

FAKULTI SAINS DAN TEKNOLOGI MAKANAN

Maklumat Am

Ditubuhkan dalam tahun 1982, Fakulti Sains dan Teknologi Makanan merupakan Fakulti yang aktif dan mempunyai reputasi tinggi sebagai sebuah Fakulti yang terbaik di Universiti Putra Malaysia. Fakulti ini mempamerkan dasar visi penubuhan Universiti untuk memenuhi keperluan negara dalam bidang sains dan teknologi makanan serta pengurusan dan khidmat makanan melalui pengajaran, penyelidikan, dan perkhidmatan profesional. Visi ini telah direalisasikan secara sistematik oleh kakitangan akademik dan sokongan Fakulti yang sangat komited dan sentiasa berkongsi pendapat dengan saintis di institusi akademik dan penyelidikan, industri dan pelanggan.

Tiga tunjang utama Fakulti adalah Jabatan Sains Makanan, Jabatan Teknologi Makanan, dan Jabatan Pengurusan dan Khidmat Makanan. Ketiga-tiga Jabatan mengamalkan kesepaduan persekitaran kerja yang interaktif di mana pendekatan sinergetik digunakan dalam menyumbang kepada kecemerlangan Fakulti Sains dan Teknologi Makanan.

Terdapat tiga program yang ditawarkan oleh Fakulti iaitu Bachelor Sains dan Teknologi Makanan, Bachelor Sains (Pengajian Makanan), dan Bachelor Sains (Pengurusan Perkhidmatan Makanan). Program Bachelor Sains dan Teknologi Makanan menekankan latihan keseluruhan dalam bidang sains dan teknologi makanan dengan pengkhususan dalam bidang keselamatan makanan dan pemastian kualiti, makanan fungsian dan pemakanan, pemprosesan dan kejuruteraan makanan, bioteknologi makanan dan bidang keusahawanan. Manakala program Bachelor Sains (Pengajian Makanan) merupakan kurikulum komprehensif yang bakal menghasilkan graduan terlatih dan profesional dalam bidang pemprosesan, pengeluaran makanan, pengurusan dan pemasaran. Program ini juga memberi tumpuan terhadap sektor pembuatan makanan. Program Bachelor Sains (Pengurusan Perkhidmatan Makanan) pula diwujudkan bagi melahirkan graduan profesional yang menyeluruh meliputi aspek sains dan teknologi, kulinari dan gastronomi, layanan dan keusahawanan serta melahirkan graduan yang berupaya menjalankan penyelidikan dan pembangunan dalam bidang perkhidmatan makanan.

FACULTY OF FOOD SCIENCE AND TECHNOLOGY

General Information

Established in 1982, the Faculty of Food Science and Technology is an active faculty which is highly regarded as one of the best faculties at University Putra Malaysia. The faculty depicts the foundations of the vision for the establishment of the University to fulfill the nation's needs in the field of food science and technology as well as food management and services through teaching, research and professional services. This vision has been systematically realized by academic staff and supportive faculty who are highly committed and frequently share ideas with scientists at academic and research institutions, industry and clients.

The three main pillars of the Faculty are the Department of Food Sciences, Department of Food Technology and the Department of Food Management and Services. All three departments have integrated an interactive working environment whereby a synergetic approach is adopted to contribute to excellence in the Faculty of Science and Technology.

The Faculty offers three programs i.e. Bachelor of Food Science and Technology, Bachelor of Science (Food Studies) and Bachelor of Science (Food Service Management). The Bachelor of Food Science and Technology program emphasizes on overall training in the field of food science and technology with a focus on food safety and quality assurance, functional foods and nutrition, food processing and engineering, food biotechnology and entrepreneurship. Meanwhile, the Bachelor of Science (Food Studies) program has a comprehensive curriculum designed to produce well-trained and professional graduates in the field of food processing, production, management and marketing. This program also focuses on the food manufacturing sector. The Bachelor of Science (Food Service Management) program, on the other hand, was established to produce

professional graduates who are well rounded in aspects of science and technology, culinary and gastronomy, hospitality and entrepreneurship as well as to produce graduates who are capable of conducting research and development in the field of food services.

Pengurusan Fakulti/ *Faculty Management*

Dekan/ *Dean*

Prof. Dato' Dr. Mohd Yazid Abdul Manap

Timbalan Dekan (Akademik dan Hal Ehwal Pelajar)

Deputy Dean (Academic & Student Affairs)

Prof. Madya Dr. Noranizan Mohd Adzahan

Timbalan Dekan (Siswazah, Penyelidikan & Inovasi)

Deputy Dean (Postgraduate, Research & Innovation)

Prof. Madya Dr. Nor Ainy Mahyudin

Timbalan Dekan (Pengurusan Sumber)

Deputy Dean (Resource Management)

Prof. Dr. Fatimah Abu Bakar

Ketua Jabatan Sains Makanan

Head, Department of Food Science

Dr. Maimunah Sanny

Ketua Jabatan Teknologi Makanan

Head, Department of Food Technology

Prof. Dr. Tan Chin Ping

Ketua Jabatan Pengurusan dan Khidmat Makanan

Department of Food Service and Management

Prof. Madya Dr. Muhammad Shahrim Abdul Karim

Ketua Penolong Pendaftar

Head Registrar Assistant

Pn. Zainaf Udin

Program Prasiswazah yang ditawarkan

Bachelor / *Bachelor*

1. Bacelor Sains dan Teknologi Makanan/ *Bachelor of Food Science & Technology*
2. Bacelor Sains (Pengajian Makanan)/ *Bachelor Science (Food Studies)*
3. Bacelor Sains (Pengurusan Perkhidmatan Makanan)/ *Bachelor Science (Food Services)*

STRUKTUR KURIKULUM/ CURRICULUM STRUCTURE

Nama Program : **Bachelor Sains dan Teknologi Makanan/ Bachelor of Food Science and Technology**
Jumlah Kredit Bergraduat : **132 /133 Jam Kredit/ Credit Hours**
Tempoh Pengajian : **8 Semester/ Semesters (4Tahun/ Years)**

1. Kursus Universiti/ University Courses (21 Kredit/ Credits)

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
SKP2101	Kenegaraan Malaysia/ <i>Malaysian Nationhood</i>	3	3	0
SKP2203	Tamadun Islam dan Tamadun Asia/ <i>Asian and Islamic Civilization</i>	2	2	0
SKP2204	Hubungan Etnik / <i>Ethnic Relation</i>	2	2	0
22	<i>Reading for Academic Purposes</i>			
BBI2423	<i>Academic Interaction and Presentation</i>	3	2	1
BBI2424	<i>Academic Writing</i>	3	2	1
MGM3101	Prinsip Pengurusan/ <i>Principles of Management</i>	3	2	1
PRT2008	Pertanian dan Manusia/ <i>Agriculture and Man</i>	2	2	0

2. Kursus Teras/ Core Courses (79 Kredit/ Credits)

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
PHY2001	Fizik Am/ <i>General Physics</i>	4	3	1
CHM3201	Kimia Organik 1/ <i>Organic Chemistry I</i>	4	3	1
CHM3401	Kimia Analisis/ <i>Analytical Chemistry</i>	3	2	1
CHM3010	Kimia Fizik dan Tak Organik/ <i>Physical and Inorganic Chemistry</i>	4	3	1
MTH3002	Pengenalan Kepada Kalkulus/ <i>Introduction to Calculus</i>	4	3	1
MTH3003	Statistik Bagi Sains Gunaan/ <i>Statistics for Applied Sciences</i>	4	3	1
FST4001	Makanan Halal/ <i>Halal Food</i>	2	2	0
FST3111	Kimia Komponen Makanan/ <i>Chemistry of Food Components</i>	3	3	0
FST3110	Biokimia Makanan/ <i>Food Biochemistry</i>	3	3	0
FST3113	Perubahan Pemakanan Dalam Makanan/ <i>Nutritional Changes in Foods</i>	3	3	0
FST3112	Analisis Kimia Makanan/ <i>Chemical Analysis of Food</i>	2	0	2
FST3201	Mikrobiologi Makanan Asas/ <i>Basic Food Microbiology</i>	3	2	1
FST3202	Mikrobiologi Makanan/ <i>Food Microbiology</i>	3	2	1
FST3304	Operasi Unit Pemprosesan Makanan I/ <i>Unit Operations in Food Processing I</i>	4	3	1
FST3305	Operasi Unit Pemprosesan Makanan II/ <i>Unit Operation in Food Processing II</i>	3	2	1

FST3401	Asas Kejuruteraan Makanan/ <i>Fundamentals of Food Engineering</i>	3	2	1
FST4821	Kimia dan Teknologi Hasilan Tumbuhan dan Haiwan/ <i>Chemistry and Technology of Plant and Animal Products</i>	3	3	0
FST4822	Amali Kimia dan Teknologi Hasilan Tumbuhan dan Haiwan/ <i>Laboratory for Chemistry and Technology of Plant and Animal Products</i>	2	0	2
FST4823	Kebersihan Makanan dan Sanitasi/ <i>Food Hygiene and Sanitation</i>	3	3	0
FST4828	Pembangunan Produk Makanan Baru/ <i>New Food Product Development</i>	3	1	2
FST4829	Penilaian Deria Makanan/ <i>Sensory Evaluation of Food</i>	3	2	1
FST4807	Seminar/ <i>Seminar</i>	1	0	1
FSM4901	Latihan Industri/ <i>Industrial Training</i>	12	0	12

3. Kursus Pengkhususan/ *Specialization courses (29/30 Kredit/ Credits)*

i. Pemprosesan dan Kejuruteraan Makanan/ *Process and Food Engineering*

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST4405	Sifat Kejuruteraan Makanan/ <i>Engineering Properties of Foods</i>	3	2	1
FST4406	Rekabentuk Proses dan Loji Makanan/ <i>Food Process and Plant Design</i>	4	4	0
FST4824	Pengurusan Kualiti Makanan/ <i>Food Quality Management</i>	3	3	0
FST4825	Perundangan Makanan/ <i>Food Law</i>	2	2	0
FST4999	Projek Ilmiah Tahun Akhir/ <i>Final Year Research Project</i>	4	0	4
FST4914	Kejuruteraan Sisa Industri Makanan/ <i>Food Industry Waste Engineering</i>	2	2	0
FST4920	Pembungkusan Makanan/ <i>Food Packaging</i>	3	2	1
FST4xxx	Elektif/ <i>Elective</i>	9		

ii. Bioteknologi Makanan/ *Foods Biotechnology*

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BTC3001	Pengenalan Kepada Bioteknologi/ <i>Introduction to Biotechnology</i>	2	2	0
FST4501	Kejuruteraan Genetik Dalam Sains Makanan/ <i>Genetic Engineering in Food Science</i>	3	2	1
FST4502	Enzim Dalam Pemprosesan Makanan/ <i>Enzymes in Food Processing</i>	3	3	0
FST4503	Proteomik Makanan/ <i>Food Proteomics</i>	3	3	0
FST4504	Mikrobiologi Industri Makanan/ <i>Industrial Food Microbiology</i>	4	3	1
FST4824	Pengurusan Kualiti Makanan/ <i>Food Quality Management</i>	3	3	0

FST4825	Perundangan Makanan/ <i>Food Law</i>	2	2	0
FST4999	Projek Ilmiah Tahun Akhir/ <i>Final Year Research Project</i>	4	0	4
FST4914	Kejuruteraan Sisa Industri Makanan/ <i>Food Industry Waste Engineering</i>	2	2	0
FST4xxx	Elektif/Elective	3		

iii. Keselamatan Makanan dan Pemastian Kualiti/ *Quality Assurance and Food Safety Minor*

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST4601	Keselamatan Mikrobiologi Makanan/ <i>Microbiological Safety of Foods</i>	4	3	1
FST4602	Keselamatan Kimia Makanan/ <i>Chemical Safety of Foods</i>	3	3	0
FST4603	Pengurusan dan Keselamatan Makmal Analisis Makanan/ <i>Management and Safety of Food Analysis Laboratory</i>	3	2	1
FST4604	Pemastian Kualiti Hasil Haiwan/ <i>Quality Assurance of Animal Products</i>	3	3	0
FST4605	Pemastian Kualiti Hasil Tumbuhan/ <i>Quality Assurance of Plant Products</i>	3	3	0
FST4606	Kaedah Pantas Dalam Analisis Makanan/ <i>Rapid Methods in Food Analysis</i>	3	1	2
FST4824	Pengurusan Kualiti Makanan/ <i>Food Quality Management</i>	3	3	0
FST4825	Perundangan Makanan/ <i>Food Law</i>	2	2	0
FST4999	Projek Ilmiah Tahun Akhir/ <i>Final Year Research Project</i>	4	0	4
FST4914	Kejuruteraan Sisa Industri Makanan/ <i>Food Industry Waste Engineering</i>	2	2	0

iv. Makanan Fungsian dan Pemakanan/ *Functional Food and Nutrition*

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST4703	Metabolisma Makanan/ <i>Food metabolism</i>	3	3	0
FST4704	Makanan Untuk Kumpulan Khusus/ <i>Food for Specific Groups</i>	3	3	0
FST4607	Toksikologi Makanan/ <i>Food Toxicology</i>	3	3	0
FST4701	Kimia Makanan Fungsian/ <i>Chemistry of Functional Food</i>	4	4	0
FST4702	Isu dan Kontroversi Dalam Makanan Fungsian/ <i>Issues and Controversies in Functional Food</i>	3	3	0
FST4824	Pengurusan Kualiti Makanan/ <i>Food Quality Management</i>	3	3	0
FST4825	Perundangan Makanan/ <i>Food Law</i>	2	2	0
FST4999	Projek Ilmiah Tahun Akhir/ <i>Final Year Research Project</i>	4	0	4

