



**MALAYSIAN INSTITUTE OF CHEMICAL
AND BIOENGINEERING TECHNOLOGY**

POSTGRADUATE PROGRAMME HANDBOOK 2024

“Elevate Your Expertise: Forge Your Future with Our Postgraduate Programmes”

Disclaimer:

All information provided is correct at the time of publication.

*Universiti Kuala Lumpur
Malaysian Institute of Chemical and Bioengineering
Technology (UniKL MICET) reserves the right to change the
content without prior notice.*

Contents

VISION & MISSION OF UNIVERSITY	3
ACADEMIC ACTIVITIES CALENDAR 2024 (by research)	4
ACADEMIC ACTIVITIES CALENDAR 2024 (by coursework)	5
ACADEMIC TOP MANAGEMENT TEAM OF UNIKL MICET	6
POSTGRADUATE STUDIES SECTION	7
SPECIFIC MAILING CONTACT DETAILS	8
ACADEMIC STAFF MEMBER OF UNIKL MICET	9
PROCESS FLOW OF POSTGRADUATE PROGRAMME (by research)	18
PROCESS FLOW OF POSTGRADUATE PROGRAMME (by coursework)	19
POSTGRADUATE PROGRAMMES BY RESEARCH	20
MASTER OF ENGINEERING TECHNOLOGY (CHEMICAL ENGINEERING)	20
DOCTOR OF PHILOSOPHY (CHEMICAL ENGINEERING)	20
PROGRAMME EDUCATIONAL OBJECTIVES (PEO)	21
PROGRAMME LEARNING OUTCOMES (PLO)	22
PREREQUISITE SUBJECTS FOR NON-ENGINEERING/ENGINEERING TECHNOLOGY	24
COMPULSORY COURSES	25
RESEARCH METHODOLOGY	25
INNOVATION TECHNOLOGY AND ENTREPRENEURSHIP	26
PROPOSAL DEFENSE	27
PROGRESS REPORT	27
POSTGRADUATE PROGRAMME BY COURSEWORK	28
MASTER OF SCIENCE IN FOOD PROCESSING AND INNOVATION	28
PROGRAMME EDUCATIONAL OBJECTIVES (PEO)	29
PROGRAMME LEARNING OUTCOMES (PLO)	29
PROGRAMME STRUCTURE	30
UNIVERSITY REQUIREMENT COURSES	31
CORE COURSES	34
ELECTIVES COURSES	43

VISION & MISSION OF UNIVERSITY

CORPORATE STRATEGY



UniKL
UNIVERSITI
KUALA LUMPUR



VISION

TO BE THE LEADING ENTREPRENEURIAL TECHNICAL UNIVERSITY



MISSION

TO PRODUCE ENTERPRISING GLOBAL TECHNOPRENEURS

ACADEMIC ACTIVITIES CALENDAR 2024

(by research)

DESCRIPTION	JANUARY SEMESTER
Online Semester Registration	Week 0 - 1
Late Semester Registration (with Penalty RM 100)	Week 2
Last date to submit draft Thesis to eligible for Thesis Fee *NOS must be sent 3 months before	Week 5
Last date to REQUEST Early submission for Notice of Submission (NoS)	Week 5
Last date to submit NOS	Week 1
Last date to submit Progress Report Last date to complete Proposal Defense	Week 15
Last Date to apply for Deferment for Unregistered Student (Retaining Fee applied)	Week 1 - 4
Last date to Apply for Deferment After Student Register Semester (Tuition Fee applied)	Week 5 - 9
*Online Registration for Compulsory Courses	Week 0 - 2
*Classes for Compulsory Courses	Week 5 - 10
*New Semester Registration (July Semester 2024)	Week 0 - 1
Last date to submit draft Thesis to eligible for Thesis Fee	Week 5

ACADEMIC ACTIVITIES CALENDAR 2024 (by coursework)

	March 2024	July 2024	October 2024
New Intake Registration	9 Mar 2024	27 Jul 2024	12 Oct 2024
Welcoming & Orientation	9-11 Mar 2024	27-29 Jul 2024	12-14 Oct 2024
Lessons	12 Mar - 5 Apr 2024	30 Jul - 13 Sep 2024	15 Oct - 29 Nov 2024
Mid Semester Break	8-12 Apr 2024		2-6 Dec 2024
Lessons	15 Apr - 21 Jun 2024		9 Dec 2024 - 24 Jan 2025
Revision	24-28 Jun 2024	16-20 Sep 2024	27-31 Jan 2025
Final Exam	29 Jun - 14 Jul 2024	21-28 Sep 2024	1-14 Feb 2025
End of Semester Break	15-29 Jul 2024	29 Sep - 14 Oct 2024	15 Feb - 3 Mar 2025

ACADEMIC TOP MANAGEMENT TEAM OF UNIKL MICET



Associate Professor Ts. Dr. Zulhafiz bin Tajudin
Dean of UniKL MICET



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Dr Noor Aina binti Mohd Nazri
Deputy Dean Academic and Technology



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Deputy Dean Student Development & Campus Lifestyle



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Ts Dr. Muhamad Yusuf bin Hasan
Deputy Dean IIIP



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POSTGRADUATE STUDIES SECTION



Ts Dr. Sharifah Sopliah binti Syed Abdullah
Head of Postgraduate Studies Section



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Ts Dr. Noriza binti Ahmad
Program Coordinator (MSc FOODI)



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Ts Dr. Rozyanti binti Mohamad
Postgraduate Studies Coordinator



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06-551 2027



Mrs. Zaine binti Md. Saad
Administrative Assistant II



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SPECIFIC MAILING CONTACT DETAILS

Contact	Services Provided
ips@unikl.edu.my	<ul style="list-style-type: none"> • Admission application • Deferment of admission • English requirements • Registration for new students
ips@unikl.edu.my	<ul style="list-style-type: none"> • Deferment of semester • Extension of study • Credit transfer/exemption • Transfer of programme/field of study • Conversion of programme • Add/drop subject • Academic candidature • Supervision • Examination • Graduation (Transcript, Senate Letter, Certificate) • Confirmation letter
ips@unikl.edu.my	<ul style="list-style-type: none"> • Financial assistance/scholarships (UERGS, GREP)
ips@unikl.edu.my	<ul style="list-style-type: none"> • Thesis submission for examination • Thesis submission after the final examination (viva voce) • Viva voce arrangement. • Appointment of Thesis Examination Committee
akashah@unikl.edu.my	<ul style="list-style-type: none"> • Students' general welfare • Learning support programme
finance.micet@unikl.edu.my	<ul style="list-style-type: none"> • Tuition fees • Dropped status due to outstanding fees
taufiq@unikl.edu.my	<ul style="list-style-type: none"> • New application for Student Pass • Extension/Renewal Pass • New/Renewal Dependent Pass Application
norazwan@unikl.edu.my	<ul style="list-style-type: none"> • Unikl-ID student email issues
ips@unikl.edu.my	<ul style="list-style-type: none"> • PG Portal
mohd.nor.razalin@unikl.edu.my	<ul style="list-style-type: none"> • Hostel and Placement for UniKL students

ACADEMIC STAFF MEMBER OF UNIKL MICET

(PhD holders)

TECHNICAL FOUNDATION SECTION

NO	NAME	HIGHEST QUALIFICATION	AREA OF EXPERTISE
1.	SITI HARTINI BINTI HAMDAN (Ts.Dr)	PhD (MECHANICAL ENGINEERING) TRIBOLOGY	MECHANICAL ENGINEERING - TRIBOLOGY
2.	NAZATULSHIMA HASAN (Dr)	PhD (BIOSTATISTICS)	STATISTICAL MODELLING, GENETICS DATA ANALYSIS
3.	YUSHAZAZIAH BINTI MOHD YUNOS (Dr)	PhD (MECHANICAL ENGINEERING)	OPTIMIZATION, ARTIFICIAL INTELLIGENCE, MACHINE VISION, HEAT TRANSFER & FLUID FLOW

