UNIVERSITI SAINS ISLAM MALAYSIA

جَامِعَة العُلومِ الإِسْلامِيَة المَالِيزِية

ISLAMIC SCIENCE UNIVERSITY OF MALAYSIA

MASTER DEGREE (MIXED MODE) STUDIES HANDBOOK

ACADEMIC SESSION 2023/2024

FACULTY OF SCIENCE AND TECHNOLOGY

ACKNOWLEDGEMENT

In the name of Allah, Most Precious Most Merciful

Faculty of Science and Technology, USIM would like to acknowledge the effort by the team of contributors:

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Associate Profesor Dr. Norasikin binti Fabil

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The faculty would also like to acknowledge the foundation set by the authors of FST Guideline For Research Component of The Masters For Mixed Mode Degree

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September 2023

CONTENT

SECTION A

THE UNIVERSITY

Motto, Philosophy, Vision And Mission

UNIVERSITI SAINS ISLAM MALAYSIA

Motto
Knowledgeable, Disciplined and Devout

Philosophy
The integration of Naqli (revealed) and Aqli (rational) knowledge and virtues are the bedrock of an outstanding generation and knowledgeable society

Vision
Distinguished Islamic Science Higher Education Institution

Mission
To produce competent intellectual, leaders and professional based on the Muslim intellectual traditions, noble values of religion and culture for the universal good

Universiti Sains Islam Malaysia In Brief

INTRODUCTION

Background and History

The Universiti Sains Islam Malaysia (USIM), which was formerly known as the Islamic Science University College (KUIM), was approved to be established in a cabinet meeting on June 11,1997, and this was gazetted on March 13, 1998. It is regarded as the first Islamic university that was established by the government of Malaysia and it is the 12th public institution of higher learning.

The main purpose of the establishment of USIM is to elevate Islamic education to bring it at par with other types of education in the country with emphasis on the usage of ICT in the teaching and research systems. USIM also stresses the importance of achieving proficiency in both the Arabic language and the English language, in addition to the Malay language.

USIM's permanent campus is located in Nilai, Negeri Sembilan Darul Khusus, while its temporary campus, which houses the Faculty of Medicine and Health Sciences and the Faculty of Dentistry is located in Pandan Indah, Kuala Lumpur. The teaching hospitals used by the students in the temporary campus include the Ampang Hospital, Temerloh Hospital, Tampin Hospital and Klawang Hospital.

The permanent campus of USIM in Nilai is located just 10 minutes from KLIA and 20-30 minutes from Putrajaya and Kuala Lumpur.

USIM currently has nine (9) faculties namely:

- Faculty of Shariah and Law
- Faculty of Quranic and Sunnah Studies
- Faculty of Leadership and Management
- Faculty of Economics and Muamalat
- Faculty of Science and Technology
- Faculty of Medicine and Health Sciences
- Faculty of Dentistry
- Faculty of Major Language Studies
- Faculty of Engineering and Built Environment

Purpose

USIM is considered the first and main channel for graduates of religious schools, whether they are schools operated by the state governments or the federal government, to continue their education to a higher level in Malaysia. USIM was established according to the following aims:

~ To produce Islamic scholars who have received a balanced education in both theoretical and practical aspects, as well as to have encyclopedic traits that will help them to be able to lead the general public. They should also have high individual potential in order for them to continue the development of the nation in the near future.

~ To return to traditional Islamic scholarship that was supreme and to create a conducive environment that will produce Muslim scholars and intellectuals who can provide a thorough understanding and visualization of Islam.

~ To rise as an educational center of excellence, research, publication and scholarly cooperation in fields related to Islamization both at the national and international levels.

Objectives

~ To elevate Islamic education and to bring it on par with other types of education in the country.

~ To build a link between theory and practice in the individual self of each graduate.

~ To produce scholars with integrated education who will be capable of leading collective society in order to realize the development of the country.

~ To return to traditional Islamic scholarship that was glorious and that is suitable to the contemporary surroundings as well as current technology.

~ To provide human capital that is fortified with Islamic values that can contribute towards society, country, and the world.

Future Prospects

USIM will be a university that is the most advanced in the field of Islamic education and scholarship and in the usage of ICT in the research fields. Its mission will be appropriate with its built-up surroundings at its campus in Nilai New Town.

Programmes Offered

In the 2021/2022 academic session, **The Faculty of Science and Technology (FST)** will offer 07 programmes at the Postgraduate level as follows:

Name (In Bahasa Malaysia)	Name (In English Language)	Code
Doktor Falsafah Sains dan Teknologi	Doctor of Philosophy in Science and Technology	S401
Sarjana Sains	Master of Science	S301
Sarjana Sains (Omik-Makanan dan Teknologi Makanan)	Master of Science (Foodomics and Food Technology)	S307
Sarjana Sains (Matematik Kewangan)	Master of Science (Financial Mathematics)	S304
Sarjana Sains Komputer (Keselamatan dan Jaminan Maklumat)	Master of Computer Science (Information Security and Assurance)	S303
Sarjana Sains (Pengurusan Risiko)	Master of Science (Risk Management)	S305
Sarjana Sains (Sains Aktuari)	Master of Science (Actuarial Science)	S306

SECTION B

THE FACULTY

Faculty Background

Faculty Of Science and Technology

Faculty of Science and Technology (FST) was established on 1st December 2003. Its pioneer programme was Bachelor of Science with Honours (Food Biotechnology) with an intake of 43 students for the 2004/2005 session. This pioneer group of students has graduated in 2008. In the session of 2005/2006, FST offered programmes for Bachelor of Science with Honours (Actuarial Science and Risk Management) and Bachelor of Science with Honours (Information Security & Assurance). In the session of 2006/2007, Bachelor of Science with Honours (Financial Mathematics) was introduced in FST. In the session of 2008/2009, Bachelor of Science with Honours (Applied Physics) and Bachelor of Science with Honours (Industrial Chemical Technology) were introduced in FST. The latest program offered is the Bachelor of Health Industry Technology with Honours starting session 2021/2022.

In term of postgraduate program, the first programme offered was the Doctor of Philosophy in Science and Technology, and Master of Science for the 2006/2007 session. It was then followed by 5 other programmes for the 2012/2013 session namely; Master of Science (Food Biotechnology), Master of Computer Science (Information Security and Assurance), Master of Science (Financial Mathematics), Master of Science (Risk Management), and Master of Science (Actuarial Science). In the 2021/2022 session, Master of Science (Food Biotechnology) was officially changed to Master of Science (Foodomics and Food Technology).

A variety of self-developmental programmes are conducted continuously for the student's soft skills ability to function in the real world. Amongst the programmes conducted by FST are New Product Introduction Day, Islamic Innovation Expo (i-NOVA), Young Scientist Assembly, USIM Student Innovation Competition (SIC), industrial visiti and etc. FST also provide opportunities for international exposure in teaching and learning of other foreign universities in Singapore, Australia and South Korea.

FST is proud of its students who have made the university proud by winning many academic and co-curricular activities awards that were organised by the university and external parties. It also has produced an alumni that is currently serving in the public and private sectors of the country. This is a challenge for the new FST students to uphold the faculty's excellence in the years to come ahead.

JUSTIFICATIONS FOR FACULTY ESTABLISHMENT

The establishment of FST are based on the following rationales:

1. To make Islamic studies more practical, especially in science and technology;

2. The need to produce Muslim scientists and technologists in a variety of disciplines that are much needed to make Malaysia an exemplary of a modern Islamic country. It is projected with FST programmes that are inculcate with Islamic studies, USIM will generate more Muslim scientists and technologists that will facilitate Ministry of Higher Education's goal to improve science and art ratio of 60:40;

3. To consider national religious secondary school Sijil Pelajar Malaysia (SPM) school leavers that are funded by the government who have obtained excellent result for competitive educational programmes, e.g. medicine and pharmacaeuticals. Since there are limited places for science and technology programmes in local universities, a majority of excellent achievers from these schools have to further studies in Middle Eastern universities or further studies in arts or conventional sciences;

4. USIM is adamant for FST to contribute to the development of science and technology; and fulfil the needs and demands of the country;

5. Future FST graduates will not only acquire expertise in their respective fields, they will also be instill with appropriate ethics and understandings of Islam, and will embed it with science and technology.

VISION, MISSION, VALUE AND OBJECTIVE OF THE FACULTY

FST was established with the purpose to produce Muslims scientist and technologists that are in demand in order to make Malaysia a model of a developed modern Islamic country.

Therefore, FST provide opportunities for SPM school leavers from religious school and pre-universities to pursue their studies in science and technology consecutively with fardhu ain. In consequence, this has changed the perception of the Muslim community that SPM school leavers from religious not only are limited to pursue studies in Islamic courses. In order to achieve this tall order, FST incorporate the following vision, mission, value and function:

Vision:

- Explore and lead the science and technology scholarship by integrating the science of Naqli and Aqli in transforming and uplifting universities and the ummah

Mission:

- Produce holistic, balanced and entrepreneurial human capital and innovative products through the generation and dissemination of science and technology.

Values:

- to pursue excellence in all endeavours;
- to always possess integrity, be fair and responsible;
- to always be honest to the rights and freedom of generating disseminating of knowledge;
- to always willingly provide service to the local and international community; and
- to always have innovative and creative visions.

FACULTY OBJECTIVES

Therefore, FST strives to achieve the following goals:

1. Provide academic and teaching and learning environments conducive to meeting human capital requirement.

2. Conduct research to produce innovative products and publish quality scientific writing.

3. Leading science and technology scholarship in producing holistic, balanced and entrepreneurship graduates for the sake of the development of the ummah.

FACULTY LEARNING OUTCOMES

FST graduates are expected to:

1. Master knowledge of science and technology as the requirement of fardhu kifayah in order to provide unisation and service to the perfect Islamic life