FST4914	Kejuruteraan Sisa Industri Makanan/ <i>Food Industry Waste Engineering</i>	2	2	0
FST4xxx	Elektif/ <i>Elective</i>	3		

V. Keusahawanan/ *Entrepreneurship*

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
ACT2112	Perakaunan Pengenalan/ <i>Introductory Accounting</i>	4	4	0
ACT3211	Pengurusan Kewangan/ <i>Financial Management</i>	3	3	0
MGM3211	Prinsip Pemasaran/ <i>Principles of Marketing</i>	3	3	0
MGM4174	Pengurusan Perkhidmatan/ <i>Service Management</i>	3	3	0
MGM4183	Keusahawanan/ <i>Entrepreneurship</i>	3	3	0
MGM4187	Pengurusan Perniagaan Baru/ <i>New Venture Management</i>	3	3	0
FST4824	Pengurusan Kualiti Makanan/ <i>Food Quality Management</i>	3	3	0
FST4825	Perundangan Makanan/ <i>Food Law</i>	2	2	0
FST4999	Projek Ilmiah Tahun Akhir/ <i>Final Year Research Project</i>	4	0	4
FST4914	Kejuruteraan Sisa Industri Makanan/ <i>Food Industry Waste Engineering</i>	2	2	0

4. Kursus Elektif/ *Elective*

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST4407	Pengurusan Operasi Loji Makanan/ <i>Operational Management of Food Plant</i>	3	3	0
FST4921	Pengendalian Lepastuai Buah-buahan dan Sayur-sayuran/ <i>Postharvest Handling of Fruits and Vegetables</i>	3	2	1
FST4922	Kimia dan Teknologi Lemak dan Minyak/ <i>Chemistry and Technology of Oils and Fats</i>	3	2	1
FST4923	Teknologi Bijirin dan Kekacang/ <i>Cereals and Legumes Technology</i>	3	2	1
FST4924	Teknologi Tenusu/ <i>Dairy Technology</i>	3	2	1
FST4925	Teknologi Minuman/ <i>Beverage Technology</i>	3	2	1
FST4926	Teknologi Daging/ <i>Meat Technology</i>	3	2	1
FST4927	Teknologi Konfeksi Coklat dan Gula/ <i>Chocolate and Sugar Confectionery Technology</i>	3	2	1
FST4928	Teknologi Hasilan Akuatik/ <i>Aquatic Product Technology</i>	3	2	1
FST4929	Pengurusan Air dan Air Buangan Industri Makanan/ <i>Management of Water and Waste Water from the Food Industry</i>	3	3	0

Nota/ Notes : Kr = Jam Kredit/ *Credit Hour*, K = Kuliah/ *Lecture*, A = Amali/ *Laboratory*, T = Tutorial

Nota/Notes :

1. Pelajar diwajibkan memilih **2 kredit** daripada **kursus kokurikulum** yang ditawarkan oleh universiti/ It is compulsory for students to take **2 credits of co-curriculum**

courses offered by the university

2. Pelajar perlu melengkapkan pakej keperluan bahasa inggeris seperti jadual di bawah :
(Butiran lanjut mengenai CEL dan LAX sila rujuk di muka surat belakang buku panduan ini)

Students need to complete the english package as the table below : For more details on CEL and LAX please refer to the back/last page of this book.

MUET Band	Graduation Requirements for 4-year programmes
1 & 2	3 BBI + 3 CEL + 24 LAX points
3 & 4	2 BBI + 2 CEL + 36 LAX points
5 & 6	3 CEL + 36 LAX points

SKEMA PENGAJIAN/ STUDY SCHEME

Pengkhususan Pemprosesan Dan Kejuruteraan Makanan/ *Food Engineering and Processing Minor* (133 Kredit)

TAHUN 1/ 1ST YEAR

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
CHM3010	Kimia Fizik dan Tak Organik/ <i>Physical and Inorganic Chemistry</i>	4	3	1
MTH3002	Pengenalan Kepada Kalkulus/ <i>Introduction to Calculus</i>	4	3	1
PHY2001	Fizik Am/ <i>General Physics</i>	4	3	1
PRT2008	Pertanian dan Manusia/ <i>Agriculture and Man</i>	2	2	0
SKP2101	Kenegaraan Malaysia/ <i>Malaysian Nationhood</i>	3	3	0
SKP2203	Tamadun Islam dan Tamadun Asia/ <i>Asian and Islamic Civilization</i>	2	2	0
JUMLAH/ TOTAL		19	16	3

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2423	Academic Interaction and Presentation	3	2	1
SKP2204	Hubungan Etnik / <i>Ethnic Relation</i>	2	2	0
CHM3201	Kimia Organik 1/ <i>Organic Chemistry I</i>	4	3	1
FST3201	Mikrobiologi Makanan Asas/ <i>Basic Food Microbiology</i>	3	2	1
FST3401	Asas Kejuruteraan Makanan/ <i>Fundamentals of Food Engineering</i>	3	2	1
MGM3101	Prinsip Pengurusan/ <i>Principles of Management</i>	3	2	1
JUMLAH/ TOTAL		18	13	5

TAHUN 2/ 2ND YEAR

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2424	Academic Writing	3	2	1
CHM3401	Kimia Analisis/ <i>Analytical Chemistry</i>	3	2	1
FST3110	Biokimia Makanan/ <i>Food Biochemistry</i>	3	3	0
FST3202	Mikrobiologi Makanan/ <i>Food Microbiology</i>	3	2	1
MTH3003	Statistik Bagi Sains Gunaan/ <i>Statistics for Applied Sciences</i>	4	3	1
JUMLAH/ TOTAL		16	12	4

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2410	<i>Skills in Grammar</i>	3	2	1
FST3111	<i>Kimia Komponen Makanan/ Chemistry of Food Components</i>	3	3	0
FST3112	<i>Analisis Kimia Makanan/ Chemical Analysis of Food</i>	2	0	2
FST3304	<i>Operasi Unit Pemprosesan Makanan I/ Unit Operations in Food Processing I</i>	4	3	1
FST4823	<i>Kebersihan Makanan dan Sanitasi/ Food Hygiene and Sanitation</i>	3	3	0
FST4829	<i>Penilaian Deria Makanan/ Sensory Evaluation of Food</i>	3	2	1
JUMLAH/ TOTAL		18	13	5

TAHUN 3/ 3RD SEMESTER

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST3113	<i>Perubahan Pemakanan Dalam Makanan/ Nutritional Changes in Foods</i>	3	3	0
FST3305	<i>Operasi Unit Pemprosesan Makanan II/ Unit Operation in Food Processing II</i>	3	2	1
FST4001	<i>Makanan Halal/ Halal Food</i>	2	2	0
FST4821	<i>Kimia dan Teknologi Hasil Tumbuhan dan Haiwan/ Chemistry and Technology of Plant and Animal Products</i>	3	3	0
FST4822	<i>Amali Kimia dan Teknologi Hasil Tumbuhan dan Haiwan/ Laboratory for Chemistry and Technology of Plant and Animal Products</i>	2	0	2
FST4824	<i>Pengurusan Kualiti Makanan/ Food Quality Management</i>	3	3	0
FST4914	<i>Kejuruteraan Sisa Industri Makanan/ Food Industry Waste Engineering</i>	2	2	0
JUMLAH/ TOTAL		18	15	3

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FSM4901	<i>Latihan Industri/ Industrial Training</i>	12	0	12
JUMLAH/ TOTAL		12	0	12

TAHUN 4/ 4TH SEMESTER
SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST4825	Perundangan Makanan/ <i>Food Law</i>	2	2	0
FST4828	Pembangunan Produk Makanan Baru/ <i>New Food Product Development</i>	3	1	2
FST4405	Sifat Kejuruteraan Makanan/ <i>Engineering Properties of Foods</i>	3	2	1
FST4406	Rekabentuk Proses dan Loji Makanan/ <i>Food Process and Plant Design</i>	4	4	0
FST4xxx	Elektif/ <i>Elective</i>	3		
JUMLAH/ TOTAL				

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST4807	Seminar/ <i>Seminar</i>	1	0	1
FST4999	Projek Ilmiah Tahun Akhir/ <i>Final Year Research Project</i>	4	0	4
FST4920	Pembungkusan Makanan/ <i>Food Packaging</i>	3	2	1
FST4xxx	Elektif/ <i>Elective</i>	3		
FST4xxx	Elektif/ <i>Elective</i>	3		
JUMLAH/ TOTAL				

Pengkhurusan Bioteknologi Makanan/ Food Biotechnology Minor (132 Kredit)

TAHUN 1/ 1ST YEAR

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
CHM3010	Kimia Fizik dan Tak Organik/ <i>Physical and Inorganic Chemistry</i>	4	3	1
MTH3002	Pengenalan Kepada Kalkulus/ <i>Introduction to Calculus</i>	4	3	1
PHY2001	Fizik Am/ <i>General Physics</i>	4	3	1
PRT2008	Pertanian dan Manusia/ <i>Agriculture and Man</i>	2	2	0
SKP2101	Kenegaraan Malaysia/ <i>Malaysian Nationhood</i>	3	3	0
SKP2203	Tamadun Islam dan Tamadun Asia/ <i>Asian and Islamic Civilization</i>	2	2	0
JUMLAH/ TOTAL		19	16	3

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2423	Academic Interaction and Presentation	3	2	1
SKP2204	Hubungan Etnik / <i>Ethnic Relation</i>	2	2	0
CHM3201	Kimia Organik 1/ <i>Organic Chemistry I</i>	4	3	1
FST3201	Mikrobiologi Makanan Asas/ <i>Basic Food Microbiology</i>	3	2	1
FST3401	Asas Kejuruteraan Makanan/ <i>Fundamentals of Food Engineering</i>	3	2	1
MGM3101	Prinsip Pengurusan/ <i>Principles of Management</i>	3	2	1
JUMLAH/ TOTAL		18	13	5

TAHUN 2/ 2ND YEAR

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2424	Academic Writing	3	2	1
CHM3401	Kimia Analisis/ <i>Analytical Chemistry</i>	3	2	1
FST3110	Biokimia Makanan/ <i>Food Biochemistry</i>	3	3	0
FST3202	Mikrobiologi Makanan/ <i>Food Microbiology</i>	3	2	1
MTH3003	Statistik Bagi Sains Gunaan/ <i>Statistics for Applied Sciences</i>	4	3	1
JUMLAH/ TOTAL		16	12	4

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2410	<i>Skills in Grammar</i>	3	2	1
FST3111	Kimia Komponen Makanan/ <i>Chemistry of Food Components</i>	3	3	0

FST3112	Analisis Kimia Makanan/ <i>Chemical Analysis of Food</i>	2	0	2
FST3304	Operasi Unit Pemrosesan Makanan I/ <i>Unit Operations in Food Processing I</i>	4	3	1
FST4823	Kebersihan Makanan dan Sanitasi/ <i>Food Hygiene and Sanitation</i>	3	3	0
FST4829	Penilaian Deria Makanan/ <i>Sensory Evaluation of Food</i>	3	2	1
JUMLAH/ TOTAL		18	13	5

TAHUN 3/ 3RD SEMESTER

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST3113	Perubahan Pemakanan Dalam Makanan/ <i>Nutritional Changes in Foods</i>	3	3	0
FST3305	Operasi Unit Pemrosesan Makanan II/ <i>Unit Operation in Food Processing II</i>	3	2	1
FST4001	Makanan Halal/ <i>Halal Food</i>	2	2	0
FST4821	Kimia dan Teknologi Hasil Tumbuhan dan Haiwan/ <i>Chemistry and Technology of Plant and Animal Products</i>	3	3	0
FST4822	Amali Kimia dan Teknologi Hasil Tumbuhan dan Haiwan/ <i>Laboratory for Chemistry and Technology of Plant and Animal Products</i>	2	0	2
FST4824	Pengurusan Kualiti Makanan/ <i>Food Quality Management</i>	3	3	0
FST4914	Kejuruteraan Sisa Industri Makanan/ <i>Food Industry Waste Engineering</i>	2	2	0
JUMLAH/ TOTAL		18	15	3

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FSM4901	Latihan Industri/ <i>Industrial Training</i>	12	0	12
JUMLAH/ TOTAL		12	0	12

TAHUN 4/ 4TH SEMESTER

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A
FST4825	Perundangan Makanan/ <i>Food Law</i>	2	2	0
FST4503	Proteomik Makanan/ <i>Food Proteomics</i>	3	2	1
FST4828	Pembangunan Produk Makanan Baru/ <i>New Food Product Development</i>	3	1	2
BTC3001	Pengenalan Kepada Bioteknologi/ <i>Introduction to Biotechnology</i>	2	2	0
FST4501	Kejuruteraan Genetik Dalam Sains Makanan/ <i>Genetic Engineering in Food Science</i>	3	2	1
JUMLAH/ TOTAL		13	9	4