PROCESS ENGINEERING TECHNOLOGY SECTION

NO	NAME	HIGHEST QUALIFICATION	AREA OF EXPERTISE
1.	AHMAD AZAHARI BIN HAMZAH (Dr)	PhD (ELECTRICAL ENGINEERING)	TOMOGRAPHY SYSTEM, TWO-PHASE FLOW
2.	ALIFF RADZUAN BIN MOHAMAD RADZI (Ts Dr)	PhD (ELECTRICAL ENGINEERING)	CHEMICAL PROCESS SIMULATION, OCCUPATIONAL SAFETY, PROCESS SAFETY, SAND REMEDIATION, MULTIPHASE-FLOW, SUSTAINABILITY, DISSOLVED AIR FLOTATION
3.	AMIN SAFWAN BIN ALIKASTURI (Dr)	PhD (CHEMICAL ENGINEERING)	CATALYSIS, RENEWABLE ENERGY, KINETIC MODELLING, 3D SCANNING AND MODELLING, OCCUPATIONAL SAFETY AND HEALTH
4.	INDOK NURUL HASYIMAH BINTI MOHD AMIN (Assoc. Prof. Dr)	PhD (CHEMICAL ENGINEERING & PROCESS)	MEMBRANE TECHNOLOGY, MEMBRANE SEPARATION, WATER & WASTEWATER TREATMENT, ABSORPTION, EXTRACT
5.	KELLY YONG TAU LEN (Assoc. Prof. Dr.)	PhD (MECHANICAL SCIENCE & ENGINEERING)	REACTION ENGINEERING, ADVANCED MATERIALS, SUPERCRITICAL FLUIDS, RENEWABLE ENERGY
6.	LAW JENG YIH (Dr)	PhD (CHEMICAL ENGINEERING)	MEMBRANE TECHNOLOGY, ADSORPTION, DOWNSTREAM PROCESSING, CHEMICAL SAFETY
7.	WAN NOOR AIDAWATI BINTI WAN NADHARI (Dr.)	PhD (BIORESOURCE, PAPER AND COATINGS TECHNOLOGY)	BIOCOMPOSITES, HYBRID COMPOSITES, OIL PALM, BIOMASS, LIGNOCELLULOSIC, COMPONENTS OF BIORESOURCES FOR PANEL PRODUCTION, VALUE-ADDED PRODUCT FROM PLANT BIOMASS
8.	ZULHAFIZ BIN TAJUDIN (Assoc. Prof. Ts. Dr.)	PhD (CHEMICAL ENGINEERING)	MATHEMATICAL MODELLING & SIMULATION, IN CHEMICAL ENGINEERING PROCESSES, CRUDE OIL FOULING TRANSPORT PHENOMENA, OPERATION & COMMISSIONING PETROL, CHEMICAL UNIT OPERATION
9.	NAZERAH AHMAD (Dr.)	PhD IN CHEMICAL ENGINEERING	NANO MATERIAL, MEMBRANE SEPARATION, ANTIBACTERIAL MEMBRANE

BIOENGINEERING TECHNOLOGY SECTION

NO.	NAME	HIGHEST QUALIFICATION	AREA OF EXPERTISE
1.	LEONG CHEAN RING (Dr)	PhD IN MEDICINE	NOVEL DRUG DISCOVERY (ANTIMICROBIAL, ANTIFUNGAL AND ANTIVIRUS), DRUG DELIVERY TECHNOLOGY (NANOPARTICLES, NANOENCAPSULATION), PROTEIN ENGINEERING, INNOVATION OF PRODUCT FOR APPLICATION IN FOOD, AND NEUTRACEUTICAL INDUSTRY
2.	MOHAMAD ZULKEFLEE BIN SABRI (Ts. Dr)	PhD (CHEMICAL ENGINEERING)	FRESHWATER SAMPLING AND ANALY
3.	NIK IDA MARDIANA BINTI NIK PA (Dr.)	PhD (MICROBIAL BIOTECHNOLOGY)	MAIN: BIOPROCESS TECHNOLOGY SUB: RECOMBINANT TECHNOLOGY, FERMENTATION TECHNOLOGY, BIOINFORMATICS
4.	NURDIYANA BINTI HUSIN (Dr.)	PhD (CHEMICAL ENGINEERING)	EXTRACTION OF NATURAL COMPOUND, BIO-INDICATOR, INTELLIGENT PACKAGING
5.	ROZYANTI BINTI MOHAMAD (Ts. Dr.)	PhD (MECHANICAL SCIENCE & ENGINEERING)	BIOMASS UTILIZATION, HYDROTHERMAL, TECHNOLOGY FOR BIOENERGY PRODUCTION
6.	RUZAINAH BINTI ALI @JAAFAR (Assoc. Prof. Dr.)	PhD (BIOTECHNOLOGY)	POPULATION MOLECULAR BIOLOGY -, MOLECULAR BIOLOGY, MOLECULAR BIOLOGY, MAJOR - BIOLOGY AQUATIC, MINOR – MANAGEMENT, MAJORING IN BIOLOGY & CHEMISTRY
7.	ZAINATUL 'ASYIQIN BINTI SAMSU (Ts. Dr)	PhD (INDUSTRIAL BIOTECHNOLOGY)	MAIN: BIOCHEMICAL/BIOPROCESS ENGINEERING AND TECHNOLOGY SUB: FERMENTATION TECHNOLOGY, BIOSURFACTANT PRODUCTION AND METABOLOMICS PROFILING, NATURAL PRODUCT COSMETIC PRODUCT DEVELOPMENT

ENVIRONMENT AND POLYMER ENGINEERING TECHNOLOGY SECTION

NO	NAME	HIGHEST QUALIFICATION	AREA OF EXPERTISE
1.	FAHMI ASYADI BIN MD YUSOF (Dr)	PhD (CHEMICAL ENGINEERING)	REACTION KINETICS, SOL-GEL SYNTHESIS, ORGANIC-INORGANIC HYBRID, NANOCOMPOSITE.
2.	AMELIA BINTI MD SOM (ChM. Dr)	PhD (GEOENVIRONMENT ENGINEERING)	LAND REMEDIATION, SOIL PHYSICAL AND CHEMICAL TESTING, ISO 17025 LABORATORY ACCREDITATION
3.	NOR ZALINA BINTI KASIM (Dr.)	PhD (CIVIL ENGINEERING)	WATER MANAGEMENT, WATER AND WASTEWATER TREATMENT, FRESHWATER SAMPLING AND ANALY
4.	ZAIHAR BIN YAACOB (Dr.)	PhD (INDUSTRIAL COMPUTER)	MATHEMATICS, NUMERICAL TECHNIQUES IN MECHANICAL ENGINEERING, NUMERICAL HEAT TRANSFER, ODES, PDES
5.	SITI NOORAIN BINTI ROSLAN (Dr.)	DOCTOR OF ENGINEERING (CIVIL & ENVIRONMENTAL ENGINEERING)	WATER & WASTEWATER TREATMENT, BIOGAS, AND DISSOLVED GAS TREATMENT.
6.	NORILHAMIAH BINTI YAHYA (Ts. Dr.)	PhD (FUEL CELL ENGINEERING)	NATURAL COAGULANT, AIR POLLUTION PREDICTION, ELECTROCATALYST AND MATERIALS
7.	NOR NADIAH BINTI MOHAMAD YUSOF (Dr)	PhD (ENERGY & ENVIRONMENT SCIENCE)	CHEMICAL SCIENCE, MOLECULAR AND ION IMPRINTED POLYMER TECHNOLOGY, SUPRAMOLECULAR MODELLING, SEPARATION PROCESS (CRYSTALLIZATION TECHNOLOGY), FREEZING, CRYSTAL GROWTH, HEAT TRANSFER
8.	ONG SIEW KOOI (Assoc. Prof. Ts. Dr)	PhD (POLYMER TECHNOLOGY)	MATERIAL SYNTHESIS, MATERIAL PROCESSING, MATERIAL TESTING & MATERIAL, CHARACTERIZATION, (SYNTHESIS/MODIFICATION OF POLYMERIC MATERIAL & ITS CHARACTERIZATION & TESTING, COMPOSITE MATERIAL MODIFICATION & PROCESSING & ITS

CHARACTERIZATION & TESTING)

9. RAJA NAZRUL HAKIM BIN RAJA
NAZRI
(Dr)

PhD (MATERIAL & METALLURGICAL
ENGINEERING)

