA} = \frac{\text{Total of Grade Points Scored in the Semester}}{\text{Total of Credit Hours Taken in the Same Semester}}$$

## **Cumulative Grade Point Average (CGPA)**

A CGPA is the grade point average obtained by a student based on all courses he/she has completed to date. The calculation is based on the following formula:

$$\text{CGPA} = \frac{\text{Total of Grade Points Scored to Date}}{\text{Total of Credit Hours Taken to Date}}$$

## **Final Examination**

Final Examination is a compulsory component to be given to students who have registered for non-project based course(s). It is compulsory for students to attend the final examination, failing which; the students will be given an 'F' grade.

## **Incomplete Grade**

The Incomplete grade will be given to a student who is not able to sit for the final examination or to complete a course due to reasons accepted by the University.

## **Course Repeating**

Student who fails or did not achieve the passing grade needs to re-register for the course and sit for the exam until he/she achieves the passing grade before graduation.

## **Course Re-sit**

A student with an Incomplete Grade (I) will be given an opportunity to re-sit the final examination.

## **Viva Voce Examination**

Viva voce is an oral examination where the postgraduate student presents and defends their research thesis to selected examiners that comprise of internal examiner, external examiner and chairman.

## **Completion of Study**

Student must fulfil all graduation requirements as specified by the programme and approved by the Senate for completion of study.

## 2.2. ACADEMIC PERFORMANCE

A student's academic standing is determined by the student's academic performance for the particular semester. However, a student's registration may be affected if any kinds of misconduct including cheating and plagiarism have been committed. The University considers all academic misconducts seriously as they affect the integrity of the University's academic evaluation process.

### 2.2.1. Academic Misconduct

Academic misconduct includes cheating and plagiarism. Cheating implies dishonesty in fulfilling academic requirements. Some examples of cheating include copying, allowing other students to copy outside or during an examination. Plagiarism may involve presenting another person's work, opinion or term as one's own without proper acknowledgement, be it printed or electronic materials such as books, magazines, thesis or projects.

If found guilty, the student will be given an 'F' grade for the said course and may be suspended for a period of time or dismissed or any other penalty deemed necessary by the University.

### 2.2.2. Satisfactory Performance

A student's performance is considered satisfactory if he/she obtains a GPA and CGPA of 3.00 and above for Master by Coursework programme or obtain 65% and above for postgraduate by Research programme. If a student's result is unsatisfactory, he/she will be placed on probation or dismissed from UTP.

i. Pass

Student who obtains GPA between 3.00 and 4.00 for Master by Coursework Programme or obtain 65% and above for postgraduate by Research Programme.

ii. Academic Probation

A student may be placed under Academic Probation if he/she falls under these categories.

Coursework	Research
1. Fail Research Methodology. 2. Obtain a GPA or CGPA of 2.99 and below for any semester.	1. Fail Research Methodology. 2. Fail Research Proposal Defense (RPD). 3. Obtain BAPC marks 64.9% and below any semester. 4. Obtain "Category 4" in viva voce.

iii. Academic Dismissal

A student will be dismissed under the following conditions:

1. Fail to complete the semester registration within the registration period. 2. Fail Research Methodology for two (2) consecutive semesters. 3. Exceed the maximum duration of candidacy.	
Coursework	Research
1. Obtain GPA or CGPA 2.99 and below in two (2) consecutive semesters. 2. Placed under Academic Probation for two (2) consecutive semesters. 3. Obtain GPA or CGPA below than 2.50.	1. Fail to complete the Research Proposal Defense (RPD) within stipulated time. 2. Obtain Research Proposal Defense (RPD) unsatisfactory results (64.99% and below) on the second attempt. 3. Placed under Academic Probation for two (2) consecutive semesters. 4. Obtain "Category 4" in viva voce re-evaluation. 5. Obtain "Category 5" in viva voce. 6. Fail to submit final hardbound thesis within stipulated time.

All decision on academic dismissal is at the discretion of the UEC & Senate.

### 2.2.3. Appeals for Reinstatement

Students under academic dismissal may appeal for reinstatement. The student is required to submit an appeal in writing to the Registry within one (1) week after the examination results are announced.

## 2.3. ACADEMIC ADMINISTRATION

Student is required to register every semester to maintain active student status. Active student may apply for enrolment changes as below.

### 2.3.1. Change of Programme

Students may apply for a change of programme upon the recommendation from the supervisor, endorsement from the Chair of Department and subject to approval from the Registrar, UTP.

### 2.3.2. Change of Study Mode

Students may apply for a change of study mode upon the recommendation from the supervisor, endorsement from the Chair of Department and subject to approval from the Registrar, UTP.

*(International students are not allowed to study in part time mode unless the student has a valid Malaysian employment pass).*



### 2.3.3. Deferment of Studies

Deferment of studies may be approved for a maximum of two (2) semesters in one application on medical grounds with supporting evidence. All applications must be recommended by the supervisor, endorsed by the Chair of Department and subject to approval from the Registrar, UTP. The duration of deferment is not considered as part of the candidacy period.

### 2.3.4. Inactive Study Status

Student who is unable to register due to non-medical reason must apply for inactive study status. All applications must be recommended by the supervisor, endorsed by the Chair of Department and subject to approval from the Registrar, UTP. The duration of inactive semester(s) will be counted as part of the candidacy period.

### 2.3.5. Semester Registration

Students are required to register during the prescribed registration period and comply with the credit hour requirement/research structure. Students who fail to register after week five (5) may be placed under deregistered status.

Students with outstanding dues (Financial or GA Hours) may not be allowed to register for the new semester.

International students must have a valid visa for semester registration.

a) Conditional Admission

Students with conditional admission due to non-fulfilment of any admission requirements shall be placed under the Provisional status until satisfied the prescribed conditions.

b) Pre-requisite Admission

Students with different disciplines to enrol into engineering, engineering technology and computing should undergo pre-requisite courses before proceeding to the programme course.

c) Registration Modules for Postgraduate by Research Programmes.

No	Module	Remarks
1	Research Methodology (RM)	Compulsory to enrol in first semester
2	Research Proposal Defence (RPD)	Compulsory to enrol in first semester
3	Research Progress Report & Symposium (RPR)	Compulsory to enrol in every semester after completed RPD
4	Research Completion Seminar (RCS) ( <i>PhD candidate only</i> )	To enrol before submission of Notice of Thesis Submission

5	Viva voce	To enrol in the semester the viva voce is scheduled
6	Thesis Research Correction (TRC)	Compulsory to enrol after completed viva voce on the previous semester.

Students who have completed viva voce and obtained category four (4) are **compulsory** to register for Research Progress Report & Symposium (RPR) in the following semesters until complete the re-evaluation process.

d) Late Registration

Students who fail to register on the prescribed date must apply in writing to the Registration Unit of Registry before week five (5) subject to the following consequences:

- i. Late registration penalty will be imposed,
- ii. Allowance for GRA and GA recipients will be suspended,
- iii. Will not be allowed to undertake assessment (RPD, RCS Symposium, viva voce),
- iv. Visa cancellation for international students.

e) Academic Dismissal

Students who fail to register in any particular semester without reason will be automatically dismissed.

### 2.3.6. Fee Policy

- i. Students tuition fees shall be the responsibility of the student themselves whether sponsored by sponsoring body, under university financial assistantship scheme etc. In the event, sponsors are not able to pay for the required fees; any outstanding amount shall be borne by the student. The fees amount will depend on the approved rate published by UTP and UTP reserves the right to revise the tuition fee as and when deemed appropriate.
- ii. Student accepted to pursue for postgraduate studies in UTP is required to pay the stipulated fees upon registration.
- iii. It shall be a condition of registration that the student have made adequate arrangements for the payment of tuition fees and for maintenance during the period of study at the University.
- iv. Letter of sponsorship must be produced during registration.
- v. Candidates responsible to provide all the required information as may be necessary for the University to secure payment from the body concerned.
- vi. Students who have no sponsors will be classified as self-supporting and will be responsible for the payment of their fees.
- vii. The rate of fees to be charged is determined by UTP from time to time.
- viii. The delays in the payments of fees, whether by students themselves or by a grant-awarding body or other sponsor, and where those students cannot show reasonable cause and give a satisfactory assurance as to payment, they may be excluded from further study in the University.

Note: *Failure to comply with any of the above, a candidate may not be allowed to undertake any of the required graduate such as semester assessments, Research Proposal Defence (RPD), Research Completion Seminar (RCS) and viva voce examination, barred from pre-registration, sitting for examination, viewing results and restriction to any university's facilities including hostel, information resource Centre and IT facilities, whenever deemed appropriate.*

### **2.3.7. Add/Drop/Withdrawal of Courses**

a) Add/Drop

Students are allowed to add/drop courses within the first two (2) weeks of semester registration.

b) Withdrawal

i. Course Withdrawal

Students are allowed to withdraw from the courses latest by week eight (8). The course fee, however, shall not be refunded.

ii. Withdrawal from Examination

Students who have registered for courses but are unable to sit for the examination due to unavoidable circumstances may apply for withdrawal from the examination, subject to recommendation from the Chair of Department and approval by the Dean of Centre for Graduate Studies.

If the withdrawal is due to an illness or injury, the student must submit a medical certificate, or a letter certified by the UTP's panel doctor. Upon approval, the student will be given an INCOMPLETE status and the student is required to repeat that particular course when it is next offered.

### **2.3.8. Appeal for Reinstatement/Re-admission**

An appeal for reinstatement/re-admission is an application by a student who has been placed under academic dismissal status to continue his/her studies in the University.

The Academic Appeal Committee shall decide to reject or to grant for reinstatement or re-admission. Reinstatement refers to the decision to continue studies in the same programme whereas re-admission refers to the decision to continue studies in another programme.

### **2.3.9. Suspension Period**

A suspension period is a period in which a student is suspended from being a student of UTP due to disciplinary causes. The suspension period will be considered as part of the duration of study at UTP.

### **2.3.10. Attendance**

The minimum attendance requirement is eighty percent (80%) for each course.

a) Coursework Mode

Students who fail to fulfil this requirement may be barred from sitting for the final examination.

b) Research Mode

The attendance requirement is compulsory for all FULL TIME students. Students who fail to fulfil the attendance requirement may lead to GA/GRA allowance being suspended and barred from registration.

For International students who fail to fulfil the attendance requirement, application for student visa renewal may not be supported.

Student is required to clock-in and clock-out daily on working days.

### **2.3.11. Visa Application and Renewal**

All international students must have valid student visa until completion of study (Senate Approval). For detailed information, the students may refer to the guideline from International Student Management Unit (ISMU).

### **2.3.12. Student Clearance**

A student who has been approved for graduation is required to submit the completed Clearance Form to Admission Unit, Registry. Failure to submit the form may result in action being taken against the student.

(\*International students are required to obtain release from ISMU on immigration matters within one (1) month after completion of study or before leaving Malaysia as per requirement from the Malaysian Immigration Department.)

### **2.3.13. Final Transcript and Degree**

The University reserves the right to withhold a student's final transcript or degree if the student;

- a) Does not submit the duly completed Clearance Form to the Registrar Office before leaving the university after completing their studies;
- b) Has any outstanding fees to be paid to the University;
- c) Does not comply with any other conditions imposed by the University.

## 2.4. ACADEMIC GRADUATION REQUIREMENTS

In order to graduate, students must complete a few courses and publications as required by the University including submission of final hardbound thesis for research mode students.

### 2.4.1. List of Graduation Requirements

Research		Coursework
Master	PhD	
i. Pass Research Methodology Course. ii. Publication: One (1) article accepted in journals indexed by ISI/SCOPUS. iii. Pass viva voce. iv. Submit Final hardbound thesis. v. Approved by Senate.	i. Pass Research Methodology Course. ii. Publications: <ul style="list-style-type: none"> <li>• One (1) article accepted in journals indexed by ISI/ERA.</li> <li>• One (1) article accepted in journals indexed by SCOPUS.</li> <li>• One (1) article accepted in conference proceeding.</li> </ul> iii. Pass viva voce. iv. Submit Final hardbound thesis. v. Approved by Senate.	i. Pass Research Methodology Course. ii. Completed all the required credit hours. iii. Obtain CGPA 3.00 and above. iv. Approved by Senate.

### 2.4.2. Research Methodology Courses

Research methodology is a compulsory course for all postgraduate students. Students are required to complete and pass the course before conducting the research. UTP offers three (3) types of research methodology courses:

Course Code	Course Name	Credit hours	Programmes
SNB5032	Research Methodology	2	All Engineering, Science and Technology programmes
RAM5013	Research Methodology in Social Science and Management Science	3	All Management and Humanities programmes
GAM5402	Business Research Methodology	2	MBA in Energy Management

#### a) SNB5032/OAN5032 - Research Methodology

##### General information

##### Objectives

The objective of this course is to introduce the basic concepts and methods of scientific research. The students will be guided on issues such as preparation of technical papers, preparation of thesis/dissertation, intellectual properties, ethical

principles, research management and research planning inclusive of the preparation of a research proposal.

### Learning Outcomes

By the end of the course, students are able to:

- i. Demonstrate and articulate the philosophy of research study which includes literature review, data collection and analysis as well as research reporting.
- ii. Identify and evaluate a variety of research tools and methodologies for planning, managing and conducting research from a scientific, technical, ethical and safety perspectives.
- iii. Formulate and communicate effectively a brief research proposal based on the undertaken subject of research.

### Synopsis

To equip new post-graduate students with the philosophy and methodology of conducting research so as to maximize their success in proposing and managing their graduate research study plan for successful completion of the objectives by taking into consideration factors such as health, safety & environment (HSE), ethical conducts and intellectual property protections.

### Course Content

Module	Description
Module 1	Overview of Research & Research Ethics
Module 2	Research Problem & Formulation
Module 3	Research Design & Analysis/ Special Topics <ul style="list-style-type: none"> <li>• Data collection and analysis</li> <li>• Special Topic 1: Modelling and Simulation</li> <li>• Special Topic 2: Experimentation and Instrumentation</li> </ul>
Module 4	Research Management, Assessment and Planning
Module 5	Health Safety Environments (HSE)
Module 6	Intellectual Property Rights
Module 7	Research Reporting (Research Proposal, Dissertation/ Thesis, Research article)

### Fee

Registration fee is RM 1500.00. The course fee waiver under GA, GRA & TFA Scheme will only be applicable once.

### Passing Requirement

The passing requirement will be based on table below:

Result	Attendance		Assessment	Remarks
Pass	80% and above	AND	65% and above	
Fail	Less than 80%	OR	Less than 65%	Repeat all modules and/or re-sit the assessment

Any reason for non-attendance must be informed in writing to the Dean, Centre for Graduate Studies (CGS) within 1 week after the course has ended.

### Assessment Component

No.	Assessment Component	Weightage
1.	Continuous Assessment (e.g. Assignment, Quiz, Test)	60%
2.	Research Proposal & Presentation	40%

### b) RAM5013 - Research Methodology in Social Science & Management Science General Information

This course is only for Social Science and Management programme (PhD & MPhil) and Humanities programme (PhD & MPhil).

### Objectives

The primary aim of this course is to provide students with the necessary exposure to the process of research, critical analysis of research, and special problems and issues in social science methodology along with the essential skills and knowledge to conduct postgraduate level research in the social and management sciences.

### Learning Outcomes

By the end of the course, students are able to:

- i. Conduct an effective literature search including the identification of, access to and use of a variety of secondary sources (e.g. books, journals, databases, websites etc.).
- ii. Recognise and utilize appropriate strategies for carrying out qualitative and / or quantitative research.
- iii. Produce an initial design for a research project and proposal.
- iv. Apply the appropriate methods to analyse primary and / or secondary data.
- v. Present research results via both written and oral reports.

### Synopsis

This course is designed to introduce students to the essential concepts and methods of doing postgraduate research in management and social sciences encompassing the understanding and application of appropriate research designs, data analysis and report writing.

### Course Content

Module	Description
Module 1	Fundamentals of research
Module 2	Qualitative methods in research
Module 3	Quantitative methods in research

### Fee

Registration fee is RM1500.00. The course fee waiver under GA, GRA & TFA Scheme will only be applicable once.

## Passing Requirement

The RAM 5013 passing requirement will be based on table below:

Result	Attendance		Assessment	Remarks
Pass	80% and above	AND	65%and above	
Fail	Less than 80%	OR	Less than 65%	Repeat all modules and/or re-sit the assessment

Any reason for non-attendance must be informed in writing to the Dean, Centre for Graduate Studies (CGS) within 1 week after the course has ended.

### c) **GAM5402 - Business Research Methodology**

#### **General Information**

This course is only for MBA in Energy Management programme.

#### **Objectives**

To provide students with the opportunity to understand research method and analysis skills in a real business environment. The module provides students with the theoretical, practical and relevant concepts and techniques of business and management research that support decision making (including methods for presenting and analysing data). It is designed in such way that it enables students to learn how to write a research proposal and how to design, conduct, and evaluate research studies.

#### **Learning Outcomes**

By the end of the course, students are able to:

- i. Apply appropriate research method and analysis for specific research objective and purpose in business setting.
- ii. Formulate research questions and hypotheses.
- iii. Generate quantitative methods of statistical analysis in decision-making processes.

#### **Synopsis**

This module aims to extend and deepen students' understanding on the different research designs and methodologies to prepare students for their own research projects in their business discipline. This module will assist students in identifying, discussing and formulating a research problem, selecting and applying appropriate research approaches and methods of inquiry and presenting their results. This module provides a learning curve for the MBA students to propose real value to the participating companies by applying the various 'tools' and skills learned in the classroom to improve identified business operations.



## Course Content

Module	Description
Module 1	Introduction to business research and process
Module 2	Quantitative research design, methods and instruments
Module 3	Constructs, scale, measurement and hypothesis development
Module 4	Multivariate data analysis and hypothesis testing
Module 5	Lab and field work

## Fee

Registration fee is RM1550.00. The course fee waiver under GA, GRA & TFA Scheme will only be applicable once.