2. Possess high technical, practical and psychomotor skills; and achieve ethics and integrity in professionalism

3. Able to think critically and creatively; and communicate effectively in Malay, English and Arabic

4. Possess skills in management, entrepreneurship and information management system and always increase knowledge

5. Possess leadership vision that contributes to the development of ummah

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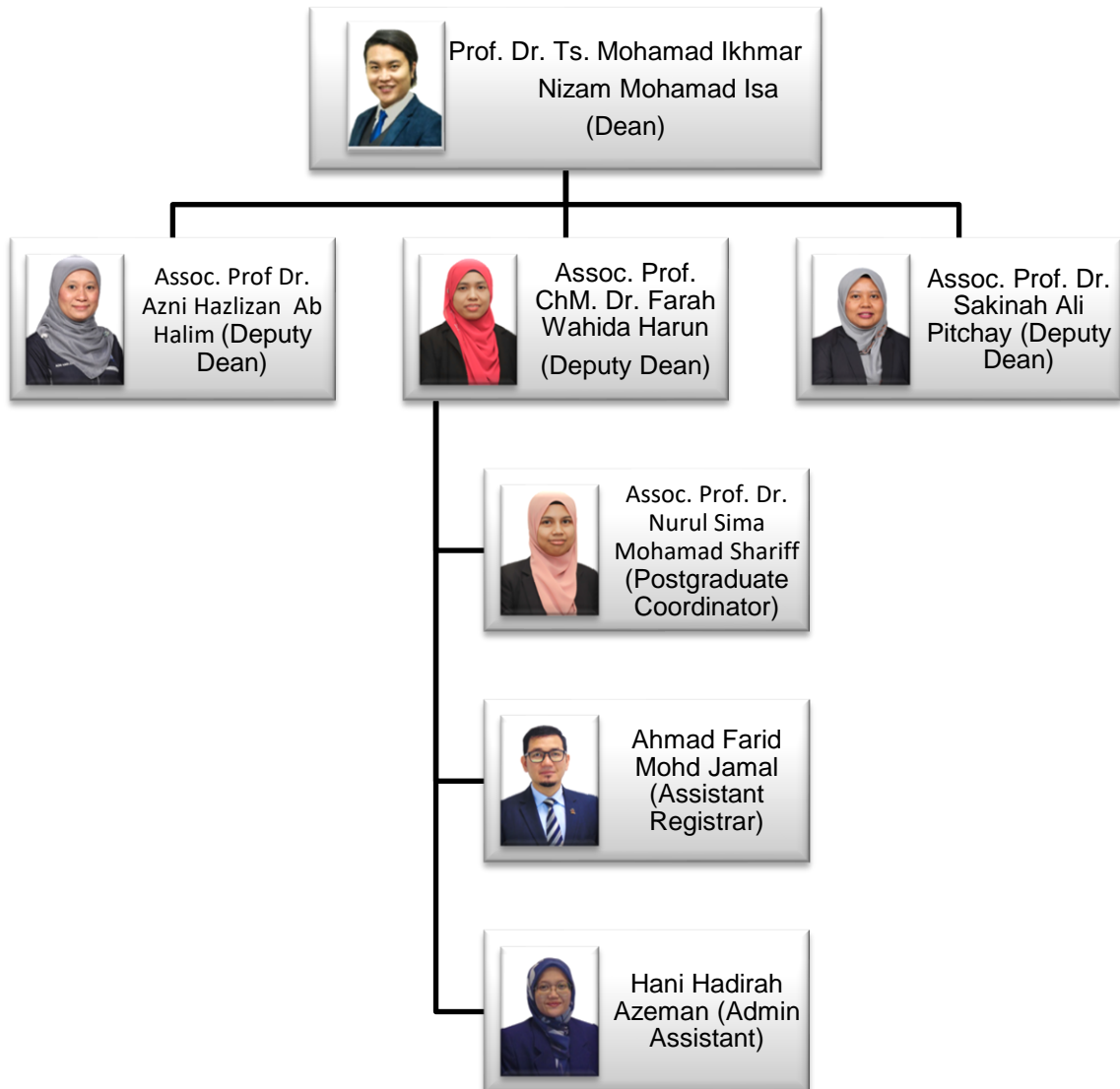
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Che Ku Sarahanim Che Ku Abd Rahim

Chief Senior Administrative
Silawati Manan

Administrative Assistant (Clerical/Operation)
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Normah Haron
Siti Shazwani Mohd Noor

Computer Technician
Mohamad Aidil Salim

SECTION C

ACADEMIC INFORMATION

Academic Calendar

SEMESTER I, ACADEMIC SESSION 2023/2024

ACTIVITIES	SEMESTER I	
	DATE	DURATION
University & Course Registration (New Student)	4 October 2023	1 day
Semester & Course Registration Online-Based (Senior Student)	9 October – 5 November 2023	4 weeks
Late Semester & Course Registration Online-Based (Senior Student)	6 November 2023 – 21 January 2024	10 weeks
Lecture / Research Work	**9 October – 26 November 2023**	**7 weeks**
Mid-Term Break Semester I	27 November – 3 December 2021	1 week
Lecture / Research Work	**4 December 2023 – 21 January 2024**	**7 weeks**
Study Week (Final check: registration, ledger)	22 – 28 January 2024	1 week
Final Examination / Online Progress Report Evaluation Semester I	**29 January – 18 February 2024**	**3 weeks**
Inter-Semester I Vacation	19 February – 17 March 2024	4 weeks

* subject to change

SEMESTER II, ACADEMIC SESSION 2023/2024

ACTIVITIES	SEMESTER II	
	DATE	DURATION
University & Course Registration (New Student)	11 March 2024	1 day
Semester & Course Registration Online-Based (Senior Student)	18 March - 21 April 2024	4 weeks
Late Semester & Course Registration Online-Based (Senior Student)	22 April – 7 July 2024	10 weeks
Lecture / Research Work	**18 March – 7 April 2024**	**3 weeks**
Special Break for Eid	8 – 14 April 2024	1 week
Lecture / Research Work	**15 April – 12 May 2024**	**4 weeks**
Mid-Term Break Semester II	13 – 19 May 2024	1 week
Lecture / Research Work	**20 May – 7 July 2024**	**7 weeks7 weeks**
Study Week (Final check: registration, ledger)	8 – 14 July 2024	1 week
Final Examination / Online Progress Report Evaluation (PPS08) Semester II	**15 July – 4 August 2024**	**3 weeks**
Inter-Semester II Vacation	5 August – 1 September 2024	4 weeks

* subject to change

NATIONAL, NEGERI SEMBILAN AND SELANGOR PUBLIC HOLIDAY

PUBLIC HOLIDAY	YEAR	
	2023	**2024**
New	1 January (Sunday) *	1 January (Monday)
Birthday of Yang di-Pertuan Besar Negeri Sembilan	14 January (Saturday)	14 January (Sunday) *
Thaipusam	4 February (Saturday)	25 January (Thursday)
Chinese New Year	22 & 23 January (Sunday & Monday) *	10 & 11 February (Saturday & Sunday) *
Israk dan Mikraj	18 February (Saturday)	8 February (Thursday)
Aidilfitri	22 & 23 April (Saturday & Sunday) *	10 & 11 April (Wednesday & Thursday)
Labour Day	1 May (Monday)	1 May (Wednesday)
Wesak	4 May (Thursday)	22 May (Wednesday)
Birthday of Seri Paduka Baginda Yang di-Pertuan Agong	5 June (Monday)	3 June (Monday)
Aidiladha	28 June (Wednesday)	17 June (Monday)
Awal Muharram (Maal Hijrah)	19 July (Wednesday)	8 July (Monday)
National Day	31 August (Thursday)	31 August (Saturday)
Malaysia Day	16 September (Saturday)	16 September (Monday)
Birthday of Nabi Muhammad S.A.W (Maulidur Rasul)	27 September (Wednesday)	16 September (Monday)
Deepavali	12 November (Sunday) *	31 October (Thursday)
Christmas	25 December (Monday)	25 December (Wednesday)

* If a public holiday falls on a Sunday, the following Monday will be entitled as public holiday as stated in Laws of Malaysia Holiday Act 1951

** Subject to change

UNIVERSITI SAINS ISLAM MALAYSIA

جَامِعَة العُلوم الإِسْلامِيَة المَالِيزِيَة

ISLAMIC SCIENCE UNIVERSITY OF MALAYSIA

MASTER OF SCIENCE (FOODOMICS AND FOOD TECHNOLOGY)

Background

The Master of Science (Foodomics and Food Technology) Programme is offered in mixed mode and the total available credit hours for this programme is 40 credit hours.

This programme introduces students to the latest technique in biotechnology such as genetic engineering and bioinformatic, as well as the latest techniques in bioprocessing that can be applied to produce new and innovative food products to meet customer needs.

Programme Educational Objectives (PEO)

Objective of the Programme is to produce graduates who are knowledgeable, skilled and able to integrate the knowledge of biological science and food technology.

The Master of Science (Foodomics and Food Technology) Programme strives to achieve the following goals:

1.   Food Technologists who can combine and use advanced knowledge and laboratory research experience to produce new knowledge while providing the best services to relevant agencies in line with the university's educational philosophy (PLO1, PLO2, PLO3, PLO7).

2.   Food Technologists who are able to lead and engage in teamwork to solve problems within or outside the field of knowledge through the ability to communicate effectively (PLO4, PLO5, PLO8).

3.   Food Technologists who have comprehensive knowledge and the ability to leverage digital technology to generate business opportunities in related sectors (PLO6, PLO9, PLO10).

4.   Food Technologists who practice ethical and professional values in providing services to related sectors and also cover halal issues in the food industry (PLO11).

Programme Learning Objectives (PLO)

PLO NO	Programme Learning Outcome
	Msc Graduates (Foodomics and Food Technology)
PLO1	Demonstrate in-depth knowledge and apply expertise for advances in the field of food biotechnology.
PLO2	Evaluate current issues critically and generate solutions to problems related to the field of food biotechnology using scientific skills.
PLO3	Apply and integrate practical skills and scientific equipment in line with technological developments in the field of food biotechnology.
PLO4	Demonstrate skills to interact confidently and effectively at various levels both among peers and experts in and outside the field.
PLO5	Possess effective communication skills in imparting knowledge related to the field of food biotechnology and able to provide consulting services.
PLO6	Integrate various sources of digital technology in addressing issues related to food biotechnology.

PLO7	Skilled in applying various quantitative techniques in analyzing numerical and graphical data.	
PLO8	Skilled to lead and collaborate effectively in a team or individually.	
PLO9	Demonstrate individual skills in line with needs in the field of food biotechnology.	
PLO10	Possess skills in management, entrepreneurship and consulting services.	
PLO11	Appreciate ethical and legal responsibilities in line with professional codes and practices in research and consultancy in the field of biotechnology.	

Programme Structure

For full-time student

Semester	Code	Course	Component	Credit Hours
Year 1				
I	SFA8014	Foodomic	WP	4
	SFA8013	Advanced Food Processing Technology	WP	3
	SFA8044	Bioprocessing And Fermentation Technology	WP	4
	SZ80106	Dissertation I	WP	6
	AAA8003	Philosophy of Islamic Science	WU	3
Credit Hours				**20**
II	SFA8024	Halal Compliance and Legislation	WP	4
	SFA8003	Advance Food Biotechnology	WP	3
	SZ80213	Dissertation II	WP	13
Credit Hours				**20**
Total Credit Hours				**40**

Study Scheme

Item	Scheme	
	Full Time	**Part Time**
Number of semester	2	3
Study Period	1 Year	1.5 Year

Course Synopsis

SFA8014 FOODOMICS

This course is designed to provide students with theories and applications of foodomics including genomics, transcriptomics, proteomics, metabolomics, lipidomics and nutrigenomics. It is intended to provide students with analytical and molecular skills needed in independent research projects.

SFA8013 ADVANCED FOOD PROCESSING TECHNOLOGY

This course covers topics in advanced food processing which is pertinent knowledge for graduate students in food biotechnology to adapt to the challenges imposed by emerging micro-organisms, environmental concerns, quality, safety, nutrition, and dietary needs of humans. The processing of food will include improving, modifying, or altering food products or ingredients with techniques that will be discussed in this course.

SFA8044 BIOPROCESSING AND FERMENTATION TECHNOLOGY

Bioprocess is a specific process that uses complete living cells or their components to obtain desired products. This course introduces quantitative methods and applications in biochemical engineering practice to students with a biological sciences background. Principles of mass and energy balances are discussed and their applications in various biological systems from molecules to production facilities are presented. Emphasis should be on application of the techniques and concepts of fermentation, and beneficial uses of microorganisms in food to realistic problems in industry. In order that the student may solve such problems, the basic knowledge of design of equipment and their functioning, theory, and application of scale up techniques should be included. This course also introduces various methods of downstream processing such as precipitation, centrifugation, membrane filtration, chromatographic separation and bio-affinity based method.

SFA8024 HALAL COMPLIANCE AND LEGISLATION

This course presents the Halal Malaysian Standard for products and services and briefly introduces related audit process. The Halal schemes associated with food, GMP, HACCP and other industrial requirements such as ISO 22000 will briefly be explained in the context of the Halal ecosystem. Student will be exposed on the quality and safety procedures, Halal compliance and ethics in the halal industry based on current official documents related to the governing bodies and authorities covering edible and non-edible products.

SFA8003 ADVANCED FOOD BIOTECHNOLOGY

Food biotechnology is a term that refers to a very broad range of technologies that utilise living organisms (e.g., microbes) or their components (e.g., isolated cells or proteins). A range of traditional approaches and techniques as well as the development and applications of industrial bioreactors will form the core of the module. Topics will be chosen from recent research to illustrate current and future applications and directions, for example the production and applications of Genetically Modified Organisms (GMOs). The theory and practical techniques involved in a selection of both traditional and modern applications of biotechnology will be covered, including their limitations, controversy and ethics surrounding their use in the food and nutritional industry.