NANOTECHNOLOGY,
POLYMER RHEOLOGY,
POLYMER SYNTHESIS,
ELASTOMER, AND
BIOPLASTICS

FOOD ENGINEERING TECHNOLOGY SECTION

NO	NAME	HIGHEST QUALIFICATION	AREA OF EXPERTISE
1.	MOHD ZULKHAIRI BIN ABDUL RAHIM (ChM. Dr.)	PhD (CHEMISTRY)	CHEMISTRY, ANALYTICAL CHEMISTRY, INSTRUMENTATION ANALYSIS, BIOSENSORS, BIOMATERIALS, IMMOBILIZATION TECHNIQUE, ADSORPTION TECHNOLOGY
2.	FARAH SALINA BINTI HUSSIN (Dr)	PhD (FOOD BIOTECHNOLOGY)	FERMENTATION, PROBIOTICS AND PREBIOTICS, BIOACTIVE COMPOUNDS, ANTI HYPERTENSIVE STUDIES, BIOACTIVE COMPOUNDS, ANTI HYPERTENSIVE STUDIES
3.	HARUN BIN SARIP (Assoc. Prof. Ts. Dr.)	PhD (FOOD TECHNOLOGY)	FOOD TECHNOLOGY, CHEMICAL PROCESS
4.	KHAIRUL FAIZAL BIN PA'EE (Dr.)	PhD (FOOD & NUTRITIONAL SCIENCE)	BIOACTIVE PEPTIDES PRODUCTION, DEEP EUTECTIC SOLVENT, SUBCRITICAL WATER EXTRACTION, BIOINFORMATICS
5.	MASNIZA BINTI MOHAMED @ MAHMOOD (Dr)	PhD (KEJURUTERAAN KIMIA DAN PROSES)	EXTRACTION, SUPERCRITICAL FLUID EXTRACTION, DOWNSTREAM PROCESSING, BIOPROCESS ENGINEERING, FOOD PROCESSING AND ENGINEERING
6.	NOR ZANARIAH BINTI SAFIEI (Dr.)	PhD (CHEMICAL ENGINEERING)	SEPARATION PROCESS (CRYSTALLIZATION, TECHNOLOGY), FREEZING, CRYSTAL GROWTH, HEAT TRANSFER
7.	NORIZA BINTI AHMAD (Ts. Dr)	PhD (FOOD SCIENCE & TECHNOLOGY)	FOOD SAFETY, PROTEIN MODIFICATION
8.	SHARIFAH SOPLAH BINTI SYED ABDULLAH (Ts Dr)	PhD (ENVIRONMENTAL ENGINEERING)	MAIN : BIOCHEMICAL/BIOPROCESS ENGINEERING, SUB: FERMENTATION TECHNOLOGY, BIOETHANOL AND BACTERIAL CELLULOSE FROM OIL PALM BIOMASS, BIOFUEL, FOOD MICROBIOLOGY, FOOD PACKAGING TECHNOLOGY
9.	SHARIFAH MARIAM BINTI SAYED HITAM (Ts. Dr.)	PhD (BIOPROCESS ENGINEERING)	MAIN: PROTEIN, SUB: FERMENTATION, PROTEIN SEPARATION AND PURIFICATION
10.	MUHAMAD YUSUF BIN HASAN (Ts. Dr.)	PhD (BIOPROCESS ENGINEERING)	MAIN: FOOD ENGINEERING, BIOPROCESS ENGINEERING, CHEMICAL ENGINEERING, SUB: FOOD PACKAGING, FOOD STERILIZATION, FERMENTATION TECHNOLOGY, BIOSEPARATION TECHNOLOGY, NATURAL AND HERBAL PRODUCTION, PLANT DESIGN DIGITALIZATION AND PROCESS ECONOMICS, PLANT

MANAGEMENT, COMPOSTING,
MATHEMATICAL MODELLING AND
SIMULATION

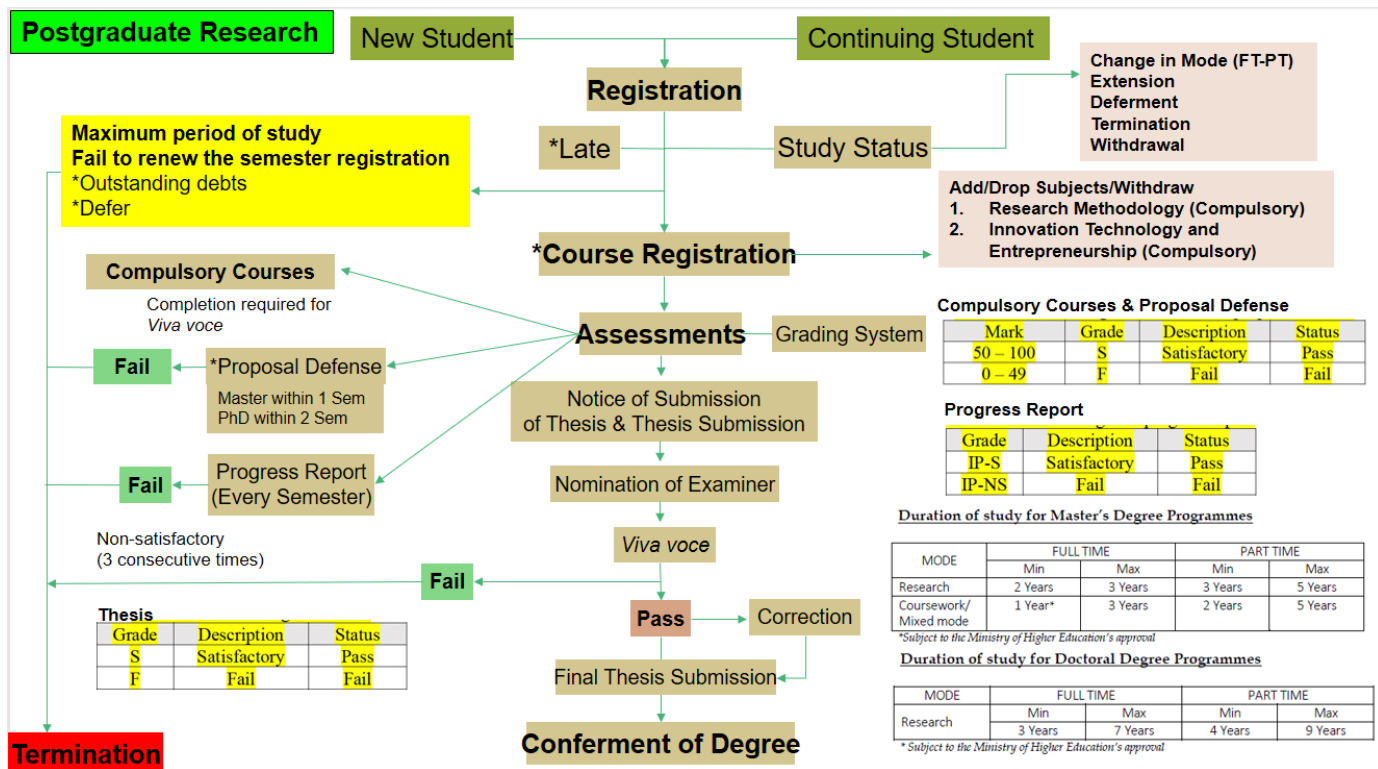
CHEMICAL ENGINEERING SECTION

NO	NAME	HIGHEST QUALIFICATION	AREA OF EXPERTISE
1.	NOOR AINA BINTI MOHD NAZRI (Dr.)	PhD IN ENGINEERING (GAS)	ULTRAFILTRATION MEMBRANE TECHNOLOGY, WASTEWATER ANALYSIS, POLYMER SYNTHESIS (GRAFTING)
2	WONG CHEE SIEN (Dr.)	PhD (BIOPROCESS ENGINEERING)	SEPARATION PROCESSES, RENEWABLE ENERGY, REACTION KINETICS AND CATALYSIS
3.	CHIN LIP HAN (Ir. Dr.)	PhD (CHEMICAL ENGINEERING)	(CHEMICAL REACTION ENGINEERING) (ADSORPTION, CATALYSIS, RENEWABLE ENERGY, OZONE TREATMENT)
4.	FARRA WAHIDA BINTI SHAARANI (Dr)	PhD (CHEMICAL PROCESS ENGINEERING)	BIOMATERIAL, CARBON, CATALYSIS
5.	RAPIDAH BINTI OTHMAN (Dr)	PhD (CHEMICAL ENGINEERING)	FUEL CELL, NON- PRECIOUS METAL CATALYST, CARBON, ELECTROCHEMICAL
6.	SITI NURUL ATIKAH BINTI ABD HALIM (Dr.)	PhD (CHEMICAL ENGINEERING)	ENERGY FROM BIOMASS (EFW), PELLETISATION, MICROWAVE PYROLYSIS, CARBONISATION, VALUE ADDED PRODUCT FROM PLANT BIOMASS, DEEP EUTECTIC SOLVENT
7.	SUZANA BINTI WAHIDIN (Assoc. Prof. Dr)	PhD (BIOPROCESS ENGINEERING)	BIOPROCESS ENGINEERING, BIOENERGY, MICROALGAE, NATURAL PRODUCT, EXTRACTION