## Passing Requirement

The minimum pass mark is 65%.

### d) Research Methodology Course Exemption

The appeal for course exemption must be in written form and submitted with certified copy of students' academic transcript or any related document(s) to: Registrar, Registrar Office, Level 1, Block F, Universiti Teknologi PETRONAS.

### 2.4.3. Publication Requirement (Research Mode Only)

#### Introduction

All MSc/MPhil and PhD candidate by research programme must present the proof of submission and acceptance of journal articles based on research conducted during their candidature prior to graduation. Table below tabulates the publication requirements.

Level of Study	Number of Required Publications
PhD	i. One (1) article accepted in journals indexed by ISI/ERA. ii. One (1) article accepted in journals indexed by SCOPUS. iii. One (1) article accepted in conference proceeding.
Master	i. One (1) article accepted in journals indexed by ISI/SCOPUS.

(Disclaimer: This new publication requirement will be effective for January 2018 intake onwards.)

#### Authorship

The student should be first author. In the case, student become second author, the first author of the article should be student's supervisor.

### **Entitlement for Paper Publication**

Centre for Graduate Studies may allocate Full Time Research student to publish their research work during their candidacy. The entitlement of paper publication is maximum RM 3,000.00 per publication which is limited to the number/s of publication requirement as per table of publication requirement.

<b>Type of Expenses</b>	<b>Eligibility for Claim</b>
Travelling	Flight Ticket: RM300.00 (return) subject to Malaysia region only. Other Public Transport (bus, ferry, taxi, train): As per receipt.
Meal Allowance	RM 20.00 per day (Subject to the number of conference's day/s)
Accommodation Allowance	RM 80.00 per night (Subject to the number of conference's day/s)
Publication Registration Fee	Maximum RM 3,000.00 per conference/article

### **Similarity Percentage**

All publications need to prove the similarity percentage not more than 20% similarity to other publications.

### **Submission and payment for Publications**

The process for submission and payment of paper publication is as per Standard Operation Procedure (SOP) (Appendix 1).

# 3 RESEARCH PROGRAMME

## 3.1. LIST OF PROGRAMMES

### 3.1.1. Master by Research

#### A. MSc in Chemical Engineering

##### Programme Educational Objective (PEO)

- i. Specialists who are able to practice the knowledge acquired and generate innovative and creative solutions for research and scholarly activities in chemical engineering related fields.
- ii. Specialists who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

##### Programme Learning Outcome (PLO)

<b>PLO 1</b>	Demonstrate continuing and advanced knowledge and have the capabilities to further develop or use these in new situation or multi-disciplinary contexts.
<b>PLO 2</b>	Analyze and evaluate problems in the chemical engineering discipline critically particularly in situations with limited information.
<b>PLO 3</b>	Appraise available information and research evidence and apply it in the chemical engineering engineering context.
<b>PLO 4</b>	Plan and perform research undertakings professionally, ethically and responsibly.
<b>PLO 5</b>	Report technical findings in both written and oral forms.
<b>PLO 6</b>	Recognize the needs for continuing professional development.
<b>PLO 7</b>	Evaluate problems and provide solutions through the application of appropriate tools and techniques in chemical engineering.

#### B. MSc in Civil Engineering

##### Programme Educational Objective (PEO)

- i. Specialists who are able to practice the knowledge acquired and generate innovative and creative solutions for research and scholarly activities in civil engineering related fields.
- ii. Specialists who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

### Programme Learning Outcome (PLO)

<b>PLO 1</b>	Demonstrate continuing and advanced knowledge and have the capabilities to further develop or use these in new situation or multi-disciplinary contexts.
<b>PLO 2</b>	Analyse and evaluate problems in the civil engineering discipline critically particularly in situations with limited information.
<b>PLO 3</b>	Appraise available information and research evidence and apply it in the civil engineering context.
<b>PLO 4</b>	Plan and perform research undertakings professionally, ethically and responsibly.
<b>PLO 5</b>	Report technical findings in both written and oral forms.
<b>PLO 6</b>	Recognise the needs for continuing professional development.
<b>PLO 7</b>	Evaluate problems and provide solutions through the application of appropriate tools and techniques in civil engineering.

### C. MSc in Mechanical Engineering

#### Programme Educational Objective (PEO)

- i. Specialists who are able to practice the knowledge acquired and generate innovative and creative solutions for research and scholarly activities in mechanical engineering related fields.
- ii. Specialists who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

### Programme Learning Outcome (PLO)

<b>PLO 1</b>	Demonstrate continuing and advanced knowledge and have the capabilities to further develop or use these in new situation or multi-disciplinary contexts.
<b>PLO 2</b>	Analyse and evaluate problems in the mechanical engineering discipline critically particularly in situations with limited information.
<b>PLO 3</b>	Appraise available information and research evidence and apply it in the mechanical engineering context.
<b>PLO 4</b>	Plan and perform research undertakings professionally, ethically and responsibly.
<b>PLO 5</b>	Report technical findings in both written and oral forms.
<b>PLO 6</b>	Recognise the needs for continuing professional development.
<b>PLO 7</b>	Evaluate problems and provide solutions through the application of appropriate tools and techniques in mechanical engineering.

### D. MSc in Electrical & Electronic Engineering

#### Programme Educational Objective (PEO)

- i. Specialists who are able to practice the knowledge acquired and generate innovative and creative solutions for research and scholarly activities in electrical & electronic engineering related fields.

- ii. Specialists who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

**Programme Learning Outcome (PLO)**

<b>PLO 1</b>	Demonstrate continuing and advanced knowledge and have the capabilities to further develop or use these in new situation or multi-disciplinary contexts.
<b>PLO 2</b>	Analyse and evaluate problems in the electrical & electronic engineering discipline critically particularly in situations with limited information.
<b>PLO 3</b>	Appraise available information and research evidence and apply it in the electrical & electronic engineering context.
<b>PLO 4</b>	Plan and perform research undertakings professionally, ethically and responsibly.
<b>PLO 5</b>	Report technical findings in both written and oral forms.
<b>PLO 6</b>	Recognise the needs for continuing professional development.
<b>PLO 7</b>	Evaluate problems and provide solutions through the application of appropriate tools and techniques in electrical & electronic engineering.

**E. MSc in Petroleum Engineering**

**Programme Educational Objective (PEO)**

- i. Specialists who are able to practice the knowledge acquired and generate innovative and creative solutions for research and scholarly activities in petroleum engineering related fields.
- ii. Specialists who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

**Programme Learning Outcome (PLO)**

<b>PLO 1</b>	Demonstrate continuing and advanced knowledge and have the capabilities to further develop or use these in new situation or multi-disciplinary contexts.
<b>PLO 2</b>	Analyse and evaluate problems in the petroleum engineering discipline critically particularly in situations with limited information.
<b>PLO 3</b>	Appraise available information and research evidence and apply it in the petroleum engineering context.
<b>PLO 4</b>	Plan and perform research undertakings professionally, ethically and responsibly.
<b>PLO 5</b>	Report technical findings in both written and oral forms.
<b>PLO 6</b>	Recognise the needs for continuing professional development.
<b>PLO 7</b>	Evaluate problems and provide solutions through the application of appropriate tools and techniques in petroleum engineering.

## **F. MSc in Information Technology**

### **Programme Educational Objective (PEO)**

- i. Specialists who are able to practice the knowledge acquired and generate innovative and creative solutions for research and scholarly activities in information technology related fields.
- ii. Specialists who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

### **Programme Learning Outcome (PLO)**

<b>PLO 1</b>	Apply and integrate knowledge concerning current research issues in computing and produce work that is at the forefront of developments in the domain of the information technology.
<b>PLO 2</b>	Evaluate and analyse computing solutions in terms of their usability, efficiency and effectiveness.
<b>PLO 3</b>	Develop computing solutions and use necessary tools to analyse their performance.
<b>PLO 4</b>	Appraise existing techniques of research and enquiry to acquire, interpret and extend, knowledge in computing.
<b>PLO 5</b>	Communicate and function effectively in a group.
<b>PLO 6</b>	Prepare, publish and present technical material to a diverse audience.
<b>PLO 7</b>	Demonstrate behaviour that is consistent with codes of professional ethics and responsibility.

## **G. MSc in Information Systems**

### **Programme Educational Objective (PEO)**

- i. Specialists who are able to practice the knowledge acquired and generate innovative and creative solutions for research and scholarly activities in information systems related fields.
- ii. Specialists who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

### Programme Learning Outcome (PLO)

<b>PLO 1</b>	Apply and integrate knowledge concerning current research issues in computing and produce work that is at the forefront of developments in the domain of the information systems.
<b>PLO 2</b>	Evaluate and analyse computing solutions in terms of their usability, efficiency and effectiveness.
<b>PLO 3</b>	Develop computing solutions and use necessary tools to analyse their performance.
<b>PLO 4</b>	Appraise existing techniques of research and enquiry to acquire, interpret and extend, knowledge in computing.
<b>PLO 5</b>	Communicate and function effectively in a group.
<b>PLO 6</b>	Prepare, publish and present technical material to a diverse audience.
<b>PLO 7</b>	Demonstrate behaviour that is consistent with codes of professional ethics and responsibility.

### H. MSc in Petroleum Geoscience

#### Programme Educational Objective (PEO)

- i. Specialists who are able to practice the knowledge acquired and generate innovative and creative solutions for research and scholarly activities in petroleum geoscience related fields.
- ii. Specialists who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

### Programme Learning Outcome (PLO)

<b>PLO 1</b>	Demonstrate mastery of knowledge in the petroleum geoscience related fields.
<b>PLO 2</b>	Apply analytical skills in the petroleum geoscience related fields.
<b>PLO 3</b>	Relate ideas to technological or societal issues in the petroleum geoscience related fields.
<b>PLO 4</b>	Conduct research with minimal supervision and adhere to ethical and professional standards.
<b>PLO 5</b>	Develop leadership qualities through communicating and working effectively with peers and stakeholders.
<b>PLO 6</b>	Evaluate problem and generate solutions to problems using advanced petroleum geoscience knowledge and critical thinking skills.
<b>PLO 7</b>	Analyse and Evaluate information for lifelong learning.

## **I. Master of Science**

### **Programme Educational Objective (PEO)**

- i. Specialists who are able to practice the knowledge acquired and generate innovative and creative solutions for research and scholarly activities in science related fields.
- ii. Specialists who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

### **Programme Learning Outcome (PLO)**

<b>PLO 1</b>	Demonstrate mastery of knowledge in the science related fields.
<b>PLO 2</b>	Apply analytical skills in the science related fields.
<b>PLO 3</b>	Relate ideas to technological or societal issues in the science related fields.
<b>PLO 4</b>	Conduct research with minimal supervision and adhere to ethical and professional standards.
<b>PLO 5</b>	Develop leadership qualities through communicating and working effectively with peers and stakeholders.
<b>PLO 6</b>	Evaluate problem and generate solutions to problems using advanced science knowledge and critical thinking skills.
<b>PLO 7</b>	Analyze and Evaluate information for lifelong learning.

## **J. MPhil in Social Science & Humanities**

### **Programme Educational Objective (PEO)**

- i. Specialists who are able to practice the knowledge acquired and generate innovative and creative solutions for research and scholarly activities in social science & humanities related fields.
- ii. Specialists who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.



### Programme Learning Outcome (PLO)

<b>PLO 1</b>	Demonstrate mastery of knowledge in the social science & humanities related fields.
<b>PLO 2</b>	Apply analytical skills in the social science & humanities related fields.
<b>PLO 3</b>	Relate ideas to technological or societal issues in the social science & humanities related fields.
<b>PLO 4</b>	Conduct research with minimal supervision and adhere to ethical and professional standards.
<b>PLO 5</b>	Develop leadership qualities through communicating and working effectively with peers and stakeholders.
<b>PLO 6</b>	Evaluate problem and generate solutions to problems using advanced social science & humanities knowledge and critical thinking skills.
<b>PLO 7</b>	Analyze and Evaluate information for lifelong learning.

### K. MPhil in Management

#### Programme Educational Objective (PEO)

- i. Specialists who are able to practice the knowledge acquired and generate innovative and creative solutions for research and scholarly activities in management related fields.
- ii. Specialists who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

#### Programme Learning Outcome (PLO)

<b>PLO 1</b>	Critically evaluate literature and relate ideas to business or societal issues in management related fields.
<b>PLO 2</b>	Apply appropriate research methods;
<b>PLO 3</b>	Conduct research with minimal supervision and adhere to legal, ethical and professional practices
<b>PLO 4</b>	Analyze data using qualitative and/or quantitative research tools in management related research area.
<b>PLO 5</b>	Interpret and present research findings using scientific and critical thinking skills.
<b>PLO 6</b>	Demonstrate mastery of knowledge in the management related fields.
<b>PLO 7</b>	Develop leadership qualities through communicating and working effectively with peers and stakeholders.

### 3.1.2. PhD by Research

#### A. PhD in Chemical Engineering

##### Programme Educational Objective (PEO)

- i. Experts who are able to practice the knowledge acquired, conduct independent research and generate innovative and creative solutions for research and scholarly activities in chemical engineering related fields.
- ii. Experts who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

##### Programme Learning Outcome (PLO)

<b>PLO 1</b>	Demonstrate an in-depth scholarship of chemical engineering area of research.
<b>PLO 2</b>	Contribute to original research to broaden the boundary of knowledge through thesis.
<b>PLO 3</b>	Construct critical analysis, evaluation and synthesis of new ideas.
<b>PLO 4</b>	Plan and perform independent research undertakings professionally, ethically and responsibly and to lead/supervise research project.
<b>PLO 5</b>	Internalise research finding & report to peers at level suitable for international publication.
<b>PLO 6</b>	Recognise the needs for continuing professional development.
<b>PLO 7</b>	Provide expert advice to the society in chemical engineering area of research.

#### B. PhD in Civil Engineering

##### Programme Educational Objective (PEO)

- i. Experts who are able to practice the knowledge acquired, conduct independent research and generate innovative and creative solutions for research and scholarly activities in civil engineering related fields.
- ii. Experts who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

### Programme Learning Outcome (PLO)

<b>PLO 1</b>	Demonstrate an in-depth scholarship of civil engineering area of research.
<b>PLO 2</b>	Contribute to original research to broaden the boundary of knowledge through thesis.
<b>PLO 3</b>	Construct critical analysis, evaluation and synthesis of new ideas.
<b>PLO 4</b>	Plan and perform independent research undertakings professionally, ethically and responsibly and to lead/supervise research project.
<b>PLO 5</b>	Internalise research finding & report to peers at level suitable for international publication.
<b>PLO 6</b>	Recognise the needs for continuing professional development.
<b>PLO 7</b>	Provide expert advice to the society in civil engineering area of research.

### C. PhD in Mechanical Engineering

#### Programme Educational Objective (PEO)

- i. Experts who are able to practice the knowledge acquired, conduct independent research and generate innovative and creative solutions for research and scholarly activities in mechanical engineering related fields.
- ii. Experts who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

### Programme Learning Outcome (PLO)

<b>PLO 1</b>	Demonstrate an in-depth scholarship of mechanical engineering area of research.
<b>PLO 2</b>	Contribute to original research to broaden the boundary of knowledge through thesis.
<b>PLO 3</b>	Construct critical analysis, evaluation and synthesis of new ideas.
<b>PLO 4</b>	Plan and perform independent research undertakings professionally, ethically and responsibly and to lead/supervise research project.
<b>PLO 5</b>	Internalise research finding & report to peers at level suitable for international publication.
<b>PLO 6</b>	Recognise the needs for continuing professional development.
<b>PLO 7</b>	Provide expert advice to the society in mechanical engineering area of research.

### D. PhD in Electrical & Electronic Engineering

#### Programme Educational Objective (PEO)

- i. Experts who are able to practice the knowledge acquired, conduct independent research and generate innovative and creative solutions for research and scholarly activities in electrical & electronic engineering related fields.

- ii. Experts who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

**Programme Learning Outcome (PLO)**

<b>PLO 1</b>	Demonstrate an in-depth scholarship of electrical & electronic engineering area of research.
<b>PLO 2</b>	Contribute to original research to broaden the boundary of knowledge through thesis.
<b>PLO 3</b>	Construct critical analysis, evaluation and synthesis of new ideas.
<b>PLO 4</b>	Plan and perform independent research undertakings professionally, ethically and responsibly and to lead/supervise research project.
<b>PLO 5</b>	Internalise research finding & report to peers at level suitable for international publication.
<b>PLO 6</b>	Recognise the needs for continuing professional development.
<b>PLO 7</b>	Provide expert advice to the society in electrical & electronic engineering area of research.

**E. PhD in Petroleum Engineering**

**Programme Educational Objective (PEO)**

- i. Experts who are able to practice the knowledge acquired, conduct independent research and generate innovative and creative solutions for research and scholarly activities in petroleum engineering related fields.
- ii. Experts who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

**Programme Learning Outcome (PLO)**

<b>PLO 1</b>	Demonstrate an in-depth scholarship of petroleum engineering area of research.
<b>PLO 2</b>	Contribute to original research to broaden the boundary of knowledge through thesis.
<b>PLO 3</b>	Construct critical analysis, evaluation and synthesis of new ideas.
<b>PLO 4</b>	Plan and perform independent research undertakings professionally, ethically and responsibly and to lead/supervise research project.
<b>PLO 5</b>	Internalise research finding & report to peers at level suitable for international publication.
<b>PLO 6</b>	Recognise the needs for continuing professional development.
<b>PLO 7</b>	Provide expert advice to the society in petroleum engineering area of research.