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST4807	Seminar/ <i>Seminar</i>	1	0	1
FST4999	Projek Ilmiah Tahun Akhir/ <i>Final Year Research Project</i>	4	0	4
FST4504	Mikrobiologi Industri Makanan/ <i>Industrial Food Microbiology</i>	4	3	1
FST4502	Enzim Dalam Pemprosesan Makanan/ <i>Enzymes in Food Processing</i>	3	2	1
FST4xxx	Elektif/ <i>Elective</i>	3	2	1
JUMLAH/ TOTAL		15	7	8

Pengkhususan Keselamatan Makanan Dan Pemastian Kualiti/ *Quality Assurance and Food Safety Minor* (133 Kredit)

TAHUN 1/ 1ST YEAR

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
CHM3010	Kimia Fizik dan Tak Organik/ <i>Physical and Inorganic Chemistry</i>	4	3	1
MTH3002	Pengenalan Kepada Kalkulus/ <i>Introduction to Calculus</i>	4	3	1
PHY2001	Fizik Am/ <i>General Physics</i>	4	3	1
PRT2008	Pertanian dan Manusia/ <i>Agriculture and Man</i>	2	2	0
SKP2101	Kenegaraan Malaysia/ <i>Malaysian Nationhood</i>	3	3	0
SKP2203	Tamadun Islam dan Tamadun Asia/ <i>Asian and Islamic Civilization</i>	2	2	0
JUMLAH/ TOTAL		19	16	3

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2423	Academic Interaction and Presentation	3	2	1
SKP2204	Hubungan Etnik / <i>Ethnic Relation</i>	2	2	0
CHM3201	Kimia Organik 1/ <i>Organic Chemistry I</i>	4	3	1
FST3201	Mikrobiologi Makanan Asas/ <i>Basic Food Microbiology</i>	3	2	1
FST3401	Asas Kejuruteraan Makanan/ <i>Fundamentals of Food Engineering</i>	3	2	1
MGM3101	Prinsip Pengurusan/ <i>Principles of Management</i>	3	2	1
JUMLAH/ TOTAL		18	13	5

TAHUN 2/ 2ND YEAR

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2424	Academic Writing	3	2	1
CHM3401	Kimia Analisis/ <i>Analytical Chemistry</i>	3	2	1
FST3110	Biokimia Makanan/ <i>Food Biochemistry</i>	3	3	0
FST3202	Mikrobiologi Makanan/ <i>Food Microbiology</i>	3	2	1
MTH3003	Statistik Bagi Sains Gunaan/ <i>Statistics for Applied Sciences</i>	4	3	1
JUMLAH/ TOTAL		16	12	4

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2410	<i>Skills in Grammar</i>	3	3	0
FST3111	Kimia Komponen Makanan/ <i>Chemistry of Food Components</i>	3	3	0

FST3112	Analisis Kimia Makanan/ <i>Chemical Analysis of Food</i>	2	0	2
FST3304	Operasi Unit Pemprosesan Makanan I/ <i>Unit Operations in Food Processing I</i>	4	3	1
FST4823	Kebersihan Makanan dan Sanitasi/ <i>Food Hygiene and Sanitation</i>	3	3	0
FST4829	Penilaian Deria Makanan/ <i>Sensory Evaluation of Food</i>	3	2	1
JUMLAH/ TOTAL		18	14	4

TAHUN 3/^{3RD} YEAR
SEMESTER 1/ ^{1ST} SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST3113	Perubahan Pemakanan Dalam Makanan/ <i>Nutritional Changes in Foods</i>	3	3	0
FST3305	Operasi Unit Pemprosesan Makanan II/ <i>Unit Operation in Food Processing II</i>	3	2	1
FST4001	Makanan Halal/ <i>Halal Food</i>	2	2	0
FST4821	Kimia dan Teknologi Hasil Tumbuhan dan Haiwan/ <i>Chemistry and Technology of Plant and Animal Products</i>	3	3	0
FST4822	Amali Kimia dan Teknologi Hasil Tumbuhan dan Haiwan/ <i>Laboratory for Chemistry and Technology of Plant and Animal Products</i>	2	0	2
FST4824	Pengurusan Kualiti Makanan/ <i>Food Quality Management</i>	3	3	0
FST4914	Kejuruteraan Sisa Industri Makanan/ <i>Food Industry Waste Engineering</i>	2	2	0
JUMLAH/ TOTAL		18	15	3

SEMESTER 2/ ^{2ND} SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FSM4901	Latihan Industri/ <i>Industrial Training</i>	12	0	12
JUMLAH/ TOTAL		12	0	12

TAHUN 4/ ^{4TH} YEAR
SEMESTER 1/ ^{1ST} SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST4825	Perundangan Makanan/ <i>Food Law</i>	2	2	0
FST4603	Pengurusan dan Keselamatan Makmal Analisis Makanan/ <i>Management and Safety of Food Analysis Laboratory</i>	3	2	1
FST4828	Pembangunan Produk Makanan Baru/ <i>New Food Product Development</i>	3	1	2
FST4601	Keselamatan Mikrobiologi Makanan/ <i>Microbiological Safety of Foods</i>	4	3	1

FST4602	Keselamatan Kimia Makanan/ <i>Chemical Safety of Foods</i>	3	3	0
JUMLAH/ TOTAL		15	11	4

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST4807	Seminar/ <i>Seminar</i>	1	0	1
FST4999	Projek Ilmiah Tahun Akhir/ <i>Final Year Research Project</i>	4	0	4
FST4606	Kaedah Pantas Dalam Analisis Makanan/ <i>Rapid Methods in Food Analysis</i>	3	1	2
FST4604	Pemastian Kualiti Hasil Haiwan/ <i>Quality Assurance of Animal Products</i>	3	3	0
FST4605	Pemastian Kualiti Hasil Tumbuhan/ <i>Quality Assurance of Plant Products</i>	3	3	0
JUMLAH/ TOTAL		14	7	7

Pengkhurusan Makanan Fungsian Dan Pemakanan/ *Nutrition and Food Functional Minor*
(133 Kredit)

TAHUN 1/ 1ST YEAR

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
CHM3010	Kimia Fizik dan Tak Organik/ <i>Physical and Inorganic Chemistry</i>	4	3	1
MTH3002	Pengenalan Kepada Kalkulus/ <i>Introduction to Calculus</i>	4	3	1
PHY2001	Fizik Am/ <i>General Physics</i>	4	3	1
PRT2008	Pertanian dan Manusia/ <i>Agriculture and Man</i>	2	2	0
SKP2101	Kenegaraan Malaysia/ <i>Malaysian Nationhood</i>	3	3	0
SKP2203	Tamadun Islam dan Tamadun Asia/ <i>Asian and Islamic Civilization</i>	2	2	0
JUMLAH/ TOTAL		19	16	3

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2423	Academic Interaction and Presentation	3	2	1
SKP2204	Hubungan Etnik / <i>Ethnic Relation</i>	2	2	0
CHM3201	Kimia Organik 1/ <i>Organic Chemistry I</i>	4	3	1
FST3201	Mikrobiologi Makanan Asas/ <i>Basic Food Microbiology</i>	3	2	1
FST3401	Asas Kejuruteraan Makanan/ <i>Fundamentals of Food Engineering</i>	3	2	1
MGM3101	Prinsip Pengurusan/ <i>Principles of Management</i>	3	3	0
JUMLAH/ TOTAL		18	14	4

TAHUN 2/ 2ND YEAR

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2424	Academic Writing	3	2	1
CHM3401	Kimia Analisis/ <i>Analytical Chemistry</i>	3	2	1
FST3110	Biokimia Makanan/ <i>Food Biochemistry</i>	3	3	0
FST3202	Mikrobiologi Makanan/ <i>Food Microbiology</i>	3	2	1
MTH3003	Statistik Bagi Sains Gunaan/ <i>Statistics for Applied Sciences</i>	4	3	1
JUMLAH/ TOTAL		16	12	4

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI 2410	<i>Skills in Grammar</i>	3	2	1
FST3111	Kimia Komponen Makanan/ <i>Chemistry of Food Components</i>	3	3	0

FST3112	Analisis Kimia Makanan/ <i>Chemical Analysis of Food</i>	2	0	2
FST3304	Operasi Unit Pemrosesan Makanan I/ <i>Unit Operations in Food Processing I</i>	4	3	1
FST4823	Kebersihan Makanan dan Sanitasi/ <i>Food Hygiene and Sanitation</i>	3	3	0
FST4829	Penilaian Deria Makanan/ <i>Sensory Evaluation of Food</i>	3	2	1
JUMLAH/ TOTAL		18	13	5

TAHUN 3/ 3RD SEMESTER

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST3113	Perubahan Pemakanan Dalam Makanan/ <i>Nutritional Changes in Foods</i>	3	3	0
FST3305	Operasi Unit Pemrosesan Makanan II/ <i>Unit Operation in Food Processing II</i>	3	2	1
FST4001	Makanan Halal/ <i>Halal Food</i>	2	2	0
FST4821	Kimia dan Teknologi Hasil Tumbuhan dan Haiwan/ <i>Chemistry and Technology of Plant and Animal Products</i>	3	3	0
FST4822	Amali Kimia dan Teknologi Hasil Tumbuhan dan Haiwan/ <i>Laboratory for Chemistry and Technology of Plant and Animal Products</i>	2	0	2
FST4824	Pengurusan Kualiti Makanan/ <i>Food Quality Management</i>	3	3	0
FST4914	Kejuruteraan Sisa Industri Makanan/ <i>Food Industry Waste Engineering</i>	2	2	0
JUMLAH/ TOTAL		18	15	3

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FSM4901	Latihan Industri/ <i>Industrial Training</i>	12	0	12
JUMLAH/ TOTAL		12	0	12

TAHUN 4/ 4TH YEAR

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST4825	Perundangan Makanan/ <i>Food Law</i>	2	2	0
FST4701	Kimia Makanan Fungsian <i>Chemistry of Functional Food</i>	4	4	0
FST4828	Pembangunan Produk Makanan Baru/ <i>New Food Product Development</i>	3	1	2
FST4703	Metabolisma Makanan/ <i>Food metabolism</i>	3	3	0
FST4702	Isu dan Kontroversi Dalam Makanan Fungsian/ <i>Issues and Controversies in Functional Food</i>	3	3	0
JUMLAH/ TOTAL		15	13	2

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST4807	Seminar/ <i>Seminar</i>	1	0	1
FST4999	Projek Ilmiah Tahun Akhir/ <i>Final Year Research Project</i>	4	0	4
FST4704	Makanan Untuk Kumpulan Khusus/ <i>Food for Specific Groups</i>	3	3	0
FST4607	Toksikologi Makanan/ <i>Food Toxicology</i>	3	2	1
FST4xxx	Elektif/ <i>Elective</i>	3	2	1
JUMLAH/ TOTAL		14	7	7

Pengkhususan Keusahawanan/ Entrepreneurship Minor (137 Kredit)TAHUN 1/ 1ST YEARSEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
CHM3010	Kimia Fizik dan Tak Organik/ <i>Physical and Inorganic Chemistry</i>	4	3	1
MTH3002	Pengenalan Kepada Kalkulus/ <i>Introduction to Calculus</i>	4	3	1
PHY2001	Fizik Am/ <i>General Physics</i>	4	3	1
PRT2008	Pertanian dan Manusia/ <i>Agriculture and Man</i>	2	2	0
SKP2101	Kenegaraan Malaysia/ <i>Malaysian Nationhood</i>	3	3	0
SKP2203	Tamadun Islam dan Tamadun Asia/ <i>Asian and Islamic Civilization</i>	2	2	0
JUMLAH/ TOTAL		19	16	3

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2423	Academic Interaction and Presentation	3	2	1
SKP2204	Hubungan Etnik / <i>Ethnic Relation</i>	2	2	0
CHM3201	Kimia Organik 1/ <i>Organic Chemistry I</i>	4	3	1
FST3201	Mikrobiologi Makanan Asas/ <i>Basic Food Microbiology</i>	3	2	1
FST3401	Asas Kejuruteraan Makanan/ <i>Fundamentals of Food Engineering</i>	3	2	1
MGM3101	Prinsip Pengurusan/ <i>Principles of Management</i>	3	2	1
JUMLAH/ TOTAL		18	13	5

TAHUN 2/ 2ND YEARSEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2424	Academic Writing	3	2	1
CHM3401	Kimia Analisis/ <i>Analytical Chemistry</i>	3	2	1
FST3110	Biokimia Makanan/ <i>Food Biochemistry</i>	3	3	0
FST3202	Mikrobiologi Makanan/ <i>Food Microbiology</i>	3	2	1
MTH3003	Statistik Bagi Sains Gunaan/ <i>Statistics for Applied Sciences</i>	4	3	1
MGM3180	Asas Keusahawanan/Basic Entrepreneurship	3	2	1
JUMLAH/ TOTAL		19	14	5

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2410	<i>Skills in Grammar</i>	3	2	1
FST3111	Kimia Komponen Makanan/ <i>Chemistry of Food Components</i>	3	3	0

FST3112	Analisis Kimia Makanan/ <i>Chemical Analysis of Food</i>	2	0	2
FST3304	Operasi Unit Pemprosesan Makanan I/ <i>Unit Operations in Food Processing I</i>	4	3	1
FST4823	Kebersihan Makanan dan Sanitasi/ <i>Food Hygiene and Sanitation</i>	3	3	0
FST4829	Penilaian Deria Makanan/ <i>Sensory Evaluation of Food</i>	3	2	1
JUMLAH/ TOTAL		18	13	5