SZ80106/SZ80213 DISSERTATION

This course provides the opportunity for students to conceptualise ideas into a research project. This involves generation of ideas, substantial research about Food Biotechnology and related fields. The research will be developed through discussions and seminars. Projects will be presented, discussed and evaluated in relation to experimental design precedents, theoretical and practical issues. At the end of the course the student must submit a dissertation that demonstrates independent critical and creative thinking in presenting coherent, well-argued ideas in a sustained piece of writing.

AAA8003 PHILOSOPHY OF ISLAMIC SCIENCE

This course is introduced to expose the students to the philosophy of Islamic Science. It also discusses the principles of Islamic worldview in providing a sound philosophical basis for producing an Islamic science in the current context. The course also demonstrates the relation of Islamic science to the theoretical framework for the integration of Naqli and Aqli knowledge. Besides, the course enlightens and contextualizes the achievements of past Muslim Scientists in the current discussion of science.

UNIVERSITI SAINS ISLAM MALAYSIA
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ISLAMIC SCIENCE UNIVERSITY OF MALAYSIA

MASTER OF SCIENCE (FINANCIAL MATHEMATICS)

Introduction and Objectives

The Master of Science (Financial Mathematics) program was first offered in Semester I, Academic Session 2012/2013. The program is offered in mixed mode structure, and the total number of credit hours for this program is 43 credit hours whereby 48% or more of the total number of credits is dedicated for research.

The programme educational objectives (PEOs) are to produce:

1. Financial mathematicians who use advanced, quantitative, and practical knowledge to solve problems and produce quality research. (PLO1, PLO2, PLO3, PLO7);
2. Financial mathematicians who can lead, make meaningful contributions in the team and practice effective communication among team members and other relevant parties. (PLO4, PLO5, PLO8);
3. Financial mathematicians who are competitive by leveraging current digital technology developments in providing services and able to create new opportunities. (PLO6, PLO10);
4. PEO 4 : Financial mathematicians who are independent, ethical and practice good governance in providing professional services. (PLO9, PLO11)

Programme Outcomes

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

PLO No.	Programme Learning Outcomes (PLO)
	Graduates of MSc (Financial Mathematics) should:
PLO1	Describe basic and advanced knowledge in the field of financial mathematics.
PLO2	Adapt advanced knowledge to think critically in solving problems.
PLO3	Develop practical and technical skills to analyze data in the field of financial mathematics.
PLO4	Demonstrate interactive communication skills and social accountability as an educated person and able to work in a team.
PLO5	Communicate orally and convey information effectively to all levels of society.
PLO6	Adapt digital technology to meet current needs in the field of financial mathematics.
PLO7	Apply quantitative information accurately to solve problems.
PLO8	Demonstrate meaningful contribution as a leader or team member in achieving objectives.
PLO9	Demonstrate high self -motivation in improving skills in the field of financial mathematics.
PLO10	Demonstrate entrepreneurial characteristics that are able to create new opportunities.
PLO11	Demonstrate ethics and good governance professionally.

Programme Structure

For fulltime study the mixed mode programme requires a minimum duration of 3 semesters and a maximum of 6 semesters. For part time study, the minimum duration is 4 semesters and a maximum of 8 semesters. The mixed mode program consists a taught component and a research component resulting in a thesis. The taught component is grouped into Core University (*Wajib University*), Core Program Compulsory (*Wajib Program*) and Elective Program (*Elektif Program*).

*For full-time student

Semester	Code	Course	Component	Credit Hours
Year 1				
I	AAA8003	Philosophy of Islamic Science	WU	3
	SMK8004	Mathematical Finance	WP	4
	SMK8063	Applied Corporate Finance	WP	3
	SZ80103	Research Methodology And Proposal	WP	3
		Credit Hours		**13**
II	SMK8023	Computational Finance	WP	3
	SMK8013	Applied Econometrics	WP	3
	SMK8033	Islamic And Conventional Financial Markets	EP	3
	SMK8113	Investment Theory And Analysis	EP	
	SZ80006	Thesis I	WP	6
		Credit Hours		**15**
Year 2				
III	SMK8103	Stochastic Modelling In Finance	EP	3
	SMG8013	Computational Statistics	EP	
	SZ80012	Tesis II	WP	12
		Credit Hours		**15**
		Total Credit Hours		**43**

Study Scheme

Item	Scheme	
	Full Time	**Part Time**
Number of semester	3	4
Study Period	1.5 Year	2 Year

The period of candidature for a fulltime programme is between three (3) to six (6) semesters, and for a part time programme is between four (4) to eight (8) semesters

Course Synopsis

AAA8003 PHILOSOPHY OF ISLAMIC SCIENCE

This course is introduced to expose the students to the philosophy of Islamic Science. It also discusses the principles of Islamic worldview in providing a sound philosophical basis for producing an Islamic science in the current context. The course also demonstrates the relation of Islamic science to the theoretical framework for the integration of Naqli and Aqli knowledge. Besides, the course enlightens and contextualizes the achievements of past Muslim Scientists in the current discussion of science.

SMK8004 MATHEMATICAL FINANCE

This course develops methods widely used within the financial services industry for assessing risk and pricing derivatives and their use within portfolio theory, and models for market equilibrium. Other than usage and applications, students will also be exposed to the limitation of this methods and models. The development of stochastic models of market behavior leads into methods of valuing certain derivatives and their use in risk management. The skills and knowledge developed are necessary to communicate with other financial professionals and to evaluate modern financial theories critically.

SMK8063 APPLIED CORPORATE FINANCE

This course covers both the theories and applications of corporate finance in business organization. In the beginning, students will be introduced to the corporation, its goal and corporate finance decisions, financial markets and institutions. The topic on capital budgeting, capital structure and working capital managements will be introduces in this course. The firm's dividend policy, firms' analysis and merger and acquisitions will also be covered. Student will be able to apply the theories and applications of corporate finance through a project.

SMK8023 COMPUTATIONAL FINANCE

This subject provides students with the technical skills and techniques in the rapidly growing area of quantitative and computational finance which is an important area in modern financial market.

SMK8013 APPLIED ECONOMETRICS

This subject is about an understanding the application of economic analysis to specific problems in both the public and private sectors. Students will also acquire knowledge, practical and problem solving skills which are important in bringing the econometrics theory to solve real economic problems.

SMK8033 ISLAMIC AND CONVENTIONAL FINANCIAL MARKET

Financial markets and institutions, both Islamic and conventional, have become one of the most exiting areas in both the academic and the professional pursuits of finance. Financial markets have change rapidly, with new financial instruments appearing almost daily. This course will provide students with an understanding of the mechanisms of various financial markets and institutions, both Islamic and conventional, such as banks, non-banks, stock exchanges and brokers. Students will develop a critical awareness of the theoretical and practical problems associated with regulating financial markets. Throughout the course, student will be exposed to the different between conventional and Islamic financial markets. The first part of the course covers the overview of financial markets and interest rates. The second part covers financial markets and the assets traded on these-market including money, bonds, stocks and derivatives. The last part covers details workings of some financial institutions.

SMK8113 INVESTMENT THEORY AND ANALYSIS

The course will cover the theoretical and practical applications of investments. Within this context, students will review various approaches to the use and valuation of stocks, bonds, and derivative securities. Students are expected to master both the theoretical constructs of investments and their application to current industry practice. Topics covered will include: portfolio and diversification theory, short-term investments, long-term investments, investment banking, security trading, international investing, mutual funds, and basic derivatives.

SMK8103 STOCHASTIC MODELLING IN FINANCE

This course provides the students with the foundation in the theory and applications of stochastic processes in finance. The content includes stochastic processes in discrete and continuous time; Markov chains, Markov processes, the Chapman-Kolmogorov equation, infinitesimal generator, the forward and backward equations,birth and death,estimation of transition rates. Students also be trained to built up mathematical models in finance using stochastic approach.

SMG8013 COMPUTATIONAL STATISTICS

This course is an introduction to the modern, computationally intensive methods in statistics focusing on the aspects of the computational methods in data analysis and inference. The following topics will be covered in this course; introduction to statistical programming, univariate statistical analysis, regression models, data partition, decision trees, multivariate statistical analysis and simulation of random variables.

SZ80003 RESEARCH METHODOLOGY AND PROPOSAL

This course provides students with an opportunity to develop their skills in the use of the literature and in quantitative methods. Students will learn how to evaluate and contribute to the scientific literature, to assess the kinds of scientific data and tests of hypotheses, as well as to use and interpret advanced methods of experimental design and statistical analysis.

SZ80118 THESIS I

Students will continue their research work after sucessfully defended their research proposal. This involves data collection activities as well as performing preliminary data analysis. Students also will continue working on their write up especially improving the first three chapters according to the comments and feedbacks given during the proposal presentation. Students will work closely under supervisor's guidance and present their progress.

SZ80218 THESIS II

The thesis provides the opportunity for students to develop a substantial investigation into the ideas about application of mathematics in fields of finance, actuarial science, and risk management. An individual area of research and enquiry will be developed through tutorials and seminars. Students will resume their research with data analysis and discussion in relation to the results obtained before it can be concluded. This course aims to enable students to demonstrate independent, critical, and creative thinking in presenting coherent and well-argued discussion in a sustained piece of writing. It is also a way of increasing the students' maturity and preparing them for their future career. The thesis will be presented, discussed and evaluated in relation to experimental design precedents, theoretical and practical issues.

UNIVERSITI SAINS ISLAM MALAYSIA

جَامِعَة العُلوم الإِسْلَامِيَّة المَالِيزِيَّة

ISLAMIC SCIENCE UNIVERSITY OF MALAYSIA

MASTER OF COMPUTER SCIENCE (INFORMATION SECURITY AND ASSURANCE)

Introduction and Objectives

The Master of Computer Science (Information Security and Assurance) program was first offered in Semester I, Academic Session 2012/2013. The program is offered in mixed mode structure, and the total number of credit hours for this program is 43 credit hours.

The objectives of the programme are to produce:

1. Computing practitioners with advanced knowledge in the field of Information Security who use the best methodologies and techniques to provide innovative solutions to current problems in computing in line with Islamic principles. (LO1, LO2, LO3, LO6, LO7)
2. Computing practitioners who have leadership skills and can communicate and interact effectively with various stakeholders. (LO5, LO8)
3. Computing practitioners have a positive attitude, engage in lifelong learning activities and are entrepreneurial minded for career success. (LO9, LO10)
4. Computing practitioners who uphold ethical values as well as professional practices in maintaining personal and career integrity. (LO4, LO11)

Programme Outcomes

PLO No.	Programme Learning Outcomes (PLO)
	Graduates MSc of Computer Science (Information Security and Assurance) should:
PLO1	Integrate advanced knowledge related to current research issues of computing especially in the field of information security and assurance.
LO2	Recommend innovative solutions that are at the core of developments in the field of study. **(Cognitive Skills)**
PLO3	Evaluate computing solutions and tools in terms of their usability, efficiency and effectiveness, especially in the field of Information Security and Assurance. **(Practical Skills)**
PLO4	Work effectively in groups with a diverse audience by publishing and presenting technical material in the field of study. **(Interpersonal Skills)**
PLO5	Communicate and interact effectively in various forms of material with various stakeholders. **(Communication Skills)**
PLO6	Using information and digital tools to acquire, interpret and expand knowledge in computing. **(Digital Skills)**
PLO7	Use numerical skills to acquire, interpret and extend knowledge in computing. **(Numerac Skills)**
PLO8	Demonstrate leadership, teamwork, autonomy and responsibility in providing services related to the field of study. **(Leadership, Autonomy and Responsibility)**
PLO9	Demonstrate the ability to expand knowledge through lifelong learning. **(Personal Skills)**

PLO10	Showcasing the entrepreneurial mindset related to the field of study. **(Entrepreneurial Skills)**
PLO11	Uphold professional and ethical practices in conducting research and providing services related to the field of study. **(Ethics and Professionalism)**

Programme Structure

For full-time student

Semester	Code	Course	Component	Credit Hours
		Year 1		
I	AAA8003	Philosophy of Islamic Science	WU	3
	SKJ8103	Advanced Information Security Management	WP	3
	SKJ8203	Network And Mobile Security	WP	3
	SZ80023	Research Methodology In Computing	WP	3
		Credit Hours		**12**
II	SZ80110	Thesis I	WP	10
	Choose One (1) Out of Five (5)			
	SKJ8003	Applied Cryptography	EP	
	SKJ8303	Advanced Data Analytics	EP	
	SKJ8403	Secure Software Development	EP	3
	SKJ8043	Information Security Assurance Audit	EP	
	SKJ8503	Digital Forensic And Incident Management	EP	
		Credit Hours		**13**
		Year 2		
III	SZ80318	Thesis II	WP	18
		Credit Hours		**18**
		Total Credit Hours		**43**

Study Scheme

The period of candidature for a fulltime programme is between two (3) to six (6) semesters, and for a part time programme is between four (4) to eight (8) semesters. The following tables show the various study schemes.