## F. PhD in Information Technology

### Programme Educational Objective (PEO)

- i. Experts who are able to practice the knowledge acquired, conduct independent research and generate innovative and creative solutions for research and scholarly activities in information technology related fields.
- ii. Experts who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

### Programme Learning Outcome (PLO)

<b>PLO 1</b>	Demonstrate a systematic comprehension and in-depth understanding of a discipline, and mastery of skills and research methods related to the field of computing.
<b>PLO 2</b>	Critically analyse, evaluate and synthesize new and complex ideas
<b>PLO 3</b>	Demonstrate scholarly capabilities to generate, design, implement and adopt the integral part of the research process based on the computing theoretical framework.
<b>PLO 4</b>	Contribute to original research that broadens the boundary of knowledge through an in-depth thesis, which has been presented and defended according to international standards including writing in internationally refereed publications;
<b>PLO 5</b>	Communicate to peers, scholarly communities and society at large through the preparation, publication and presentation of technical material.
<b>PLO 6</b>	Promote the technological, social and cultural progress in a knowledge based society in both academic and professional contexts.
<b>PLO 7</b>	Demonstrate behaviour that is consistent with codes of professional ethics, legal requirements and responsibility.
<b>PLO 8</b>	Demonstrate supervisory skills in research project.

## G. PhD in Information Systems

### Programme Educational Objective (PEO)

- i. Experts who are able to practice the knowledge acquired, conduct independent research and generate innovative and creative solutions for research and scholarly activities in information systems related fields.
- ii. Experts who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

### Programme Learning Outcome (PLO)

<b>PLO 1</b>	Demonstrate a systematic comprehension and in-depth understanding of a discipline, and mastery of skills and research methods related to the field of computing.
<b>PLO 2</b>	Critically analyse, evaluate and synthesise new and complex ideas
<b>PLO 3</b>	Demonstrate scholarly capabilities to generate, design, implement and adopt the integral part of the research process based on the computing theoretical framework.
<b>PLO 4</b>	Contribute to original research that broadens the boundary of knowledge through an in-depth thesis, which has been presented and defended according to international standards including writing in internationally refereed publications;
<b>PLO 5</b>	Communicate to peers, scholarly communities and society at large through the preparation, publication and presentation of technical material.
<b>PLO 6</b>	Promote the technological, social and cultural progress in a knowledge based society in both academic and professional contexts.
<b>PLO 7</b>	Demonstrate behaviour that is consistent with codes of professional ethics, legal requirements and responsibility.
<b>PLO 8</b>	Demonstrate supervisory skills in research project.

### H. PhD in Petroleum Geoscience

#### Programme Educational Objective (PEO)

- i. Experts who are able to practice the knowledge acquired, conduct independent research and generate innovative and creative solutions for research and scholarly activities in petroleum geoscience related fields.
- ii. Experts who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

### Programme Learning Outcome (PLO)

<b>PLO 1</b>	Synthesize knowledge and contribute to original research that broadens the frontier of knowledge in the petroleum geoscience related fields.
<b>PLO 2</b>	Adapt practical skills leading to innovative ideas in the petroleum geoscience related fields.
<b>PLO 3</b>	Disseminate expert knowledge to society in the petroleum geoscience related fields.
<b>PLO 4</b>	Conduct research independently and adhere to ethical and professional standards.
<b>PLO 5</b>	Internalise leadership qualities through communicating and working effectively with peers and stakeholders.
<b>PLO 6</b>	Appraise problems using advanced petroleum geoscience knowledge and critical thinking skills.
<b>PLO 7</b>	Integrate information for lifelong learning.

## I. PhD in Applied Science

### Programme Educational Objective (PEO)

- i. Experts who are able to practice the knowledge acquired, conduct independent research and generate innovative and creative solutions for research and scholarly activities in applied science related fields.
- ii. Experts who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

### Programme Learning Outcome (PLO)

<b>PLO 1</b>	Synthesize knowledge and contribute to original research that broadens the frontier of knowledge in the applied science related fields.
<b>PLO 2</b>	Adapt practical skills leading to innovative ideas in the applied science related fields.
<b>PLO 3</b>	Disseminate expert knowledge to society in the applied science related fields.
<b>PLO 4</b>	Conduct research independently and adhere to ethical and professional standards.
<b>PLO 5</b>	Internalise leadership qualities through communicating and working effectively with peers and stakeholders.
<b>PLO 6</b>	Appraise problems using advanced applied science knowledge and critical thinking skills.
<b>PLO 7</b>	Integrate information for lifelong learning.

## J. PhD in Social Science & Humanities

### Programme Educational Objective (PEO)

- i. Experts who are able to practice the knowledge acquired, conduct independent research and generate innovative and creative solutions for research and scholarly activities in social science & humanities related fields.
- ii. Experts who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

### Programme Learning Outcome (PLO)

<b>PLO 1</b>	Synthesize knowledge and contribute to original research that broadens the frontier of knowledge in the social science & humanities related fields.
<b>PLO 2</b>	Adapt practical skills leading to innovative ideas in the social science & humanities related fields.
<b>PLO 3</b>	Disseminate expert knowledge to society in the social science & humanities related fields.
<b>PLO 4</b>	Conduct research independently and adhere to ethical and professional standards.
<b>PLO 5</b>	Internalise leadership qualities through communicating and working effectively with peers and stakeholders.
<b>PLO 6</b>	Appraise problems using advanced social science & humanities knowledge and critical thinking skills.
<b>PLO 7</b>	Integrate information for lifelong learning.

### K. PhD in Management

#### Programme Educational Objective (PEO)

- i. Experts who are able to practice the knowledge acquired, conduct independent research and generate innovative and creative solutions for research and scholarly activities in management related fields.
- ii. Experts who promote lifelong learning and are able to contribute to knowledge creation, innovation and creative solutions for the well-being and betterment of societies.

### Programme Learning Outcome (PLO)

<b>PLO 1</b>	Recognise and validate problems using qualitative and/or quantitative research tools.
<b>PLO 2</b>	Critically evaluate literature and relate ideas to business or societal issues in management related fields.
<b>PLO 3</b>	Appraise existing techniques and apply appropriate research methods
<b>PLO 4</b>	Conduct original research independently and adhere to legal, ethical and professional practices
<b>PLO 5</b>	Demonstrate mastery of qualitative and quantitative research skills
<b>PLO 6</b>	Interpret research findings and recommend solutions using scientific and critical thinking skills
<b>PLO 7</b>	Demonstrate leadership qualities by communicating and working effectively.



### 3.2. CANDIDACY PERIOD

The candidacy period for research program starts from the semester of the admission registration to the submission of Soft Bound Thesis. The duration of candidacy for each program is as shown in table below:

Type	Level	Duration of Candidacy	Programme
Full-time	Masters	Min – 2 years Max – 4 years	PhD/MSc in Chemical Engineering PhD/MSc in Mechanical Engineering PhD/MSc in Petroleum Engineering
	PhD	Min – 3 years Max – 8 years	PhD/MSc in Petroleum Geoscience PhD/MSc in Civil Engineering PhD/MSc in Electrical & Electronic Engineering
Part-time	Masters	Min – 3 years Max – 6 years	PhD/MSc in Information Technology PhD/MSc in Information System
	PhD	Min – 4 years Max – 10 years	PhD/Master of Philosophy in Social Science and Humanities PhD/ Master of Philosophy in Management PhD in Applied Science Master of Science

#### 3.2.1. Extension of Candidacy

A student who requires more than the stipulated maximum period to complete his/her study may apply for an extension. Appeal for extension can be made to the Centre for Graduate Studies upon recommendation by respective Supervisor or Chair of Department before the candidacy ends. The appeal will be deliberated by the Graduate Studies Committee. The University reserves its right to approve or reject any application for extension.

#### 3.2.2. Graduate On-Time (GOT)

Graduate On-Time (GOT) is based on a fixed period which starts from date of admission until the date of Senate approval. The duration for Graduate On-Time (GOT) is based on the MyRA definition; PhD is 42 months and Master is 24 months.

### 3.3. SUPERVISION

#### 3.4.1. Appointment of Supervisor

All postgraduate students by research mode are required to have a main supervisor and co-supervisor(s) to supervise on academic and research activities. The criteria for supervisor selection are as below.

Students must submit application for Supervisor appointment within one (1) month upon registration via online - Application for Appointment/Change of Supervisor (UTP/CGS/005) to ensure smooth study progress. The supervisor's appointment letter will be issued by the Centre for Graduate Studies (CGS) upon endorsement by the Chair of Department and approval by Dean of CGS (Appendix III).

#### A. Qualification of Supervisor

Postgraduate Programmes by Research	Supervisory Requirements	Other Requirements
Master's Degree	<ol style="list-style-type: none"> <li>1) The main supervisor must have a minimum qualification of one level higher than the degree level enrolled by the candidate i.e. a doctoral degree; Or</li> <li>2) Where the main supervisor is without the required qualification, he/she must have a master degree with at least 5 years experience:               <ol style="list-style-type: none"> <li>a) in teaching and research; or</li> <li>b) as a co-supervisor.</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• Fulltime staff at UTP.</li> <li>• Possess knowledge and expertise within the research area of the student.</li> <li>• Required to attend supervisory training program.</li> <li>• UTP staff that are registered UTP students, are not allowed to be appointed as main or co-supervisor.</li> <li>• No relative or marriage relation between supervisor/co-supervisor and student.</li> </ul>
Doctoral Degree	<ol style="list-style-type: none"> <li>1) The main supervisor must have a minimum qualification of the equivalent degree level enrolled by the candidate with at least 2 years experience:               <ol style="list-style-type: none"> <li>a) in teaching and research; or</li> <li>b) as a co-supervisor.</li> </ol> </li> </ol>	<ul style="list-style-type: none"> <li>• UTP staff that are registered UTP students, are not allowed to be appointed as main or co-supervisor.</li> <li>• No relative or marriage relation between supervisor/co-supervisor and student.</li> </ul>

#### B. Appointment of Co-Supervisor/ Field Supervisor

The appointed supervisor may nominate a co-supervisor/ field supervisor (if necessary) in consultation with department chair to assist in the supervision of the candidate. The co-supervisor may be another academician or may be an experienced practitioner whose area of expertise is relevant to the research topic of the candidate. In addition, The Dean of CGS may appoint a co-supervisor/field supervisor as and when necessary. (Appendix II)

Category	Additional Supervisory Requirements
UTP co-supervisor	<ol style="list-style-type: none"> <li>1) The maximum number of UTP co-supervisor for a candidate is ONE (1) for Master degree level and TWO (2) for PhD degree level.</li> <li>2) The co-supervisor must have a minimum qualification of the equivalent degree level enrolled by the candidate. Therefore, the minimum qualification for a Master and PhD co-supervisor is Master and PhD degree, respectively.</li> </ol>
External co-supervisor	<ol style="list-style-type: none"> <li>1) Experts from other academic institutions or industries with the knowledge and expertise in the fields or research area of the student are also allowed to be appointed as co-supervisor or field supervisor.</li> <li>2) The maximum number of external co-supervisors is ONE (1) for Master degree level and ONE (1) for PhD degree level.</li> <li>3) The co-supervisor from academic institution must have a minimum qualification of the equivalent degree level enrolled by the candidate.</li> <li>4) The field co-supervisor from industry must have a minimum qualification of Bachelor's degree with 10 years working experience in related field of study for both Master and Doctoral degree programs.</li> </ol>

### C. Application for Change of Supervisor

Student who requires a change from a current supervisor must submit an online request - Application for Appointment/Change of Supervisor (UTP/CGS/005) (Appendix III).

## 3.4.2. Roles and Responsibility Supervisors and Students

### A. Introduction

The methods used in supervising a postgraduate student may range from one which sees students as apprentices who require close supervision on a continuous basis, to one which sees students as essentially independent researchers who only require periodic guidance. Students normally will become more independent over the period of the research program. However, agreement and regular exchange on research work is important for supervisor and their postgraduate students to maximize the benefits of their undertaking and to minimize misunderstandings.

It is important for supervisor to assume the leadership role in the overall relationship with postgraduate students. It is also paramount for students to understand that they have a shared responsibility in maintaining open channels of communication and finding out for them self what may be required to their success, and act accordingly. Having good wisdom of open and timely communication between supervisors and

students is crucial in creating good working relationships. The understanding between student and supervisor role and responsibility, will create good working relationships across the University as a whole.

## **B. Establishing Student-Supervisor Relationship**

It is a requirement that all students by research programme must have a supervisor while doing research work and preparing for their thesis. Students are advised to study in the field of specialization of the respective department to ensure that expertise exists within the department for their own areas of academic interest.

Sometimes, there will be unforeseen cases when it may be difficult or impossible for a student to have a supervisor on the research topic they are engaged in especially if the supervisor decides to leave the university permanently, or the student themselves decides to change the research topic or wish to change the supervisor. In such cases, students, department and the Dean, Centre for Graduate Studies have to work together to do what they can to ensure continuous supervision for students.

## **C. Expectations on Students**

### **Intellectual Scope**

A student undertaking a master's degree by thesis must demonstrate that he/ she is competent in research design and able to execute a substantial piece of research. For PhD, the student must be able to make a significant contribution of a scholarly nature which is recognized as such by peers in the discipline in general.

### **Originality of Research Work**

Both PhD and Master thesis are expected to be of original contributions within the discipline concerned.

### **Incoming Student's Background**

Incoming Master's students are expected to have the required minimum qualifications, some research skills to enable them to learn how to design and execute research in their chosen field.

Incoming PhD students should demonstrate that they are able to carry out substantial, original research and that they have the appropriate background to enable them to make a significant contribution to knowledge and become independent researchers in their own right.

### **Nature of Supervision**

Thesis supervision for master's students tends to provide more in terms of the definition and design of the undertaking than in PhD programs. PhD supervision tends to expect more self-direction and critical thought in research undertakings than does the master's program.

## **Research Topics and Specialization**

The research topic in which a student undertakes should correspond with the expertise of the appointed supervisor/co-supervisor available in the respective department.

The issue of intellectual property varies depending on the discipline, types of funding, and other such related matters. The overall guiding principle which should be considered in matters of intellectual property is that ownership and recognition of contribution should commensurate with intellectual leadership, actual and active involvement, self-reliance and innovation in the research undertaking.

All published works, including dissertations which are copyrighted by students which become part of the scholarly domain are governed by the general rules of copyright. This applies to thesis written in the context of contract research as in other areas. It is of considerable importance that supervisors/co-supervisors and students be acquainted with the copyright provision of fair dealing which allows for use of public works for personal use, research, criticism, etc.

## **D. Student's Roles and Responsibilities**

The followings are some of the roles and responsibilities of a postgraduate candidate:

- i. Student should inform themselves concerning any policies, processes, procedures, rules & regulations and standards as prescribed by the CGS, faculty, department and University.
- ii. Student is responsible for presenting in symposium and submitting research progress work and meeting contractual obligations in a timely fashion and for maintaining regular contact and meeting with supervisors.
- iii. Student shall maintain and record their research progress in their research logbook and submit the logbook for their supervisor's verification and validation on the research work data, finding and progress during their consultation/meetings with their supervisors.
- iv. Should student have a reasonable ground for changing supervisor, they should submit a request using the prescribe form that is available at the CGS. The student must also state the reason/s for the changing of supervisor.
- v. Student is responsible to act in a manner which conforms to basic principles of natural justice, academic integrity and professionalism and to manage in conflict situations which may arise in the relationship with their supervisors.
- vi. Student should also show initiative and diligence in his/her studies and must be aware of opportunities to meet other researchers in the field, attend seminars, meetings and conferences as required.
- vii. Student should also take the initiative in raising problems or difficulties and share responsibility for seeking solutions from the supervisor.
- viii. Student shall adopt at all times, safe working practices relevant to the field of research and adhere to the ethical practices appropriate to the discipline.
- ix. Student under the Graduate Assistantship Scheme (GA)/Graduate Research Assistantship Scheme (GRA) are required to undertake a number of academic duties involving tutorials or weekly laboratory demonstrations. The respective Chair of Department may require the student to perform other additional academic duties under this scheme.

- x. Student should submit thesis, or draft publication materials, based on research work, to supervisors before submission for publication or viva voce examination.
- xi. Student should prepare the thesis for examination, including arranging for typing, proofreading and binding, and where appropriate consulting the Supervisor regarding matters of style and presentation.
- xii. Student should arrange for the thesis copies to be sent to CGS on time as per agreed schedule.
- xiii. Student should take appropriate action based on comments on the evaluation reports of the examiners.
- xiv. Student should adhere to all notices and directives pertaining to the research work given by the Supervisor, Faculty, department or CGS.

#### **E. Supervisor's Roles and Responsibilities**

- i. Supervisor shall oversee the research undertakings of their postgraduate student in a manner prescribed by CGS and respective departments.
- ii. Supervisor and student should ensure mutual agreement on their expectations and supervisor should discuss with the student on the general nature of their working relationship early in the developmental stages of their collaboration.
- iii. Supervisor should be available to students on a reasonable basis for consultation and discussion of research progress and issues related to research work. During these meetings, supervisor is required to verify the student's logbook to validate the data/ findings acquired on the research conducted.
- iv. Supervisor is expected to provide technical assistance, advice and guidance on the nature of research, the choice of the research topic, the planning of the research programme, and the research outcome.
- v. Supervisor should provide timely comments on written material submitted by their students and this would include comments on the advisability of submitting thesis for examination.
- vi. Supervisor shall submit their students' Research Progress Report/ Symposium under his/her supervision to the relevant office as and when required or as per prescribed schedule by CGS.
- vii. Supervisor should make appropriate arrangements for students when they go on sabbatical leave or are on extended absence.
- viii. Supervisor with students receiving financial assistance such as Graduate Assistantship (GA), Graduate Research Assistant (GRA) etc. should make clear on the terms and condition on the financial assistance received from the beginning of the student's tenure at the university.
- ix. Supervisor should play an active role in seeking to ensure the availability of basic resources required for the student's research work and progress.
- x. Supervisor must advise students on their obligation to adhere to the existing copyright law or contract in writing and conducting their research work.
- xi. If a supervisor withdraws from supervising a student, this should be made in writing to the Dean of CGS and to the student.
- xii. The supervisor has the responsibility to act in a manner which conforms to basic principles of natural justice, academic integrity and professionalism and to act in a similar way in any situation which may arise in the relationship with the student.
- xiii. Supervisor should recommend candidates for the external and internal examiner(s) for endorsement from University Academic Committee (UAC).