TAHUN 3/ 3RD YEAR

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
ACT2112	Perakaunan Pengenalan/ <i>Introductory Accounting</i>	4	3	1
FST3305	Operasi Unit Pemprosesan Makanan II/ <i>Unit Operation in Food Processing II</i>	3	2	1
FST4001	Makanan Halal/ <i>Halal Food</i>	2	2	0
FST4821	Kimia dan Teknologi Hasil Tumbuhan dan Haiwan/ <i>Chemistry and Technology of Plant and Animal Products</i>	3	3	0
FST4822	Amali Kimia dan Teknologi Hasil Tumbuhan dan Haiwan/ <i>Laboratory for Chemistry and Technology of Plant and Animal Products</i>	2	0	2
FST4824	Pengurusan Kualiti Makanan/ <i>Food Quality Management</i>	3	3	0
FST4914	Kejuruteraan Sisa Industri Makanan/ <i>Food Industry Waste Engineering</i>	2	2	0
JUMLAH/ TOTAL		19	15	4

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FSM4901	Latihan Industri/ <i>Industrial Training</i>	12	0	12
JUMLAH/ TOTAL		12	0	12

TAHUN 4/ 4TH SEMESTER

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST4825	Perundangan Makanan/ <i>Food Law</i>	2	2	0
FST3113	Perubahan Pemakanan Dalam Makanan/ <i>Nutritional Changes in Foods</i>	3	3	0
MGM3211	Prinsip Pemasaran/ <i>Principles of Marketing</i>	3	3	0
FST4828	Pembangunan Produk Makanan Baru/ <i>New Food Product Development</i>	3	1	2
ACT3211	Pengurusan Kewangan/ <i>Financial Management</i>	3	3	0
JUMLAH/ TOTAL		14	12	2

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FST4807	Seminar/ <i>Seminar</i>	1	0	1
FST4999	Projek Ilmiah Tahun Akhir/ <i>Final Year Research Project</i>	4	0	4
MGM4174	Pengurusan Perkhidmatan/ <i>Service Management</i>	3	3	0
MGM4187	Pengurusan Perniagaan Baru/ <i>New Venture Management</i>	3	3	0
MGM4183	Keusahawanan/ <i>Entrepreneurship</i>	3	3	0
JUMLAH/ TOTAL		14	9	5

STRUKTUR KURIKULUM/ CURRICULUM STRUCTURE

Nama Program : **Bachelor Sains (Pengajian Makanan)/ Bachelor of Science (Food Studies)**
Jumlah Kredit Bergraduat : **127 Jam Kredit/ Credit Hours**
Tempoh Pengajian : **8 Semester/ Semesters (4Tahun/ Years)**

1. Kursus Universiti/ University Courses (.21 Kredit/ Credits)

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2423	<i>Academic Interaction and Presentation</i>	3	2	1
BBI2424	<i>Academic Writing</i>	3	2	1
PRT2008	<i>Pertanian dan Manusia/ Agriculture and Man</i>	2	2	0
SKP2101	<i>Kenegaraan Malaysia/ Malaysian Nationhood</i>	3	3	0
SKP2203	<i>Tamadun Islam dan Tamadun Asia/ Asian and Islamic Civilization</i>	2	2	0
SKP2204	<i>Hubungan Etnik /Ethnic Relation</i>	2	2	0
BB_2401	<i>Bahasa Asing I/ Foreign Language I</i>	3	2	1
BB_2402	<i>Bahasa Asing II/ Foreign Language II</i>	3	2	1
MGM3180	<i>Asas Keusahawanan/Basic Entrepreneurship</i>	3	2	1

2. Kursus Teras/ Core Courses (74 Kredit/ Credits)

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
ACT2112	<i>Perakaunan Pengenalan/ Introductory Accounting</i>	4	3	1
CHM3201	<i>Kimia Organik 1/ Organic Chemistry I</i>	4	3	1
PHY2001	<i>Fizik Am/ General Physics</i>	4	3	1
ECN3100	<i>Prinsip Ekonomi/ Principles of Economics</i>	3	3	0
FSM3001	<i>Pengenalan Industri Makanan/ Introduction to Food Industry</i>	3	3	0
FSM3101	<i>Kimia dan Fungsi Ramuan Makanan/ Chemistry and Functionality of Food Ingredients</i>	3	2	1
FSM4801	<i>Seminar/ Seminar</i>	1	0	1
FSM4999A	<i>Projek Ilmiah Tahun Akhir/ Final Year Project I</i>	3	0	3
FSM4999B	<i>Projek Ilmiah Tahun Akhir/ Final Year Project II</i>	3	0	3
FST3113	<i>Perubahan Pemakanan Dalam Makanan/ Nutritional Changes in Foods</i>	3	3	0
FST3201	<i>Mikrobiologi Makanan Asas/ Basic Food Microbiology</i>	3	2	1
FST3401	<i>Asas Kejuruteraan Makanan/ Fundamentals of Food Engineering</i>	3	2	1
FST4823	<i>Kebersihan Makanan dan Sanitasi/ Food Hygiene and Sanitation</i>	3	3	0
FST4824	<i>Pengurusan Kualiti Makanan/ Food Quality Management</i>	3	3	0
FST4825	<i>Perundangan Makanan/ Food Law</i>	2	2	0

FST4826	Pemprosesan hasilan tumbuhan dan haiwan/ <i>Processing of Plant and Animal Products</i>	4	3	1
FSM4901	Latihan Industri/ <i>Industrial Training</i>	12	0	12
MGM3101	Prinsip Pengurusan/ <i>Principles of Management</i>	3	3	0
MGM3113	Gelagat Organisasi/ <i>Organizational Behavior</i>	3	3	0
MGM3180	Asas Keusahawanan/ <i>Basic Entrepreneurship</i>	3	2	1
MTH3003	Statistik Bagi Sains Gunaan/ <i>Statistics for Applied Sciences</i>	4	3	1

3. Kursus Elektif/ *Elective* (32 Kredit/ *Credits*)

i. Opsyen Pengurusan Makanan/ *Food Management*

KOD KURSUS/ <i>COURSE CODE</i>	NAMA KURSUS/ <i>COURSE NAME</i>	Kr	K	A/T
ACT2131	Perakaunan Kos dan Pengurusan/ <i>Cost and Management Accounting</i>	3	3	0
ACT3211	Pengurusan Kewangan/ <i>Financial Management</i>	3	3	0
FSM3601	Pengurusan Operasi dalam Industri Makanan/ <i>Food Industry Operations Management</i>	3	3	0
FSM4401	Sistem Maklumat Pengurusan dalam Industri Makanan/ <i>Information System in Food Industry</i>	3	2	1
FSM4502	Pemasaran dan Penjualan dalam Industri Makanan/ <i>Marketing and Sales in Food Industry</i>	3	3	0
FSM4601	Pengurusan Strategik dalam Industri Makanan/ <i>Strategic Management in Food Industry</i>	3	3	0
FSM4658	Isu Semasa dalam Perniagaan Makanan/ <i>Current Issue in Food Business</i>	3	3	0
FST3304	Operasi Unit Pemprosesan Makanan I/ <i>Unit Operations in Food Processing I</i>	4	3	1
FST3305	Operasi Unit Pemprosesan Makanan II/ <i>Unit Operation in Food Processing II</i>	3	2	1
FST4001	Makanan Halal/ <i>Halal Food</i>	2	2	0
FST4406	Rekabentuk Proses dan Loji Makanan/ <i>Food Process and Plant Design</i>	4	4	0
FST4914	Kejuruteraan Sisa Industri Makanan/ <i>Food Industry Waste Engineering</i>	2	2	0
MGM4284	Pengurusan Promosi/ <i>Promotion Management</i>	3	3	0
PPT4202	Perancangan dan Pengurusan Projek Perniagaantani/ <i>Agribusiness Project Planning and Management</i>	3	3	0
PPT4701	Keusahawanan Perniagaantani/ <i>Agribisnes Entrepreneurship</i>	3	2	1

ii. Opsyen Pemasaran Makanan/ *Food Marketing*

KOD KURSUS/ <i>COURSE CODE</i>	NAMA KURSUS/ <i>COURSE NAME</i>	Kr	K	A/T
FSM4502	Pemasaran dan Penjualan dalam Industri Makanan/ <i>Marketing and Sales in Food Industry</i>	3	3	0

FST3304	Operasi Unit Pemprosesan Makanan I/ <i>Unit Operations in Food Processing I</i>	4	3	1
FST3305	Operasi Unit Pemprosesan Makanan II/ <i>Unit Operation in Food Processing II</i>	3	2	1
FST4001	Makanan Halal/ <i>Halal Food</i>	2	2	0
FST4504	Mikrobiologi Industri Makanan/ <i>Industrial Food Microbiology</i>	4	3	1
FST4829	Penilaian Deria Makanan/ <i>Sensory Evaluation of Food</i>	3	2	1
MGM3211	Prinsip Pemasaran/ <i>Principles of Marketing</i>	3	3	0
MGM3244	Gelagat Pengguna/ <i>Consumer Behavior</i>	3	3	0
MGM4204	Pemasaran Perkhidmatan/ <i>Services Marketing</i>	3	3	0
MGM4219	Pengurusan dan Strategi Pemasaran/ <i>Marketing Strategy & Management</i>	3	3	0
MGM4224	Pemasaran Langsung/ <i>Direct Marketing</i>	3	3	0
MGM4264	Penyelidikan Pemasaran/ <i>Marketing Research</i>	3	3	0
MGM4273	Pemasaran Antarabangsa/ <i>International Marketing</i>	3	3	0
MGM4284	Pengurusan Promosi/ <i>Promotion Management</i>	3	3	0

Nota/ Notes : Kr = Jam Kredit/ *Credit Hour*, K = Kuliah/ *Lecture*, A = Amali/ *Laboratory*, T = Tutorial

Nota/Notes :

1. Pelajar diwajibkan memilih **2 kredit** daripada **kursus kokurikulum** yang ditawarkan oleh universiti/ It is *compulsory for students to take 2 credits of co-curriculum courses offered by the university*
2. Pelajar perlu melengkapkan pakej keperluan bahasa inggeris seperti jadual di bawah :
(Butiran lanjut mengenai CEL dan LAX sila rujuk di muka surat belakang buku panduan ini)
Students need to complete the english package as the table below : For more details on CEL and LAX please refer to the back/last page of this book.

MUET Band	Graduation Requirements for 4-year programmes
1 & 2	3 BBI + 3 CEL + 24 LAX points
3 & 4	2 BBI + 2 CEL + 36 LAX points
5 & 6	3 CEL + 36 LAX points

SKEMA PENGAJIAN/ STUDY SCHEMETAHUN 1/ 1ST YEARSEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
CHM 3201	Kimia Organik 1/ <i>Organic Chemistry I</i>	4	3	1
PHY 2001	Fizik Am/ <i>General Physics</i>	4	3	1
FSM 3001	Pengenalan Industri Makanan/ <i>Introduction to Food Industry</i>	3	3	0
MGM 3101	Prinsip Pengurusan/ <i>Principles of Management</i>	3	3	0
ACT 2112	Perakaunan Pengenalan/ <i>Introductory Accounting</i>	4	3	1
JUMLAH/ TOTAL		18	15	3

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2423	Academic Interaction and Presentation	3	2	1
FSM3101	Kimia dan Fungsi Ramuan Makanan/ <i>Chemistry and Functionality of Food Ingredients</i>	3	2	1
ECN3100	Prinsip Ekonomi/ <i>Principles of Economics</i>	3	3	0
SKP2101	Kenegaraan Malaysia/ <i>Malaysian Nationhood</i>	3	3	0
PRT2008	Pertanian dan Manusia/ <i>Agriculture and Man</i>	2	2	0
SKP2204	Hubungan Etnik / <i>Ethnic Relation</i>	2	2	0
JUMLAH/ TOTAL		16	14	2

TAHUN 2/ 2ND YEARSEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2424	Academic Writing	3	2	1
FST3113	Perubahan Pemakanan Dalam Makanan/ <i>Nutritional Changes in Foods</i>	3	3	0
FST3401	Asas Kejuruteraan Makanan/ <i>Fundamentals of Food Engineering</i>	3	2	1
SKP2203	Tamadun Islam dan Tamadun Asia/ <i>Asian and Islamic Civilization</i>	2	2	0
	Elektif/ <i>Elective</i>	6		
JUMLAH/ TOTAL		17		

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
MTH3003	Statistik Bagi Sains Gunaan/ <i>Statistics for Applied Sciences</i>	4	3	1
FST3201	Mikrobiologi Makanan Asas/ <i>Basic Food Microbiology</i>	3	2	1
MGM3113	Gelagat Organisasi/ <i>Organizational Behavior</i>	3	3	0

MGM3180	Asas Keusahawanan/ <i>Basic Entrepreneurship</i>	3	2	1
	Elektif/ <i>Elective</i>	3		
	JUMLAH/ TOTAL	16		

TAHUN 3/ 3RD YEAR

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BB_2401	Bahasa Asing I/ <i>Foreign Language I</i>	3	2	1
FST4823	Kebersihan Makanan dan Sanitasi/ <i>Food Hygiene and Sanitation</i>	3	3	0
FST4826	Pemprosesan hasilan tumbuhan dan haiwan/ <i>Processing of Plant and Animal Products</i>	4	3	1
	Elektif/ <i>Elective</i>	6		
	JUMLAH/ TOTAL	16		