STUDENT DEVELOPMENT SECTION

NO	NAME	HIGHEST QUALIFICATION	AREA OF EXPERTISE
1.	INTAN NORJAHAN BINTI AZMAN (Dr.)	PHD IN ENGLISH LANGUAGE STUDIES	SOCIOLINGUISTICSS, POLITENESS, IMPOLITENESS
2.	ANISAH BAHYAH AHMAD (Dr.)	PhD (ISLAMIC CIVILIZATION)	ISLAMIC CIVILIZATION, MALAYSIAN STUDIES, ISLAMIC STUDIES
3.	AZMAN BIN YUSOF (Assoc. Prof. Dr.)	PhD (PHILOSOPHY AND CIVILIZATION STUDIES)	CIVILISATION STUDIES (ISLAMIC CIVILISATION), ISLAMIC JURISPRUDENCE (ISLAMIC FAMILY LAW), ISLAMIC THOUGHT (ISLAMIC STATECRAFT), HALAL MANAGEMENT, BUSINESS MANAGEMENT (MUAMALAT)

PROCESS FLOW OF POSTGRADUATE PROGRAMME (by research)



*Note: The process flow should be read together with Postgraduate Rules and Regulations (PGRR)

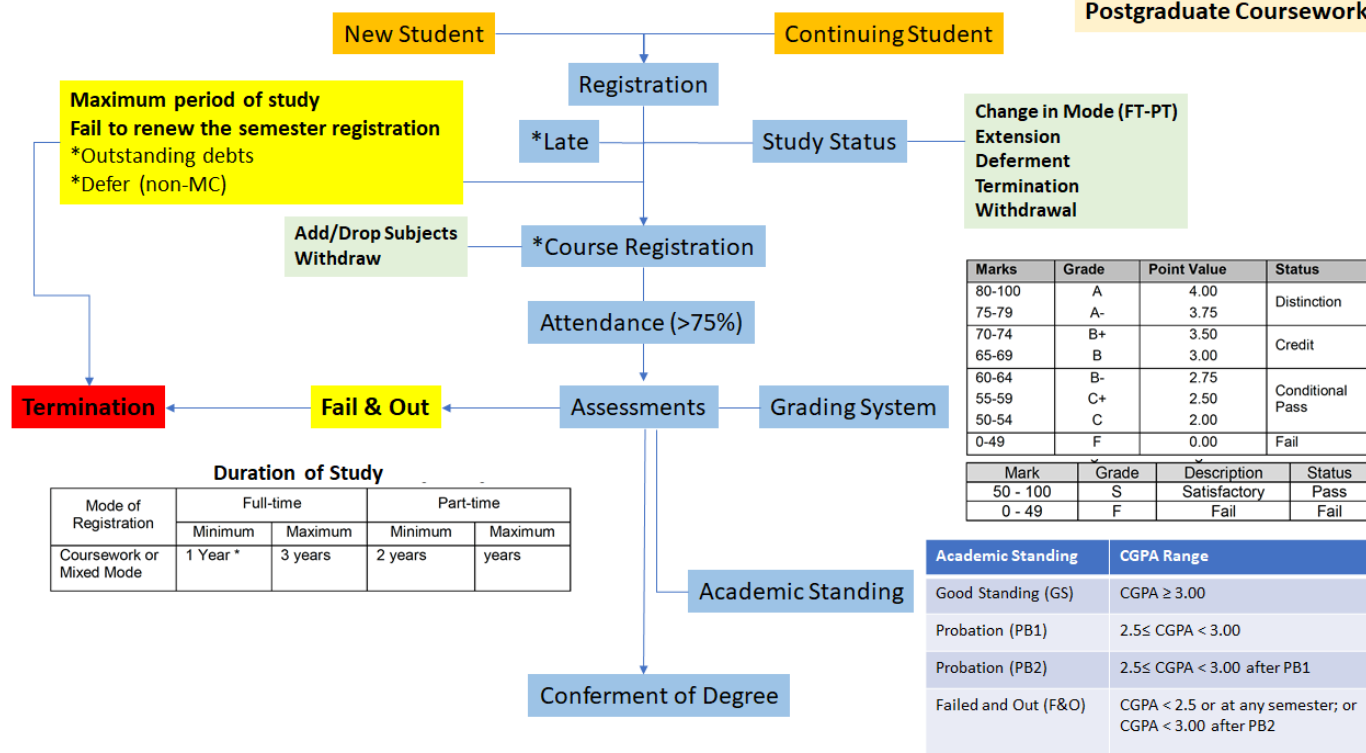
Summary of Registration Timeline

Activity	Duration	Week
Semester Registration	1 week	Week 0
Late Semester registration (with fine of RM100)	1 week	Week 1
Add and Drop	2 weeks	Week 0 - 1
Drop Only	3 weeks	Week 2 - 4
Verify Courses Registration Records	2 weeks	Week 3 – 4
Withdraw	5 weeks	Week 5 - 9

Disclaimer: Some programmes may use different operation calendar

PROCESS FLOW OF POSTGRADUATE PROGRAMME (by coursework)

Postgraduate Coursework



Note:

- The process flow should be read together with Postgraduate Rules and Regulations, 2022 (PGRR 2022)
- Students must maintain a B grade in all courses (MSc in Food Processing and Innovation) in order to remain in good academic standing and qualify for graduation (PGRR, 2022).

POSTGRADUATE PROGRAMMES BY RESEARCH

MASTER OF ENGINEERING TECHNOLOGY (CHEMICAL ENGINEERING)

JTP/BPP (R3/0711/7/0043) 10/25, MQA A9320

This program is a specialized graduate degree that focuses on the field of Chemical Engineering. It is a research-based program that allows students to deepen their knowledge and skills in chemical engineering. They will explore a specific research topic within the field of chemical engineering and contribute to the existing body of knowledge. The program typically involves conducting experiments, analyzing data, and presenting findings in the form of a research thesis. This program is designed for individuals who wish to pursue advanced studies in chemical engineering and develop expertise in a specific area of interest. Graduates of this program are well-prepared for careers in research and development, academia, and industry.

DOCTOR OF PHILOSOPHY (CHEMICAL ENGINEERING)

JTP/BPP (R2/524/8/0044) 10/25, MQA A9321

This program is an advanced academic degree that focuses on the field of Chemical Engineering. It is a research-based program that allows students to delve deep into the theoretical and practical aspects of chemical engineering. Students in this program are expected to conduct original research, contribute to the existing body of knowledge in the field, and demonstrate a high level of expertise in their chosen area of specialization. The program typically involves research activities and the completion of a doctoral thesis. Graduates of this program are prepared for careers in academia, research institutions, industry, and other related fields.

Duration of study for Postgraduate Programme by Research

Programme	Full time		Part time	
	Minimum	Maximum	Minimum	Maximum
Master of Engineering Technology (Chemical Engineering)	1.5 Years	3 Years	3 Years	5 Years
Doctor of Philosophy (Chemical Engineering)	3 Years	7 Years	4 Years	9 Years

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

UniKL graduates who are knowledgeable, competent, and innovative will contribute towards the requirement of human capital in chemical engineering related industry.

PEO 2

UniKL graduates who are effective leaders with teamwork skills, as well as verbal and nonverbal interpersonal communication skills.

PEO 3

UniKL graduates who are committed towards the importance of lifelong learning and continuous improvement.

PEO 4

UniKL graduates who are professional, ethical, and socially responsible.

PEO 5

UniKL graduates who are capable of embarking on business and technopreneur activities.

PROGRAMME LEARNING OUTCOMES (PLO)

MASTER OF ENGINEERING TECHNOLOGY (CHEMICAL ENGINEERING)

PLO 1

Demonstrate in-depth and frontier knowledge and understanding in the chemical engineering technology field or practice.

PLO 2

Critically and creatively apply knowledge in chemical engineering technology field to resolve complex disciplinary and practical problems.

PLO 3

Conduct rigorous and independent research or investigation with minimal supervision.

PLO 4

Perform research adhering to legal, ethical, professional and sustainable practices.