### **3.4. POSTGRADUATE ASSESSMENT AND PROGRESS MONITORING**

All postgraduate students by research mode shall be evaluated on their research progress every semester i.e. January and July semesters. The research progress assessment is to ensure that all graduate students by research mode progress in meeting their agreed research milestone with their supervisors and within their period of candidacy.

Three (3) types of monitoring systems to be implemented for candidates are as follows:

1. Research Proposal Defence (RPD)  
Candidates by research mode must satisfy a panel of examiners before being allowed to proceed with their research work. Candidates must complete their RPD within a given time period.
2. Semester assessment or known as Biannual Postgraduate Conference (BAPC)  
UTP has implemented the BAPC assessment format for all postgraduate candidates by research mode as its semester assessment. Student will be assessed every semester on their progress report, online submission of paper and oral presentation (symposium) twice in an academic year.
3. Research Completion Seminar (RCS)  
A PhD candidate must undergo RCS before being allowed to submit their Final Draft Thesis for Viva Voce examination. This is to ensure the quality of the thesis to be submitted and to guide candidates before the actual Viva Voce examination.

#### **3.5.1. Research Proposal Defence (RPD)**

##### **A. Introduction**

Research Proposal Defense (RPD) is a written description of a proposed scientific research to be conducted within the period of a candidate's graduate study. All candidates are required to undertake the RPD within the allocated time given. Candidates are required to present the RPD to a panel of examiners appointed by respective departments. Candidates who are unsuccessful in their RPD are given another opportunity to re-submit their RPD within the allocated time after their first attempt of RPD. Failing this, they may face termination of candidature. However, student must first attend and pass Research Methodology course before undergo Research Proposal Defence (RPD).

##### **B. RPD Submission**

All candidates are required to submit one (1) copy of the RPD report using the form "Submission for RPD/RCS – UTP/CGS/007" via online within the allocated deadline. The RPD must be endorsed by the candidate's main supervisor prior to submission. Student will distribute the submitted RPD report to the nominated Panel of Evaluators two (2) weeks prior to the date of the RPD session.

### **C. RPD Deadline**

Candidate under the research programme mode must undertake the RPD within the stipulated period given below. All candidates will be allowed a maximum of TWO (2) attempts to deliver a successful RPD. Failure to resubmit or unsuccessful RPD within the given period may cause termination of candidature.

#### **Full Time Students**

##### a) Master Programmes

All master's candidates are required to successfully complete their first RPD within the first semester of registration or six (6) months from the date of registration. The unsuccessful candidate in the first RPD may re-submit for the second RPD within three (3) months from date of the first RPD. The panel can only be changed under specific circumstances (e.g. transfer, retirement), with written approval from the Chair of Department.

##### b) PhD Programmes

All PhD candidates are required to successfully complete their first RPD within the twelve (12) months from the date of registration. Candidates who are unsuccessful in their first RPD may re-submit for the second RPD within six (6) months from the date of first RPD. The panel can only be changed under specific circumstances (e.g. transfer, retirement), with written approval from the Chair of Department.

#### **Part Time Students**

##### a) Master Programmes

All master's candidates are required to successfully complete their first RPD within the first semester of registration or twelve (12) months from the date of registration. Candidates who are unsuccessful in the first RPD may re-submit for the second RPD within six (6) months from the date of first RPD. The panel can only be changed under specific circumstances (e.g. transfer, retirement), with written approval from the Chair of Department.

##### b) PhD Programmes

PhD candidates are required to successfully complete their first RPD within the twenty-four (24) months from the date of registration. Candidates who are unsuccessful in their RPD may re-submit for the second RPD within twelve (12) months from the date of first RPD. The panel can only be changed under specific circumstances (e.g. transfer, retirement), with written approval from the Chair of Department.

### **D. RPD Assessment Session**

The RPD assessment session will be notified to the student by respective departments. However, the student must also confirm with the department on the schedule for his/her RPD assessment session.



## **E. Panel of Examiners**

The Panel of Examiners shall be nominated by the Chair of Department (COD). The members must be selected from related field of the proposed research work.

- **Master Programmes**

The RPD examiners consist of a minimum of three (3) members consisting of the chairman (PhD qualified Dean/Chair/Senior Academic staff with minimum 5 years Senior Lecturer position and graduate minimum 1 Master student) the main supervisor and one (1) examiner from the department within the related field of research. Those with master's degree must have at least 3 years of research experience.

- **PhD Programmes**

The RPD examiners consist of a minimum of four (4) members consisting of the chairman (PhD qualified Dean/Chair/ Senior Academic staff with Associate Professor position), the main supervisor, one (1) Internal Examiner from the department and one (1) External Examiner from other clusters/departments and must be from related field of research with minimum PhD qualification.

## **F. Evaluation Process**

During the RPD evaluation session, the examiners must use the “RESEARCH PROPOSAL DEFENSE (EVALUATION FORM)” – UTP/CGS/52C. After the evaluation session, the Chairman shall submit consolidated evaluation results together with the copy of the student's RPD report within one (1) week of the evaluation date to:

- The department (one (1) copy)
- Centre for Graduate Studies Office (one (1) copy).

### **3.5.2. Biannual Postgraduate Conference**

#### **A. Introduction**

Students by research mode (Full-Time and Part-Time) are to be assessed on their research progress every semester. Beginning Academic Year of 2014, postgraduate assessments by research mode will be conducted in January and July semester. (Senate Meeting/2014/msutp84 (1-2014) 23 January 2014). Please refer to the Academic Calendar for Postgraduate by research mode.

The BAPC will enable postgraduate students to gain experience in presenting their research work in a formal conference environment. The assessment of postgraduate students by research mode will be held in conference style.

All postgraduate students are to submit their semester progress report through the prescribed online system and conduct oral presentation during the conference.

Tentative Activities of Biannual Postgraduate Conference (BAPC):

1. Semester Registration
2. 1st Notification and Invitation for Online Submission of Symposium Paper
3. Online System Open for Paper Submission
4. 2nd Notification and Invitation for Online Submission of Symposium Paper
5. Closing of Online System for Submission of Paper
6. Reviewing Submitted Paper by Respective Department
7. Biannual Postgraduate Conference

## Marking System and Assessment Grading

### Marking System

No	Components	Percentage (%)
1	Paper Review	20
2	Presentation	20
3	Progress marks from supervisor	60
	<b>Total</b>	<b>100</b>

### Assessment Grading

Based on the performance, a student is considered to be in any one of the academics standing as described below:

Score Range	Grade	Overall Grade
85 – 100	A	Pass
80 – 84.9	A-	Pass
75 – 79.9	B+	Pass
65 – 74.9	B	Pass
55 – 64.9	C+	Fail
50 – 54.9	C	Fail
45 – 49.9	D+	Fail
40 – 44.9	D	Fail
0 – 39.9	F	Fail

### Assessment Standing

Based on the performance, a student is considered to be in any one of the academics standing as described below:

Academic Status	Description
Pass	Student who obtains 65% and above
Probation	Student who obtains below 65% Failure to upload conference paper Failure to conduct the oral presentation
Dismissal	Fail in two (2) consecutive semesters

### Exemption from BAPC

A PG student under the following academic progress may appeal for exemption from the Semester Assessment by filling the hardcopy form of Semester Assessment Exemption Form and submit the duly completed form to respective academic department. The following are steps for the appeal:

1. Set and pass the research seminar before the online paper submission deadline,
2. Submit the Final Draft Thesis for Viva Voce before the online paper submission deadline,
3. Set and complete the viva voce before the online paper submission deadline.

Note:

All PG candidates by research mode (Full-Time and Part-Time) must submit their online paper submission, progress report and conduct oral presentation during the BAPC every semester.

No exemption will be given to candidate who is in the process of writing their thesis. New intake is exempted by default.

## **B. Submission of Online Paper**

Student must submit a full paper indicating the topic, theoretical framework, research questions or hypotheses, methods, results and conclusions. The full paper should not exceed six (6) pages. Student must provide full contact information including name, email, postal addresses, telephone number and academic affiliation for each author. The format for the full paper can be accessed from the IEEE website: [http://www.ieee.org/conference\\_events/conferences/publishing/templates.html](http://www.ieee.org/conference_events/conferences/publishing/templates.html)

The online system will be opened for submission (please refer to the BAPC schedule) ONLY to submit paper based on the respective program. The instruction on how to submit your paper will be given via email.

Failing to submit within the given time, student may be given the “F” Grade for the semester assessment which may put student under “Academic Probation” or “Academic Dismissal” status.

Student must secure the endorsement from supervisor before submitting the paper to the system and register their names as co-author. Please be advised that the online system will only allow active and registered students to upload their papers. Those who did not register will not be given access to the system and will not be able to submit the paper and may be given the “Academic Probation” status due to no assessment. Obtaining the “Academic Probation” status may affect many things including the GA/GRA allowance, visa renewal and dismissal.

Note:

Please refer to CGS email pertaining to the BAPC instruction

### **3.5.3. Research Completion Seminar (RCS)**

#### **A. Introduction**

Research Completion Seminar (RCS) is a process of evaluation on a PhD student’s written report/dissertation which describes the research conducted within the period of PhD candidacy graduate study. PhD candidates are required to undertake RCS assessment before being allowed to submit their final draft thesis and sit for viva voce examination. Candidates are required to present RCS to a Panel of Examiners appointed by Dean of Centre for Graduate Studies. Candidates who are successful in

their RCS may submit the form via online for submission of the final draft thesis for viva voce examination (Notice of Thesis Submission for PhD/MSc candidate – UTP/CGS/006). Candidates who are unsuccessful in their first RCS must re-sit for a second RCS within the allocated time.

#### **B. RCS Submission**

All candidates are required to submit RCS report using the form “Submission for RPD/RCS – UTP/CGS/007” via online. The RCS report will be provided to the Panel of Examiners two (2) weeks prior to the date of the RCS session.

#### **C. RCS Assessment Session**

The notice for RCS assessment session will be sent to the student by Centre for Graduate Studies. However, the student must also confirm with Centre for Graduate Studies on the schedule for his/her RPD assessment session.

#### **D. RCS Written Submission**

RCS report in written form shall be submitted by candidates to their supervisor for endorsement before submitting to the COD for approval. The format for RCS report should follow the Thesis Guideline Format.

#### **E. Evaluation Process**

During the RCS evaluation session, the Panel members are required to use the “RESEARCH SEMINAR (EVALUATION FORM)” – UTP/CGS/60B. After the evaluation session, the Chairman shall submit consolidated evaluation results to the Centre for Graduate Studies. At the end of the RCS session the Panel of Evaluators shall nominate the internal and external examiner for the candidate actual viva voce examination using the Nomination of Examiners (UTP/ CGS/012) via online form.

#### **F. Panel of Evaluators**

The Panel of Evaluators is nominated by the Chair of Department (COD). The members must be selected from related field of the proposed research work.

The RCS panel of Examiners shall consist of a minimum of three (3) panel members consisting of chairman (PhD qualified Dean/COD/Senior Academic Staff with at least Associate Professor status), one (1) Internal Examiner from the Department and one (1) External Examiner from other clusters/departments and must be from related field of research with minimum PhD qualification. Supervisor is invited as an observer to the RCS but not as a panel member.

### **3.5.4. Viva Voce Examination**

#### **A. Introduction**

The viva voce oral examination is compulsory for Master and Doctoral candidate. It is the most important assessment in deciding whether the research work (thesis) has satisfied the panel of examiners and that is eligible to be offered a postgraduate degree pending submission of the Final Hardbound Thesis and approval by Senate.

Normally the oral examination will take place at UTP and is conducted by a chairman and at least one external examiner and an internal examiner. The candidate's supervisor may be present at the oral examination as an observer.

The oral examination is primarily intended to test the candidate's awareness of the background of the research, the significance of the thesis in the field studied and, especially in the case of the PhD, the extent to which it contributes to existing knowledge. Its aim is to enable the examiners to clarify with the candidate any aspects of the research work which might be unclear in the thesis submitted. The oral examination may also take the form of a general discussion, and/or considered in greater depth in some sections of thesis which particularly interest the examiners, or in which they have found some problems which require clarification. The oral examination is also intended to assure the examiners that the thesis is the candidate's own work.

The oral examination is a formal occasion. The examiners may have decided on a result before the oral examination takes place in some cases. However, the student's capacity to deal adequately with the points raised might influence their final decision.

PhD candidate MUST PASS RCS prior to the process of viva voce examination. The Viva Voce Examination process flow is available in the online form portal (Viva Voce Kit).

## **B. Thesis Submission**

- i. A candidate must submit notice of submission of thesis via online form to the Centre for Graduate Studies using the specified form at least three (3) months before the submission of the final draft thesis. Notice of Thesis Submission for PhD/MSc Candidate - (UTP/CGS/006).
- ii. The thesis must be written in the English language. The abstracts must be in English and Bahasa Melayu translation of the abstract must be included.
- iii. The thesis is required to proof the similarity percentage with others work at least 25%.
- iv. Two (2) copies of the Final Draft Thesis (soft bound thesis) certified by the supervisor must be submitted to the Department Centre for Graduate Studies for viva voce examination.
- v. In the preparation of the thesis, the candidate must always refer to the latest guidelines on University thesis format and other specific requirements as decided by the University Academic Committee.
- vi. A candidate is not allowed to submit a thesis or part thereof which has been prepared for another degree without explicit written permission.
- vii. Thesis submitted to UTP whether successful or not will become the property of UTP. UTP reserves the right to make copies of the thesis in whole or in part.
- viii. A candidate must submit their soft-bounded thesis for viva voce examination before the end of their candidature.

## **C. Examiners for Thesis Evaluation**

Panel of Examiners

The Panel of Examiners for Master candidate shall consist the following:

- One (1) external examiner, and
- One (1) internal examiner, who is not the Supervisor or Co-Supervisor of the candidate
- Chairman

The Panel of Examiners for PhD candidate shall consist the following:

- Two (2) external examiners, and
- One (1) internal examiner, who is not the Supervisor or Co-Supervisor of the candidate
- Chairman

#### **D. General Guidelines on The Selection of The External Thesis Examiners**

Master Candidate

- i. The examiner from academia should at least possess a PhD degree from recognized higher education institutes. The examiner (from industry) should at least possess a Master degree from recognized higher education institutes.
- ii. Priority is given to the examiner with an Associate Professorial position.
- iii. The examiner is an expert in the research area with a minimum of 5 years' experience.
  - Project leader/Management role.
  - Publications.
- iv. The examiner has at least 1 Master AND 1 PhD student who has graduated under his/ her supervision. (Applicable for examiner from university).
- v. The examiner has experience as external examiner for Master viva voce.

PhD Candidate

- i. The examiner should at least possess a PhD degree from recognized higher education institutes.
- ii. Priority is given to the examiner with a Professorial Position.
- iii. The examiner is an expert in the research area with a minimum of 10 years' experience.
  - Project leader/Management role
  - Publications.
- iv. The examiner has at least 1 Master AND 1 PhD student who has graduated under his/her supervision. (Applicable for examiner from university).
- v. The examiner has experience as external examiner for PhD viva voce.

#### **E. General Guidelines on The Selection of The Internal Thesis Examiners**

Master Candidate

- i. The examiner should at least possess PhD degree from recognized higher education institutes.
- ii. The examiner must be an academic staff of the University.
- iii. The examiner is an expert in the research area with a minimum of 5 years' experience.
  - Project leader/Management role
  - Publications

PhD Candidate

- i. The examiner should at least possess PhD degree from recognized higher education institutes.
- ii. The examiner must be an academic staff of the University.
- iii. The examiner is an expert in the research area with a minimum of 10 years' experience.
  - Project leader/Management role
  - Publications

**F. Conflict of Interest**

Category	Type of conflict of interest for External Examiner
Working relationship	Co-authored paper with the student and/or student's supervisor in the research thesis to be examined
	Worked with the student on matters of analysis and/or synthesis in the research thesis to be examined
	Has provided funds to the student in the research thesis to be examined
	Has refereed/edited a paper published by the student in the research thesis to be examined
	Has been employed or currently employed by the student
Personal relationship	A close relative of the student/student's supervisor (e.g. spouse, child or parent, sibling and in-laws)
	Has a personal relationship of enmity with the student or supervisor
	A Mentor/Associate of the student
Other	Has currently been appointed by Universiti Teknologi PETRONAS (e.g. Adjunct lecturer, Adjunct Professor, IAP, Visiting Professor etc)
	A former (leaving UTP) staff/student of Universiti Teknologi PETRONAS for less than five years

Category	Type of conflict of interest for Internal Examiner
Working relationship	Co-authored paper with the student and/or student's supervisor in the research thesis to be examined
	Worked with the student on matters of analysis and/or synthesis in the research thesis to be examined
	Has provided funds to the student in the research thesis to be examined
	Has refereed/edited a paper published by the student in the research thesis to be examined
	Has been employed or currently employed by the student
	Has acted as referee for the student for employment
Personal relationship	A close relative of the student/student's supervisor (e.g. spouse, child or parent, sibling and in-laws)
	Has a personal relationship of enmity with the student or supervisor
	A Mentor/Associate of the student

Category	Type of conflict of interest for Chairman
Working relationship	Co-authored paper with the student and/or student's supervisor in the research thesis to be examined
	Worked with the student on matters of analysis and/or synthesis in the research thesis to be examined
	Has provided funds to the student in the research thesis to be examined
	Has refereed/edited a paper published by the student in the research thesis to be examined
	Has been employed or currently employed by the student
	Has acted as referee for the student for employment
Personal relationship	A close relative of the student/student's supervisor (e.g. spouse, child or parent, sibling and in-laws)
	Has a personal relationship of enmity with the student or supervisor
	A Mentor/Associate of the student

#### G. Duties of The Examiners

- i. The appointed examiners are required to:
  - Evaluate the thesis of the student independently,
  - Provide a comprehensive report and point out the syntactic and semantic errors in the thesis; and
  - Provide an indication of the original contribution made by the candidate.
- ii. The examiners are given a maximum of four (4) weeks and six (6) weeks for Master and PhD respectively to examine the draft thesis.