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BB_2402	Bahasa Asing II/ <i>Foreign Language II</i>	3	2	1
FST4824	Pengurusan Kualiti Makanan/ <i>Food Quality Management</i>	3	3	0
FST4825	Perundangan Makanan/ <i>Food Law</i>	2	2	0
FSM4999A	Projek Ilmiah Tahun Akhir/ <i>Final Year Project I</i>	3	0	3
	Elektif/ <i>Elective</i>	6		
	JUMLAH/ TOTAL	17		

TAHUN 4/ 4TH YEAR

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FSM4801	Seminar/ <i>Seminar</i>	1	0	1
FSM4999B	Projek Ilmiah Tahun Akhir/ <i>Final Year Project II</i>	3	0	3
	Kursus Elektif	11		
	JUMLAH/ TOTAL	15		

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FSM4901	Latihan Industri/ <i>Industrial Training</i>	12	0	12
	JUMLAH/ TOTAL	12	0	12

STRUKTUR KURIKULUM/ CURRICULUM STRUCTURE

Nama Program : **Bachelor Sains (Pengurusan Perkhidmatan Makanan)/ Bachelor of Science (Food Service Management)**

Jumlah Kredit Bergraduat : **126 Jam Kredit/ Credit Hours**

Tempoh Pengajian : **8 Semester/ Semesters (4Tahun/ Years)**

1. Kursus Universiti/ University Courses (.21 Kredit/ Credits)

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2423	<i>Academic Interaction and Presentation</i>	3	2	1
BBI2424	<i>Academic Writing</i>	3	2	1
BBI2412	<i>Writing for Academic Purposes</i>	3	2	1
PRT2008	<i>Pertanian dan Manusia/ Agriculture and Man</i>	2	2	0
SKP2101	<i>Kenegaraan Malaysia/ Malaysian Nationhood</i>	3	3	0
SKP2203	<i>Tamadun Islam dan Tamadun Asia/ Asian and Islamic Civilization</i>	2	2	0
SKP2204	<i>Hubungan Etnik /Ethnic Relation</i>	2	2	0
MGM3180	<i>Asas Keusahawanan/Basic Entrepreneurship</i>	3	2	1

2. Kursus Teras/ Core Courses (72 Kredit/ Credits)

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
MTH3003	<i>Statistik Bagi Sains Gunaan/ Statistics for Applied Sciences</i>	4	3	1
FST3301	<i>Prinsip Pemprosesan dan Pengawetan Makanan/ Principles of Food Processing and Preservation</i>	4	3	1
FSM3001	<i>Pengenalan Industri Makanan/ Introduction to Food Industry</i>	3	3	0
FSM3203	<i>Kefungsian Ramuan Makanan/ Functionality of Food Ingredients</i>	3	2	1
FSM3204	<i>Pemakanan dalam Perkhidmatan Makanan/ Nutrition in Foodservice</i>	3	2	1
FSM3205	<i>Mikrobiologi Dalam Perkhidmatan Makanan /Microbiology In Foodservice)</i>	3	2	1
FSM3302	<i>Teori Asas Penyediaan Makanan /Basic Theory Of Food Preparation)</i>	3	3	0
FSM3303	<i>Amali Asas Penyediaan Makanan/Fundamental Laboratory For Food Preparation</i>	2	0	2
FSM3401	<i>Khidmat Layanan Restoran/Restaurant Services</i>	2	0	2
FSM3501	<i>Pembangunan Menu/Menu Development</i>	3	3	0
FSM3602	<i>Sumber Manusia Dalam Perkhidmatan Makanan/ Human Resource In Foodservice</i>	3	3	0
FSM4101	<i>Kaedah Penyelidikan Dalam Perkhidmatan Makanan/ Research Methods In Foodservice</i>	3	2	1
FSM4206	<i>Kebersihan Dan Sanitasi Dalam Perkhidmatan Makanan/Hygiene And Sanitation In Foodservice</i>	2	2	0

FSM4304	Penyediaan Makanan Lanjutan/ <i>Advanced Food Preparation</i>	3	1	2
FSM4503	Sistem Maklumat Dalam Perkhidmatan Makanan/ <i>Information System In Foodservice</i>	3	2	1
FSM4504	Reka Bentuk Dan Susunatur Prasarana Perkhidmatan Makanan/ <i>Equipment Layout And Design For Foodservice Facilities</i>	3	2	1
FSM4603	Pemasaran Dan Penjualan Dalam Perkhidmatan Makanan/ <i>Marketing And Sales In Foodservice</i>	3	3	0
FSM4803	Perundangan Industri Perkhidmatan Makanan/ <i>Foodservice Industrial Law</i>	3	3	0
FSM4901	Latihan Industri/ <i>Industrial Training</i>	12	0	12
FSM4977	Seminar/Seminar	1	0	1
FSM4999	Projek Ilmiah Tahun Akhir/ <i>Final Year Project</i>	6	0	6

3. Kursus Elektif/ *Elective* (33 Kredit/ *Credits*)

Kumpulan Bahasa				
KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BB_ 2401	Bahasa Asing I/ <i>Foreign Language I</i>	3	2	1
BB_ 2403	Bahasa Asing III/ <i>Foreign Language III</i>	3	2	1
BB_ 2402	Bahasa Asing II/ <i>Foreign Language II</i>	3	2	1
2	Reading for Academic Purposes			
Kumpulan Kuantitatif				
KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
ECN3100	Prinsip Ekonomi/ <i>Principles Of Economics</i>	3	3	0
ECN3101	Mikroekonomi/ <i>Microeconomics</i>	3	3	0
ECN3102	Makroekonomi/ <i>Macroeconomics</i>	3	3	0
ACT2112	Perakaunan Pengenalan/ <i>Introductory Accounting</i>	4	3	1
ACT3211	Pengurusan Kewangan/ <i>Financial Management</i>	3	3	0
FSM3604	Pengurusan Dan Kawalan Kos Perkhidmatan Makanan/ <i>Foodservice Management And Cost Control</i>	3	3	0
FSM3605	Pembelian Berkuantiti Dalam Perkhidmatan Makanan/ <i>Quantity Procurement In Foodservice</i>	3	3	0
FSM4606	Pengurusan Operasi Perkhidmatan Makanan/ <i>Foodservice Operations Management</i>	3	3	0
FSM4701	Sistem Operasi Perkhidmatan Makanan / <i>Foodservice Operational System</i>	3	3	0
Kumpulan Profesional				
KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FSM4207	Makanan Kajian Dalam Perkhidmatan Makanan/ <i>Experimental Food In Foodservice</i>	3	1	2
FSM4305	Kuisin Barat/ <i>Western Cuisine</i>	3	1	2
FSM4306	Kuisin Asia/ <i>Asian Cuisine</i>	3	1	2

FSM4607	Pengurusan Strategik Perkhidmatan Makanan/ <i>Foodservice Strategic Management</i>	3	3	0
FSM4702	Pengurusan Makanan Dan Minuman/ <i>Food And Beverage Management</i>	3	3	0
FSM4703	Pengurusan Institusi/ <i>Institutional Management</i>	3	3	0
FSM4704	Pengurusan Minuman Dan Bar/ <i>Beverage And Bar Management</i>	3	3	0
FSM4804	Kontrak Dan Francais Dalam Perkhidmatan Makanan/ <i>Contract And Franchise In Foodservice</i>	3	3	0
FST4001	Makanan Halal/ <i>Halal Food</i>	2	2	0
MGM3113	Gelagat Organisasi/ <i>Organizational Behavior</i>	3	3	0
MGM4154	Pengurusan Perdagangan Antarabangsa/ <i>International Business Management</i>	3	3	0
MGM4183	Keusahawanan/ <i>Entrepreneurship</i>	3	3	0
HPR4100	Pengurusan Hotel dan Pusat Peranginan/ <i>Hotel And Resort Management</i>	3	3	0
HPR4314	Pengurusan Acara, Konvensyen Dan Pameran/ <i>Event, Convention And Exhibition Management</i>	3	3	0
DTK3000	Kaunseling Pemakanan/ <i>Nutrition Counseling</i>	3	2	1
DTK3200	Pemakanan Klinikal/ <i>Clinical Nutrition</i>	4	3	1
DTK3201	Diet Terapi I/ <i>Therapeutic Diet I</i>	3	3	0
KOH3432	Kemahiran Komunikasi Interpersonal/ <i>Interpersonal Communication Skill</i>	3	2	1
SBP3202	Biokimia Klinikal/ <i>Clinical Biochemistry</i>	3	2	1

Nota/Notes :

1. Pelajar diwajibkan memilih **2 kredit** daripada **kursus kokurikulum** yang ditawarkan oleh universiti/ It is *compulsory for students to take 2 credits of co-curriculum courses offered by the university*
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MUET Band	Graduation Requirements for 4-year programmes
1 & 2	3 BBI + 3 CEL + 24 LAX points
3 & 4	2 BBI + 2 CEL + 36 LAX points
5 & 6	3 CEL + 36 LAX points

SKEMA PENGAJIAN/ STUDY SCHEME

TAHUN 1/ 1ST YEAR

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2423	Academic Interaction and Presentation	3	2	1
MGM3180	Asas Keusahawanan/ <i>Basic Entrepreneurship</i>	3	2	1
FSM3205	Mikrobiologi Dalam Perkhidmatan Makanan / <i>Microbiology In Foodservice</i>	3	2	1
FSM3001	Pengenalan Industri Makanan/ <i>Introduction to Food Industry</i>	3	3	0
FSM3302	Teori Asas Penyediaan Makanan / <i>Basic Theory Of Food Preparation</i>	3	3	0
FSM3303	Amali Asas Penyediaan Makanan / <i>Fundamental Laboratory For Food Preparation</i>	2	0	2
JUMLAH/ TOTAL		17	12	5

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
BBI2424	Academic Writing	3	2	1
FSM3204	Pemakanan Dalam Perkhidmatan Makanan / <i>Nutrition In Foodservice</i>	3	2	1
FSM3203	Kefungsian Ramuan Makanan / <i>Functionality Of Food Ingredients</i>	3	2	1
FSM3401	Khidmat Layanan Restoran/ <i>Restaurant Services</i>	2	0	2
SKP2203	Tamadun Islam dan Tamadun Asia/ <i>Asian and Islamic Civilization</i>	2	2	0
SKP2101	Kenegaraan Malaysia/ <i>Malaysian Nationhood</i>	3	3	0
JUMLAH/ TOTAL		16	11	5

TAHUN 2/ 2ND YEAR

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
SKP2204	Hubungan Etnik / <i>Ethnic Relation</i>	2	2	0
FSM3501	Pembangunan Menu/ <i>Menu Development</i>	3	3	0
FST3301	Prinsip Pemprosesan Dan Pengawetan Makanan / <i>Principles Of Food Processing And Preservation</i>	4	3	1
FSM3602	Sumber Manusia Dalam Perkhidmatan Makanan/ <i>Human Resource In Foodservice</i>	3	3	0
	Elektif	6		
JUMLAH/ TOTAL		18	11	1

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
PRT2008	Pertanian dan Manusia/ <i>Agriculture and Man</i>	2	2	0
FSM4206	Kebersihan Dan Sanitasi Dalam Perkhidmatan Makanan/ <i>Hygiene And Sanitation In Foodservice</i>	2	2	0
FSM4503	Sistem Maklumat Dalam Perkhidmatan Makanan/ <i>Information System In Foodservice</i>	3	2	1
FSM4504	Reka Bentuk Dan Susunatur Prasarana Perkhidmatan Makanan/ <i>Equipment Layout And Design For Foodservice Facilities</i>	3	2	1
	Elektif/ <i>Elective</i>	6		
	JUMLAH/ TOTAL	16	8	2

TAHUN 3/ 3RD SEMESTER

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
MTH3003	Statistik Bagi Sains Gunaan/ <i>Statistics for Applied Sciences</i>	4	3	1
FSM4603	Pemasaran Dan Penjualan Dalam Perkhidmatan Makanan/ <i>Marketing And Sales In Foodservice</i>	3	3	0
BB12412	Writing for Academic Purposes	3	2	1
	Elektif/ <i>Elective</i>	6		
	JUMLAH/ TOTAL	16	8	2

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FSM4901	Latihan Industri/ <i>Industrial Training</i>	12	0	12
	JUMLAH/ TOTAL	12	0	12

TAHUN 4/ 4TH SEMESTER

SEMESTER 1/ 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FSM4101	Kaedah Penyelidikan Dalam Perkhidmatan Makanan/ <i>Research Methods In Foodservice</i>	3	2	1
FSM4999A	Projek Ilmiah Tahun Akhir/ <i>Final Year Project I</i>	3	0	3
FSM4304	Penyediaan Makanan Lanjutan/ <i>Advanced Food Preparation</i>	3	1	2
	Elektif/ <i>Elective</i>	6		
	JUMLAH/ TOTAL	15	3	6

SEMESTER 2/ 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/ COURSE NAME	Kr	K	A/T
FSM4999B	Projek Ilmiah Tahun Akhir/ <i>Final Year Project I</i>	3	0	3
FSM4977	Seminar/ <i>Seminar</i>	1	0	1
FSM4803	Perundangan Industri Perkhidmatan Makanan/ <i>Foodservice Industrial Law</i>	3	3	0
	Elektif/ <i>Elective</i>	9		
	JUMLAH/ TOTAL	16	3	4

SINOPSIS KURSUS/ COURSE SYNOPSIS

Jabatan Pengurusan Dan Khidmat Makanan/ Department of Food service and Management

FSM3001 Pengenalan Industri Makanan/ *Introduction to Food 3(3+0)*
 Industry

Prasyarat : Tiada

Kursus ini merangkumi sejarah dan perkembangan industri makanan. Prinsip sains dan teknologi dalam pemprosesan, penyediaan dan perkhidmatan makanan serta operasi dan pengurusan dalam industri makanan turut dibincangkan

This course covers the history and development in the food industry. The principles of food science and technology in processing, preparation and foodservice, as well as operations and management in the food industry will be discussed

FSM3203 Kefungsian Ramuan Makanan 3(2+1)
 /Functionality Of Food Ingredients

Prasyarat : Tiada

Kursus ini merangkumi peranan, sifat dan aplikasi komponen makanan dalam penyediaan makanan dan penghasilan produk. Peranan dan kesan ramuan turut dibincangkan.

