

**DOCTOR of PHILOSOPHY
FIELD: SOFTWARE ENGINEERING**

PROGRAMME SYNOPSIS

The Doctor of Philosophy, Field: Software Engineering is offered on a full-time basis. The full-time programme is offered only at the UTM Main Campus in Johor Bahru. The duration of study for the full-time programme is subjected to the student's entry qualifications and lasts between three (3) years to a maximum of eight (8) years.

The programme is offered on full-time basis and is based on a 2-Semester per academic session. This is a full research programme. The candidate is supervised by a lecturer. The directed research work introduces candidates to the process by which new knowledge is developed and applied accordingly. Assessment is done by examining first assessment reports (research proposal), each semester's progress reports, and thesis examination (viva-voce).

General Information

1. Awarding Institution		Universiti Teknologi Malaysia		
2. Teaching Institution		Universiti Teknologi Malaysia		
3. Programme Name		Doctor of Philosophy		
4. Final Award		Doctor of Philosophy		
5. Programme Code		PCSQA3AJA		
6. Professional or Statutory Body of Accreditation		Ministry of Higher Education		
7. Language(s) of Instruction		English		
8. Mode of Study (Conventional, distance learning, etc)		Conventional		
9. Mode of operation (Franchise, self-govern, etc)		Self-governing		
10. Study Scheme		Full Time		
11. Study Duration		Minimum : 6 semesters Maximum:12 semesters		
Type of Semester	No. of Semesters		No of Weeks/Semester	
	Full Time	Part Time	Full Time	Part Time

Normal	6	-	12	-
Short	-	-	-	-

Course Classification

No.	Classification	Credit Hours	Percentage
i.	University Courses	3	100%
ii.	Core Courses	0	0%
iii.	Research	0	0%
	Total	3	100%
Total Credit Hours to Graduate		3 credit hours	

COURSE MENU

Doctor of Philosophy students are required to register and pass the following courses before their first assessment (proposal defense).

- v. Research Methodology course (course code UCSP0010).
- vi. One University Elective Course (course code U*** **3).

YEAR 1: SEMESTER 1			
Code	Course	Credit	Pre-requisite
UCSM1263	IT Project Management	3	
UHAP6013	Seminar on Development, Economics and Global		
UICW 6023	Philosophy Science and Civilization		
UHAZ 6123	Malaysian Society and Culture		
UCSP0010	Research Methodology	0	
MCSS 1100	*Research	0	
	TOTAL CREDIT	3	
	CUMULATIVE CREDITS	3	

YEAR 1: SEMESTER 2			
Code	Course	Credit	Pre-requisite
MCSS 1200	*Research	0	
	TOTAL CREDIT	0	
	CUMULATIVE CREDITS	3	

* Research (course code PCSQ **00), to be taken every semester until the submission of thesis. The progress of a candidate in any particular semester is assessed through research progress reports submitted at the end of each semester. It is important for the students to know that the submission of the progress report needs to be done by the student themselves via GSMS website <http://spsapp3.utm.my:8080/gsmv4/>.

RESEARCH CODE

Semester	Research Course Code
1	PCSQ 1100
2	PCSQ 1200
3	PCSQ 2100
4	PCSQ 2200
5	PCSQ 3100
6	PCSQ 3200
7	PCSQ 4100
8	PCSQ 4200

RESEARCH AREAS

- Software Modeling and Specification
- Software Quality and Testing
- Software Usability and Reusability
- Software as Service
- Dependable Embedded Real-Time Systems
- Agile Software Development
- Intelligent Software Systems
- Model Driven Architecture
- Software Product Line
- Software Maintenance and Evolution.
- Human Computer Interaction
- Intelligent System

Programme Educational Objectives (PEO)

This programme is aimed to produce computer science experts who have a skill and knowledge to apply and research the state-of-the-art computer science techniques, methods and tools. These skills are important to support a research and development towards the development of a novel computer science solution(s), either for local use or export that can generate national income.

After having exposed to several years working experience, our graduates should become professionals who demonstrate the following competencies:

Code	Intended Educational Objectives
PEO1	Competent in computer science and digital technologies that foster research and development of new knowledge in specific areas.
PEO2	Has good character, ethics and high integrity and demonstrate behavior that is consistent to professional ethics.
PEO3	Has promote the technological, social and cultural progress in a knowledge based society in the academic and professional contexts.