#### H. Panel for Viva Voce Examination

- i. After the candidate has submitted the thesis, arrangements will be made for viva voce examination.
- ii. Panel for viva voce examination Committee will consist of the following:
  - The Chairman must not have had direct or formal involvement with the project or with the Candidate.
  - For a Master Viva Voce, the Chairman shall be at least an Associate Professor /Senior Staff or an Academic Chair of Department at UTP.
  - In the case of a PhD degree, the Chairman shall be a Professor/ Associate Professor/ Chair of Department or Dean.
  - For PhD candidate, at least one (1) External Examiner must be present during the viva voce examination. However, both External Examiners are required to submit thesis' report prior to the viva voce session.
  - Internal Examiner.
- iii. The viva voce examination will consist of public presentation as well as closed door defence session. The presentation is open for public while the closed- door session is limited to only the panel of examiners. However, the chairman reserves the right to allow the supervisor and selected members to be in attendance as observers.



## **I. Report from The Panel of Examiners**

After receiving the Examiners' reports and reviewing the performance of the candidate in the viva voce examination, the panel of Examiners shall recommend one of the following:

- i. The candidate to be conferred the Degree subject to minimal corrections in spelling, grammar, and syntax only. Student to submit the final thesis within 1 month.
- ii. The candidate be conferred the Degree subject to minor modifications (reformatting of chapters, revision of literature, improvement in the declaration of research objectives or statements, insertion of missing references, amendment of inaccurately cited reference, and other minor improvements including language) to the Thesis. Student is given up to 3 months to submit the final thesis.
- iii. The candidate is to make modifications and corrections which are not minor in nature (extensive revision of the entire thesis, major improvement in description methodology, statistical re-analysis of research data, removal of chapter(s), re-discussion of the result, improvements in language, excluding additional experimental works and/or data collection) to the Thesis. Student is given minimum 3 months and up to 6 months to submit the final thesis.
- iv. The candidate is to re-submit the Thesis to be re-examined after the candidate has made major modifications and corrections (extensive rewriting to the entire Thesis and require to include additional experimental work, data collection and discussion of obtained new result from the further studies). The candidate may be required\* to attend the oral (viva voce) examination again. (\*Examiners will determine the viva voce examination upon evaluation on the corrected thesis). Student is given minimum 6 months and up to 12 months to submit the thesis for viva voce/ final thesis, or
- v. The candidate is not to be conferred the Degree and not allowed to resubmit the Thesis for re-examination. The candidate is deemed to have failed.

## **J. Submission of Final Hard Bound Thesis**

The candidate is required to submit their final hard bound thesis to the Centre for Graduate Studies within the given period agreed during the viva voce examination. Failing to submit the final hard bound thesis within the given period, the candidate is deemed to have failed in their viva voce examination.

## **K. Extension of Thesis Correction Duration**

The candidate may submit their appeal with supporting documents to the Centre for Graduate Studies for extension of thesis correction duration. The application will be deliberated and approved by the Graduate Study Committee. Maximum duration for extension of thesis correction duration is three (3) months.

### 3.5. UPGRADING MASTER TO PHD

#### 3.6.1. Eligibility

A Master's candidate may apply for an upgrade to PhD within their first year of candidature by completing the appropriate form (**UTP/CGS/050**). The supervisor may recommend upgrading a master student to PhD level based on the following criteria:

- i. Obtained a minimum **CGPA of 3.30 in bachelor's degree**.
- ii. Application must be **WITHIN 12 months of Master candidature**.
- iii. **Pass** Research Proposal Defence (RPD) for Master's degree.
- iv. **Accepted** article in indexed journals (SCOPUS/ISI/ERA).
- v. Presented and defended PhD proposal with rigorous assessment by panel of assessors.
- vi. Approved by Senate.

#### 3.6.2. Application Process

The followings are the processes involved for an upgrading level of study.

- a. A Master's candidate applies for upgrading level of study from Master to PhD by completing the application form (**UTP/CGS/050**).
- b. The supervisor recommends an upgrade to the department's Chair.
- c. If recommended by the department Chair, the department Chair shall propose an independent evaluation panel for the purpose of examination/evaluation for the endorsement of the Dean of Centre for Graduate Studies.
- d. The student prepares a submission containing an overview of the completed work and the proposed PhD research proposal.
- e. The evaluation panel shall evaluate the student and submit a collaborative report using the (**UTP/CGS/050A**) form.
- f. The recommendation for the upgrade of level of study is subjected to the approval of the UTP Senate.

#### 3.6.3. Members of Assessors for the Upgrading Panel

The upgrading panel of Assessors shall consist of a minimum of three (3) panel members consisting of the chairman (Dean of Faculty), one (1) from other Department and one (1) expert from related field within the Department. Members of the panel must have a minimum PhD qualification with academic standing of an Associate Professor and above.

#### 3.6.4. Written Submission

The candidate shall submit PhD research proposal to justify the upgrade to Centre for Graduate Studies. Four copies of PhD research proposal shall be submitted together with the upgrading application Form (**UTP/CGS/050**) to the Centre for Graduate Studies.

#### 3.6.5. Proposal Evaluation

The date for evaluation by the panel of assessors shall be conducted within one (1) month upon complete submission of the application form to Centre for Graduate Studies.

### **3.6.6. Oral Presentation**

During the evaluation process, the student will be allowed 20 (twenty) minutes of oral presentation to the upgrading panel of assessors followed by proposal defence. The oral presentation should explore the research undertaken to date and the anticipated future directions of the PhD research work.

### **3.6.7. Overall Evaluation**

The Chairman of the Upgrading Committee shall verify in writing in the form of a collaborative report using the assessment form (**Assessment for Upgrading Level of Study from Masters to PhD Assessment (UTP/CGS/050A)**) that the candidate:

- a. has in-depth and broad knowledge of research and theories pertaining to issues that are fundamental to the field of study.
- b. has conducted comprehensive, in depth and critically analyzed literature review suitable for PhD level research.
- c. has formulated the problem and research hypothesis with clear objective and sound methodology.
- d. has demonstrated novelty in research with publishable results.
- e. has presented feasible research plan within the candidacy period.

The Panel shall submit a consolidated report to recommend for successful conversion to PhD, or to continue the Master's program. The upgrading evaluation report shall be submitted to the Centre for Graduate Studies within (1) week of the evaluation date.

## **3.6. FINANCIAL ASSISTANCE**

### **3.6.1 Graduate Assistantship Scheme (GA)**

#### **A. Introduction**

The Graduate Assistantship (GA) Scheme is the financial assistance given to postgraduate students of UTP. In return students need to conduct research work and/or teaching services and/or academic related services. The GA allocation is limited. Therefore, it should be considered as a prestigious award. The scheme is for full time student by research only.

#### GA Scheme

- i. Recipients will receive a monthly stipend allowance under the Tuition Fee Assistantship scheme.
- ii. Successful applicant is not allowed to receive any other form of financial aid including Graduate Research Assistantship Scheme (GRA).
- iii. A recipient for Master Programme, will be given a stipend allowance of RM 1,300.00 (Ringgit Malaysia One Thousand Three Hundred Only) per month while for PhD Programme, will receive a stipend allowance of RM 1,600.00 (Ringgit Malaysia One Thousand Six Hundred Only) per month.
- iv. This scheme also covers the students tuition fees which include semester tuition fee and Research Methodology course fee (first attempt only). The registration fee during admission, accommodation, transportation, viva voce

examination fee and annual university resource fee are NOT covered under this scheme and shall be borne by the recipient.

- v. In lieu of the Stipend Allowance received, recipient are required to perform twenty-two (22) research days per month and to report the activities to the Supervisor. A recipient is also required to submit the report via online (using the UTP/CGS/002 online form) to claim monthly Stipend Allowance. Each activity performed must be endorsed by the supervisor and to be approved by the PG Coordinator. The dully filled form must be submitted on the 15th until 20th of the month.
- vi. In lieu of the waived tuition fee, a recipient is required to undertake teaching duties as laboratory demonstrator or class tutor for 3 - 4 hours per week or at least seventy-one (71) hours per semester as instructed by Supervisor or Chair of Department. Duties performed such as marking of students' test papers, assignments, quizzes, laboratory report etc, shall not be considered as additional GA hours in the workload calculation. The activities must also be reported and recorded via online (using the UTP/ CGS/002 online form).
- vii. Recipients may also be required to work beyond the above required academic related activities or individual research days with no extra allowance.
- viii. Recipient shall also perform any other duties and/or responsibilities as requested by your supervisor or COD provided that these duties are academic related activities.

**Note:**

Universiti Teknologi PETRONAS reserves the right to add, amend or make any alterations to the GA terms and conditions as and when necessary. UTP also reserves the right to determine the amount of monthly subsistence allowance given to a GA recipient and shall depend on the availability of the GA fund.

**B. Eligibility**

Eligibility to be a recipient of the UTP GA scheme:

- i. Be a registered Malaysian or International student pursuing a Masters or a PhD programme by research on campus at UTP;
- ii. Not receiving any other financial support or salary/ scholarship/ fellowship/ GRA and should not be in any type of employment.
- iii. Fulfil all Malaysian immigration rules and regulations for international students.

**C. Spouse Policy**

UTP will allow ONLY one GA recipient in a family to be given the GA scheme. Spouse will not be eligible to apply and receive the same scheme. If a recipient is married, he/she shall have the duty to inform UTP and UTP shall have the right to terminate either spouse who is receiving the GA scheme.

**D. Duration of Graduate Assistantship Scheme (GA)**

<b>Level of Study</b>	<b>Maximum Duration for Funding</b>
Masters	Twenty-four (24) months
PhD	Forty-two (42) months

Note: Any appeal for extension of GA will be considered on case-to-case basis.

### **E. Stipend Allowance (Monthly Allowance)**

All research activities shall be recorded and reported in the relevant GA claim form every month.

### **F. Termination of Allowance**

GA offer can be automatically discontinued if a recipient has been put under/placed in any of the following condition/status:

- i. Does not satisfy the panel during Research Proposal Defense (RPD) and failed Research Methodology course;
- ii. "Academic Probation" or "Dismissal";
- iii. Withdraws from candidacy;
- iv. Placed under academic or university suspension;
- v. Placed under investigation;
- vi. Approved for deferment;
- vii. Under disciplinary action;
- viii. Absent without prior approval or dismissed by the University;
- ix. Instructed/requested by supervisor/COD/GSAC/UAC to discontinue your GA scheme;
- x. Give misleading or false information for the purpose of securing the GA scheme;
- xi. Two (2) months after a student has completed his/her viva voce;
- xii. Any other reasons deemed appropriate by the University.

Note:

If a recipient fails the Research Methodology paper, he/she need to re-seat the paper. Once "pass" the Research Methodology paper, the allowance shall be release from the month of getting senate approval.

### **G. Roles and Responsibilities of The Recipient**

The expected roles and responsibilities of a GA recipient shall include, but not limited to, the following:

- i. Adhere to all University rules and regulations.
- ii. Discuss with the Supervisor the type of help considered most useful and keep to an agreed schedule of meetings.
- iii. Maintain the progress of the work in accordance with the stages agreed with the Supervisor, including the presentation of any required written material in sufficient time to allow for comments and discussions before proceeding to the next stage.
- iv. Discuss the progress towards, and impediments to maintain the agreed timetable with the Supervisor at regular intervals.
- v. Always adopt safe working practices relevant to the field of research and adhere to the ethical practices appropriate to the discipline.
- vi. Prepare the thesis for examination, including arranging for typing, proofreading, and binding, and where appropriate consulting the Supervisor regarding matters of style and presentation.
- vii. Arrange for the thesis copies to be sent to the Centre for Graduate Studies Office on time as per agreed schedule.
- viii. Take appropriate action based on comments on the evaluation reports of the examiners.
- ix. Adhere to all notices and directives pertaining to the research work given by the Supervisor, Programme Head or Dean, Centre for Graduate Studies.

- x. Show initiative and diligence in studies and be aware of opportunities to meet other researchers in the field, attend seminars, meetings and conferences as required.
- xi. Take the initiative in resolving problems or difficulties and share responsibility for seeking solutions from the supervisor.

#### H. Research Proposal Defense (RPD)

Research Proposal defence (RPD) is a written description of a proposed scientific research to be conducted within the period of postgraduate study. For MSc students, you are required to submit your RPD to the Postgraduate Office within 6 (six) months from the date of your registration. Meanwhile for PhD by research students, you are required to submit your RPD to the Postgraduate Office within 12 (twelve) months from the date of the registration. Failure to submit within the deadline will result in an immediate termination of candidature thus the termination of your GA.

Level of Study	Maximum duration for GRA funding until suspension (RPD)
Masters	Three (3) months
PhD	Six (6) months

#### I. Calculation of GA Workload Claim

The following are the guidelines for calculating the GA workload:

GA Activity		Descriptions	Approver	Claimable GA Hours (hrs)
Tutorial	Tutorial	To conduct tutorial that has been prescheduled as part of Student Learning Time (SLT)	Course Coordinator / Lecturer	1.25 x Tutorial hours
	Focused Group Tutorial	To conduct tutorial for specific groups of students that require extra attention	Department Chair	
	Conduct Special Training	To organise and conduct special training on specific topics, simulation software or tools for assisting students on project-based courses.(e.g. FYP/ETP/STP/Capstone, MSc by CW project).	Dean of CGS	2 x Training hours
Laboratory	Lab Demonstration	To conduct teaching lab demonstration that has been prescheduled in the timetable as part of SLT	Course Coordinator / Lecturer	1.25 x Lab hours
Evaluation of Assessment	Evaluating short assignment /assessment	To conduct marking of quizzes, short assignments, and brief lab report as per marking scheme provided by course coordinator / lecturer.	Course Coordinator / Lecturer	2 minutes x no of student
Invigilation/ Coordination	Invigilation of Final Exam / Test	To conduct invigilation of final exam or test that has been prescheduled by REX unit or course coordinator / lecturer.	Manager (REX) or Course Coordinator / Lecturer	Based on approved hours

	Course Management	<p>Project-based courses To assist project-based course coordinator in managing sessions for evaluation and assessment purposes (e.g. FYP/ETP/STP/Capstone, MSc by CW project).</p> <p>Courses with large no of students (&gt;80 students) with lab component/field work. To assist course coordinator / lecturer on course management which include grouping and scheduling for labs and field work sessions.</p>	Course / PG Coordinator	
	Assessment for Bi-Annual Postgraduate Conference (BAPC)	To assist PG coordinator in managing BAPC sessions for evaluation and assessment purposes		

Note:

All activities can be performed via physical face-to-face or online UTP's approved platform.

Payment shall be based on actual teaching hours (tutorial & demonstrations) and research activities based on actual days performed.

#### J. Penalties

UTP, at its sole discretion may deduct the allowance of a GA Recipient if:

- i. The number of hours of teaching duties (tutorials/ Laboratory Demonstration/ Examination Invigilation) is less than seventy-one (71) hours per semester (January & July semester), or
- ii. The number of research days performed is less than 22 days per month.

Pre-dumping/carry forward of GA hours is not permitted. The maximum allowable GA hours per month is 15 hours. All appeal pertaining to GA matters is at the discretion of Dean CGS/SM CGS.

### 3.6.2 Graduate Research Assistance Scheme (GRA)

#### A. Introduction

The Graduate Research Assistant (GRA) Scheme is introduced to drive Mission Oriented research in UTP and to support Project Leader (PL) in ensuring delivery of result for their secured research grants. Successful applicants will work under the supervision of the Project Leader (PL) for a postgraduate degree in UTP for full time on campus mode.

#### B. Eligibility Requirement

- i. Fulfils all the UTP admission criteria.
- ii. Registered as a full time on-campus postgraduate student only.
- iii. Shows research capability in the proposed research project.
- iv. Able to carry out the work to be assigned by the Project Leader (PL).
- v. Applicant must be appointed as GRA by Universiti Teknologi PETRONAS (UTP).
- vi. The UTP GRA scheme is open to full time on-campus both local and international postgraduate candidates.
- vii. Academic requirement for Graduate Research Assistant (GRA) Scheme

Level	Requirements
Master	CGPA: minimum 3.00/4.00 and above or 5 years working experience. CGPA: 3.25/4.00 and above or equivalent from renowned university or 5 years working experience.
PhD	Coursework: CGPA: 3.00/4.00 and above or equivalent from renowned university or 5 years working experience Research: Pass

#### C. Appointment Of GRA

- i. GRAs will be required to sign the Graduate Research Assistant Scheme Agreement with UTP;
- ii. Tuition Fee Assistantship (TFA) can be given to the GRAs, based on the policies set by the university;
- iii. Duration of GRA appointment:

Level of Study	Maximum duration for GRA funding
Masters	Twenty-four (24) months
PhD	Forty-two (42) months

- The minimum and maximum duration shall be at least three (3) months and twelve (12) months. All applications for GRA appointment must be submitted at least one (1) month for normal GRA scheme and three (3) months for exceeding duration and revision allowance.
- GRA Appointment date of appointment is 1st or 16th. Ending appointment date is 15th or end of the month. Backdated appointment OR redundant agreement is not allowed.



The Application for GA/GRA Requisition/Extension/Reinstatement Form (UTP/CGS/009) must be completed and submitted via online with certified copy of candidate's resume, academic transcript, professional certificates (if any), publications (indexed and impact factor), work experiences, student visa, UTP offer letter and account bank number.

**D. Working Hours**

GRAs are required to provide the services during the following working hours:

Day	Working Hours	Lunch Break
Monday – Thursday	8.00 am – 5.00 pm	1.00 pm – 2.00 pm
Friday	8.00 am – 5.00 pm	12.30 pm – 2.30 pm

However, due to the nature of the Project, GRAs may be required to work beyond the above working hours at no extra allowance.