This course covers the role, properties and application of food components in food preparation and production. The functions and effects of ingredients are also discussed.

FSM3204 Pemakanan Dalam Perkhidmatan Makanan 3(2+1)
 /Nutrition In Foodservice

Prasyarat : Tiada

Kursus ini merangkumi ciri nutrien dan kepentingannya dalam penyediaan menu yang seimbang untuk masyarakat umum dan kumpulan tertentu. Perubahan kandungan nutrien semasa penstoran, pemprosesan dan penyediaan makanan turut diberi penekanan

This course covers the properties of nutrients and their importance in preparing a balanced menu for the general public and specific group. The changes in nutrient content during storage, processing and food preparation are also emphasized

FSM3205 Mikrobiologi Dalam Perkhidmatan Makanan/*Microbiology 3 (2+1)*
 In Foodservice

Prasyarat : Tiada

Kursus ini merangkumi kepentingan dan kesan bahaya mikrorganisma kepada industri perkhidmatan makanan. Kepentingan keselamatan dan pengendalian makanan turut diberi penekanan.

This course covers the importance and effects of microbiological hazard on the foodservice industry. The importance of food safety and handling is also emphasized.

FSM3302 Teori Asas Penyediaan Makanan/ *Basic Theory Of Food Preparation* 3(3+0)

Prasyarat : Tiada

Kursus ini merangkumi prinsip, teknik dan kemahiran penyediaan makanan berkuantiti. Penekanan diberikan kepada pengurusan bahan mentah, pengeluaran produk dan perhubungan antara perorangan.

This course covers the principles, techniques and skills needed in quantity food production. Emphasize is given to the management of raw materials, food production and interpersonal skills.

FSM3303 Amali Asas Penyediaan Makanan 2(0+2)
/Fundamental Laboratory For Food Preparation

Prasyarat : Tiada

Kursus ini merangkumi kaedah asas penyediaan pelbagai menu. Pra-penyediaan bahan mentah, teknik penyediaan dan penyajian makanan turut dibincangkan.

This course covers the various basic menu preparations. The mis en place of raw materials, techniques of food preparation and serving are also discussed.

FSM3401 Khidmat Layanan Restoran/ *Restaurant Services* 2(0+2)

Prasyarat : Tiada

Kursus ini merangkumi aspek penting dalam pengendalian pelbagai majlis mengikut budaya. Aspek layanan yang eksklusif dan hiasan makanan turut dibincangkan.

This course covers the important aspect of handling different cultural functions. The aspects of exclusive service and food garnishing are also discussed.

FSM3501 Pembangunan Menu/ *Menu Development* 3(3+0)

Prasyarat : FSM3302

Kursus ini merangkumi prinsip perancangan dan kawalan kos dalam pembangunan menu. Penekanan turut diberikan kepada pembangunan menu khusus.

This course covers the principles of cost planning and control in menu development. The development of specific menu is also emphasized.

FSM3602 Sumber Manusia Dalam Perkhidmatan Makanan/Human 3(3+0)
Resource In Foodservice

Prasyarat : Tiada

Kursus ini merangkumi prinsip dan amalan pengurusan sumber manusia. Aktiviti berkaitan dengan pengambilan, latihan dan pembangunan sumber manusia turut diberi penekanan.

This course covers the principles and practices of human resource management. The human resource activities pertaining to recruitment, training and development are also emphasized.

FSM3604 Pengurusan Dan Kawalan Kos Perkhidmatan Makanan 3(3+0)
Foodservice Management And Cost Control

Prasyarat : FSM3501

Kursus ini merangkumi prinsip dan konsep penting sistem kawalan kos dalam perkhidmatan makanan. Prosedur kawalan kos turut diberi penekanan.

This course covers the important principles and concepts in foodservice cost control system. The cost control procedures are also emphasized.

FSM3605	Pembelian Berkuantiti Dalam Perkhidmatan Makanan/ <i>Quantity Procurement In Foodservice</i>	3(3+0)
Prasyarat :	FSM3501	
Kursus ini merangkumi proses pembelian bahan mentah dan bahan bukan makanan. Spesifikasi dan pengendalian bahan turut diberi penekanan. <i>This course covers the purchasing procedures for raw materials and non-food items. The specification and handling of the items are emphasized.</i>		
FSM4101	Kaedah Penyelidikan Dalam Perkhidmatan Makanan/ <i>Research Methods In Foodservice</i>	3(2+1)
Prasyarat :	MTH3003	
Kursus ini merangkumi prinsip asas menjalankan penyelidikan saintifik. Penggunaan perisian statistik dalam menganalisis data dan kaedah penafsiran keputusan kajian turut ditekankan. <i>This course covers the basic principles of conducting scientific research. The usage of statistical software to analyze data dan the method of interpreting research result is also emphasized.</i>		
FSM4206	Kebersihan Dan Sanitasi Dalam Perkhidmatan Makanan <i>/Hygiene And Sanitation In Foodservice</i>	2(2+0)
Prasyarat :	Tiada	
Kursus ini merangkumi kepentingan sanitasi dan kebersihan dalam perkhidmatan makanan. Prinsip sanitasi dan kebersihan diri dan premis perkhidmatan makanan diberi penekanan. Amalan Pengilangan Baik dan Sistem Pengurusan Kualiti makanan turut dibincangkan. <i>This course covers the importance of sanitation and hygiene in foodservice operations. The principles of sanitation and hygiene for personal and foodservice establishment are emphasized. Good Manufacturing Practice (GMP) and food quality management system are also discussed.</i>		
FSM4207	Makanan Kajian Dalam Perkhidmatan Makanan/ <i>Experimental Food In Foodservice</i>	3(1+2)
Prasyarat :	FSM3203, FSM3303 dan FST3301	
Kursus ini merangkumi pendekatan sains dalam inovasi produk makanan. Keperluan menghasilkan produk baru dititikberatkan. <i>This course covers scientific approach in food product innovation. The need to produce new products is emphasized.</i>		
FSM4304	Penyediaan Makanan Lanjutan/ <i>Advanced Food Preparation</i>	3(1+2)
Prasyarat :	FSM3303 Dan FSM3401	
Kursus ini merangkumi penyediaan, persembahan dan perkhidmatan makanan secara komersil. Penekanan turut diberikan kepada keberkesanan dan kecekapan bekerja secara berkumpulan. <i>This course covers commercial food preparation, presentation and service. The effectiveness and efficiency of teamwork are emphasized.</i>		
FSM4305	Kuisin Barat/ <i>Western Cuisine</i>	3(1+2)
Prasyarat :	FSM3303	
Kursus ini merangkumi prinsip dan teknik asas penyediaan masakan barat. Penekanan turut diberikan kepada perkembangan masakan makanan barat.		

FSM4701	Sistem Operasi Perkhidmatan Makanan/ <i>Foodservice Operational System</i>	3(3+0)
Prasyarat :	Tiada	
<p>Kursus ini memberi penekanan kepada pengurusan sistem dan operasi perkhidmatan makanan. Peningkatan produktiviti dan aplikasi teknologi turut dibincang.</p> <p><i>This course emphasizes on the management of foodservice systems and operations. The productivity improvement and technology application are also discussed.</i></p>		
FSM4702	Pengurusan Makanan Dan Minuman/ <i>Food And Beverage Management</i>	3(3+0)
Prasyarat :	FSM3604, FSM4504 dan FSM4603	
<p>Kursus ini merangkumi proses dan langkah serta prinsip pengurusan makanan dan minuman. Penekanan diberikan kepada pengurusan sumber secara berkesan dengan mengintegrasikan teknologi maklumat.</p> <p><i>This course covers the processes and stages, as well as the principles in food and beverage management. Emphasize is given to effective resources management by integrating information technology.</i></p>		
FSM4703	Pengurusan Institusi/ <i>Institutional Management</i>	3(3+0)
Prasyarat :	FSM3204, FSM3501 dan FSM4701	
<p>Kursus ini merangkumi teknik pengurusan dan pengendalian institusi perkhidmatan makanan dengan cekap. Aktiviti berkaitan dengan operasi institusi perkhidmatan makanan turut dibincangkan.</p> <p><i>This course covers the effective techniques in managing and handling foodservice institution. Activities pertaining to the foodservice institution operations are also discussed.</i></p>		
FSM4704	Pengurusan Minuman Dan Bar/ <i>Beverage And Bar Management</i>	3(3+0)
Prasyarat :	FSM3501 dan FSM3604	
<p>Kursus ini merangkumi prinsip penghasilan minuman beralkohol dan tak beralkohol. Pelbagai aspek pengurusan minuman turut dibincangkan.</p> <p><i>This course covers the principles of alcoholic and non-alcoholic beverages production. The various aspects of beverage management are also discussed.</i></p>		
FSM4803	Perundangan Industri Perkhidmatan Makanan/ <i>Foodservice Industrial Law</i>	3(3+0)
Prasyarat :	Tiada	
<p>Kursus ini merangkumi undang-undang yang berkaitan dengan penubuhan dan pengoperasian institusi perkhidmatan makanan. Akta dan peraturan makanan yang berkaitan turut dibincangkan.</p> <p><i>This course covers the laws pertaining to the formation and operations of foodservice institutions. The related food acts and regulations are also discussed.</i></p>		

FSM4804	Kontrak Dan Francais Dalam Perkhidmatan Makanan <i>/Contract And Franchise In Foodservice</i>	3(3+0)
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Prasyarat : Tiada

Kursus ini merangkumi asas dan prinsip pembangunan kontrak dan francais. Pembangunan dan penilaian kontrak di dalam organisasi perkhidmatan makanan turut diberi penekanan.

This course covers the basic and principles of contract and franchise development. The development and evaluation of a contract in the foodservice organization are also emphasized.

FSM4901	Latihan Industri/ <i>Industrial Training</i>	12(0+12)
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Prasyarat : Pelajar Semester 6 BS (PPM) – Lengkap 100 jam Khidmat

Kursus ini meliputi latihan industri selama 24 minggu di agensi kerajaan atau beberapa syarikat atau kilang industri yang terpilih. Latihan dikendalikan bersama oleh penyelaras dan seorang penyelia atau pengurus dari agensi atau syarikat atau kilang tersebut

This course covers an industrial training for a period of 24 weeks at various selected government agencies, companies or factories. The training is organized jointly by the coordinator and supervisor or the manager from the related agencies, company or factory

FSM4977	Seminar/Seminar	1(0+1)
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Prasyarat : Pelajar Semester 8 BS (PPM)

Kursus ini merangkumi persediaan dan teknik pembentangan berkesan. Pelajar perlu membenteng penemuan projek penyelidikan yang telah dijalankan.

This course covers the preparation and techniques of effective presentation. Students are required to present the findings of their research project.