Item	Scheme	
	Full Time	**Part Time**
Number of semester	3	4
Study Period	1.5 Years	2 Years

Course Synopsis

AAA8003 PHILOSOPHY OF ISLAMIC SCIENCE (FALSAFAH SAINS ISLAM)

This course is introduced to expose the students to the philosophy of Islamic Science. It also discusses the principles of Islamic worldview in providing a sound philosophical basis for producing an Islamic science in the current context. The course also demonstrates the relation of Islamic science to the theoretical framework for the integration of Naqli and Aqli knowledge. Besides, the course enlightens and contextualizes the achievements of past Muslim Scientists in the current discussion of science.

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

- Analyse critically other worldview against the principles of Islamic worldview;
- Propose solutions to the current problems in science using the fundamental principles of Islam in the understanding of reality and hence science;
- Present the comparison between Islamic Science and western/modern science using various communication technology.

SKJ8103 ADVANCED INFORMATION SECURITY MANAGEMENT

Recent high profile information security breaches and the value of information are highlighting the ever-increasing need for organizations to protect their information. An Information Security Management System (ISMS) is a controlled approach to managing sensitive company information so that it remains secure. It encompasses people, processes and IT systems. This is a Masters-level course, which covers the issues and processes involved with managing the security of computer systems and networks. The course also builds on a combination of case studies of information security management issues, incidents and examples, plus research and application of current best practices and standards. The focus of this course is on management processes and the business context of information security. It touches on a number of technical areas but does not require the student to have in-depth technical experience in systems development or administration.

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

- Analyze security risks in organizations (MQF2.0 - LO2-C5)
- Organize innovative approaches to manage security issues within defined environments. (MQF2.0 – LO4 -A4)
- Propose a commercial security solution meaningfully raise the level of confidence in computer systems. (MQF2.0 – LO10-A4)

SKJ8203 NETWORK AND MOBILE SECURITY

This course covers the foundation and intermediate topics in network and mobile security. The course aims at preparing students with the concept and knowledge of using network security protocols and applications to provide security over wired and mobile networks. The course also covers various threats in networked environment and their countermeasures.
At the end of the course students will be able to:

- Analyze security issues in various network applications (MQF2.0 -LO2 – C2)
- Apply network security technologies in securing networked environment (MQF2.0 -LO3 – P3)
- Explain verbally effectively on the contemporary threats to Network and Mobile security (MQF2.0 -LO5 – A3)
- Propose a solution to emerging threats to Netwrok and Mobile security (MQF2.0 -LO9 – A4)

SKJ8043 INFORMATION SECURITY ASSURANCE AUDIT

This course discusses checklists, practical guidelines for information security audit and assurance. Information Technology has become a part and parcel of business processes. Consequently, the asset composition of organizations has, with the concomitant vulnerabilities and risks, undergone significant changes. In the new scenario, stakeholders are apprehensive about the security of Information

Systems. Regulators all over the world have therefore realized the need for a strong Information System Assurance Framework, and have issued guidelines for periodic Information System Security Assessment. Information System Audit and Assurance holistically covers the subject and addresses the needs of Auditors.

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

- Evaluate IT risks, control, and deployment risks to construct an IT Audit plan. (MQF2.0-PLO2)
- Discuss an IT Audit plan on case study given (MQF2.0-PLO5)
- Demonstrate the IT Audit Process using Auditing tool. (MQF2.0-PLO6)
- Demonstrate independence leadership in a project and learning activities (MQF2.0-PLO8)

SKJ8003 APPLIED CRYPTOGRAPHY

This subject teaches students on the concept of cryptography. This course covers the details of cryptography; the basic of computational number theory; the constructions and security issues of various cryptosystems, such as symmetric encryption schemes (stream cipher and block cipher), message authentication codes and hash functions, asymmetric encryption schemes and digital signature schemes also included additional quantum cryptography. The main topic of this course is the study of secure multiparty computation, or more generally, complex cryptographic protocols that go beyond the basic functionalities studied in the basic course.

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

- Summarise the security issues of various cryptosystems and relate it with communication security, current and future cryptographic standards. (MQF 2.0 - LO2-C3)
- Formulate formal mathematical definitions and proofs in designing cryptography algorithms. (MQF 2.0 - LO3-A4).
- Discuss the concepts and the fundamental of cryptography and cryptanalysis. (MQF 2.0 - LO5-A4)
- Evaluate the different types of encryption methods. (MQF 2.0 - LO8-P4)

SKJ8303 ADVANCED DATA ANALYTICS

Advanced data analytics is a core competency required for Big Data Analytics graduates. The essence of advanced data analytics is to extract data from various operational systems and store it on one platform, where it can be organised into a format that is geared towards supporting decision makers in a company.

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

- Recognize advanced data analytics constructs, models and workflows. (LO2-C4)
- Apply data analytics knowledge in various real-world use cases using appropriate tools and methods. (LO3-P3)
- Effectively present data models, predictions and advanced analytics in various real-world use cases. (LO5-P5)
- Able to plan, manage and solve data analytics problems collaboratively within team settings. (LO7-C5, LO8-A4)

SKJ8503 DIGITAL FORENSIC AND INCIDENT MANAGEMENT

Incident response is the method by which organizations take steps to identify and recover from an information security incident, with as little impact as possible on business as usual. Digital forensics is what follows - a scientific investigation into the causes of an incident with the aim of bringing the perpetrators to justice. These two disciplines have a close but complex relationship and require a balancing act to get right, but both are essential when an incident occurs.
At the end of the course students will be able to:

- Analyze requirements and propose incident response and recovery techniques in various situations (MQF2.0 - LO2 – C3)
- Evaluate findings of forensics investigation and preparing report of incident management. (MQF2.0 - LO3 –A3)
- Present effectively laws and ethics in digital forensics (MQF2.0 - LO5,LO8 – A4)

SKJ8403 SECURE SOFTWARE DEVELOPMENT

A core course, which will expose the students to methods, techniques and processes, involve in developing secure software. It introduces a structured way of building secure software applications from requirement phase until implementation phase. It teaches students how to put software security into practice from reading and analyzing requirements to choosing development tools, to guarding against software vulnerabilities and attacks.

At the end of the course students will be able to:
- Determine the secure software development lifecycle; (MQF2.0 LO2 – C6).
- Construct a simple secure programming application based on its principles as a protection against threats and vulnerabilities. (MQF 2.0 L03-P4).
- Present the completed secure software development project. (MQF 2.0 LO5–A4)
- Demonstrate independce leadership in a project and learning activities. (MQF 2.0 LO8–A4)

SZ80023 RESEARCH METHODOLOGY IN COMPUTING

This course provides students with an opportunity to develop their skills in research method for computing in various domain knowledge. Students will be able to differentiate the different methodology and analysis suitable for the relevant discipline in computing such as computer sciece, software engineering,computer engineering, information science, cybersecurity and data science with a similar underlying research concept

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

- Demonstrate knowledge on ways to conduct research relevant to a particular computing discipline (MQF2.0 LO2-C4)
- Present a critical review on relevant literature to define problem and research design (MQF2.0 LO4-A5, LO6-A4)
- Present a research proposal in oral and writing. (MQF2.0 LO5-A4, LO9-A5, LO11-A5)

SZ80110 THESIS I

The thesis module is aimed at engendering students with a spirit of enquiry into a research-based dissertation. A broad range of research is encompassed within the expertise based in the Program of Computer Science. All projects will include the development of research skills, analysis and discussion of results as well as an opportunity to compose a written report in which an evaluation of the relevant literature and research findings are presented. Assessment is via coursework, consisting of three components: (1) a research activity, (2) a written report and (2) presentation. The written report would vary with the discipline specific subject area, and whether the student undertakes a single investigation, or a series of discipline specific investigations, but would typically be within the range of 7000-10000 words. The presentation will assess the student"s ability to communicate complex scientific concepts and data, clearly and concisely to a specified audience. Within this module the emphasis is on independent study, with the guidance of supervisor(s).

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

- Demonstrate the ability to produce work that is at the forefront of developments in computer science field specifically in information security and assurance. (LO2-C2, A4)
- Communicate effectively with various audience by publishing and presenting technical materials in computer science field. (LO4 - C3 ,A4, LO5-C3, A4)

- Collaborate with the supervisory committee to seek professional advice and discuss on the progress of the research project, as well as produce all deliverables in a timely manner. (LO9-C4A,4)
- Demonstrate consistent ethicall behaviour, professional conduct and social consideration. (PLO6, A4, LO11-C5, A4)

SZ80318 THESIS II

This course gives students the chance to investigate and contribute to an area at the cutting edge of computer science.This is an advanced research project conducted individually under the guidance of an academic supervisor, which is a continuous project from Thesis 1. The research continues over two semesters and this is an advanced phase for which students are expected to carry out their reserach topic that they have been doing over the past semester. Students are expected to keep themselves consulted with supervisors throughout the semester to ensure good progress. Students will complete this course once they arae able to produce a written thesis and go through viva voce session successfully.

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

- Demonstrate the ability to produce work that is at the forefront of developments in computer science field specifically in information security and assurance. (PLO2-C2, A4)
- Show the ability to evaluate computing solutions and tools in terms of their usability, efficiency and effectiveness(PLO3-C3A, P4)
- Demonstrate the ability to communicate effectively within a group and diverse audience by publishing and presenting technical materials in the fields of study (PLO5, C3C, A4)
- Demonstrate the ability to work individually and deliver work in a timely manner. (PLO9- C4A, A4)
- Show the ethical behaviour, professional conduct and social consideration. (PLO11-C5, A4)

UNIVERSITI SAINS ISLAM MALAYSIA

جَامِعَة العُلوم الإِسْلامِيَة المَالِيزِيَة

ISLAMIC SCIENCE UNIVERSITY OF MALAYSIA

MASTER OF SCIENCE (RISK MANAGEMENT)

Introduction and Objectives

The Master of Science (Risk Management) program was first offered in Semester I, Academic Session 2012/2013. The program is offered in mixed mode structure, and the total number of credit hours for this program is 42 credit hours.