**E. GRAs Duties and Responsibilities**

The duties and responsibilities of a GRA may vary according to the nature of the research project in which they participate and the source of the funding. In general, research assistants help PI and PL on research projects and perform such research and related duties that may include:

Comply with the University's for Postgraduate Studies rules on postgraduate studies, and to progress on research activities according to milestones set by the supervisor. Comply with department related assignments such as jobs related to teaching and/or tutoring and/or lab demonstration and/or other administrative tasks as required by the department and Project Leader.

Assists with academic research.

- i. Performs routine clerical duties as instructed, if essential to the research project activities of the PL/PI or project to which the GRA is assigned.
- ii. Assists in administrative duties such as completing reports for budget, project expenditures, in the maintenance of project records.
- iii. Assists with the editing and preparation of research manuscripts.
- iv. Prepares research project articles, reports, and presentations.
- v. Assists with duties related to the preparation and production of academic journals.
- vi. Meets regularly with supervisor to discuss research assignments.
- vii. Performs research work in archives, through interviews, online, or whatever may be appropriate to assist the PI and PL.
- viii. Prepares literature reviews.
- ix. Gathers and performs analysis of data.
- x. Prepares materials for submission to agencies and foundations that fund research.
- xi. Assist PI and PL in project-related correspondence.
- xii. Attends project meetings if requested by PI and PL.
- xiii. Assists in the acquisition of research project materials in campus facilities.
- xiv. Prepares research project articles, reports, and presentations.

## F. Submission of Monthly Allowance Claim

GRAs are required to submit their allowance monthly claim every month. Payment will be processed upon submission of UTP/CGS/002 Form via online by latest 20th of each month. Each activity performed must be authorized by relevant lecturers/supervisor and to be endorsed by the respective department chair. Incomplete claim form will not be processed.

Graduate Research Assistant (GRA) Scheme Work Service Claim Duration (Payment schedule)

No	Monthly Claim Work	Payment for the month of
1	16 December – 15 January	January
2	16 January – 15 February	February
3	16 February - 15 March	March
4	16 March - 15 April	April
5	16 April – 15 May	May
6	16 May – 15 June	June
7	16 June – 15 July	July
8	16 July – 15 August	August
9	16 August – 15 September	September
10	16 September – 15 October	October
11	16 October – 15 November	November
12	16 November – 15 December	December

## G. Confidentiality

GRAs shall keep strictly confidential all data, documents, reports including but not limited to information on formulae, process, manufacturing methods, business affairs of ITPSB or the Project, or any other information obtained, collected, or worked on during the provision of the Services. GRAs shall not, either during the Contract Period or after its expiration, disclose, utilise, or disseminate any information or data related to the Project or ITPSB to any third party except with prior written approval from ITPSB. PL can if required may request the GRA to sign the Non-Disclosure Agreement from to ensure confidentiality.

## H. Extension of GRA Term

YEAR	DURATION OF STUDY	NEW REQUIREMENT	Extension
Year 1	3 <sup>rd</sup> Month	Completed RPD Min. 3 months Max. 6 month	12 Months
Year 2	12 <sup>th</sup> Month	ISI/SCOPUS/ERA One (1) Article Accepted	6 Months
	18 <sup>th</sup> Month	ISI/SCOPUS/ERA ONE (1) Article Published	6 Months

YEAR	DURATION OF STUDY	REQUIREMENT	Extension
Year 1	3 <sup>rd</sup> Month	Completed RPD Min. 6 month Max. 9 month	18 Months
Year 2	18 <sup>th</sup> Month	ISI/SCOPUS/ERA/Conference One (1) Article Accepted	12 Months
Year 3	30 <sup>th</sup> Month	ISI/SCOPUS/ERA/Conference 1. ONE (1) Article Accepted 2. TWO (2) Article Published Articles	6 Months
Year 4	36 <sup>th</sup> Month	Softbound Submission for RCS	6 Months

### I. Termination of Contract

The GRA appointment may be terminated by the Project Leader (PL) on or before expiration of the specified time under the following conditions:

- i. incompetence or neglect of duty as determined by the PL;
- ii. misconduct;
- iii. delinquency in academic work as determined by the PL;
- iv. chronic physical or mental ailment or condition which impairs and undermines the GRA's performance of required duties;
- v. resignation;
- vi. no longer satisfies the criteria for being eligible for appointment;
- vii. Other employment during the tenure of the Graduate Research Assistantship.

In addition, a GRA appointment can be automatically discontinued if a recipient under placed any of the following condition/status:

- i. Does not satisfy the panel during Research Proposal Defense (RPD) and Research Methodology course;
- ii. On "Academic Probation" or "Academic Dismissal";
- iii. withdraws from candidacy;
- iv. placed under academic or university suspension;
- v. placed under investigation;
- vi. intercalate or deferment;
- vii. absent without prior approval or dismissed by the University;
- viii. instructed/requested by the Project Leader/ MOR Director/ DCGS to discontinue/suspend GRA allowance;
- ix. gave misleading or false information for the purpose of securing the GRA scheme;
- x. Any other reasons deemed appropriate by the University.
  - GA hour claimed – shall be based on actual hours as a tutor or demonstrator.
  - GAs are required to complete 71 GA hours every semester. Pre-Dumping/ Carry – Forward of GA hours is not allowed.

- GRAs recipient is required to pay semester tuition fee for the lack of GA hours performed.

**J. Approved GRA Allowance**

<b>Level of study</b>	<b>GRA Allowance (Normal rate)</b>	<b>GRA Allowance (Special scheme - Above normal rate subject for approval)</b>
MSc	RM1, 800.00 per month	Up to RM2, 500.00 per month
PhD	RM2, 300.00 per month	Up to RM3, 900.00 per month

- A Top-Up Scheme allowance is open to all GRAs.
- Application submission for the basic allowance and extra allowance should be submitted at least 1 month and 3 months respectively before the expected date of appointment.

# 4 COURSEWORK PROGRAMME

## 4.1. INTRODUCTION

### Candidacy Period

Programme	Mode	Minimum	Maximum
All Master Programme By Coursework	Conventional/ ODL	12 months	36 months

### Project & Dissertation

Project/Dissertation is the final component in the coursework programme. Students must complete project/dissertation within two (2) consecutive semesters. A student who fails to complete the project/dissertation within the stipulated time will be given "Fail" status.

## 4.2. LIST OF PROGRAMMES

- i. Master of Business Administration in Energy Management
- ii. Master of Business Administration in Energy Management (ODL)
- iii. Master of Science in Applied Computing
- iv. Master of Science in Asset Management & Maintenance
- v. Master of Science in Asset Management & Maintenance (ODL)
- vi. Master of Science in Corrosion Engineering
- vii. Master of Science in Drilling Engineering
- viii. Master of Science in Electronics Systems Engineering
- ix. Master of Science in Electronics Systems Engineering (ODL)
- x. Master of Science in Industrial Environmental Engineering
- xi. Master of Science in Offshore Engineering
- xii. Master of Science in Offshore Engineering (ODL)
- xiii. Master of Science in Petroleum Engineering
- xiv. Master of Science in Petroleum Geosciences
- xv. Master of Science in Petroleum Geosciences (ODL)
- xvi. Master of Science in Process Integration
- xvii. Master of Science in Process Integration (ODL)
- xviii. Master of Science in Process Safety
- xix. Master of Science in Process Safety (ODL)
- xx. Master of Science in Corrosion Engineering

## **Master of Business Administration in Energy Management (Conventional/ODL)**

### **Introduction**

The ever-increasing energy demand and the threat of fast depleting energy resources in recent times have caused concerns on sustainable energy supply worldwide. Under these circumstances, the oil, gas and energy industry domestically and globally face with the urgent need for managers and professionals who are not only competent in managing their businesses but who are also visionary leaders capable of driving their energy businesses in a sustainable manner in tandem with challenging environment. The offering of a Master of Business Administration in Energy Management (MBA-EM) programme is expected to become a very apt solution to develop visionary leaders for the energy industry.

The MBA-EM programme is 5 trimesters, 50 credit hours, 20 months programme with a comprehensive curriculum design. The programme comprises 15 modules with nine Business Core modules, five Energy Management Specialisation modules and on Management Consultancy Management sub-module, and Capstone Consultancy Report).

The MBA-EM programme will expose students to a wide range of real work challenges and will enrich student's learning experiences through case studies. Apart from lectures, the MBA-EM programme offers variety of learning approaches such as seminar, case studies and consultancy based projects-all of which are targeted to authenticate and enhance the classroom learning experiences.

In order to provide greater value and global exposure to the students, all the five energy management specialization modules will be delivered by experienced visiting professors from renowned international universities. This programme is well-suited for top corporate talent candidates, technical managers, engineers, regulators, and professionals serving the energy sector who aim to enhance their business managerial capability.

### **Programme Objective**

- i. Business Administration in Energy Management specialists with insights to articulate complex industry problems and solutions.
- ii. Industry leaders with integrity towards sustainable development through continuous improvement and innovation for the betterment of society.

### **Programme Outcomes**

- i. Demonstrate continuing advanced knowledge in Business Administration in Energy Management and have the capabilities to further develop or use these in new situations or multi-disciplinary context.
- ii. Analyse and evaluate critically problems in Business Administration in Energy Management particularly in situations with limited information and to provide solutions through application of appropriate tools and techniques.

- iii. Appraise available information and research evidence in Business Administration in Energy Management and apply it in the engineering context.
- iv. Plan and perform research undertakings in Business Administration in Energy Management professionally, ethically and responsibly.
- v. Report technical findings in both written and oral forms.
- vi. Recognize the needs for continuing professional development in Business Administration in Energy Management

### Programme Curriculum Structure

Each student is required to complete fifteen (15) modules with nine (9) business core modules, five (5) energy management consultancy project module and one (1) national requirement module. The programme curriculum structure is shown in the below table.

### MBA-EM Curriculum Structure (Conventional)

Course Code	Course Name	Course Type	Semester	Credit Hour
GAM 5013	Organizational Behavior & Human Resource Management	Core	1	3
GAM 5043	Energy Management	Core	1	3
GAM 5113	Accounting for Decision Making	Core	1	3
GAM 5023	Operations Management	Core	2	3
GAM 5123	Strategic Marketing	Core	2	3
GAM 5143	Energy Technology & Innovation	Core	2	3
GAM 5133	Energy Economics	Core	2	3
GAM 5213	Corporate Finance	Core	3	3
GAM 5223	Corporate Ethics, Social Responsibility & Governance	Core	3	3
GAM 5233	Low Carbon Economy & Sustainability	Core	3	3
GAM 5323	Project Management	Core	4	3
GAM 5243	Energy Regulations & Policies	Core	4	3
GAM 5313	Competitive Strategy management	Core	4	3
GAM 5402	Business Research Methods	National Requirement	4	2
GAM 5033	Energy Value Chain	Core	5	3
GAM 5416	Management Consultancy Project	Project	5	6
<b>Total Credit Hour</b>				<b>50</b>

### MBA-EM Curriculum Structure (ODL)

Course Code	Course Name	Course Type	Semester	Credit Hour
OAG 5013	Organizational Behavior & Human Resource Management	Core	1	3
OAG 5043	Energy Management	Core	1	3
OAG 5113	Accounting for Decision Making	Core	1	3
OAG 5023	Operations Management	Core	2	3
OAG 5123	Strategic Marketing	Core	2	3
OAG 5143	Energy Technology & Innovation	Core	2	3
OAG 5133	Energy Economics	Core	2	3
OAG 5213	Corporate Finance	Core	3	3
OAG 5223	Corporate Ethics, Social Responsibility & Governance	Core	3	3
OAG 5233	Low Carbon Economy & Sustainability	Core	3	3
OAG 5323	Project Management	Core	4	3
OAG 5243	Energy Regulations & Policies	Core	4	3
OAG 5313	Competitive Strategy management	Core	4	3
OAG 5402	Business Research Methods	National Requirement	4	2
OAG 5033	Energy Value Chain	Core	5	3
OAG 5416	Management Consultancy Project	Project	5	6
<b>Total Credit Hour</b>				<b>50</b>

### Specialization Modules

The programme offers Energy Management Specialization with the following modules:

1. Energy Value Chain
2. Energy Management
3. Energy Technology and Innovation
4. Low Carbon Economy and Sustainability
5. Energy Regulations and Policies
6. Students have to complete all the above modules in the MBA-EM programme.



## **Master of Science in Applied Computing**

### **Introduction**

This MSc. in Applied Computing programme believes in providing education for the betterment of society and the programme aims to elevate computing professionals into computing experts in supporting the national digital transformation agenda

### **Program Objective**

The objective of the programme; produces computing experts who:

- i. Apply advanced knowledge, understanding and technical skills of applied computing in providing services to various industries and the society.
- ii. Integrate values, attitudes, professionalism and social responsibilities in applied computing practices.
- iii. Alternately adapt the role as leaders and team members, communicate effectively and provide scientific solutions in solving complex applied computing issues and problems.
- iv. Innovatively practice continual career development through lifelong learning and effectively manage information and resources.

### **Programme Outcomes**

- i. Apply advanced knowledge of applied computing to solve issues in the industry and society.
- ii. Design solutions and services for computing industry and society by coordinating multiple advanced applied computing skills.
- iii. Integrate social skills and responsibilities in applied computing practices for the well-being of society.
- iv. Adhere to positive values, ethics and accountability in societal and professional engagement .
- v. Practice effective communication and adopt alternate roles as a leader or a member of diverse teams.
- vi. Construct effective solutions to computing issues and problems that meet the computing standards.
- vii. Manage computing information and seek new knowledge and skills independently.
- viii. Practice relevant and appropriate managerial and entrepreneurial skills.

### **Programme Curriculum Structure**

Each student is required to undertake 40 credits of courses which consist of 6 technology core modules, 3 specialization modules, 1 national requirement and 1 industrial/research-based project module. The duration of the MSc in Applied Computing programme is recommended to be 12 months (tri-semesters). The programme curriculum structure is shown in the below table.

Course Code	Course Name	Course Type	Semester	Credit Hour
TAM1013	IT Project Management	Core	1	3
TAM1023	Digital Innovation and Transformation	Core	1	3
TAM1033	Emerging Technology	Core	1	3
TAM1043	Digital and knowledge Economy	Core	1	3
TAMXXX3	Core Specialization I	Core	1	3
TAM1053	Research Method in IT	National Requirement	2	3
TAM1063	IT Governance, Risk and Compliance	Core	2	3
TAM1073	Information System Strategic Planning	Core	2	3
TAMXXX3	Core Specialization II	Core	2	3
TAMXXX3	Core Specialization III	Core	2	3
TAM108A	MSc Project	Project	3	10
<b>Total Credit Hour</b>				<b>40</b>

<b>Big Data Analytics</b>		
Code	Courses	Credit Hour
TAM1113	Machine Learning Analytics	3
TAM1123	Real Time Analytics	3
TAM1133	Digital Analytics	3
	<b>Total</b>	<b>9</b>

<b>Enterprise Resource Planning</b>		
Code	Courses	Credit Hour
TAM1213	Business Intelligence	3
TAM1223	Business Process Re-Engineering	3
TAM1233	Enterprise System Architecture	3
	<b>Total</b>	<b>9</b>

## **Master of Science in Asset Management & Maintenance (Conventional /ODL)**

### **Introduction**

A master programme in Asset Management and Maintenance program addresses concerns of aging assets and maintenance culture amongst plant personnel. The target group that needs to be equipped with new knowledge and competencies in Asset Management and Maintenance are engineers and managers from petrochemical plants, refineries, offshore platforms/pipelines, power sectors, public and private infrastructures and manufacturing organizations.

The program aims to produce leaders who are able to manage and maintain assets in the most economical, professional, creative, and reliable ways with the state-of-the-art technology, locally and globally.

Graduates with an MSc in Asset Management and Maintenance degree will enhance their employment and industrial career prospects in the management and maintenance of assets with the incorporation of the mechanical and civil engineering aspects.

### **Programme Objective**

- i. Asset Management and Maintenance specialists with insights to articulate complex industry problems and solutions.
- ii. Industry leaders with integrity towards sustainable development through continuous improvement and innovation for the betterment of society.

### **Programme Outcomes**

- i. Demonstrate continuing advanced knowledge in Asset Management and Maintenance and have the capabilities to further develop or use these in new situations or multi-disciplinary context.
- ii. Analyse and evaluate critically problems in Asset Management and Maintenance particularly in situations with limited information and to provide solutions through application of appropriate tools and techniques.
- iii. Appraise available information and research evidence in Asset Management and Maintenance and apply it in the engineering context.
- iv. Plan and perform research undertakings in Asset Management and Maintenance professionally, ethically and responsibly.
- v. Report technical findings in both written and oral forms.
- vi. Recognize the needs for continuing professional development in Asset Management and Maintenance.

### **Programme Curriculum Structure**

Each student is required to complete four (4) core modules, four (4) technical elective modules, 2 management elective modules, Research Methodology and 1 project and dissertation. The programme curriculum structure is shown in the below table.