PLO 5

Demonstrate intellectual leadership qualities and management skills.

PLO 6

Communicate effectively in the chemical engineering technology field and interact with specialist and general audience.

PLO 7

Select and use suitable digital and analytical tool techniques to research problems.

PLO 8

Demonstrate commitment to lifelong learning and personal development.

DOCTOR OF PHILOSOPHY (CHEMICAL ENGINEERING)**PLO 1**

Demonstrate a critical and in-depth understanding of frontier knowledge by generating substantial and original contributions to a chemical engineering field and/or practice.

PLO 2

Synthesize existing and new knowledge in chemical engineering area to develop new concepts or interpretations or applications.

PLO 3

Conduct rigorous and independent research or investigation with minimal supervision.

PLO 4

Demonstrate intellectual leadership qualities and management skills.

PLO 5

Perform research adhering to legal, ethical, professional and sustainable practices.

PLO 6

Communicate cogently in the chemical engineering field and interact with specialist and general audience.

PLO 7

Select and use suitable digital and analytical techniques to research problems.

PLO 8

Demonstrate commitment to lifelong learning and personal development.

PREREQUISITE SUBJECTS FOR NON-ENGINEERING/ENGINEERING TECHNOLOGY

- The university entry requirement (based on MQA & MOHE approval) requires degree holders of bachelor's Science or Technology (non-engineering/engineering technology) to enroll for prerequisite courses in engineering and engineering technology.
- These courses equip students with the necessary skills for their postgraduate programme.
- The student will undergo an interview session with internal committee (early in the 1st semester) at the institute level to determine the prerequisite subjects needed for the research project.

COMPULSORY COURSES

RESEARCH METHODOLOGY (WEG 60103 / WEG 70103)

The course will provide a general introduction to research methodology and develop understanding of the research processes. It exposes the students in formulating research problems, research questions and research objectives, the importance of literature review, research methodology design and preparation of research proposal.

Learning Outcomes

CLO 1

Apply research methodology knowledge in designing a research study (C5, PLO1)

CLO 2

Develop a research proposal (C6, PLO2)

CLO 3

Present research findings effectively in an oral presentation (A4, PLO9)

Main References

Leedy, P.D. and Ormrod, J.E. (2016). Practical Research – Planning and Design, 11th Edition, Pearson.

INNOVATION TECHNOLOGY AND ENTREPRENEURSHIP (WEG 60203 / WEG 70203)

This module prepares postgraduate students to be engineering technologists or engineers with research and entrepreneurship capabilities. It discusses analyses and resolves issues related to innovation, and government policies. Case studies and assignments involve those of local and world scenarios.

Learning Outcomes

CLO 1

Recognize entrepreneurial processes from across disciplines.

CLO 2

Communicate ideas, individually and in groups enthusiastically and credibly.

CLO 3

Integrate business models to solve real world problems.

Main Reference

Read, S., Sarasvathy, S., Dew, N., & Wiltbank, R. (2016). Effectual entrepreneurship. Taylor & Francis.

PROPOSAL DEFENSE

All research students are required to prepare a detailed written research proposal to be presented to panels consisting of experts in the research area. The presentation must be done within 6 and 12 months from the date of registration for master and PhD, respectively.

PROGRESS REPORT

Students need to submit a report every six (6) months on the progress of their research to the respective supervisor.

POSTGRADUATE PROGRAMME BY COURSEWORK

MASTER OF SCIENCE IN FOOD PROCESSING AND INNOVATION

JPT/BPP (N/0721/7/0001) 09/27, MQA/PA15781

This programme integrates innovation management into the food processing courses for the first time. This program targets those who have completed their education and are seeking to establish successful careers in the food processing sector. The course enhances knowledge and comprehension of the entire process of ingredient development and launch, encompassing the entire lifecycle from concept to completion. Students will have the opportunity to delve into a range of subjects, encompassing food processing, business development, packaging, food safety, regulation, and sustainability.

One of the key drivers of the country's economy and a market with rapid growth is Malaysia's food and beverage sector. Experts predict that the industry will grow rapidly and boost its GDP contribution to 8% by 2023. In 2022, the beverage industry had a remarkable 22% growth, reaching RM35.2 billion (<https://www.businesstoday.com.my/2023/12/06/shaping-the-future-of-malaysias-beverage-landscape/>).

The food manufacturing industry experiences a commensurate increase in demand as the nation progresses and investigates more varied domains. As a result, vocations offer an extensive array of opportunities. As the industry evolves and becomes more sophisticated and complex, organizations are seeking better-trained candidates with all-around capabilities and industry-specific expertise for a variety of employment opportunities.

Career path

Food Technologist
Quality Management System Executive / Manager
Project Manager
Project planner
Consultant
Researcher
Science officer
Halal Executive
Technopreneur

DURATION OF STUDY FOR MSC IN FOOD PROCESSING AND INNOVATION

Full time		Part time	
Minimum	Maximum	Minimum	Maximum
1.5 Years	3 Years	2 Years	5 Years

PROGRAMME EDUCATIONAL OBJECTIVES (PEO)

PEO 1

Knowledgeable, competent, and innovative which will contribute toward the requirements of the human capital in food processing related industry.

PEO 2

Effective leaders with teamwork skills as well as verbal and non-verbal interpersonal communication skills.

PEO 3

Committed towards the importance of lifelong learning and continuous improvement.

PEO 4

Professional, ethical and socially responsible.

PEO 5

Capable of embarking on business and technopreneurial activities

PROGRAMME LEARNING OUTCOMES (PLO)

PLO 1

Demonstrate in-depth and frontier knowledge and understanding in the field of food processing and innovation.

PLO 2

Critically and creatively apply knowledge in one or more fields to resolve complex disciplinary and practical problems.

PLO 3

Conduct credible problem solving or investigation to resolve complex issues and questions in the field of food processing and innovation.

PLO 4

Conduct research or investigation with minimal supervision adhering to legal, ethical, professional, and sustainable practice.

PLO 5

Demonstrate leadership qualities through collaboration with peers and others.

PLO 6

Communicate and interact effectively with peers in the field of food processing and innovation as well as general audience.

PLO 7

Select and use suitable digital and analytical tool techniques to resolve problems.

PLO 8

Demonstrate commitment to lifelong learning and personal development.

PROGRAMME STRUCTURE

subject to amendments

Code	Semester 1	Kursus	Credit
PRJ7013 (WEG60103)	Research Methodology	University Requirement	3
CFG60103	Advanced Food Quality and Analysis	Core	3
CFG60203	Advanced Food Processing and Innovation	Core	3
CFG60602	Project Proposal	Core	2
	Elective 1	Elective	3
CFG60303	Food Additive and Ingredients	Core	3
Total			17

Code	Semester 2	Kursus	Credit
BNM7023 (WEG60203)	Innovation Technology and Entrepreneurship	University requirement	3
CFG60403	Food Safety, Law and Regulation	Core	3
CFG60503	Food Supply Chain, Traceability and Sustainability	Core	3
	Elective 2	Elective	3
	Elective 3	Elective	3
CFG60703	Research Project 1	Core	3
Total			18

Code	Semester 3	Kursus	Credit
CFG60806	Research project 2	Core	6

ELECTIVE COURSES

Code	Nama kursus	Kursus	Kredit
CFG60903	Food Packaging	Elective	3
CFG61003	Nutrition and Health	Elective	3
CFG61103	Consumer Behaviour	Elective	3
CFG61203	Food Sales and Marketing	Elective	3
CFG61303	Hot topics and Global issue	Elective	3
CFG61403	Halal Regulation and Certification	Elective	3

UNIVERSITY REQUIREMENT COURSES

PRJ 7013 (WEG60103) RESEARCH METHODOLOGY

BNM7023 (WEG60203) INNOVATION TECHNOLOGY AND ENTREPRENEURSHIP

PRJ 7013 (WEG60103) RESEARCH METHODOLOGY

The course will provide a general introduction to research methods, as well as exposing the students to Literature Reviews and Research Proposal writing. The specific aims of the subject are to assist students to 1) develop an appreciation for research and an understanding of the nature of research; 2) develop the ability to make a logical argument; 3) develop the ability to synthesize new knowledge and 4) be able to understand the nature of a research problem.