Programme Outcomes

The objectives of the programme are to produce:

1.	PEO1: Risk managers who can apply and adapt knowledge and practical skills in the field of risk management to produce quality research while providing the best services to relevant sectors. (PLO 1, PLO2, PLO3)
2.	PEO2: Risk managers who are able to lead, work in a team in solving problems, provide new ideas and subsequently convey and communicate information effectively.(PLO4, PLO5, PLO8, PLO9)
3.	PEO3: Risk managers who constantly strive to improve their knowledge and capabilities by leveraging digital technology to solve problems in relevant sectors. (PLO6, PLO7)
4.	PEO4: Risk managers who practice ethical and professional values in providing services to relevant sectors. (PLO11)

PLO No.	Programme Learning Outcomes (PLO)
	Graduates of MSc (Risk Management) should be able to:
PLO1	Describe advanced knowledge in the fied of risk management
PLO2	Adapt risk management knowledge and skills, and practice critical thinking in solving problems through data analysis and processing techniques
PLO3	Develop practical research skills in conducting experiments, analysing and interpreting data for research in the field of risk management.
PLO4	Demonstrate interactive communication skills and social accountability as an educated person and able to work in a team
PLO5	Communicate orally and convey information effectively to all levels of society.
PLO6	Adapt digital technology in identifying, analysing and processing data to solve problems in the field of risk management.
PLO7	Apply basic and advanced knowledge of mathematics and statistics to solve problems related to risk management using appropriate techniques
PLO8	Demonstrate meaningful contribution as a leader or team member in achieving objectives.
PLO9	Demonstrate confidence, self control, appropriate social skills and commitment to continuous learning.
PLO10	
PLO11	Demonstrate an understanding of the fundamentals of commercialization, ethics, and legislation.

Programme Structure

*For full-time student

Semester	Code	Course	Component	Credit Hours
Year 1				
I	AAA8003	Philosophy of Islamic Science	WU	3
	SRA8093	Risk Analysis And Decision Making	WP	3
	SRA8043	Risk Management Principles And Practice	WP	3
	SZ80003	Research Methodology And Proposal	WP	3
Credit Hours				**12**
II	SZ80118	Thesis I	WP	6
	SRA8123	Enterprise Risk Management	WP	3
Choose One (1) Out of Two (2)				
	SMK8013	Applied Econometrics	EP	3
	SRA8203	Advanced Financial Risk Management	EP	
Choose One (1) Out of Two (2)				
	SMK8033	Islamic And Conventional Financial Market	EP	3
	SRA8193	Islamic Risk Management	EP	
Credit Hours				**15**
Year 2				
III	SZ80218	Tesis II	WP	12
Choose One (1) Out of Two (2)				
	SRA8103	Risk Models	EP	3
	SRA8133	Quantitative Risk Analysis	EP	
Credit Hours				**15**
Total Credit Hours				**42**

Study Scheme

Item	Scheme	
	Full Time	**Part Time**
Number of semester	3	4
Study Period	1.5 Years	2 Years

Course Synopsis

AAA8003 PHILOSOPHY OF ISLAMIC SCIENCE

This course is introduced to expose the students to the philosophy of Islamic Science. It also discusses the principles of Islamic worldview in providing a sound philosophical basis for producing an Islamic science in the current context. The course also demonstrates the relation of Islamic science to the theoretical framework for the integration of Naqli and Aqli knowledge. Besides, the course enlightens and contextualizes the achievements of past Muslim Scientists in the current discussion of science.

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

- Analyse critically other worldview against the principles of Islamic worldview;

- Propose solutions to the current problems in science using the fundamental principles of Islam in the understanding of reality and hence science;
- Present the comparison between Islamic Science and western/modern science using various communication technology.

SRA8043 RISK MANAGEMENT PRINCIPLES AND PRACTICE

This course is designed to expose students to the fundamentals of risks and risk management, to develop within students a sound appreciation of risk and its implications, and to develop students understanding on the role and importance of various internal and external factors giving rise to risk. This course explores key concepts in risk, with emphasis on practical approach to risk and its management.

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

- Develop the understanding of the scope of risk and uncertainty management in organisations;
- Demonstrate key skills during the module, and subsequently through preparation of the written assignments and reports;
- Explain the ways in which risk and uncertainty may be described and evaluated through several information handling.

SRA8093 RISK ANALYSIS AND DECISION MAKING

The ability to make effective decisions in the face of risk and uncertainty is essential to success in today's fast changing world. This course seeks to equip students with the knowledge of risk analysis techniques that will help them to make decisions under risk and uncertainty. The course will take an inter-disciplinary approach and will emphasise a mix of both qualitative and quantitative risks analysis, within a structured decision making process. The hybrid of qualitative and quantitative analysis is essential to significantly improve decision making.

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

- Analyse the different approaches to risk analysis and decision making;
- Perform risk assessment using specific risk assessment techniques;
- Evaluate risks using risk analysis techniques to produce a decision,

SRA8123 ENTERPRISE RISK MANAGEMENT

This course introduces the key principles of Enterprise Risk Management (ERM) within an organisation. This course is intended to provide an understanding of what is risk and what does ERM process look like for organizations including some common challenges and pitfalls of institutionalizing an ERM culture. ERM involves the integration of risk management across an organisation, rather than treating each individual risk which an organisation faces separately. Students should gain an understanding of the implementation and application of ERM. Students taking this course will gain the ability to apply the knowledge and understanding of ERM practices to any type of organisations. Students should also be able to model and measure the risk using the right tools. Students will understand the concept of economic capital, risk measures in capital assessment and techniques to allocate the cost of risks within business units.

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

- Explain the key principles underlying the implementation and application of ERM within an organisation;
- Perform the right techniques to allocate the cost of risks within a business units;
- Propose the quantitative methods and tools for risk measurement and modelling.

SMK8013 APPLIED ECONOMETRICS

This subject is about understanding the application of economic analysis to specific problems in both the public and private sectors. Students will also acquire knowledge, practical and problem solving skills which are important in bringing the econometrics theory to solve real economic problems.

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

- Analyse the essential assumptions of classical linear econometric model;
- Explain the application of econometric model using analysis of the dataset;
- Interpret the results and findings from the econometric model into decision-making process

SRA8203 ADVANCED FINANCIAL RISK MANAGEMENT

This course is an advanced course in the management of financial service firms and the development of risk management systems. The course will focus on understanding financial risk management strategies, and examples used may come from areas such as commodities, insurance, financial markets, agriculture, and banking and credit. It will deal with advanced methods of measuring financial risk within financial institutions.

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

- Evaluate the theory and concept of derivatives contracts and hedging instruments;
- Perform a presentation related to financial risk management project using the right financial derivative tools:
- Explain the current issues relating to financial risk management through independent learning.

SMK8033 ISLAMIC AND CONVENTIONAL FINANCIAL MARKET

Financial markets and institutions, both Islamic and conventional, have become one of the most exiting areas in both the academic and the professional pursuits of finance. Financial markets have change rapidly, with new financial instruments appearing almost daily. This course will provide students with an understanding of the mechanisms of various financial markets and institutions, both Islamic and conventional, such as banks, non-banks, stock exchanges and brokers. Students will develop a critical awareness of the theoretical and practical problems associated with regulating financial markets. Throughout the course, student will be exposed to the different between conventional and Islamic financial markets. The first part of the course covers the overview of financial markets and interest rates. The second part covers financial markets and the assets traded on these-market including money, bonds, stocks and derivatives. The last part covers details workings of some financial institutions.

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

- Critically analyse the operations of conventional and Islamic financial market;
- Compare the operations of Islamic and conventional financial market;
- Interpret the impact and the reasons of the policies related to the financial condition.

SRA8193 ISLAMIC RISK MANAGEMENT

This course exposes students to the concept of managing risks especially in the Islamic financial institutions through an Islamic perspective of risk management.

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

- Analyse the concept of risk management from conventional and Islamic perspectives;
- Display knowledge and skills regarding with the management of risk from Islamic perspective;
- Display broad understanding on regulations and supervision issues that is relevant to Islamic risk management.

SRA8103 RISK MODELS

This course provides an intensive introduction to the stochastic models used by actuaries to model both liabilities and assets and illustrates their applications in actuarial work. Topics covered include main features of a Markov chain and applications to experience rating; Markov process models and applications to insurance, survival, sickness and marriage models; simple time series models including random walk and auto-regressive models and their application to investment variables; properties of Brownian motion and applications to investment variables; methods for simulation of a stochastic process. Students will be expected to implement models using spreadsheets or programs in a numerical computer package.

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

- Analyse between selected risk model and classify the benefits of each;
- Perform techniques related to incurred but not reported (IBNR) components in insurance companies:
- Explain the outcomes of various IBNR techniques in given projects.

SRA8133 QUANTITATIVE RISK ANALYSIS

This subject prepares students to quantitative risk analysis which is an important knowledge in the competitive modern corporate world. The course focuses on modern, quantitative methods to measure and manage the risks faced by financial institutions. It covers market risk (value at risk, expected shortfall, market volatility, stress testing, scenario analysis, back testing), credit risk (single name, portfolio, ratings & market based models, credit derivatives), liquidity risk, operational risk, risk budgeting, and capital requirements.

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

- Analyse the likelihood and consequences of risk events to provide information to potential risk carriers or other organisations which might assist in risk solutions using qualitative and quantitative data;
- Organize data to provide a basis for future prediction of occurrence of the consequences of risk, particularly timing, magnitude and frequency;
- Explain significant financial instruments that can be used to manage risk and the potential problems associated using such instruments.

SZ80003 RESEARCH METHODOLOGY AND PROPOSAL

This course provides students with an opportunity to develop their skills in the use of the literature and in quantitative methods. Students will learn how to evaluate and contribute to the scientific literature, to assess the kinds of scientific data and tests of hypotheses, as well as to use and interpret advanced methods of experimental design and statistical analysis.

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

- Apply research methodology and actuarial/risk management knowledge to develop a good research plan;
- Present the compiled literature and research parameters in written and oral forms effectively following the faculty's guidelines;
- Adhere to high academic ethics and values while fulfilling the research works.

SZ80118 THESIS I

Students will continue their research work after successfully defended their research proposal. This involves data collection activities as well as performing preliminary data analysis. Students also will continue working on their write up especially improving the first three chapters according to the comments and feedbacks given during the proposal presentation. Students will work closely under supervisor's guidance and present their progress.

Risk Management

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

- Critically justify the problem statement and research objectives based on knowledge in the research area;
- Perform a preliminary data analysis based on proper methodology for assisting further accurate analyses;
- Report the progress of the research work before the research committee as well as in writing based on the faculty's guidelines;
- Adhere to high academic ethics and values while fulfilling the research works.

SZ80218 THESIS II

The thesis provides the opportunity for students to develop a substantial investigation into the ideas about application of mathematics in fields of finance, actuarial science, and risk management. An individual area of research and enquiry will be developed through tutorials and seminars. Students will resume their research with data analysis and discussion in relation to the results obtained before it can be concluded. This course aims to enable students to demonstrate independent, critical, and creative thinking in presenting coherent and well-argued discussion in a sustained piece of writing. It is also a way of increasing the students' maturity and preparing them for their future career. The thesis will be presented, discussed and evaluated in relation to experimental design precedents, theoretical and practical issues.

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

- Critically justify the problem statement and research objectives based on knowledge in the research area;
- Demonstrate systematic data analysis based on proper methodology for accurate findings and discussions;
- Defend scientific research concepts and findings effectively in oral and written forms based on the faculty's guidelines;
- Adhere to high academic ethics and values while fulfilling the research works.

UNIVERSITI SAINS ISLAM MALAYSIA

جَامِعَة العُلوم الإسْلامِيَة المَالِيزِيَة

ISLAMIC SCIENCE UNIVERSITY OF MALAYSIA

MASTER OF SCIENCE (ACTUARIAL SCIENCE)

Introduction and Objectives

This programme was first introduced in the 2016/2017 academic year. The programme is offered as a mixed mode programme. In 2018/2019 a revised curriculum was introduced. Then, in order to update the programme using MQF2.0, another revised curriculum is introduced and will be applied to the 2021/2022 academic year.