### Programme Curriculum Structure (Conventional)

Course Code	Course Name	Course Type	Semester	Credit Hour
MBM5013	Principles of Appraisal, Repair and Maintenance	Core	1	3
MBM XXX	Technical Elective 1	Core	1	3
SNB5032	Research Methodology	National Requirement	1	2
MBM5023	Asset Reliability and Risk	Core	2	3
MBM XXX	Technical Elective 2	Core	2	3
SNB5052	Project Management	University Requirement	2	2
MBM5063	Plant Asset Maintenance Management	Core	3	3
MBM XXX	Technical Elective 3	Core	3	3
DAM5362	Data Analytics	University Requirement	3	2
MBM5033	Asset Life Study	Core	4	3
MBM XXX	Technical Elective 4	Core	4	3
MBM51110/ MBM511A	Project	Project	4	10
<b>Total Credit Hour</b>				<b>40</b>

Elective Courses		
Course Code	Course Name	Credit Hour
MBM5083	Asset Integrity Management	3
MBM5073	Failure Analysis and Non-Destructive Testing	3
MBM5093	Offshore Structural Integrity Management	3
MBM5103	Sustainable Environmental Management	3
MBM5123	Condition-based monitoring and analysis	3
MBM5133	Asset Operation Optimization	3

**Programme Curriculum Structure (ODL)**

<b>Course Code</b>	<b>Course Name</b>	<b>Course Type</b>	<b>Semester</b>	<b>Credit Hour</b>
OAM5013	Principles of Appraisal, Repair and Maintenance	Core	1	3
OAM5033	Asset Life Study	Core	1	3
OAM5083	Corrosion Engineering	Core	1	3
OAM5103	Deepwater Maintenance	Core	1	3
SFB5012	Engineering Economy	University Requirement	1	2
OAM5023	Reliability Assessment of Structures	Core	2	3
OAM5063	Plant Asset Maintenance Management	Core	2	3
OAM5093	Reliability Assessment of Pipelines	Core	2	3
OAM5073	Failure Analysis and Risk-based Inspection	Core	2	3
SNB5012	Operations Management	University Requirement	2	2
OAN5032	Research Methodology	National Requirement	2	2
OAM511C	Industrial-Based Project	Project	3	12
<b>Total Credit Hour</b>				<b>42</b>

## **Master of Science in Corrosion Engineering**

### **Introduction**

Corrosion inflicts damage to many industry sectors such as utilities, transportation, infrastructures, government's asset and production / manufacturing. The global cost of corrosion is US\$2.5 trillion, equating to 3.4% of a country's Gross Domestic Product (GDP) and investing in Corrosion Control can save 15- 35% (USD375- 875 Billion). Therefore, our industry needs Corrosion Professionals and UTP offers a specially designed Corrosion Engineering programme, the first in South East Asia.

Students will experience state-of-the-art facilities at UTP through our Centre for Corrosion Research such as Electrochemistry Lab, High Pressure High Temperature Autoclave, Multiphase Flow Loop/TCFC, MIC Lab, Corrosion under Insulation Lab, Coating Test Lab, Stress Corrosion Cracking Lab and Characterization Lab.

### **Programme Objective**

who are able to conduct corrosion assessment and provide sustainable, innovative solution and judgment pertaining to asset integrity, complying to industry requirement and management best practices.

who have the potential to become leaders and are committed to manage sustainable development in industries for the betterment of society and nation.

### **Programme Outcomes**

At the end of the program, graduates should be able to:

- i. Implement advanced knowledge and technology in corrosion and prevention engineering design.
- ii. Analyse and evaluate corrosion problems by using appropriate tools and techniques providing solution in corrosion cases.
- iii. Appraise available information and research evidence and apply it in the corrosion engineering context.
- iv. Plan, manage and act professionally, ethically and responsibly in corrosion practices.
- v. Effectively communicate and advocate best practices in relation to corrosion management in both written and oral forms.
- vi. Undertake lifelong learning and continuing professional development.

### **Programme Curriculum Structure**

Each student is required to complete 40 credit hours consisting of six (6) core modules, two (2) elective modules, one (1) module for national requirement and 2 modules for individual project. The programme curriculum structure is shown as below:

### Programme Curriculum Structure

Course Code	Course Name	Course Type	Semester	Credit Hour
BAM 5114	Principles of Corrosion	Core	1	4
BAM 5124	Engineering Materials, Fundamentals and Selection	Core	1	4
BAM 5134	Corrosion Control and Management System	Core	1	4
SNB5042	Research Methodology	National Requirements	1	2
BAM 5214	Cathodic Protection and Protective Coating	Core	2	4
BAM 5223	Engineering Failure Analysis	Core	2	3
BAM 5233	Corrosion Inhibition	Core	2	3
BAM 5244	Industrial-Based Project I	Project	2	4
BAM 5316	Research Project II	Project	3	6
BAM5XX3	Elective Course	Core	3	3
BAM5XX3	Elective Course	Core	3	3
<b>Total Credit Hour</b>				<b>40</b>

## **Master of Science in Drilling Engineering**

### **Introduction**

A master programme in Drilling Engineering deals with the application of recent advances in drilling technologies and analysis techniques such as well constructions, geomechanics, drilling fluid and cementing, well completion, casing design, hydraulics, project management and economics, well engineering and well intervention in order to understand and optimise the drilling technique with technical knowledge and safety in place.

The MSc in Drilling Engineering program in UTP is unique as it is the only program of its kind offered in Malaysia. In addition, being affiliated to PETRONAS, UTP has good access to supports of the program such as through adjunct lecture scheme, co-teaching from industrial instructors and also external examiners for individual projects. This program has industrial based project which exposed to the real data of industries to become competent drilling engineer.

The program would provide the MSc in Drilling Engineering graduate with enhanced knowledge and skills that meets industrial demands in the area of Drilling Engineering such as in oil and gas industries, academia, R&D scientific bodies and further studies.

### **Programme Objective**

The programme educational objective of the programme is to produce drilling Engineering specialists with insights to articulate complex industry problems and solutions. The program also aims to produce industry leaders with integrity towards sustainable development through continuous improvement and innovation for the betterment of society.

### **Programme Outcomes**

- i. Demonstrate continuing and advanced knowledge in drilling engineering and have the capabilities to further develop or use these in new situations or multi-disciplinary context.
- ii. Analyse and evaluate critically problems in drilling engineering, particularly in situations with limited information and to provide solutions through application of appropriate tools and techniques.
- iii. Appraise available information and research evidence in drilling engineering and apply it in the engineering context.
- iv. Plan and perform research undertakings professionally, ethically and responsibly.
- v. Report technical findings in both written and oral forms.
- vi. Recognize the needs for continuing professional development in drilling engineering.

### **Programme Curriculum Structure**

Each student is required to complete 44 credit hours consisting of 9 core modules, 1 module for national requirement, 2 modules for University requirement and 1 module for individual project. The programme curriculum structure is shown in the below table.



<b>Course Code</b>	<b>Course Name</b>	<b>Course Type</b>	<b>Semester</b>	<b>Credit Hour</b>
DAM 5253	Geomechanics	Core	1	3
DAM 5313	Well Engineering 1	Core	1	3
DAM 5253	Wells Construction	Core	1	3
DAM 5273	Drilling Fluids & Cementing	Core	1	3
DAM 5293	Hydraulics & Drillstring Design	Core	2	3
DAM 5283	Casing Design & Tubular	Core	2	3
DAM 5303	Well Completion	Core	2	3
DAM 5343	Well Engineering 2	Core	2	3
SNB5032	Research Methodology	National Requirement	2	2
DAM 5323	Project Management & Economics	University Requirement	3	3
DAM 5333	Well Intervention & Workover	Core	3	3
DAM5362	Data Analytics	University Requirement	3	2
DAM524A	Industrial Project	Project	3	10
<b>Total Credit Hour</b>				<b>44</b>

## **Master of Science in Electronics Systems Engineering (Conventional/ODL)**

### **Introduction**

A master programme in Electronics System Engineering Programme is tailored to train young graduates and professionals with advanced design in integrated circuit design and applications and entrepreneurship skills to enable them to perform R&D and commercialization activities and move up the value chain from the manufacturing era to the design era of the electronic industry.

Besides providing in-depth knowledge of specific subject areas, this programme is also intended to expose the graduates and engineers with a range of analytical and research skills that would be of long-term value. Graduates with an MSc in Electronic Systems Engineering degree will enhance their employment and career prospects in the telecommunication, computers, and electronics and semiconductor industry. The degree is also a good starting point for a career in research and academia.

### **Programme Objective**

- i. Science in Electronics Systems Engineering specialists with insights to articulate complex industry problems and solutions.
- ii. Industry leaders with integrity towards sustainable development through continuous improvement and innovation for the betterment of society.

### **Programme Outcomes**

- i. Demonstrate continuing advanced knowledge in Electronics Systems Engineering and have the capabilities to further develop or use these in new situations or multi-disciplinary context.
- ii. Analyse and evaluate critically problems in Electronics Systems Engineering particularly in situations with limited information and to provide solutions through application of appropriate tools and techniques.
- iii. Appraise available information and research evidence in Electronics Systems Engineering and apply it in the engineering context.
- iv. Plan and perform research undertakings in Electronics Systems Engineering professionally, ethically and responsibly.
- v. Report technical findings in both written and oral forms.
- vi. Recognize the needs for continuing professional development in Electronics Systems Engineering.

### **Programme Curriculum Structure**

Each student is required to complete 5 core modules, 3 technical elective modules, 2 university requirements and 1 project and dissertation, and Research Methodology. The programme curriculum structure is shown in the below table.

**Programme Curriculum Structure (Conventional)**

<b>Course Code</b>	<b>Course Name</b>	<b>Course Type</b>	<b>Semester</b>	<b>Credit Hour</b>
EEM5013	Advanced Engineering Mathematics for System Analysis and Design	Core	1	3
EEM5023	Advanced Digital Systems Design	Core	1	3
EEM5073	Modern Communication & Networking Systems	Core	1	3
EEM5043	Advanced Embedded Systems	Core	1	3
SNB5032	Research Methodology	National Requirement	1	2
EEM5053	VLSI Systems Design	Core	2	3
EEM50X3	Major Elective I	Core	2	3
EEM50X3	Major Elective II	Core	2	3
EEM51X3	Technical Elective	Core	2	3
SFB/SNB 50X2	Management Elective I	University Requirement	2	2
SFB/SNB 50X2	Management Elective II	University Requirement	3	2
EEM520C	R&D Project	Project	3	12
<b>Total Credit Hour</b>				<b>42</b>

**Programme Curriculum Structure (ODL)**

<b>Course Code</b>	<b>Course Name</b>	<b>Course Type</b>	<b>Semester</b>	<b>Credit Hour</b>
OAE5013	Advanced Engineering Mathematics for System Analysis and Design	Core	1	3
OAE5023	Advanced Digital Systems Design	Core	1	3
OAE5073	Modern Communication & Networking Systems	Core	1	3
OAE5043	Advanced Embedded Systems	Core	1	3
OAN5032	Research Methodology	National Requirement	1	2
OAE5053	VLSI Systems Design	Core	2	3
OAE50X3	Major Elective I	Core	2	3
OAE50X3	Major Elective II	Core	2	3
OAE51X3	Technical Elective	Core	2	3
OAU 50X2	Management Elective I	University Requirement	2	2
OAU 50X2	Project Management	University Requirement	3	2
OAE520C	R&D Project	Project	3	12
<b>Total Credit Hour</b>				<b>42</b>

## **Master of Science in Industrial Environmental Engineering**

### **Introduction**

The hunt for industrial site performance gain and sustainability underscores the pressing pursuit of practical, proven and cost-effective solutions to help industry players achieve full industrial environmental compliance. Jointly developed with PETRONAS' HSE Fraternity, MSc in Industrial Environmental Engineering exposes students to some of the most important actions accelerating environmental sustainability through the diffusion of technology-enabled practices. To bring focus to the effort, candidates' development journey is founded on international, national and industrial needs that cover essential areas such as environmental management, risk management and pollution prevention.

Candidates will work with senior industry experts to study the latest trends and strategies that seek to minimise environmental impact from industrial activities. In addition, students will build advanced knowledge in industrial wastewater treatment, air emission abatement, solid and hazardous waste management as well as other forward-looking environmental management practices.

Through extensive research, students will frame industrial environmental best practices around proven technology and practical and cost-effective solutions. Ultimately, students will be equipped with a global outlook and adopt bold ambitions to contribute towards achieving global sustainability goals in line with United Nation's Sustainable Development Goals; SDG6 – Clean Water and Sanitation, SDG7 - Affordable and Clean Energy, SDG9 - Industry, Innovation and Infrastructure SDG11 - Sustainable Cities and Communities, SDG13 - Climate Action, and SDG14 - Life Below Water.

### **Programme Objective**

The objective of the programme is to produce graduates who are technically competent, creative, innovative and specialized environmental engineers who contribute to the various industries and society.

### **Programme Outcomes**

- i. Appraise and synthesize available information and evidence in solving complex environmental problems.
- ii. Provide sustainable engineering solutions through the application of appropriate tools and techniques.
- iii. Provide design and conduct assessments on environmental engineering aspects of projects.
- iv. Undertake lifelong learning and continuous improvement of technical solutions on environmental related issues through innovative research and development.

### **Programme Curriculum Structure**

Each student is required to complete seven (7) core modules, three (3) technical elective modules, one (1) national requirement and research project I and II. The programme curriculum structure is shown in the below table.

<b>Course Code</b>	<b>Course Name</b>	<b>Course Type</b>	<b>Semester</b>	<b>Credit Hour</b>
ZAM 5013	Advanced Biological Wastewater Treatment	Core	1	3
ZAM 5022	Environmental Engineering Laboratory	Core	1	2
ZAM 5033	Sludge Management and Disposal	Core	1	3
ZAM 5042	Environmental Hazardous Substances and Waste Management	Core	1	2
SNB 5032	Research Methodology	National Requirements	1	2
ZAM 5053	Advanced Physical-Chemical Treatment Technologies	Core	2	3
ZAM 5063	Renewable Energy Technology	Core	2	3
ZAM 5XX3	Major Elective I	Core	2	3
ZAM 5XX3	Major Elective II	Core	2	3
ZAM 5073	Research Project I	Project	2	3
ZAM 5083	Air Pollution Prevention and Control	Core	3	3
ZAM 5XX3	Major Elective III	Core	3	3
ZAM 5097	Research Project II	Project	3	7
<b>Total Credit Hour</b>				<b>40</b>

## **Master of Science in Offshore Engineering (Conventional/ODL)**

### **Introduction**

Offshore industry is a relatively recent industry that has rapidly expanded during the last 60 years. Challenges in the industry arise such as has never been encountered before, particularly in offshore engineering. These challenges can only be synthesized and solved by upgrading and enhancing the knowledge related to offshore engineering.

The oil and gas industry plays a significant role in Malaysia's economy. The nation largely derives these resources from offshore reserves. It is predicted that there will be a shortage of talent in Malaysia in the oil and gas industry. This complexity is due to the large segments of workforce approaching retirement and the lack of skilled graduates from Malaysian universities.

Malaysian universities have limited exposure in offshore engineering, as the focus is on general engineering in major disciplines (e.g. Civil, Mechanical, and Electrical Engineering). Exposure is only gained through on the job training, requiring companies to invest a significant amount in time and money. In order to fill in the skill gap and lack of talent, it is necessary to develop graduates who are trained and versed in various offshore engineering areas.

The pedagogical goal of the MSc Offshore Engineering Programme is to educate students to be able of taking a leadership role in superior technical knowledge and application required in the offshore industry.

### **Programme Objective**

- i. Offshore Engineer specialists with insights to articulate complex industry problems and solutions.
- ii. Industry leaders with integrity towards sustainable development through continuous improvement and innovation for the betterment of society.

### **Programme Outcomes**

- i. Demonstrate continuing and advanced knowledge in Offshore Engineering and have the capabilities to further develop or use these in new situations or multi-disciplinary contexts.
- ii. Analyse and evaluate critically problems in Offshore Engineering particularly in situations with limited information and to provide solutions through the application of appropriate tools and techniques.
- iii. Appraise available information and research evidence in Offshore Engineering and apply it in the engineering context.
- iv. Plan and perform research undertakings in Offshore Engineering professionally, ethically and responsibly.
- v. Report technical findings in both written and oral forms.
- vi. Recognize the needs for continuing professional development in Offshore Engineering.

### Programme Curriculum Structure

Each student is required to complete seven (7) core modules, two (2) technical elective modules, two (2) university requirements, one (1) research project, and Research Methodology module. The programme curriculum structure is shown in the below table.

### Programme Curriculum Structure (Conventional)

Course Code	Course Name	Course Type	Semester	Credit Hour
VBM5113	Wave Hydrodynamics	Core	1	3
VBM5123	Structural Dynamics	Core	1	3
VBM5143	Meteorology and Oceanography	Core	1	3
VBM XXX	Technical Elective 1	Core	1	3
SNB5032	Research Methodology	National Requirement	1	2
VBM5153	Design of Fixed Offshore Structures	Core	2	3
VBM5163	Offshore Foundations	Core	2	3
VBM5173	Risk, Reliability & Integrity of Offshore Structures	Core	2	3
VBM XXX	Technical Elective 2	Core	2	3
SNB5052	Project Management	University Requirement	2	2
DAM5362	Data Analytic	University Requirement	3	2
VBM5183	Offshore Project Management	Core	3	3
VBM5212	Research Project I	Project	3	2
VBM5228	Research Project II	Project	4	8
<b>Total Credit Hour</b>				<b>43</b>



### Programme Curriculum Structure (ODL)

Course Code	Course Name	Course Type	Semester	Credit Hour
OAV5113	Wave Hydrodynamics	Core	1	3
OAV5123	Structural Dynamics	Core	1	3
OAN5032	Research Methodology	National Requirement	1	2
OAV5XX3	Technical Elective	Core	1	3
OAV5133	Offshore Engineering Materials	Core	1	3
OAU5052	Project Management	University Requirement	2	2
OAV5153	Design of Fixed Offshore Structures	Core	2	3
OAV5163	Offshore Foundations	Core	2	3
OAV5173	Risk, Reliability & Integrity of Offshore Structure	Core	2	3
OAV5XX3	Technical Elective 2	Core	2	3
OAU5362	Data Analytic	University Requirement	3	2
OAV5183	Offshore Project Management	Core	3	3
OAV5213	Research Project I	Project	3	3
OAV5227	Research Project II	Project	7	7
<b>Total Credit Hour</b>				<b>43</b>

## **Master of Science in Petroleum Engineering**

### **Introduction**

Engineering is an interdisciplinary field that applies engineering principles and quantitative methods in exploiting subsurface oil and gas reserves. At UTP, the MSc course in Petroleum Engineering offers qualified and dedicated graduates with a learning experience and industry relevant research and field development projects related to the needs of the multibillion-dollar petroleum industry. This is achieved through a programme of taught MSc degree course which offers 11 technical modules and 2 management electives. There is a high degree of computer usage for project, teaching and on-line support. High performance workstations are able to provide powerful graphics and processing capability enabling students and high caliber staff to tackle complicated problems of the petroleum industry.