Learning Outcomes:

CLO1 Evaluate previously published work critically by writing a literature review. (C4)

CLO2 Apply various research methods including quantitative and qualitative methods. (C5)

CLO3 Produce a research / project proposal/ report / paper and present research output effectively in an oral presentation.(P5)

References:

Creswell, J. W., & Creswell, J. D. (2017). Research design: Qualitative, quantitative, and mixed methods approaches. Sage publications.

Prabhat Pandey, Meenu Mishra (2015) . Research Methodology: Tools and Techniques. Bridge Center.

Dawson, C. (2019). Introduction to Research Methods 5th Edition : A Practical Guide for Anyone Undertaking a Research Project. London: Little Brown Book Group.

Welman C, Kauger F , Mitchells B (2006). Research methodology, Oxford Southern Africa.

BNM7023 (WEG60203) INNOVATION TECHNOLOGY AND ENTREPRENEURSHIP

The course discusses on innovation, invention and the relevant technologies, entrepreneurship and government policies. It also provides information and hands-exercise on various IP issues (e.g. copyright, trademark and patent), commercializing IP (includes licensing, outright sale, infringement and patent process) and case studies on research projects. Lastly, the course discusses the impact of new technology such as social media and 4 p's on entrepreneurship

Learning Outcomes:

CLO1 Recognize the entrepreneurial processes from across the disciplines (C6)

CLO2 Communicate idea, individually and in groups enthusiastically and credibly (A3)

CLO3 Integrate business model to solve real-world problems (A4)

References:

Grant, R.M. (2010). Contemporary Strategy Analysis, Blackwell Publishing, seventh edition. ISBN-13: 978-0470972205

Hill, C. and Jones, G. (2012). Strategic Management Theory: An Integrated Approach, South-Western Cengage Learning, 10th edition. ISBN-13: 978-1111825843

Johnson G., Whittington, R. and Scholes, K. (2011). Exploring Strategy: Text and Cases, Prentice Hall, 9th edition. ISBN-13: 978-0273735496

Thompson, A.A., Peteraf, M.A., Gamble, J.E. and Strickland III, A.J. (2012). Crafting and Executing Strategy: Concepts and Readings, 18th edition, McGraw-Hill Irwin. ISBN-13: 978-0078112720

Lynch R. (2012), Strategic Management, Pearson, 6th Edition. ISBN-13: 978-0273750925

David, F.R., (2013). Strategic Management, Pearson, 14th Edition.

Pearce J. II and R. Robinson (2012). Strategic Management: Planning for Domestic and Global Competition, 13th Edition, Pearson. ISBN-13: 978-0071326391

Markides, C. (2008), Game-Changing Strategies, Jossey-Bass. ISBN-13: 978-0470276877

Markides C. (2000). All the Right Moves: A Guide to Crafting Breakthrough Strategy, Boston, Harvard Business School Press. ISBN-13: 978-08758483

CORE COURSES

CFG60103 ADVANCED FOOD QUALITY

CFG60203 ADVANCED FOOD PROCESSING AND INNOVATION

CFG60303 FOOD ADDITIVES AND INGREDIENTS

CFG60403 FOOD SAFETY, LAW & REGULATION

CFG60503 FOOD SUPPLY CHAIN, TRACEABILITY & SUSTAINABILITY

CFG60602 RESEARCH PROPOSAL

CFG60703 RESEARCH PROJECT 1

CFG60806 RESEARCH PROJECT 2

CFG60103 ADVANCED FOOD QUALITY

Food quality refers to the quality characteristics of food that are acceptable to consumers and is an essential food manufacturing requirement. Food quality and safety are integrated concepts which apply throughout the whole food chain. Their effective management are intrinsic to the success and security of food businesses. This course provides an understanding of food quality and quality management principles and practices as applied throughout the food processing, manufacturing and retailing industries. The aim of this course is to provide students with key insights to the subject of quality control and analysis food knowledge and practice that can be applied directly in the workplace. Fundamentals of quality control and their industrial application through physical, chemical, microbiological, statistical and sensory analysis methods will be studied.

Learning Outcomes:

CLO1 Examine the components of food quality properties generally used in food industry. (C4)

CLO2 Performs appropriate analytical / statistical methods in quality control and quality assurance. (A5)

CLO3 Identify the role of teams in addressing quality problems, and apply individual and team skills to explore quality issues (A4).

References:

Rocha-Lona, L., Garza-Reyes, J.A. and Kumar, V. (2013). Building Quality Management Systems: Selecting the Right Methods and Tools. CRC Press. ISBN-13: 978-1-46656-499-2

Meilgaard, M.C., Carr, B.T. and Civille, G.V. (2015). Sensory Evaluation Techniques, Fifth Edition, CRC Press. ISBN-13: 978-1482216905

Stone, H., Bleibaum, R. and Thomas, H.A. (2012). Sensory Evaluation Practices, Fourth Edition (Food Science and Technology), Academic Press. ISBN-13: 978-0123820860

Kim-Soon, Ng. (2012). Quality Management and Practices. Intech. In: Quality Management System and Practices, Edition: 1, Chapter: 1, Publisher: InTech, Editors: Kim-Soon Ng, pp.1-11. ISBN-13:978-953-51-0550-3

Tague, N.R. (2013). The Quality Toolbox, Second Edition. ASQ. ISBN-13: 978-0-87389-871-3.

CFG60203 ADVANCED FOOD PROCESSING AND INNOVATION

In this course, students will be provided with knowledge and skills used to process a various food products. Students will develop the deep understanding on principles of food processing that currently use in food industry. It cover all aspects of food processing from the basic to the latest technological development. Student will be required to explore the novel and advanced processing technology in different food processing industry.

Learning Outcomes:

CLO1 Discuss the principles and technique of food processing and techniques toward developing new food product (C5).

CLO2 Perform food processing and preservation methods on the stability in food systems. (P4)

CLO3 Collaborate with team members in planning, performing and reporting a scientific inquiry, practical and mini project in developing new food product (A4)

References:

Gould, W.A. (2013). Fundamentals of Food Processing and Technology.Elsevier.

Swarup, A. and Shrivastava, P. (2013). Techniques of FoodPreservation. Discovery Publishing House.

Gayen, S. (2013). Food Preservation with an Attitude: Guide to preservefood. Lap Lambert Academic Publishing GmbH KG.

Chauhan, O.P. (2019) Non-thermal processing of foods, CRC Press, Boca Raton. ISBN -13: 978-1-1380-3584-3 (Hardback)

Moreno, J.J. (ed) (2017) Innovative processing technologies for foods with bioactive compounds, CRC Press, Boca Raton ISBN-13: 978-1-4987-1484-6 (Hardback)

Ohisson, T. and Bengtsson, N. (2002) Minimal processing technologies in the food industry, CRC Press, New York. ISBN-10:0-8493-1454-2.

Sun, D.W. (ed) (2014) Emerging technologies for food processing, Academic Press, London. ISBN-13: 978-0-12-411479-1

CFG60303 FOOD ADDITIVES AND INGREDIENTS

In this course, students will be provided with the knowledge of food additives and ingredients usually used in food products. This includes classification, physicochemical properties, role of food additives, chemical structure, quality standards of food additives and their determination in raw materials. Natural and synthetic colourants, innovation in food additive and ingredients are also covered in this course.

Learning Outcomes:

CLO1 Evaluate the principle of food additive and food ingredients in processing technology and their function on food. (C5)

CLO2 Assemble the solutions to maintain the quality and minimize the changes on food product. (P4)

CLO3 Prepare a presentation on issues related to the effects of food additive and food ingredients in processing technologies. (A4)

References:

Jim Smith and Hong Shum (2011). Food Additives data book. Second edition, WileyBlackwell publishers (e-Book). <http://www.taylorandfrancis.com/books/textbooks/SCFS10>

D Baines. Natural food additives, ingredients and flavourings. Woodhead Publishing website. <http://www.woodheadpublishing.com/en/book.aspx/bookID=2063>.

World Health Organization (WHO), 1995. Guidelines for Risk Assessment; Application of Risk Analysis to Food Standards Issues, a Joint FAO/WHO Expert Consultation, Geneva, Switzerland, 13–17 March 1995 <http://www.who.int/foodsafety/publications/micro/march1995/en/index.ht>

Ahmed, J., Ramaswamy, H.S., Kasapis, S. and Boye, J.I. (2010) Novel food processing Effects on rheological and functional properties CRC Press, Boca Raton. ISBN-13: 978-1-4200-7119-1 (Hardback)

CFG60403 FOOD SAFETY, LAW & REGULATION

The course will allow the student to critically appraise a variety of issues associated with hazards in food. The characteristics of the main groups of hazards (biological, chemical and physical) and their management and control during the production of foods and feed, in both modern food processing plants and in less sophisticated production conditions, will be analysed and discussed. Students will understand the elements of national and international food control systems, the role that food safety legislation plays in these systems and the importance of risk assessment in risk analysis as a means of establishing realistic standards.