Programme Learning Outcomes (PLO)

After having completed the programme, graduates should be able to demonstrate the following competencies:

Code	Intended Learning Outcomes
PLO1	Ability to identify various computer science theories suitable for particular research context, and justify and verify the proposed solution using computer science theories creatively
PLO2	Ability to conduct computer science research in a systematic and scientific way independently
PLO3	Ability to give suggestion on computer science solutions to the society
PLO4	Ability to demonstrate behaviour that is consistent with the Code of Professional Ethics and Responsibilities
PLO5	Ability to defend critically technical solutions and research findings to a range of audience orally and in writing
PLO6	Ability to identify and analyse real problems critically related to organisational, governmental and social
PLO7	Ability to undertake lifelong learning and actively participate in change
PLO8	Ability to turn ideas into innovative computer science solution to meet the real world needs

RESEARCH		
1	Hard-Bound Thesis endorsed by supervisor – 3 copies	
2	Copy of CD for Each Thesis – Extra 1 unit	
3	Copy of All Semester Results (Pre-Transcript)	
4	Copy of Registration Slip (current semester)	
5	Abstract and Title Page Approval Form (original copy)	
6	Course Checklist (endorsed by coordinator)	
7	Copy of IC (local student) / first page of Passport (international student)	
8	Fee Release Letter (UTM Bendahari)	
9	Exit Survey	
10	Submission of Thesis Form – 3 copies	
11	Verification of Graduate Information Form – 1 copy	

GRADUATION CHECKLIST

To graduate, students must pass all the stated courses in this checklist. It is the responsibility of the students to ensure that all courses are taken and passed. Students who do not complete any of the course are not allowed to graduate.

NO.	CODE	COURSE	CREDIT EARNED (JKD)	CREDIT COUNT-ED (JKK)	TICK (✓) IF PASSED
CORE COURSES (0 CREDITS)					
1	UCSP0010	Research Methodology	0	0	
TOTAL CREDIT OF CORE COURSES (a)			0	0	
UNIVERSITY ELECTIVE COURSES					
1	UCSM1263	IT Project Management	3	3	
	UHAP6013	Seminar on Development, Economics and Global			
	UICW 6023	Philosophy Science and Civilization			
	UHAZ 6123	Malaysian Society and Culture			
TOTAL CREDIT of UNIVERSITY GENERAL COURSES (b)			3	3	
TOTAL CREDIT TO GRADUATE (a + b)			3	3	

COURSE SYNOPSIS

CORE COURSES

UCSP0010 - Research Methodology

This course covers the general principles of Research Methodology that are applicable to any discipline. It discusses the fundamental process in conducting an academic research. The theoretical and practical aspects of preparing a research proposal presented. Amongst topics that will be covered are introduction to research and its philosophy, problem formulation and research objective, literature review, research methodology and design, data collection procedures, data analysis, research proposal and thesis preparation and research management.

UNIVERSITY ELECTIVE COURSES

UCSM 1263 - IT Project Management

This course presents a hands-on perspective to Information Technology project management. This course will assist post-graduate students to plan and implement their post-graduate projects as well as other IT projects effectively. The subject is organized into three main sections, that covers I) Basic concepts, life cycle and framework of project management II) Detailed description of each project management knowledge areas under the Project Management Institute (PMI) Body of Knowledge (PMBOK) and its applications, and III) Real Project Initiation, Planning, Executing, Monitoring and Closing. The Project Management areas include – project integration, scope, time, cost, quality, human resource, communications, risks and procurement management. Students are expected to perform real projects with teams and achieve agreed Key performance Indicators (KPI)

UHAP 6013 - Seminar on Development, Economics and Global

Discussion on this subject includes issues related to globalization and development, economic and social crisis that has become a global concern. It aims in developing skills in understanding and analyzing global issues and recommending relevant solutions. Issues will be discussed in details.

UICW 6023 - Philosophy Science and Civilization

This course is offered to international students in advanced scholar and doctoral programs from Malay societies such as Indonesia, Brunei, South Thailand and Malay-Singapore. This course contains two sections. This subject discusses the world view of its role and importance in shaping the culture of life and civilization; The concepts of revelation, science, humanity, nature and happiness; and Comparative Studies in the Philosophy of Science: Epistemology, Ontology and Axiology in Education. Discussions on current issues and challenges, among others; the challenge of civilization between the West and the East; Development and the environment; Economy and trade; National administration and management; Scientific research; Communication and information technology; Ethics and morals; Crime and violence; and Family education.

UHAZ 6123 - Malaysian Society and Culture

This course is designed for international postgraduates from countries of non-Malay origins. Students will be exposed to various aspects of the Malaysian culture such as belief system, religious festivals, customs and etiquettes of different ethnic groups in Malaysia. Emphasis will be given to the Malay culture as it makes the core for the Dasar Kebudayaan Kebangsaan. Students will also be briefly introduced to basics of Malay language as the national language of Malaysia.