The objective of the programme is to produce:

1. Actuarial practitioners who can apply knowledge and practical skills in the field of actuarial science to generate new knowledge while providing the best services to related sectors. (PLO1, PLO2, PLO3)
2. Actuarial practitioners who are able to lead, work independently and in a team in solving problems as well as provide new ideas and subsequently convey information effectively. (PLO4, PLO5, PLO8, PLO9)
3. Actuarial practitioners who constantly strive to improve their knowledge and abilities by leveraging digital technology to solve problems in related sectors.(PLO6, PLO7)
4. Actuarial practitioners who practice ethical and professional values in providing services to related sectors. (PLO11)

Programme Outcomes	Programme Learning Outcomes (PLO)
PLO No.	Graduates of MSc (Actuarial Science) should be able to:
PLO1	Describe advanced knowledge in the fied of actuarial science
PLO2	Adapt the knowledge and skills of actuarial science and think critically in solving problems through analysis and data processing techniques
PLO3	Conduct research, analyze and interpret data for research use in the field of actuarial science.
PLO4	Demonstrate interactive communication skills and have social accountability as an educated person and able to work in a team.
PLO5	Communicate orally and convey information effectively to all levels of society.
PLO6	Adapting digital technology in identifying, analyzing and processing data to solve problems in the field of actuarial science.
PLO7	Apply basic and advanced knowledge of mathematics and statistics to solve problems related to actuarial science by using appropriate techniques.
PLO8	Demonstrates leadership characteristics, autonomy and responsible decision making in a teamwork environment
PLO9	Demonstrates confidence, self -control and appropriate social skills and is committed to continuous learning.
PLO10	
PLO11	Demonstrate an understanding of the fundamentals of commercialization, ethics and law, as well as social issues related to the field of actuarial science.

Programme Structure

Semester	Code	Course	Component	Credit Hours
		Year 1		
	AAA8003	Philosophy of Islamic Science	WU	3
I	SRA8004	Actuarial Mathematics	WP	4
	SRA8023	Actuarial Practice	WP	3
	SZ80003	Research Methodology and Proposal	WP	3
		Credit Hours		**13**
	SMK8023	Computational Finance	WP	3
	SZ80118	Thesis I	WP	6
	Choose One (1) Out of Two (2)			
	SRA8033	Asset-Liability Management	EP	3
II	SRA8053	Employee Benefit Scheme	EP	
	Choose One (1) Out of Two (2)			
		Credit Hours		**15**
		Year 2		
	SZ80218	Thesis II	WP	12
	Choose One (1) Out of Two (2)			
III	SRA8113	Takaful	EP	3
	SRA8103	Risk Models	EP	
		Credit Hours		**15**
		Total Credit Hours		**43**

Study Scheme

Item	Scheme	
	Full Time	**Part Time**
Number of semester	3	4
Study Period	1.5 Years	2 Years

Course Synopsis

AAA8003 PHILOSOPHY OF ISLAMIC SCIENCE

This course is introduced to expose the students to the philosophy of Islamic Science. It also discusses the principles of Islamic worldview in providing a sound philosophical basis for producing an Islamic science in the current context. The course also demonstrates the relation of Islamic science to the theoretical framework for the integration of Naqli and Aqli knowledge. Besides, the course enlightens and contextualizes the achievements of past Muslim Scientists in the current discussion of science.

At the end of the course, students will be able to:
- Analyse critically other worldview against the principles of Islamic worldview;
- Propose solutions to the current problems in science using the fundamental principles of Islam in the understanding of reality and hence science;
- Present the comparison between Islamic Science and western/modern science using various communication technology.

SMK8023 COMPUTATIONAL FINANCE

This subject provides students with the technical skills and techniques in the rapidly growing area of quantitative and computational finance which is an important area in modern financial market.

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

- Describe theoretical knowledge of finance and mathematics for solving issues in financial mathematics;
- Construct computer illustration for some examples in financial engineering;
- Interpret mathematical information to solve real world examples of finance.

SRA8023 ACTUARIAL PRACTICE

The aim of Actuarial Practice is to provide students with an understanding of underlying actuarial principles that may be applied to a range of problems and issues in commercial and business environments. Students are expected to develop a holistic approach to practical problem solving and develop a level of judgement and professional skills required to successfully apply actuarial principles.

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

- Explain the concept, professional and ethical conduct of actuarial practice in variety of commercial and business situations;
- Design the insurance product to solve real commercial and business situations using the concept of actuarial practice;
- Explain the actuarial solutions or approaches to a range of audiences.

SRA8004 ACTUARIAL MATHEMATICS

This course will expose students to distribution of the time-to-death random variable for a single life, and its implications for evaluations of insurance and annuity functions, net premiums, and reserves. It will also expose students to life insurance and annuity models with multiple life functions and/or multiple decrements (including pension), and life insurance models that include expenses. The topics covered include the following: Survival distributions: age at death, life tables, fractional ages, mortality laws, select and ultimate life tables. Life insurance: actuarial present value function (apv), moments of apv, basic life insurance contracts, portfolio. Life annuities: actuarial accumulation function, moments of apv, basic life annuities. Net annual premiums: actuarial equivalence principle, loss function, accumulation type benefits. Actuarial reserves: prospective loss function, basic contracts, recursive equations and fractional durations. Topics also include: Multiple life functions: joint-life, last-survivor; Multiple decrement models: stochastic and deterministic approaches, associated single decrement, fractional durations; Valuation theory for pension plans; Insurance models including expenses: gross premiums and reserves, types of expenses and asset shares; Non-forfeiture benefits and dividends: equity concept, cash values insurance options and modified reserves.

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

- Evaluate problems involving risk, uncertainty and finance using actuarial principles and techniques;
- Explain the results of actuarial problems on pricing and reserving involving life insurance and pension plans through the role of group leader and group member alternately;
- Explain the solution for insurance models involving problems of pricing and reserving to the management team.

SRA8033 ASSET LIABILITY MANAGEMENT

Understanding asset and liability management that practiced by banks and insurance companies in managing risks that arise due to mismatches between the assets and liabilities are crucial for risk management students to be competitive in financial market.

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

- Explain the knowledge and techniques learned in the subject to manage the risks that are exposed to financial institutions;
- Integrate the knowledge and understanding of concepts and techniques relating to balance sheet management in a financial institution and the application of banking ALM theory to a practical environment;
- Study reliable sample data using appropriate ALM analysis to resolve various issues in finance and economics.

SRA8073 GENERAL INSURANCE

To acquire knowledge, practical skills, problem solving and scientific skills needed in the field of general insurance. The course is to describe the rationale for the general insurance market (including private and public sectors elements) and to be able to explain the means by which the customers' needs are catered for by industry participants.

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

- Choose appropriate reinsurance strategies, given the composition of risk, availability of capital, and other corporate goals on solvency and profitability;
- Organize probability distributions from raw data, representing the past experience of an insurer that can be used to model the risk posed by a portfolio of insurance policie and to demonstrate the use in ratemaking;
- Synthesize simple dynamic stochastic models representing the operation of an insurer to answer questions relating to solvency, capital adequacy and other key factors to the study of risk and its effects.

SRA8113 TAKAFUL

This course is designed to provide students an overview of the basic principles and practice of Takaful. The comparison between Takaful and conventional insurance in terms of its concept, practice and products will be explained in detail, in order to distinguish these two schemes. The course covers two types of Takaful products namely; Family Takaful and General Takaful especially in the context of Takaful industry in Malaysia. Finally, the actuarial aspects of Takaful with regards to investment, evaluation and distribution of surplus are discussed.

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

- Organize the main features of Islamic contracts and why traditional insurance is prohibited from the Shariah point of view;
- Explain the main features, constraints and opportunities of Takaful vis-à-vis conventional insurance;
- Identify the operational framework, management principles and practices of Takaful in Takaful operators with application of ethical considerations and their impact on underwriting policy and practice.

SRA8053 EMPLOYEE BENEFIT SCHEME

The course introduces students to topics on Employee Benefit Schemes. The course will cover the application of employee benefits schemes with the emphasis on scheme designs, administration, funding, and regulation. Furthermore, the course is designed to provide students with an understanding of the mandated benefits, group insurance benefits, and retirement plans and alternative fundings. It will provide discussion on the concepts and principles of these topics through worldwide current issues and real-life examples.

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

- Explain various forms of employee benefit schemes that is offered in Malaysia and other countries;

- Clearly propose on the solutions for various scenarios and issues of employee benefit schemes in Malaysia and other countries;
- Perform positive work attitude in completing the assignments.

SRA8083 PENSION MATHEMATICS

The course will help to fill the mathematical and numerical gap in the pension cost literature. The mathematical material, while conforming to standard actuarial notation, begins with basic definitions and principles so that mathematicians in fields other than actuarial science, as well as actuaries, will have a comprehensive source on pension mathematics. The course begins with the subject of pension costs, various aspects of actuarial assumptions, background on pension plan populations. Then, the course deals conceptually with basic pension cost concepts and investigates the sensitivity of pension costs to various pension plan designs, and the sensitivity of pension costs to different actuarial assumptions. Finally, the course proceeds with the results of normal cost and actuarial liabilities using the variety actuarial cost methods.

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

- Estimate the normal cost and actuarial liabilities of pension plans using the variety of actuarial cost methods;
- Analyse an appropriate assumptions and methods for pension funding valuation;
- Explain the principles of pension plans and valuation of pension plan under the variety of funding valuation methods.

SRA8103 RISK MODELS

This course provides an intensive introduction to the stochastic models used by actuaries to model both liabilities and assets and illustrates their applications in actuarial work. Topics covered include main features of a Markov chain and applications to experience rating; Markov process models and applications to insurance, survival, sickness and marriage models; simple time series models including random walk and auto-regressive models and their application to investment variables; properties of Brownian motion and applications to investment variables; methods for simulation of a stochastic process. Students will be expected to implement models using spreadsheets or programs in a numerical computer package.

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

- Analyze between selected risk model and classify the benefits of each;
- Perform techniques related to IBNR components in Insurance companies;
- Explain the outcomes of various IBNR techniques in given projects.

SZ80003 RESEARCH METHODOLOGY AND PROPOSAL

This course provides students with an opportunity to develop their skills in the use of the literature and in quantitative methods. Students will learn how to evaluate and contribute to the scientific literature, to assess the kinds of scientific data and tests of hypotheses, as well as to use and interpret advanced methods of experimental design and statistical analysis.

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

- Apply research methodology and actuarial/risk management knowledge to develop a good research plan;
- Present the compiled literature and research parameters in written and oral forms effectively following the faculty's guidelines;
- Adhere to high academic ethics and values while fulfilling the research works.

SZ80118 THESIS I

Students will continue their research work after sucessfully defended their research proposal. This involves data collection activities as well as performing preliminary data analysis. Students also will continue working on their write up especially improving the first three chapters according to the comments and feedbacks given during the proposal presentation. Students will work closely under supervisor's guidance and present their progress.

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

- Critically justify the problem statement and research objectives based on knowledge in the research area;
- Perform a preliminary data analysis based on proper methodology for assisting further accurate analyses;
- Report the progress of the research work before the research committee as well as in writing based on the faculty's guidelines;
- Adhere to high academic ethics and values while fulfilling the research works.

SZ80218 THESIS II

The thesis provides the opportunity for students to develop a substantial investigation into the ideas about application of mathematics in fields of finance, actuarial science, and risk management. An individual area of research and enquiry will be developed through tutorials and seminars. Students will resume their research with data analysis and discussion in relation to the results obtained before it can be concluded. This course aims to enable students to demonstrate independent, critical, and creative thinking in presenting coherent and well-argued discussion in a sustained piece of writing. It is also a way of increasing the students' maturity and preparing them for their future career. The thesis will be presented, discussed and evaluated in relation to experimental design precedents, theoretical and practical issues.

At the end of the course, students will be able to:
- Critically justify the problem statement and research objectives based on knowledge in the research area;
- Demonstrate systematic data analysis based on proper methodology for accurate findings and discussions;
- Defend scientific research concepts and findings effectively in oral and written forms based on the faculty's guidelines;
- Adhere to high academic ethics and values while fulfilling the research works.