Graduates with an MSc in Petroleum Engineering degree will enhance their employment and career prospects in the global oil and gas industry. The degree is also a good starting point for a career in research and academia.

### **Programme Objective**

- i. Petroleum Engineering specialists with insights to articulate complex industry problems and solutions.
- ii. Industry leaders with integrity towards sustainable development through continuous improvement and innovation for the betterment of society

### **Programme Outcomes**

- i. Demonstrate continuing advanced knowledge in Petroleum Engineering and have the capabilities to further develop or use these in new situations or multi-disciplinary context.
- ii. Analyse and evaluate critically problems in Petroleum Engineering particularly in situations with limited information and to provide solutions through application of appropriate tools and techniques.
- iii. Appraise available information and research evidence in Petroleum Engineering and apply it in the engineering context.
- iv. Plan and perform research undertakings in Petroleum Engineering professionally, ethically and responsibly.
- v. Report technical findings in both written and oral forms.
- vi. Recognize the needs for continuing professional development in Petroleum Engineering.

### **Programme Curriculum Structure**

Each student is required to complete seven (7) core modules, two (2) university requirement, one (1) national requirement and one (1) Individual Project. The programme curriculum structure is shown in the below table.

<b>Course Code</b>	<b>Course Name</b>	<b>Course Type</b>	<b>Semester</b>	<b>Credit Hour</b>
PBM 5123	Reservoir Engineering	Core	1	3
PBM 5144	Formation Evaluation	Core	1	4
PBM 5134	Drilling Engineering	Core	1	4
SNB5032	Research Methodology	National Requirement	1	2
DAM 5362	Data Analytics	University Requirement	1	2
PBM 5153	Well Test Analysis	Core	2	3
PBM 5164	Production Engineering	Core	2	4
PBM 5173	Reservoir Simulation	Core	2	3
PBM 5183	Petroleum Economics	Core	2	3
SNB 5052/ SNB 5022	Project Management OR Strategic Management	University Requirement	2	2
PBM 522A	Research Project	Project	3	10
<b>Total Credit Hour</b>				<b>40</b>

## **Master of Science in Petroleum Geosciences**

### **Introduction**

Petroleum Geoscience is an interdisciplinary field that applies geoscience principles and quantitative methods in the search and development of commercial oil and gas fields. It includes interpreting, predicting and managing risks and uncertainties in exploration and exploitation of hydrocarbon resources. At Universiti Teknologi PETRONAS, the MSc Petroleum Geoscience Programme is tailored to train young graduates and professionals from the industry in the full range of approaches, methods and techniques to explore and evaluate new oil and gas fields and to characterize reservoirs.

Graduates with an MSc in Petroleum Geoscience degree will enhance their employment and career prospects in the global oil and gas industry. The degree is also a good starting point for a career in research and academia.

### **Programme Objective**

- i. Petroleum Geosciences specialists with insights to articulate complex industry problems and solutions.
- ii. Industry leaders with integrity towards sustainable development through continuous improvement and innovation for the betterment of society.

### **Programme Outcomes**

- i. Demonstrate continuing advanced knowledge in Petroleum Geosciences and have the capabilities to further develop or use these in new situations or multi-disciplinary context.
- ii. Analyse and evaluate critically problems in Petroleum Geosciences particularly in situations with limited information and to provide solutions through application of appropriate tools and techniques.
- iii. Appraise available information and research evidence in Petroleum Geosciences and apply it in the engineering context.
- iv. Plan and perform research undertakings in Petroleum Geosciences professionally, ethically and responsibly.
- v. Report technical findings in both written and oral forms.
- vi. Recognize the needs for continuing professional development in Petroleum Geosciences.

### **Programme Curriculum Structure**

Each student is required to complete 6 core modules, 2 specializations modules, 2 university requirements, 1 national requirement and 2 modules of Industry Project. The programme curriculum structure is shown in the below table.

### Programme Curriculum Structure (Conventional)

Course Code	Course Name	Course Type	Semester	Credit Hour
QBM5013	Basin & Structural Dynamics	Core	1	3
QBM5023	Applied Sedimentology & Stratigraphy	Core	1	3
QBM5033	Petroleum System & Basin Modelling	Core	1	3
QBM5043	Applied Geophysics	Core	1	3
SNB5032	Research Methodology	National Requirement	1	2
SNB5052	Project Management	University Requirement	1	2
DAM5362	Data Analytic	University Requirement	2	2
QBM5053	Formation Evaluation & Petrophysics	Core	2	3
QBM5063	Life of Field & Subsurface Risking	Core	2	3
QBM5XXX	Course 1 of Specialization I/II	Specialization	2	3
QBM5XXX	Course 2 of Specialization I/II	Specialization	2	3
QBM5112	Individual Industrial Project I	Project	2	2
QBM5128	Individual Industrial Project II	Project	3	8
<b>Total Credit Hour</b>				<b>40</b>

Course Code	Course Name	Course Type	Semester	Credit Hour
QBM5073	Advance Seismic Technology	Specialization I	2	3
QBM5083	Quantitative & Computational Geophysics	Specialization I	2	3
QBM5093	Reservoir Modelling and Characterization	Specialization II	2	3
QBM5103	Reservoir Engineering	Specialization II	2	3

### Programme Curriculum Structure (ODL)

Course Code	Course Name	Course Type	Semester	Credit Hour
OAQ5013	Basin & Structural Dynamics	Core	1	3
OAQ5023	Applied Sedimentology & Stratigraphy	Core	1	3
OAQ5033	Petroleum System & Basin Modelling	Core	1	3
OAQ5043	Applied Geophysics	Core	1	3
OAN5032	Research Methodology	National Requirement	1	2
OAU5052	Project Management	University Requirement	1	2
OAQ5053	Formation Evaluation & Petrophysics	Core	2	3
OAQ5063	Life of Field & Subsurface Risking	Core	2	3
OAQ5073 / OAQ5093	Course 1 of Specialization I / II	Core	2	3
OAQ5083 / OAQ5103	Course 2 of Specialization I / II	Core	2	3
OAQ5112	Individual Industrial Project I	Project	2	2
OAU5362	Data Analytic	University Requirement	2	2
OAQ5128	Individual Industrial Project II	Project	3	8
<b>Total Credit Hour</b>				<b>40</b>

Course Code	Course Name	Course Type	Semester	Credit Hour
QBM5073	Advance Seismic Technology	Specialization I	2	3
QBM5083	Quantitative & Computational Geophysics	Specialization I	2	3
QBM5093	Reservoir Modelling and Characterization	Specialization II	2	3
QBM5103	Reservoir Engineering	Specialization II	2	3

## **Master of Science in Process Integration**

### **Introduction**

Process Integration is a systematic design methodology that addresses issues related to energy efficiency, waste minimization and an efficient use of raw materials. Currently the conceptual design stage is greatly facilitated by the use of simulations, either in a design of a new plant or in conducting improvement studies in an existing.

However, the simulation approach suffers from lack of synthesis capability and inability to provide an overall contextual overview of the entire plant. This drawback at the conceptual design stage will have serious consequences in determining the environmental impact, economic viability and safety features of the final design and Knowledge of Process Integration is essential in arriving at better designs that will meet the calls for efficiency in the use of energy, efficiency in the use of materials and reduction of emissions.

The MSc in Process Integration is an internationally recognized degree that will allow graduates to enhance their career opportunities in industry, research establishments or the academia.

### **Programme Objective**

- i. Process Integration specialists with insights to articulate complex industry problems and solutions.
- ii. Industry leaders with integrity towards sustainable development through continuous improvement and innovation for the betterment of society.

### **Programme Outcomes**

- i. Demonstrate continuing advanced knowledge in Process Integration and have the capabilities to further develop or use these in new situations or multi-disciplinary context.
- ii. Analyze and evaluate critically problems in Process Integration particularly in situations with limited information and to provide solutions through application of appropriate tools and techniques.
- iii. Appraise available information and research evidence in Process Integration and apply it in the engineering context.
- iv. Plan and perform research undertakings in Process Integration professionally, ethically and responsibly.
- v. Report technical findings in both written and oral forms.
- vi. Recognize the needs for continuing professional development in Process Integration.

### **Programme Curriculum Structure**

Each student is required to complete five (5) core modules, four (4) modules for technical electives, two (2) university requirements, one (1) national requirement and dissertation projects. The programme curriculum structure is shown in the below table.

**Programme Curriculum Structure (Conventional)**

<b>Course Code</b>	<b>Course Name</b>	<b>Course Type</b>	<b>Semester</b>	<b>Credit Hour</b>
EBM 5012	Heat Integration	Core	1	2
EBM 5022	Modelling	Core	1	2
EBM 5032	Operability & Control	Core	1	2
EBM 5042	Process Safety	Core	1	2
EBM 5052	Optimization	Core	1	2
SNB 5052	Project Management	University Requirement	1	2
SNB 5032	Research Methodology	National Requirement	1	2
EBM xxxx	Technical Elective I	Technical Elective	2	3
EBM xxxx	Technical Elective II	Technical Elective	2	3
EBM xxxx	Technical Elective III	Technical Elective	2	3
EBM xxxx	Technical Elective IV	Technical Elective	2	3
DAM5362	Data Analytics	University Requirement	2	2
EBM 5414	Design Project	Project	3	12
<b>Total Credit Hour</b>				<b>40</b>



### Programme Curriculum Structure (ODL)

Course Code	Course Name	Course Type	Semester	Credit Hour
OAN5032	Research methodology	National Requirement	1	2
OAI5012	Heat Integration	Core	1	2
OAI5022	Modelling	Core	1	2
OAI5052	Optimization	Core	1	2
OAI5032	Operability and Control	Core	1	2
OAI5042	Process Safety	Core	1	2
OAIxxx3	Technical Elective I	Core	2	3
OAIxxx3	Technical Elective II	Core	2	3
OAIxxx3	Technical Elective III	Core	2	3
OAIxxx3	Technical Elective IV	Core	2	3
OAU5052	Project Management	University Requirement	2	2
OAU5362	Data Analytics	University Requirement	3	2
OAI541C	Design project	Project	3	12
<b>Total Credit Hour</b>				<b>40</b>

Environmental Process Design		
Code	Course Name	Credit Hours
OAI5173	Cleaner Production	3
OAI5183	Environmental Design for Atmospheric Emissions	3
OAI5193	Environmental Design for Aqueous Emissions	3
OAI5153	Synthesis of Reaction and Separation Systems	3

Refinery Design & Operation		
Code	Course Name	Credit Hours
OAI5113	Refinery and Petrochemical Processes	3
OAI5123	Refinery Optimization	3
OAI5133	Advanced Distillation Design	3
OAI5032	Operability & Control	3

Advanced Chemical Process Design		
Code	Course Name	Credit Hours
OAI5153	Synthesis of Reaction and Separation Systems	3
OAI5133	Advanced Distillation Design	3
OAI5163	Design of Fine and Specialty Chemicals	3
OAI5032	Operability & Control	3

## **Master of Science in Process Safety**

### **Introduction**

The programme has been designed to accommodate the ever-increasing demand and a shortage of process safety professionals in Malaysia and also in Asia Pacific region. The recent statistics in this region show a tremendous development of Major Hazard Installations indicating the requirement for more industrial practitioners who could manage process safety hazards. The main objective of this programme is to deepen understanding and equip the students with advanced skills and expertise in process safety, loss prevention and risk assessment. Therefore, by working closely with the Process Safety professionals, centres and institutions, we have jointly developed a distinguished and leading MSc Process Safety programme in this region.

### **Programme Objective**

The objective of the programme is to produce graduates who are able to apply process safety knowledge and manage risk towards prevention, mitigation and response of major accidents and losses in process installation.

### **Programme Outcomes**

The aim of offering an MSc in Process Safety is to provide graduates and practicing engineers with advanced knowledge for safer design and operation of processing plant to prevent major accidents specifically fire, explosion and toxic release. Therefore, upon graduation the candidates shall be able to:

- i. Apply advanced knowledge and skills in process safety for safer design and operation at all asset lifecycle stages.
- ii. Investigate, analyse and solve process safety issues based on interpretation of available data and synthesis of relevant information including lesson learned from previous major accidents.
- iii. Utilize a range of tools, techniques and methodologies to identify, manage, and control process safety issues.
- iv. Comprehend professional responsibilities and identify technical and legal requirements for process safety practices.
- v. Communicate effectively on process safety activities as individual, member or a leader in a team with the engineering community and society at large.

### **Programme Curriculum Structure**

Each student is required to complete six (6) core modules, 2 elective modules, 2 university requirements, one (1) national requirement and industrial/research-based projects. The programme curriculum structure is shown in the below table.

Course Code	Course Name	Course Type	Semester	Credit Hour
CBM5113	Principles of Process Safety Management (Core)	Core	1	3
CBM5123	Principles of Hazard Analysis & Risk Management (Core)	Core	1	3
CBM/EMM XXXX	Technical Elective 1	Core	1	3
SNB5032	Research Methodology	National Requirement	1	2
CBM5143	Safe Design And Operation (Core)	Core	2	3
CBM5153	Human Factors (Core)	Core	2	3
CBM517A	Industrial/Research Based Project	Project	2	10
CBM5133	System Safety Engineering (Core)	Core	3	3
CBM5243	Process Plant Integrity & Realibility (Core)	Core	3	3
CBM/EMM XXXX	Technical Elective 2	Core	3	3
SNB5052	Project Management	University Requirement	3	2
DAM5362	Data Analytics	University Requirement	3	2
<b>Total Credit Hour</b>				<b>40</b>



## **5**

# **STUDENT AFFAIRS**

### **5.1 HEALTH, SAFETY AND ENVIRONMENT**

The University adopts and practices health, safety and environment policies provided by the law. Before being offered admission to the University each candidate is required to fulfil all health requirements as per Guidelines for Medical Examination and Insurance issued by The Malaysian Ministry of Education.

Any candidate who is found to have any of the diseases/disorders that prohibits registration during a verification process by UTP's Health Centre will not be admitted to the University. International students will be required to return to his/her home country at his/her own expense.

UTP students are obliged to comply with all government and University laws and regulations with regard to Health, Safety and Environment.

It is the responsibility of each student:

- i. To take precautions to safeguard one's own health and safety, as well as others. This may be affected as a result of one's actions or ignorance.
- ii. To support the University's personnel in implementing the relevant laws and regulations. To wear and/or use proper/required clothing and safety equipment to avoid any risk against health and safety.
- iii. To obey all instructions and follow all health and safety procedures prescribed by the University.
- iv. To report to any University personnel immediately of any case of accident, dangerous occurrence, poisoning and infectious disease.
- v. To avoid disturbances or misuse of equipment for health and safety precautions.

Students who fail to comply with the above laws and rules may be suspended for a specified period of time or dismissed or any other penalty deemed necessary by the University.

### **5.2 FACILITIES**

Facilities and services are provided by the University to fulfil academic and non-academic requirements e.g. lecture theatres, laboratories, and information technology and sports facilities.

### **5.3 INTERNATIONAL STUDENTS**

The University is providing services and organizing programmes that support the development and welfare for the international students such as immigration regulatory advising and processing, cultural adjustment, social enrichment, and assistance with practical matters related to living in Malaysia. For detailed information, the students may refer to the International Student Welcome Guide.

## 5.4 COUNSELING SERVICES

This unit is responsible to provide counselling services and assist students in personal growth and development. Students may access to our services voluntarily by walk-in, appointment, e-mail, and via phone or being referred by any University departments.

(NOTE: Students may refer to the UTP website for further details.)

## 5.5 CO-CURRICULLUM ACTIVITIES (SPORTS & RECREATION)

This unit is responsible in management and co-ordination of UTP sports activities. This includes the organizing, managing and coordinating games and competition internally or externally, planning and training of UTP sport teams and providing the required sport equipment. In addition, this unit is responsible in managing and overseeing the UTP sport complex facilities and sport equipment. All facilities and services are opened to students and staff of UTP. The sports activities sports is divided into two (2) categories which is Sports for Excellence and Sports for Fun.

Sports for excellence is to enhance and develop sport to the highest level and outstanding achievement, while sport for Fun is focusing more on UTP sports activities in order to create a vibrant campus environment. Among the activities that have been conducted are running, kayaking and Frisbee.

## 5.6 POSTGRADUATE STUDENT COUNCIL (PGSC)

Postgraduate Students Council (PGSC) provides a platform for students, Centre for Graduate Studies (CGS) and the administration of UTP to interact.

### **Vision**

A platform between students, Centre for Graduate Studies (CGS), and the administration of UTP via the Postgraduate Students Council (PGSC) of Universiti Teknologi PETRONAS (UTP).

### **Mission**

As a medium of interaction between post-graduate students, Centre for Graduate Studies (CGS) and the administration of UTP via the Postgraduate Student Council (PGSC) of Universiti Teknologi PETRONAS,

To enhance the unity of postgraduate students of Universiti Teknologi PETRONAS towards a healthy lifestyle and academic achievement,

To provide a welfare support for postgraduate students of Universiti Teknologi PETRONAS

## 5.7 STUDENT DISCIPLINARY RULES AND REGULATIONS

Students must abide to the rules and regulations stated in the “Student Disciplinary Rules and Regulations”.

## 5.8 PLAGIARISM

### **Quality and Integrity of the Thesis/Dissertation**

Postgraduate candidates of the Universiti Teknologi PETRONAS (UTP) are expected to produce original academic work. Students are reminded that consistency and accuracy of the submitted thesis/dissertation are important. Careful editing is required in order to ensure that thesis/dissertation is free of errors before submission for thesis/dissertation examination.

### **Plagiarism**

Definition of plagiarism by Oxford Dictionaries is “The practise of taking someone else’s work or ideas and passing them off as one’s own”. The University does not tolerate plagiarism. Students are recommended to use online web-based plagiarism software such as Turnitin to check for the similarity index. The similarity percentage allowed is not more than 25%. Failure to do so will result in disciplinary action as stipulated in Universiti Teknologi PETRONAS Student Rules.