Learning Outcomes:

CLO1 Evaluate the food safety issues, including the food hazards, risks and their sources. (C5)

CLO2 Perform food safety management and audit systems in the food processing industry. (P4)

CLO3 Follow accordingly to current food safety legislation which relates to food premises. (A3)

References:

Neal D. Fortin. 2009. Food regulation, Wiley Publishers.

Naomi Rees. David Watson. 2000. International standards for food safety, An Aspen Publications.

O'Rourke. 2005. European Food law, 3rd Edition, Thomson, Sweet and Maxwell

CFG60503 FOOD SUPPLY CHAIN, TRACEABILITY & SUSTAINABILITY

The course will provide advanced knowledge of various management issues related to food supply chains, including farm to post-harvest management, and on innovative concepts of sustainability and traceability for maintaining the food quality during processing, storage and distribution.

Learning Outcomes:

CLO1 Interpret the principles and process of traceability and sustainability in food supply chain systems.(C5)

CLO2 Analyse the components of domestic and international food supply chains, to apply logistic management, outsourcing principles. (C4)

CLO3 Use appropriate tools to monitor food supply chain, traceability and sustainability.(A5)

References:

D K Agarwal, Logistics and supply chain management, Macmillan Publishers India Ltd.(2003), Eighth Impressions, 2010.

Sunil Chopra and Peter Meindi, Supply chain management Pearson Education publishers,2010

David Taylor and David Brunt, Manufacturing Operations and Supply chain Management, Vikas Thomson Learning publishers, 2009.

Amit Sinha and Herbert Kotzab, Supply Chain Management, Tata McGraw Hill, 2011.

Surendra M. Gupta, Reverse Supply Chains: Issues and Analysis, CRC Press, 2013.

David Blanchard, Supply Chain Management Best Practices, Wiley Publications, 2010

CFG60602 RESEARCH PROPOSAL

This course is a pre-requisite for Research Project which focusing on the preliminary project implementation in research project. Each student will be assessed independently. The proposal project is scheduled for the first semester. Project supervision is conducted individually and takes the form of supervisory meetings. In addition to developing and implementing the research proposal writing, the student is expected to make a presentation which he presents and defends his research proposal. At the end of this course, the student independently develops and implements a research oriented or product oriented or innovation project. He/She completes the project within the time permitted; justifies the models, theories, methodology and techniques used, as well as the research/design process as a whole; analyses the work completed; and makes both an oral and written report of his work. The project proposal may involve the development and implementation of a solution for a theoretical or design problem.

Learning Outcomes:

- CLO1 Demonstrate the ability to plan and to work effectively (P3)
- CLO2 Analyse related literature for the proposed research problems (C4)
- CLO3 Propose scientific research design// to solve the research/project problems (C6).
- CLO4 Produce a feasible project proposal in accordance to specified project format. (C6)
- CLO5 Defend project proposal in a clear and concise manner. (A5)

References:

- Cooley L. and Lewkowicz J (2003): Dissertation writing in practice. Turning ideas into text. Hong Kong: Hong Kong University Press
- Roberts CM (2004). The Dissertation Journey: A Practical and Comprehensive Guide to Planning, Writing, and Defending Your Dissertation. Corwin Press.
- Glatthorn AA and Joyner RL (2005). Writing the Winning Thesis or Dissertation: A Step-by-Step Guide. 2nd Edition. Corwin Press.
- Rudestam KE and Newton RR (2007). Surviving Your Dissertation: A Comprehensive Guide to Content and Process 3rd Edition. Sage Publications, Inc
- Turabian KL (2007). Review: A Manual for Writers of Research Papers, Theses, and Dissertations. Seventh Edition, University of Chicago Press

CFG60703 RESEARCH PROJECT 1

This course is a progression of Project proposal which focusing on enhancing students' abilities and skills in conducting a project based on their specialization areas, as well as improve their technical writing and presentation skills. The research project will be conducted in two consecutive semesters. The purpose of the Research Project 1 also is for the students to apply theoretical knowledge acquired during the study to a project involving actual problem and the way to solve it. During the project, students engage in the entire process of solving a real-world problem from collecting and processing actual data to applying suitable and appropriate analytic methods to the problem. Both the problem statements for the project assignments and the data sets originate from real-world domains similar to those that students might typically encounter within industry, government, or academic research. Research project also as an evidence for student to demonstrate the ability to engage in independent and lifelong learning. This course is essential as it implement the project proposal.

Learning Outcomes:

CLO1 Evaluate project finding using appropriate technique and tools. (C5)

CLO2 Demonstrate the ability to develop suitable solution to the research problem .(A4)

CLO3 Perform in depth practical work to generate solution on research problem (P5)

CLO4 Defend project progress in clear and concise manner (A5)

CLO5 Produce project progress report in accordance to specified format (C6)

References:

Cresswell, J.W. (2014) Research Design: Qualitative, Quantitative, and Mixed Methods Approaches, 4th Edition, SAGE Publication2. Chodorow,s. (2011) Writing a Successful Research Paper: A Simple Approach. Hackett Publishing

CFG60806 RESEARCH PROJECT 2

This course is a progression of Research Project 1 which focusing on enhancing students' abilities and skills in conducting a project based on their specialization areas, as well as improve their technical writing and presentation skills. The purpose of the Research Project 2 also is for the students to apply theoretical knowledge acquired during the study to a project involving actual problem and the way to solve it. In addition, this course is designed to produce a good and comprehensive project writing/dissertation in enhancing processing and innovation technology related to food industry. It will use the design thinking approach that empowers teams and individuals to generate innovation and break-through offering to solve specific problem.

Learning Outcomes:

CLO1 Evaluate project finding using appropriate technique and tool.(C5)

CLO2 Perform appropriate techniques, resources, and tool to solve research problem with an understanding of the limitations.(P4)

CLO3 Produce a dissertation according to the specified standard format. (C6)

CLO4 Defend the project outcome effectively with respective panel. (A5)

References:

Cresswell, J.W. (2014) Research Design: Qualitative, Quantitative, and Mixed Methods pproaches, 4th Edition, SAGE Publication2. Chodorow,s. (2011) Writing a Successful Research Paper: A Simple Approach. Hackett Publishing.

ELECTIVES COURSES

CFG60903 FOOD PACKAGING

CFG61103 CONSUMER BEHAVIOUR

CFG61203 FOOD SALES AND MARKETING

CFG61003 NUTRITION AND HEALTH

CFG61403 HALAL REGULATION AND CERTIFICATION

CFG61303 HOT TOPICS & GLOBAL ISSUES

CFG60903 FOOD PACKAGING

This course will expose students to the many functions of food packaging, besides protecting foods, and how food packaging materials affect the environment. Students will become familiar with: key historical aspects of the development of packaging technology and its future direction; design of package materials; testing packaging materials and their performance; safety assessment of packaging materials; the function, material properties, characteristics and package requirements; legal and regulatory considerations; introduction of food packing system and the conversion industry and technology required to deliver packaging solutions demanded by modern consumers including active and intelligent packaging, modified atmospheric packaging, aseptic packaging, biodegradable plastics, food-package interactions, sealing integrity and handling of packages. At the end of the course students will design their own sustainable innovative smart packaging for groups for perishable food

Learning Outcomes:

CLO1 Integrate knowledge of food packaging technologies for transformation of the food industry to produce quality, safe, sustainable and innovative food packaging.(C6)

CLO2 Perform appropriate technique and method for packaging material analysis.(P4)

CLO3 Demonstrate ability in planning, resource management, problem solving and managing work within a team in packaging mini project. (A3)

References:

Robertson, G.L Food Packaging Principle and Practice Third Edition, CRC Press Taylor and Francis Group (2013)

Robertson, G.L Food Packaging and Shelf Life A Practical Guide, CRC Press Taylor and Francis Group (2009)

Coles, R. McDowell, D. and Kirwan, M.J. Food Packaging Technology, Blackwell Publisher. (2009)

Laws of Malaysia : Food Act and Regulations, MDC Publishers Sdn. Bhd. (2015).