SECTION D

FACILITIES

Lecture Theatre / Hall / Classroom

No.	Code	Level	Specific Name	Normal Capacity	Projector
1	FST-A4-049	4	Bilik Tutorial 4.1	35	n/a
2	FST-A4-050	4	Bilik Tutorial 4.2	35	n/a
3	FST-A4-051	4	Bilik Tutorial 4.3	35	n/a
4	FST-A4-052	4	Bilik Tutorial 4.4	35	n/a
5	FST-A4-053	4	Bilik Tutorial 4.5	35	n/a
6	FST-A4-054	4	Bilik Tutorial 4.6	35	n/a
7	FST-A4-055	4	Bilik Tutorial 4.7	35	n/a
8	FST-A4-056	4	Bilik Tutorial 4.8	35	n/a
9	FST-A4-074	4	Bilik Tutorial 4.9	27	n/a
10	FST-A4-075	4	Bilik Tutorial 4.10	32	n/a
11	FST-A4-076	4	Bilik Tutorial 4.11	40	n/a
12	FST-A4-077	4	Bilik Tutorial 4.12	40	n/a
13	FST-A4-078	4	Bilik Tutorial 4.13	33	n/a
14	FST-A4-079	4	Bilik Tutorial 4.14	27	n/a
15	FST-A6-019	6	Bilik Kuliah Sederhana 6.1	84	Yes
16	FST-A6-020	6	Bilik Kuliah Sederhana 6.2	84	Yes
17	FST-A6-021	6	Bilik Kuliah Sederhana 6.3	56	Yes
18	FST-A6-022	6	Bilik Kuliah Sederhana 6.4	61	Yes
19	FST-A6-023	6	Bilik Tutorial 6.1	36	n/a
20	FST-A6-024	6	Bilik Tutorial 6.2	36	n/a
21	FST-A6-046/A6-047/A6-048	6	Bilik Tutorial 6.3/6.4/6.5	116	Yes
22	FST-A6-050/A6-051	6	Bilik Tutorial 6.6/6.7	88	Yes
23	FST-A1-108	1	Dewan Kuliah Sederhana 1.1	120	Yes
24	FST-A1-144	1	Dewan Kuliah Sederhana 1.2	120	Yes

Laboratories (Wet Lab)

Teaching Lab

No.	Name	Programme	Location	Code	List of Apparatus
1	Makmal Kepujian	FB	FST	FST-A1-016	Basic teaching lab apparatus
2	Makmal Pemprosesan Makanan			FST-A1-058	
3				FST-A1-060	
4				FST-A1-065	
5	Bilik Pembungkusan			FST-A1-066	Seal Cup Machine Vacumm Pack Sosej Filller Capsule Maker
6	Ruang Kawalan Kualiti			FST-A1-069	Basic teaching lab apparatus
7	Bilik Sensori			FST-A1-073	
8	Makmal Pemprosesan Makanan			FST-A1-075	Blast Freezer
9				FST-A1-077	Spray Dryer Sealing Machine Freeze Dryer
10	Kedai Bakeri			FST-A1-081	Basic teaching lab apparatus
11	Makmal Bakeri			FST-A1-090	
12	Bilik Pembakaran			FST-A1-091	Double Deck Oven Proofer
13	Makmal Mikrobiologi			FST-A3-017	Basic teaching lab apparatus
14	Makmal Sains Makanan			FST-A4-017	Crude Fibre System (Gerhardt), Protein Distillation & Tittration (Buchi), Extration Unit (Gerhardt), Digestion system (Kjeldatherm-Digestion), Moisture Analyzer , Rancimat Oil Stability Analyzer (Metrohm ,
15	Makmal Kimia Tak Organik	TKI		FST-A2-016	Basic teaching lab apparatus
16	Makmal Kimia Organik			FST-A5-056	Dynamic Light Scattering (Zeta Sizer)
17	Makmal Fotonik	FG	FPQS	FQS-A1-032	Splising Tool Kit
					Fusion Splicing
					SDH (Synchronous Digital Hierarchy) Analyzer
					Variabler Optical Attenuators
					Light Source
					Power Meter
					OTDR (Optical Time-Domain Reflectometer)
					FTTH (Fiber To The Home)

					Termination Box
					Testing Equipment
					Optisystem Software. (OptiFDTD 10 User Network License)
					OptiSystem Software. (Optiwave)
18	Makmal Mikroelektonik			FQS-A1-037	Digital Electronic Trainer
					Power Supply HD 3003D
					Digital Storage Oscilloscope
					Function Generator
					Multimeter
					Oscilloscope
					IC Tester
19	Makmal Fizik Tenaga		MPG, Tamhidi	SM-A6-031	Pasco Wireless Voltage Sensor
					Pasco Wireless Current Sensor
					Solar Panel
					Flywheel Set & Accessories
					Gearing Set & Accessories
					Hydro Set & Accessories
					ET-Wind Turbine Set & Accessories
					PASPORT Weather Anemometer Sensor
20	Makmal Sains Bahan 1			SM-A1-002	Universal Testing Machine (UTM)
					Rigid Coupling
21	Makmal Sains Bahan 2			SM-A1-003	Impact Testing Machine with Notcher
					Hot Press Machine
22	Makmal Sains Bahan 4			SM-A1-006	Brabender Internal Mixer
					Vacum Oven
23	Makmal Fizik 1			MK-A3-015	Basic teaching lab apparatus
24				MK-A3-016	
25	Makmal Fizik 2			MK-A3-031	
26	Makmal Fizik Perubatan		MPG, Tamhidi	MS-A1-010	Basic teaching lab apparatus

Research Lab

No	Name	Code	List of Apparatus
1	Makmal Penyelidikan	FST-A1-082	Micro Visco Amylograph
2	Makmal Penyelidikan 1	FST-A2-023	Sample research and experimental setup
3	Makmal Penyelidikan 2	FST-A2-042	Sample research and experimental setup
4	Makmal Penyelidikan 4	FST-A3-030	Gel Documentation System, ELISA System, , Plant Tissue Culture Chamber, Inverted Microscope (Olympus), Trinocular Research Microscope (Nikon)
5	Makmal Penyelidikan 5	FST-A3-049	Sample research and experimental setup
6	Makmal Penyelidikan 6	FST-A3-051	Sample research and experimental setup
7	Makmal Penyelidikan 7	FST-A3-052	Sample research and experimental setup
8	Makmal Penyelidikan 8	FST-A3-055	Sample research and experimental setup
9	Makmal Penyelidikan 9	FST-A4-023	Sample research and experimental setup
10	Makmal Penyelidikan 10	FST-A4-024	Sample research and experimental setup
11	Makmal Penyelidikan 11	FST-A4-042	Sample research and experimental setup
12	Makmal Penyelidikan 12	FST-A4-044	Sample research and experimental setup
13	Makmal Penyelidikan 13	FST-A4-045	Sample research and experimental setup
14	Makmal Penyelidikan 14	FST-A4-048	Sample research and experimental setup
15	Makmal Penyelidikan 15	FST-A5-062	Sample research and experimental setup
16	Makmal Penyelidikan 16	FST-A5-081	Sample research and experimental setup
17	Makmal Penyelidikan 17	FST-A5-083	Sample research and experimental setup
18	Makmal Penyelidikan 18	FST-A5-084	Sample research and experimental setup
19	Makmal Penyelidikan 19	FST-A5-087	Sample research and experimental setup
20	Makmal Instrumentasi Prog FG, Bengkel Program FG	MS-A1-008	Electrochemical Measurement System
			Chemical Cabinet
			Heating Mantel
			Electrochemical Impedance Spectroscopy (EIS)
			Cutting Mill
			Wood Working Square Hole Drilling Machine
			Pyranometer
		MS-A1-009	X-Ray Diffraction (XRD)
			Survey Meter
21	Makmal Penyelidikan Sains Bahan	MS-A6-014	Universal Oven
		MS-A6-015	Drying Cabinet

22	Makmal Penyelidikan Fotonik	MK-A3-031	Optical sensor setup

Instruments

No	Room	Location	Code	List of Instruments
1	Bilik Persediaan 1.1	FST	FST-A1-017	Tube Furnace Water Filtration System
2	Bilik UV-Flourescent		FST-A1-019	Flourescene Spectrometer
3	Bilik Bahan Kimia/ Radas Kaca		FST-A1-020	Glass apparatus and chemicals
4	Bilik FTIR		FST-A1-021	Fourier Transform Infrared
5	Bilik Persediaan 1.2		FST-A1-022	UV Vis NIR UV Vis Spectrophotometer Microwave Digestion
6	Bilik AAS		FST-A1-023	Atomic Absorption Spectrometer (Flame AAS & Graphite Furnace)
7	Ruangan Simpanan Gas		FST-A1-024	Gas cylinder
8	Bilik Pembungkusan		FST-A1-066	Seal Cup Machine Vacumm Pack Sosej Filller Capsule Maker
9	Stor 2		FST-A1-079	CHNOS Analyzer BET Analyzer
10	Bilik Pembakaran		FST-A1-091	Double Deck Oven Proofer
11	Bilik Neraca		FST-A2-017	Analytical Balance dan Top Pan Balance
12	Bilik Radas Kaca		FST-A2-021	Glass apparatus
13	Bilik Autoclave		FST-A3-021	Autoclave Machine
14	Bilik Peralatan		FST-A3-023	Microscope
15	Stor Radas Kaca		FST-A3-025	Glass apparatus
16	Bilik Instrumen		FST-A3-050	Centrifuge PCR Machine RT PCR Machine Gel Imaging System Freezer -80 °C Freezer
17	Bilik Instrumen		FST-A3-053	Shaking Incubator Bacterial Incubator Laminar Flow CO2 Incubator Bioreactor
18	Bilik Persediaan		FST-A4-018	Sample
19	Bilik Neraca		FST-A4-020	Analytical Balance dan Top Pan Balance

20	Stor Bahan Kimia/ Radas Kaca		FST-A4-021	Glass apparatus
21	Stor Bahan Kimia		FST-A4-022	Chemicals
22	Bilik HPLC dan UHPLC		FST-A4-043	High Performance Liquid Chromatography, Ultra Performance Liquid Chromatography, Water Filtration System Furnace, Rotary Evaporator
23	Bilik Analisis Tekstur, Colorimeter dan Rheometer		FST-A4-046	Texture Analyzer Colorimeter Rheometer
24	Bilik Neraca 5.1		FST-A5-057	Analytical Balance dan Top Pan Balance
25	Bilik Persediaan 5.1		FST-A5-058	Sample
26	Bilik Bahan Kimia/ Radas Kaca		FST-A5-060	Glass apparatus
27	Bilik Neraca 5.2		FST-A5-061	RAMAN Spectrometer
28	Bilik Instrumen 5.1		FST-A5-082	Autotittrator, Furnace, Slip Melting Point, Centrifuge (Beckman Coulter), Rotary Evaporator (Buchi), Bomb Calorimeter
29	Bilik Instrumen 5.2		FST-A5-085	Gas Chromatography Flame Ion Detector Gas Chromatography Mass Spectrometer QQQ, Bomb Calorimeter
30	Bilik DSC	MPG, Tamhidi	MK-A3-018	Differential Scanning Calorimetry (DSC)
31	Bilik Peralatan Fizik		MK-A3-019	Uninterruptible Power Supply (For TGA)
32	Bilik Peralatan Fizik		MK-A3-020	Thermogravimetric Analyzer (TGA)
33	Bilik Peralatan Fizik		MK-A3-021	Thermocouple Data Logger
34	Bilik Peralatan Fizik		MK-A3-022	Universal Oven
35	Bilik Peralatan Fizik		MK-A3-024	Data Logger

Laboratories (Computer / ICT Lab)