FSM4999A	Projek Ilmiah Tahun Akhir/ <i>Final Year Project</i>	3(0+3)
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Prasyarat : Pelajar Sem 7 BS(PPM)

Kursus ini merangkumi pelaksanaan projek penyelidikan dan teknik penulisan saintifik. Pelajar perlu menghasilkan penulisan ilmiah secara sistematik

The course covers the implementation of research project and scientific writing techniques. Students are required to produce a systematic academic write-up

FSM4999B	Projek Ilmiah Tahun Akhir/ <i>Final Year Project</i>	3(0+3)
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Prasyarat : Tiada

Kursus ini merangkumi pelaksanaan projek penyelidikan dan teknik penulisan saintifik. Pelajar perlu menghasilkan penulisan ilmiah secara sistematik

The course covers the implementation of research project and scientific writing techniques. Students are required to produce a systematic academic write-up

FST3110 Biokimia Makanan/ *Food Biochemistry* 3(3+0)

Prasyarat : Tiada

Kursus ini merangkumi komponen-komponen utama dan proses biokimia yang berlaku dalam sistem hidupan. Tajuk yang diliputi termasuk: air dan larutan penimbal; enzimologi termasuk kinetik enzim, mekanisme tindakbalas, faktor yang mempengaruhi aktiviti enzim dan pengawalan aktiviti enzim; bioenergetiks, laluan metabolik biomolekul utama; mekanisme transkripsi dan translasi, dan fotosintesis

This course covers the major components and biochemical processes occurring in living system which includes water and buffers; enzymology including enzyme kinetics, mechanism of action, factors that influence enzyme activity and enzyme regulation; bioenergetics; metabolic pathways of major biomolecules; mechanisms of transcription and translation and photosynthesis

FST3111 Kimia Komponen Makanan/ *Chemistry of Food Components* 3(3+0)

Prasyarat : CHM3201 , FST3110

Kursus ini meliputi ciri kimia dan fizikal komponen makro dan mikro makanan khususnya air, karbohidrat termasuk serat dietari, protein dan enzim, lipid, vitamin, mineral, pigmen, perisa, bahan toksik semulajadi, bahan pencemar, dan aditif makanan. Peranan komponen tersebut dalam sistem makanan akan juga diliputi. Perkaitan diantara struktur dan kefungsiannya komponen berkenaan dalam makanan akan dibincangkan

This course covers the chemical and physical properties of food macro- and micro-components specifically water, carbohydrates including dietary fibre, proteins and enzymes, lipids, vitamins, minerals, pigments, flavours, natural toxicants, contaminants and food additives. Their roles in the food system shall also be covered. The relationship between structure and function(s) of these components in food will be discussed

FST3112 Analisis Kimia Makanan/ *Chemical Analysis of Food* 2(0+2)

Prasyarat : CHM3401

Kursus ini meliputi analisis kimia makanan dan aspek praktik penganalisan komponen makro dan mikro makanan yang menggunakan kaedah kimia dan instrumentasi. Pelajar juga dibimbing dalam menyediakan protokol am yang terlibat dalam pembangunan strategi bagi analisis ciri kimia sesuatu makanan

This course covers chemical analysis of food which encompasses principles and practical aspects of macro- and micro-components of food analysis using chemical and instrumental methods. The student will also be guided in the development of general protocol involved in the development of strategies for the analysis of the chemical properties of a given food

FST3113 Perubahan Pemakanan Dalam Makanan/ *Nutritional* 3(3+0)

Changes in Foods

Prasyarat : Tiada

Kursus ini meliputi sumbangan dan kepentingan nutrien ke atas kesihatan. Syor Diet Harian (*Recommended Dietary Allowance*; RDA), pemakanan untuk golongan tertentu dan penilaian status pemakanan. Penekanan juga akan diberi ke atas perubahan kualiti nutrien semasa pemprosesan dan penstoran makanan

This course covers the contribution and significance of nutrients on health, Recommended Dietary Allowance (RDA), nutrition for special groups and nutritional status assessment. Emphasis will also be given to nutritional changes occurring during processing and storage of food

FST3201 Mikrobiologi Makanan Asas/ *Basic Food Microbiology* 3(2+1)

Prasyarat : Tiada

Kursus ini meliputi pengenalan kepada mikrobiologi dan teknik asas yang digunakan di makmal, sifat mikro-organisma dan pengelasan, struktur dan fungsi sel prokariot dan eukariot, pengkulturan pemeliharaan bakteria, pembiakan dan tumbesaran, metabolisme dan biosintesis, kawalan tumbesaran mikroob, pemusnahan mikroorganisma, mutasi, kejuruteraan genetik, tindakbalas rentanan dan imun, sifat yis, fungi dan virus bawaan makanan

This course covers introduction to microbiology and basic techniques used in the laboratory, characteristics of microorganisms and classification, structures and functions of prokaryotes and eukaryotes, cultivation and maintenance of cultures, reproduction and growth, metabolism and biosynthesis, control of microbial growth, sterilization and disinfection, mutation, genetic engineering, immune and allergic responses, and characteristics of foodborne yeasts, fungi and viruses

FST3202 Mikrobiologi Makanan/ *Food Microbiology* 3(2+1)

Prasyarat : FST3201

Kursus ini meliputi peranan dan kepentingan mikroorganisma dalam makanan dan persekitaran, faktor yang mempengaruhi tumbesaran mikroorganisma dalam makanan, kesan pemprosesan dan pengawetan makanan ke atas tumbesaran dan kemandirian mikroorganisma, aktiviti mikroorganisma yang menyebabkan keracunan dan kerosakan makanan, kualiti makanan dan air dari sudut mikrobiologi, organisma penunjuk dan HACCP, probiotik dan mikroorganisma bermanfaat

This course covers the role and significance of microorganisms in foods and environment, factors affecting their growth in foods, effects of food processing and preservation techniques on the growth and survival of microorganisms, microbial activities as a causal agent for food poisoning and spoilage, microbial quality of food and water, indicator organisms and HACCP, probiotics and beneficial microorganisms

FST3301 Prinsip Pemprosesan Dan Pengawetan Makanan 4(2+1)
/Principles Of Food Processing And Preservation

Prasyarat : Tiada

Kursus ini meliputi ciri-ciri kualiti makanan, akibat dan kesan kerosakan makanan, dan pelbagai cara pengawetan dalam makanan.

This course covers characteristics of food quality, results and effect of food spoilage, and various food preservation methods.

FST3401 Asas Kejuruteraan Makanan/ *Fundamentals of Food Engineering* 3(2+1)

Prasyarat : PHY2001

Kursus ini meliputi pengenalan kepada kejuruteraan makanan, unit dan dimensi, analisis dimensi, imbalan jisim dan tenaga, termodinamik dan refrigerasi, aliran bendalir, pemindahan haba dan jisim pemindahan haba tak mantap, psikrometri. Amali yang dijalankan menekankan prinsip asas kejuruteraan makanan

This course covers the introduction to food engineering, units and dimensions, dimensional analysis, mass and energy balances, thermodynamics and refrigeration, fluid flow, heat and mass transfer, unsteady state heat transfer, psychrometry. Laboratory practical emphasizes basic principles of food engineering

FST4407 Pengurusan Operasi Loji Makanan/ *Operational Management of Food Plant* 3(3+0)

Prasyarat : FST3304 / FST3305

Kursus ini membincangkan pengurusan operasi loji makanan, pra-operasi loji, semasa operasi loji, pengoptimuman operasi, pasca operasi, pembaikan operasi, teknologi pembuatan terkini, kajian kes pembuatan dan pemasaran produk.

This course covers operational management of food plant, preoperational, current, optimization and post operational activities, operations improvement, new manufacturing technologies, case studies on manufacturing and marketing of products

FST4501 Kejuruteraan Genetik Dalam Sains Makanan/ *Genetic Engineering in Food Science* 3(2+1)

Prasyarat : FST3110

Kursus ini meliputi kejuruteraan genetik dalam sains makanan merangkumi teknik asas manipulasi dan pengklonan gen, prosedur pengklonan, pengklonan vektor, teknologi PCR, kejuruteraan genetik dan isu terkini.

This course covers Genetic Engineering in Food Science including basic techniques in gene manipulation and cloning, cloning procedures, cloning of vectors, PCR technologies, genetic engineering and current issues

FST4502 Enzim Dalam Pemprosesan Makanan/ *Enzymes in Food Processing* 3(3+0)

Prasyarat : FST3110 dan FST3111

Kursus ini meliputi enzim dalam pemprosesan makanan merangkumi sejarah dan tren penggunaan enzim, sifat enzim, sumber enzim dalam industri, penghasilan enzim industri, aplikasi enzim dalam industri, status enzim dalam peraturan makanan, dan isu terkini penggunaan enzim.

This course covers enzymes in food processing encompasses the history and trend of enzyme application, characteristics of enzyme, sources of enzyme in industry, production of industrial enzyme, application of enzyme in industry, status of enzyme in food regulation, and current issues in enzyme application

FST4503 Proteomik Makanan/ *Food Proteomics* 3(2+1)

Prasyarat : FST3111 dan FST3112

Kursus ini meliputi proteomik makanan merangkumi definisi dan kepentingan proteomik dengan sains dan teknologi makanan, struktur dan fungsi protein, kesan pemprosesan, kebolehpercayaan bio, pengekstrakan dan penulinan protein, dan pencirian protein.

This course covers food proteomics encompasses definition and the importance of the emerging field of proteomics in food science and technology, structures and functions of proteins, impacts of processing, bioavailability, extraction and isolation of protein, and characterization of proteins

FST4504 Mikrobiologi Industri Makanan/ *Industrial Food Microbiology* 4(3+1)

Prasyarat : FST3201

Kursus ini meliputi prinsip fermentasi dan kegunaan mikroorganisma dalam industri makanan. Topik meliputi industri makanan, pasaran tempatan dan global, jenis fermentasi, kultur pemula, industri makanan termentasi dan perkembangan, ramuan makanan yang dihasilkan melalui teknologi fermentasi dan perubahan tekstur dan perisa semasa penuaan dan pematangan.

This course covers the principles of fermentation and use of microorganisms in food industry. Topics covered will be food industry local and global market, types of fermentation, fermentation process, starter cultures, fermented foods and development of the industry, food ingredients produced by fermentation technology and textural and flavour changes during ageing and maturity

FST 4601 Keselamatan Mikrobiologi Makanan/ *Microbiological Safety of Foods* 4(3+1)

Prasyarat : FST3201, FST3202

Kursus ini meliputi keselamatan mikrobiologi makanan merangkumi ciri keselamatan makanan, mikroorganisma yang menyebabkan infeksi dan intoksikasi makanan, keberkesanan proses merencat atau membunuh mikroorganisma, teknik epidimiologi, mikrobiologi prediktif dan keselamatan makanan

This course covers microbiological safety of foods encompasses characteristics of food safety, microorganisms causing food infections and intoxications, effectiveness of process of inhibition and killing of microorganisms, epidemiological techniques, predictive microbiology and food safety

FST4602 Keselamatan Kimia Makanan/ *Chemical Safety of Foods* 3(3+0)

Prasyarat : FST3110

Kursus ini meliputi keselamatan kimia makanan merangkumi prinsip toksikologi, faktor yang mempengaruhi ketoksikan, kaedah penilaian keselamatan makanan di dalam makmal, penilaian keselamatan makanan, risiko, toksikan dalam makanan, kontaminan makanan dan keselamatan, dan isu semasa

This course covers chemical safety of foods which encompasses principle of toxicology, factors influencing toxicity, methods of assessment of food safety in laboratory, evaluation of food safety, risks, toxicants in foods, food contaminants and safety, and current issues

FST4603 Pengurusan dan Keselamatan Makmal Analisis Makanan/ *Management and Safety of Food Analysis Laboratory* 3(2+1)

Prasyarat : FST3112, FST3202

Kursus ini meliputi aktiviti makmal analisis makanan, pengurusan makmal, interpretasi klausa pengurusan dan aplikasinya, interpretasi klausa teknikal dan aplikasinya, bahaya dan keselamatan di makmal, dan langkah keselamatan

This course covers the activities of a food analysis laboratory, laboratory quality management system, management and technical clauses interpretation and their applications, hazards and safety in laboratory, safety measures

FST4604 Pemastian Kualiti Hasil Haiwan/ *Quality Assurance of Animal Products* 3(3+0)

Prasyarat : FST4821, FST4824, dan FST4825

Kursus ini meliputi proses pembentukan dan penguatkuasaan piawaian antarabangsa, perundangan berkaitan spesifikasi piawaian antarabangsa serta implikasi ketidakpatuhan kepada spesifikasi tersebut, parameter dan pemastian kualiti hasil haiwan, pelabelan dan isu semasa yang berkaitan.

This course covers the process of creating and enforcing international standards, laws related to international standards specification and the implications of not achieving the standards, parameters and quality control of animal products, labelling and current issues related

FST4605 Pemastian Kualiti Hasil Tumbuhan/ *Quality Assurance of Plant Products* 3(3+0)

Prasyarat : FST4821, FST4824, dan FST4825

Kursus ini meliputi piawaian antarabangsa hasil tumbuhan, pembentukan dan penguatkuasaan piawaian antarabangsa, definisi dan kualiti hasil tumbuhan, aspek perundangan, spesifikasi dan pelaksanaan piawaian antarabangsa, pemastian kualiti hasil minyak dan lemak, buah dan sayur, bijirin dan hasil lain, keperluan pelabelan dan isu semasa yang berkenaan.

This course covers international standards of plant products, formation and enforcement of international standards, definition and quality of plant products, aspects of law, specification and implementation of international standards, quality assurance of oil and fats, fruits and vegetables, cereals and other products, labeling needs and current issues related

FST4606 Kaedah Pantas Dalam Analisis Makanan/ *Rapid Methods in Food Analysis* 3(1+2)

Prasyarat : FST3201

Kursus ini meliputi genetik asas dalam tumbuhan dan haiwan, prinsip asas dan aplikasi diagnostik dan pembangunan kit teknologi pantas untuk analisis makanan

This course covers basic genetics and its organization in microorganisms and higher organisms, diagnostic principles and their applications, and the development of kits for rapid food analysis

FST4607 Toksikologi Makanan/ *Food Toxicology* 3(3+0)

Prasyarat : FST3111

Kursus ini meliputi pembelajaran tentang aspek-aspek asas kimia dan biologi dalam toksikologi makanan, biotransformasi, penilaian risiko, bahan toksik semulajadi, bahan pencemar dan aditif makanan. Peranan dan kesan sampingan bahan-bahan tersebut dalam sistem makanan juga diliputi. Perkaitan diantara bahan kimia dalam makanan dan mekanisme pembentukan kaser dalam makanan turut dibincangkan.