Soroka, W. Fundamentals of Packaging Technology. 4th Edition. Institute of Packaging Professionals, Naperville, IL. (2009).

CFG61103 CONSUMER BEHAVIOUR

This course contemporary approaches to business emphasize the importance of adopting a consumer focus. Marketing, in particular, is a customer-driven function that begins and ends with the consumer—from recognizing his or her needs to ensuring post-purchase satisfaction. In this course, the understanding of how and why people choose, use, and evaluate goods and services the way they do will be enhanced. While all of us are consumers, our intuitions about our own behavior as well as that of others' are often inaccurate. In this class, the theories developed in marketing, psychology, and other behavioral sciences will be applied to better predict how consumers will respond to different marketing activities.

Learning Outcomes:

CLO1 Examine the relevant theories and research in behavioral sciences that influence consumer behavior. (C6)

CLO2 Analyse consumer behavior research findings in designing and evaluating marketing strategies (C4)

CLO3 Appreciate the importance of consumer analyses to the design, implementation, and evaluation of successful marketing strategies and programs. (A4)

References:

Gaia, B. P. R. (2015). The food industry: history, evolution and current trends. Department of Business and Economics.

William, M. K. A. (2013). Behavioural patterns in the food industry: Consumer behaviour at food joints in Sunyani Metropolis. Atlantic International University

Jesionkowska,, K., Sijtsema, S., Simoneaux,, R., Konopacka,, D. & Plochanski, , W. (2008). Preferences and consumption of dried fruit and dried fruit products among Dutch, French and Polish consumers. Journal of Fruit and Ornamental Plant Research, 16, 261-274.

Lewicki,, P. P. (2006). Design of hot air drying for better foods. Trends in Food Science & Technology, 17, 153-163.

Sijtsema, S. J., Jesionkowska, , K., Simoneaux, R., Konopacka,, D. & Snoek,, H. (2012). Perceptions of the health and convenience characteristics of fresh and dried fruits. LWT-Food Science and Technology, 49, 275-281.

Campbell, I.D., Durant D.G., Hunter, K.L. and Hyatt, K.D. (2014): Food Production; in Canada in a Changing Climate: Sector Perspectives on convenience characteristics of fresh and dried fruits. LWT-Food Science and Technology, 49, 275-281.

Campbell, I.D., Durant D.G., Hunter, K.L. and Hyatt, K.D. (2014): Food Production; in Canada in a Changing Climate: Sector Perspectives on Impacts and Adaptation, (ed.) F.J. Warren and D.S. Lemmen; Government of Canada, Ottawa, p. 99-134

FAO (2014). Economic analysis of supply and demands for food up to 2030 – special focus on fish and fishery products. Food and Agriculture Organization of the United Nations, Rome. 8. William, M. K. A. (2013). Behavioural patterns in the food industry: Consumer behaviour at food joints in

Sunyani Metropolis. Atlantic International University.

CFG61203 FOOD SALES AND MARKETING

Food marketing is an interesting and dynamic field of study with new trends and issues requiring strategic decision making and market planning for food industries to take advantages of opportunities and deal with increasing challenges of global competitive environment. The focus will be on helping students develop in-depth understanding of the macro and micro environments effecting the food industry, food supply chain, food consumers and the future outlook in relation to the developments in Industrial Revolution 4.0. The theory of selecting target markets for the food products and the development of the marketing mix (product, price, promotion, distribution) with the aid of market research will be covered. The students will learn how to organize disruptive marketing innovations to drive change in consumer's food choices including the need to develop an appealing product, create effective branding and integrated marketing communication strategies. The course will be taught using cases, lectures, and a major field project with student teams working with food related companies in establishing efficient and sustainable marketing plans.

Learning Outcomes:

CLO1 Design solutions for sales and marketing problems encountered by the food industry (C6)

CLO2 Organise disruptive and effective marketing innovation strategies for organisations (P4)

CLO3 Propose marketing concepts - including ethical, entrepreneurial, and sustainable marketing concepts (A5) and plans, through case studies.

References:

Kotler, P. and Keller, Kl. (2018). Marketing Management. 15th Edition, New York: Prentice Hall ISBN-1292092629

Kotabe, M. (2017). Global Marketing Management, 7th ed., John Wiley. ISBN-1119298849

CFG61303 NUTRITION AND HEALTH

This course provides an understanding of the role of food and nutrition in health. The topics covered will include: micro and macro nutrients and their food sources; nutrient requirements and food-based dietary guidelines; the concepts of energy and nutrient balance; over - and under-nutrition. Students will be introduced to some of the evidence relating nutrients and diet to health and chronic disease prevention. In addition, students will also gain an understanding of the challenges of ensuring food and nutrition security which relies on the adequate supply of safe, affordable and nutritious fresh and processed foods in order to meet the regions Sustainable Development Goals.

Learning Outcomes:

CLO1 Explain biological functions and interactions between macronutrients and micronutrients (C4)

CLO2 Justify the health related issue due to undernutrition and overnutrition (C5)

CLO3 Display awareness with respect to deriving maximum benefit from available food resources (A5).

References:

Bender, D., A. (2021). Introduction to Nutrition and Metabolism. (6nd Ed.), London: Taylor & Francis Ltd.

Ellie Whitney & Sharon R. Rolfes (2011). Understanding Nutrition Thomson Wadsworth, (12th Edition) ISBN 13: 978-0538-734653

Gibney, M., J., Lanham-New, S., A., Cassidy, A., & Vorster, H., H. (2019). Introduction to human nutrition. (3rd Ed.). Singapore: Wiley-Blackwell

Mann, J. & Truswell, A., S. (2017). Essentials to human nutrition. (5th Ed.). Oxford: Oxford university press.

CFG61403 HALAL REGULATION AND CERTIFICATION

The course will present principles of Halal food concepts in Sharie. Students will be exposed to: the main information relating to Halal reference documents, schemes and procedures; the development of Halal documentation, online application and internal Halal audit in halal-based product certification; current issues related to halal food industries. The aim is to train graduates competent in Halal regulation and certification to meet the demand from dynamic industrial sectors, regulatory and other government bodies relevant to Halal activities. The professional certificate-embedded course is recognized by Halal Professional Board (HPB) and will be given to those who are qualified.

Learning Outcomes:

CLO1 Assess Halal guidelines and their implementation according to Islamic law. (C5)

CLO2 Construct Halal management systems manual for relevant industry while adhere to standards and regulation (P4)

CLO3 Collaborate effectively in managing relationship in team and other teams. (A3)

References:

Yunes Ramadan Al-Teinaz, Stuart Spear, Ibrahim H. A. Abd El-Rahim (2020). The Halal Food Handbook, John Wiley & Sons Ltd

Manual Procedure for Malaysia Halal Certification (3rd Revision) (2020). Jabatan Kemajuan Islam Malaysia (JAKIM).

Muhammad Munir Chaudry, Mary Anne Jackson, Mohammad Mazhar Hussaini, Mian Nadeem Riaz (2000) Halal Industrial Production Standards (Fourth Printing). J&M Food Products Company Illinois, USA.

CFG61303 HOT TOPICS & GLOBAL ISSUES

The course will provide deeper knowledge and expertise to postgraduate students on hot topics/global issues related to the current trends of food processing and innovation. Students will learn some crucial topics related to climate changes and food security, food industries, global economic crisis on food, applicable laws or regulations, factors that affect food security, efforts to achieve food security, analysis of food insecurity and vulnerability household / community level and regional level.

Learning Outcomes:

CLO1 Discuss current issue related to food processing and innovation. (C5)

CLO2 Relates the current issue on food sustainability, security and responsibility toward future generation. (A4)

CLO3 Display the ability to interact and communicate effectively in difference situation. (P4)

References:

Olubukola Oluranti Babalola, (2021). Food Security and Safety : African Perspectives, Springer Nature Switzerland AG (1st edition)

Charis Galanakis (2020), Food security and Nutrition, (1st edition), eBook ISBN: 9780128209325

Food Security in Asia: Challenges, Policies and Implications (Adelphi series) 1st Edition (2014), ISBN-10 : 1138792470

Basudeb Guha-Khasnobis, Shabd S. Acharya, and Benjamin Davis (2009). Food Security: Indicators, Measurement and The Impact of Trade Openness, Oxford University Press.

FAO, The State of Food Security and Nutrition in the World 2020, ISBN: 978-92-5-132901-6