No.	Code	Level	Name	Computer Capacity	Projector	White Board
1	FST-A5-029	5	Makmal Sains Komputer 5.1	15	Yes	Yes
2	FST-A5-030	5	Makmal Sains Komputer 5.2	15	Yes	Yes
3	FST-A5-031	5	Makmal Sains Komputer 5.3	16	Yes	Yes
4	FST-A5-032	5	Makmal Multimedia 5.1	31	Yes	Yes
5	FST-A5-033	5	Makmal Multimedia 5.2	33	Yes	Yes
6	FST-A6-045	6	Makmal Sains Komputer 6.2	16	Yes	Yes
7	FST-A6-053	6	Makmal Sains Komputer 6.5	31	Yes	Yes
8	FST-A6-054	6	Makmal Sains Komputer 6.6	31	Yes	Yes
9	FST-A6-055	6	Makmal Sains Komputer 6.7	33	Yes	Yes
10	FST-A6-056	6	Makmal Sains Komputer 6.8	32	Yes	Yes
11	FST-A6-057	6	Makmal Sains Komputer 6.9*	0	Yes	Yes
12	FST-A6-058	6	Makmal Sains Komputer 6.10*	0	Yes	Yes
13	FST-A6-059	6	Makmal Sains Komputer 6.11*	0	Yes	Yes

* Bring Your Own Device (BYOD)

SECTION E

GENERAL INFORMATION

TABLES OF REFERENCES

General Link: https://cgs.usim.edu.my/quick-link/

No.	Items	Link
1.	Rules & Regulations	CGS Official web > QUICK LINK > For Students > Regulations
2.	Fees	https://cgs.usim.edu.my/admission-related/fee-structure/
3.	Course Registration	https://ipps2.usim.edu.my/
4.	Examination	https://cgs.usim.edu.my/student-related/examinations/
5.	Plagiarism	CGS Official web > QUICK LINK > For Faculty > Plagiarism Policy
6.	Helpdesk & Assistance	hanihadirah@usim.edu.my ahmadfarid@usim.edu.my nurulsima@usim.edu.my

SECTION F

STUDY PROCESSES

STUDY FLOW

Overview of Mixed Mode Study Flow
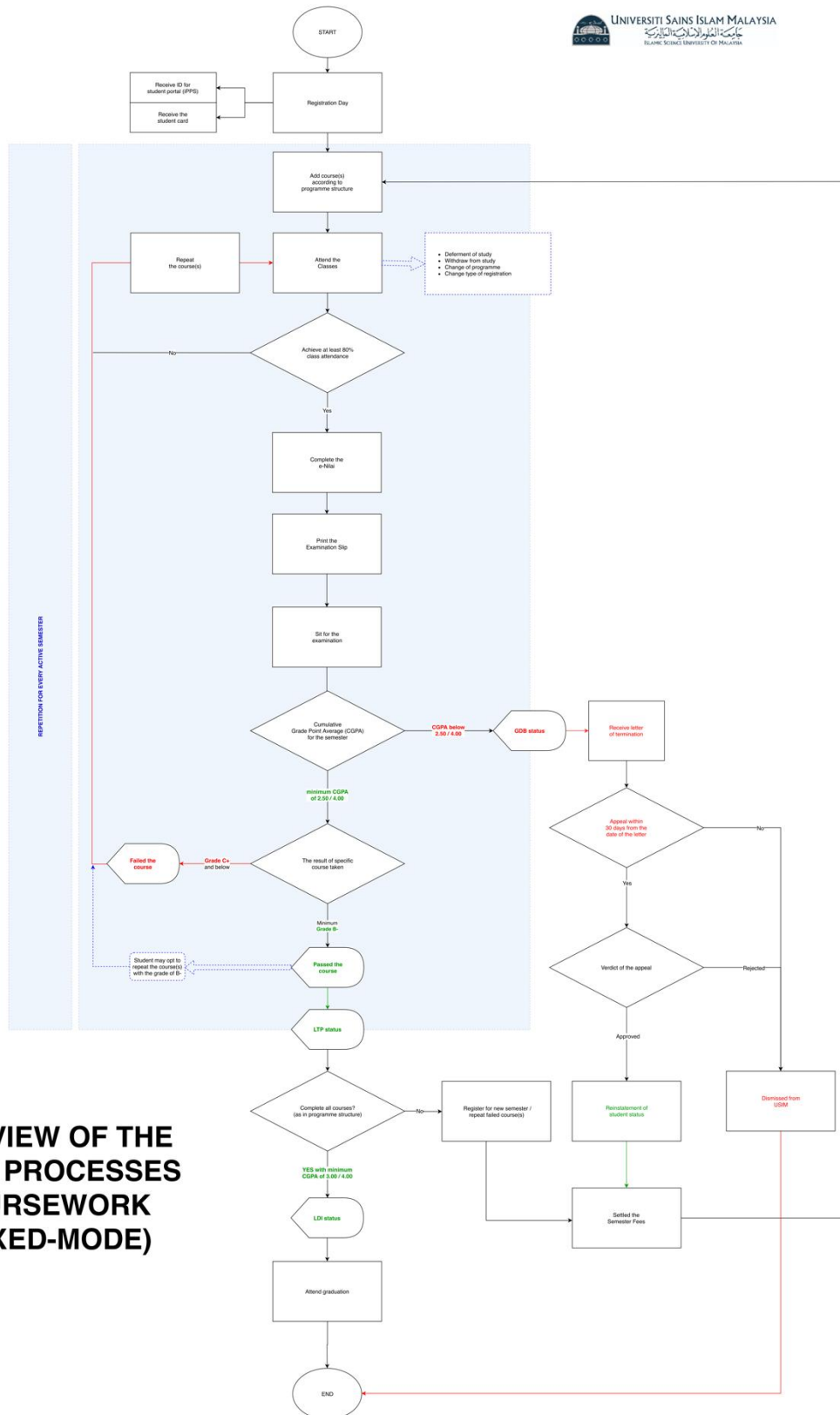
Overview of Mixed Mode Study Process

Study Week (W)	Study Process (General)		Process Related to Research (Proposal & Dissertation)						Administrative Process	
	Related to all programmes		RM	AS	FM	ISA	FB	Action by	Activities	Action by
SEMESTER ONE (1)										
W1	Course Registration (subject not included in the programme structure)[2]	Lecture	Discuss and choose a research topic with the coordinator					**Student & Supervisor**		
W2										
W3										
W4										
W5	Lecture								Nominate Examiners for PD and SPP	**Research Method Lecturer**
W6										
W7									Approval for the nomination of Examiners in Pes	**PG Coordinator & MAF**
W8										
W9			Appointment of Internal Examiners for **Proposal Defence (PD)** & **Semester Progress Presentation (SPP)**[3]					**FST Office**	Send the official examiners appointment to approved Examiners	**FST Office**
W10	Last week to drop course									
W11			Submit completed proposal to FST Office					**Student**	Submit proposal to Examiners	
W12										
W13									Send the invitation for PD Session	**FST Office**

Week	Activity						Role	Task	Responsible
W14		*Proposal Defence (PD) Session*					**Student & Examiners**	Ensure the smooth running of PD Session	
W15	Final Examination (subject to course requirement)								
W16									
W17									
W18									
W19	Semester Break							Gradings & Grade endorsement	**Course Lecture**
W20									
W21									
W22									
SEMESTER TWO (2)									
W1	Course Registration (subject not included in the programme structure)²					Intention to Submit	**Student**	Send reminder to student to apply for *intention to submit*	**FST Office**
W2									
W3								Nomination of Thesis Examiners	**Supervisor**
W4									
W5	Lecture							Approval for the nomination of Examiners in Pes	**PG Coordinator & Pes**
W6									
W7									
W8									
W9									

Week	Activity	SPP				Completed Study	Thesis	Responsible	Task	Office
W10										
W11										
W12										
W13							Submission of Thesis & Turnitin	**Student**	Send the official examiners appointment to approved Examiners (FB only)	**FST Office**
W14										
W15	Final Examination (subject to course requirement)	***Submission of Semester Progress Report (SPP)***					Thesis Evaluation	**Thesis Examiners**	Submit invitation to SPP Session	
W16									Submit thesis to Examiners (FB only)	
W17		SPP Session								
W18									Submit invitation to Viva Voce Session (FB only)	
W19	Semester Break						Disertation presentation (Viva Voce)	**Thesis Coordinator Student, Examiners**	Ensure the smooth running of Viva Voce Session	
W20										
W21							Viva Voce Reports & Grade	**Thesis Coordinator**		
W22										
SEMESTER THREE (3)										
W1	Course Registration (subject not included in the programme structure)	Intention to Submit				Completed Study		**Student**	Send reminder to student to apply for *intention to submit*	**FST Office**
W2										
W3									Nomination of Thesis Examiners	**Supervisor**
W4										

W5	Lecture								Approval for the nomination of Examiners in Pes	**PG Coordinator & Pes**
W6										
W7										
W8										
W9										
W10	Last week to drop course									
W11										
W12										
W13		Submission of Thesis & Turnitin					**Student**	Send the official examiners appointment to approved Examiners		**FST Office**
W14									
W15	Final Examination (subject to course requirement)	Thesis Evaluation					**Thesis Examiners**	Submit thesis to Examiners	
W16									
W17									
W18								Submit invitation to Viva Voce Session	
W19	Semester Break Course Pre-registration	*Disertation presentation (Viva Voce)*					**Thesis Coordinator Student, Examiners**	Ensure the smooth running of Viva Voce Session	
W20									
W21		Viva Voce Reports & Grade					**Thesis Coordinator**		
W22									

IMPORTANT NOTES:

1. Student must refer to their programme structure and consult their Head of Programme prior to Course Registration.

2. Student is required to complete their Arabic Language Foundation Course with minimum grade of B. Alternatively, Student may apply for exemption during their first semester of studies *(Refer Paragraph 12.1(5) Regulations of Universiti Sains Islam Malaysia (Graduate Studies) 2007 (Amendment 2019)).*

3. Student is required to comply with the English Language Proficiency Requirements as per *Paragraph 3.7 Regulations of Universiti Sains Islam Malaysia (Graduate Studies) 2007 (Amendment 2019).* In addition, FST mixed mode student is required to met the minimum language proficiency set as partial fulfilment of the Proposal Defence (PD) requirement.

Related Medium, Forms, and Reports

No.	Process	Medium / Related Form, and Reports	Download Link
1.	Course Pre-registration (Accordance to programme structure)	Programme Structure	
		Student portal (iPPS)	https://ipps2.usim.edu.my
2.	Taaruf sesson for new students	Online	
3.	Course Registration	Student portal (iPPS)	https://ipps2.usim.edu.my
4.	Lecture	Classroom / Laboratory / Online	
5.	Drop course	Student portal (iPPS)	https://ipps2.usim.edu.my
6.	Submition of completed proposal	FST Office / Online	
7.	Proposal Defence (PD) / Research Methodology	USIM/FST/MIXEDMODE-B1 (research topic registration)	
		USIM/FST/MIXEDMODE-B2 (proposal / SPP / dissertation presentation evaluation)	
		USIM/FST/MIXEDMODE-B3 (written proposal evaluation)	
		USIM/FST/MIXEDMODE-B4 updated (certification for proposal evaluation)	
		USIM/FST/MIXEDMODE-B11 (Supervisor evaluation)	
8.	Final Examination	Campus / Online	

9.	Submission of Semester Progress Report		
10.	Semester Progress Report	USIM/FST/MIXEDMODE-B2 (proposal / SPP / dissertation presentation evaluation)	
		USIM/FST/MIXEDMODE-B5 (SPP written report evaluation)	
		USIM/FST/MIXEDMODE-B6 (Supervisor's evaluation)	
		USIM/FST/MIXEDMODE-B7 (certification for progress evaluation)	
11.	Intention to Submit	Student Portal	https://ipps2.usim.edu.my
12.	Nomination of Thesis Examiners	Postgraduate System	https://ipps2.usim.edu.my
13.	Dissertation presentation (Viva Voce)	USIM/FST/MIXEDMODE-B2 (proposal / SPP / dissertation presentation evaluation)	
		USIM/FST/MIXEDMODE-B8 (written dissertation evaluation)	
		USIM/FST/MIXEDMODE-B9 (Supervisor's evaluation)	
		USIM/FST/MIXEDMODE-B10 (certification for dissertation evaluation)	