This course covers the basic chemical and biological aspects of food toxicology, biotransformation, risk assessment, natural toxicants, food-borne toxins and food additive. Their roles and side effect of toxicants in the food system shall also be covered. The relationship between food chemicals and mechanism of carcinogenesis in food will be discussed

FST4701 Kimia Makanan Fungsian *Chemistry of Functional Food* 4(4+0)

Prasyarat : FST3111

Kursus ini meliputi sebatian fungsian dalam makanan, kebbaikannya kepada kesihatan dan mekanisme yang dicadangkan, kesan pemprosesan terhadap sebatian bioaktif, kebolehdapatanbio, kawalan kualiti dan piawaian, kajian keberkesanan, isu keselamatan, status peraturan serta prospek masa hadapan makanan fungsian.

This course discusses functional compounds in foods, their health benefits and proposed mechanisms, effects of processing on bioactive compounds, bioavailability, quality control and standardization, efficacy studies, safety issues, regulatory status and future prospects of functional food

FST4702 Isu dan Kontroversi Dalam Makanan Fungsian/ *Issues and Controversies in Functional Food* 3(3+0)

Prasyarat : FST3111

Kursus ini meliputi isu dan kontroversi berkaitan makanan fungsian, merangkumi manfaat bahan antioksidan fitokimi, asid lemak perlu dan kegunaan makanan berasas susu. Kesan pemprosesan ke atas efikasi, kebolehdapatan bio dan keselamatan bioaktif. Pengadukan GMP, Isu Pelabelan dan GMF juga boleh diliputi.

This course covers benefits of phyto-chemicals antioxidant, essential fatty acid, milk-based functionality, effect of processing on efficacy, bioavailability and safety of bioactive ingredients. Adulteration, GMP, labeling issues and GMF will also be covered

FST4703 Metabolisma Makanan/ *Food metabolism* 3(3+0)

Prasyarat : FST3113

Kursus ini merangkumi aspek klasifikasi, sumber, fungsi, pemakanan, metabolisma, petanda kekurangan dan berlebihan nutrien makro dan mikro seperti protein, lipid, karbohidrat, serat diet, vitamin dan mineral. Keseimbangan tenaga akan juga di bincangkan

This course covers the classification, sources, functions, nutrition, metabolism, symptoms of deficiency and excess of macro and micro nutrients such as proteins, lipids, carbohydrates, dietary fiber, vitamins and minerals. Energy balance will also be discussed

FST4704 Makanan Untuk Kumpulan Khusus/ *Food for Specific Groups* 3(3+0)

Prasyarat : FST4703

Kursus ini merangkumi aspek pengambilan makanan bagi kumpulan khusus, simptom klinikal, gangguan pemakanan (kardiovaskular, sindrom metabolik, kanser, gout, endokrin dll.) dan isu semasa mengenai hubungan di antara makanan dan kesihatan. Kajian kes dan penilaian status pemakanan akan dijalankan.

This course covers the food intake for specific groups, clinical deficiency symptoms, nutritional disorder (cardiovascular, metabolic syndrome, cancer, gout, endocrine etc.) and current issues on the relationship between food and health. Case study and nutritional assessment will be conducted

FST4807 Seminar/ *Seminar* 1(0+1)

Prasyarat : Pelajar Tahun akhir BSTM

Kursus ini merangkumi pembentangan penemuan projek penyelidikan yang dijalankan

This course covers presentation of research findings of the project conducted

FST4823 Kebersihan Makanan dan Sanitasi/ *Food Hygiene and Sanitation* 3(3+0)

Prasyarat : FST3201

Kursus ini merangkumi prinsip kebersihan dan sanitasi dalam industri makanan, meliputi pelbagai aspek sanitasi seperti jangkitan, kebersihan, kaedah penentuan kebersihan, unsur sanitasi, kualiti air, kotoran, teknologi permukaan, teknologi pembersihan, reka bentuk bersih dan konsep *Cleaning In-Place* (CIP).

This course covers principles of hygiene and sanitation in food industries which encompasses various aspects of sanitation such as infection, hygiene, methods to determine hygiene, elements of sanitation, water quality, soils, surface technology, cleaning technology, hygienic design and Cleaning In-Place (CIP) concept

FST4824 Pengurusan Kualiti Makanan/ *Food Quality Management* 3(3+0)

Prasyarat : BSTM : FST3111, FST3202, BS(PMK) : FSM 3101, FST 3201, FST 4823

Kursus ini merangkumi pengurusan kualiti makanan meliputi konsep pengurusan kualiti makanan, aplikasi statistik dalam kawalan proses, variasi dan indeks kebolehan, atribut kualiti, persampelan, kebolehan proses, carta kawalan, sistem pengurusan kualiti, Halal, Tepat-Pada-Waktu, dan *First In First Out*, dan sistem pengurusan keselamatan makanan

This course covers management of food quality which encompasses concept of food quality management, application of statistical process control, variation and capability index, quality attributes, sampling, process capability, control chart, quality management systems, Halal, Just-In-Time, and First In First Out and food safety management system

FST4921 Pengendalian Lepastuai Buah-buahan dan Sayuran/ 3(2+1)

Postharvest Handling of Fruits and Vegetables

Prasyarat : FST4821 dan FST4822

Kursus ini merangkumi pengendalian lepastuai buahan dan sayuran meliputi perubahan biokimia dan biofisikal lepastuai, aktiviti pengendalian lepastuai, kriteria kualiti dan indeks kematangan, kaedah rawatan, peranan dan kesan pembungkusan, suhu dan kelembapan relatif. Pembaziran lepastuai dan gangguan fisiologi semasa penstoran buahan dan sayuran akan juga dibincangkan.

This course discusses postharvest handling of fruits and vegetables encompasses biochemical and biophysical changes after harvest, postharvest activities, quality criteria and maturity index, methods of treatments, role and effect of packaging, temperature and relative humidity. Postharvest wastage and physiological disorder of fruits and vegetables during storage will also be covered

FST4922 Kimia dan Teknologi Lemak dan Minyak/ *Chemistry and* 3(2+1)

Technology of Oils and Fats

Prasyarat : FST4821 dan FST4822

Kursus ini merangkumi kimia dan teknologi minyak dan lemak meliputi komposisi dan ciri pelbagai jenis kumpulan, teknologi pemprosesan, analisis lemak dan minyak, ciri fizikal lemak, minyak dan produk terbitan lemak, tindakbalas kerosakan lemak dan minyak, teknologi modifikasi minyak, teknologi pembuatan produk minyak, lemak dan lemak khusus, aspek persekitaran pemprosesan lemak dan minyak dan kajian kes.

This course covers chemistry and technology of oil and fat which encompasses different composition and properties of various fats and oils, processing technology, analysis of fats and oils, physical properties of fats, oils and fats by-products, deteriorative reactions of fats and oils, technology of fats modification, manufacturing technology of fats, oils and specialty fats, environmental aspects of fats and oils processing and case study

FST4923 Teknologi Bijirin dan Kekacang/ *Cereals and Legumes* 3(2+1)

Technology

Prasyarat : FST4821 dan FST4822

Kursus ini membincangkan teknologi bijirin dan kekacang meliputi penggunaan, penghasilan dan penilaian kualiti bijirin dan kekacang serta hasilnya, isu semasa dan penemuan baru.

This course covers cereals and legumes technology which encompasses utilization, production and the quality evaluation of cereals and legumes and their products, current issues and new findings

FST4924 Teknologi Tenusu/ *Dairy Technology* 3(2+1)

Prasyarat : FST4821 dan FST4822

Kursus ini merangkumi komposisi susu, fisiologi laktasi, pemprosesan susu cair, hasilan susu cair dan pekat, klasifikasi dan terminologi krim, mentega dan AMF klasifikasi, dan terminologi aiskrim, pemprosesan yogurt, keju dan susu tepung, sistem sanitasi dan nyah infeksi dan penemuan terbaru dalam teknologi tenusu.

This course covers milk composition, physiology of lactation, processing of fluid milk, concentrated milk and their products, classification and terminology of cream, butter and AMF, classification and terminology of ice cream, processing of yogurt, cheese and powdered milk, sanitation and disinfection system, and new findings in dairy technology

FST4925 Teknologi Minuman/ *Beverage Technology* 3(2+1)

Prasyarat : FST4821 dan FST4822

Kursus ini merangkumi klasifikasi minuman, kaedah pemprosesan jus buahan, minuman kopi dan teh, minuman berkarbonat, minuman fungsian dan kesihatan termasuk minuman air botol. Penekanan diberi ke atas peralatan yang digunakan, ramuan dan fungsi spesifik, kestabilan produk dan kualiti, aspek perundangan dan spesifikasi produk..

This course covers classification of beverages, methods of processing fruit juice, coffee, tea, carbonated drinks, functional and health drinks including bottled water. Emphasis will be given on the equipment used, ingredients and their specific functions, product stability and quality, aspects on regulations and product specifications

FST4926 Teknologi Daging/ *Meat Technology* 3(2+1)

Prasyarat : FST4821 dan FST4822

Kursus ini merangkumi tren dalam industri daging dan corak pengambilan daging, mekanisme dalam pengecutan otot, penyembelihan haiwan, teknik pengawetan dan pengkikiran, sosej dan penghasilan hancur, hasilan bentuk semula, penyalutan hasilan daging, hasilan kering dan separa kering, pembungkusan dan pengedaran hasilan daging.

This course covers trends in meat industry and meat consumption pattern, mechanisms in muscle contraction, animal slaughtering, preservation and curing techniques, sausage and minced products, reformed products, wrapping of meat products, dry products and half-dry products, packaging and distributing of meat products

FST4927 Teknologi Konfeksi Coklat dan Gula/ *Chocolate and Sugar Confectionery Technology* 3(2+1)

Prasyarat : FST4821 dan FST4822

Kursus ini membincangkan teknologi konfeksi coklat dan gula merangkumi jenis dan ciri produk konfeksionari, ramuan dalam pembuatan coklat, pembuatan konfeksi, kualiti produk coklat, ramuan kofeksi gula dan kualiti, sifat konfeksi gulan dan pembuatan konfeksi lain.

This course covers chocolate and sugar confectionary technology encompasses types and attributes of confectionary products, ingredients in chocolate manufacturing, confectionary manufacturing quality of chocolate products, ingredients and quality of sugar confectionaries, properties of sugar confectionary and manufacturing of other confectionaries

FST4928 Teknologi Hasilan Akuatik/ *Aquatic Product Technology* 3(2+1)

Prasyarat : FST4821 dan FST4822

Kursus ini merangkumi ciri-ciri fizikal, kimia dan biokimia hasilan akuatik, pengendalian selepas penangkapan; prinsip pengawetan pada suhu rendah, teknologi pemprosesan surimi dan hasilannya, hasilan sampingan industri akuatik, teknik pengawetan, proses pengetinan dan pengawalan kualiti makanan akuatik

This course covers physical, chemical and biochemical properties of aquatic food, post-harvest handling principles of preservation at low temperature, preservation techniques, canning process and quality control of aquatic food

FST4929 Pengurusan Air dan Air Buangan Industri Makanan/ 3(3+0)
Management of Water and Waste Water from the Food Industry

Prasyarat : FST4914

Kursus ini meliputi pandangan keseluruhan air, bekalan dan pengurusan air, sifat kimia air, rawatan air konvensional, rawatan air lanjutan, pengurusan air sisa, rawatan premer, sekunder dan tertier, pertimbangan ekonomik dan rekabentuk, dan isu semasa.

This course covers overview of water management, water supply and management, chemical properties of water, conventional water treatment, advance water treatment, waste water management, primary, secondary and tertiary treatments of industrial waste water, economics and design consideration, and current issues

FST4999 Projek Ilmiah Tahun Akhir/ *Final Year Research Project* 4 (0 + 4)

Prasyarat : Pelajar Tahun Akhir BSTM

Pelajar akan menjalankan projek yang dipersetujui oleh penasihat akademik masing-masing. Ini merangkumi cadangan penyelidikan, reka bentuk eksperimen, pengumpulan data yang boleh melibatkan kerja amali, keputusan dan perbincangan. Di akhir semester pelajar dikehendaki untuk menghantar laporan akhir untuk penilaian.

The student will carry out a project on topic approved by his/her academic advisor. It consists of proposal, experimental design, data collection that involves laboratory work, results and discussion. At the end of the semester, the student is required to submit a final report for evaluation

FSM4901 Latihan Industri/ *Industrial Training* 12(0+12)

Prasyarat : Tiada

Pelajar dikehendaki menjalankan latihan praktik di institusi atau industri dalam bidang pengajian atau pengkhususan mereka agar mendapat pengalaman bekerja yang berkaitan dengan pembuatan makanan, penyelidikan dan/ atau analisis makanan

Students are required to undergo practical training in an institution or industry in their field of study or specialisation to gain work experience related to the manufacturing of food, research and/or analysis of food

Jabatan Teknologi Makanan/ Department of Food Technology

FSM 3101 Kimia dan Fungsi Ramuan Makanan/ *Chemistry and Functionality of Food Ingredients* 3(2+1)

Prasyarat : Tiada

Kursus ini merangkumi peranan, sifat dan aplikasi komponen makanan dalam penghasilan produk. Peranan dan kesan ramuan turut dibincangkan

This course covers the role, properties and application of food components in food production. The functions and effects of ingredients will be discussed

FST3304 Operasi Unit Pemprosesan Makanan I/ *Unit Operations in Food Processing I* 4(3+1)

Prasyarat : FST3401

Kursus ini meliputi prinsip-prinsip operasi unit fizikal dan sampingan dalam pemprosesan makanan. Ini termasuk pengecilan saiz dan penurasan pepejal, penghomogenan dan pengemulsian, pencampuran, teknik pemisahan dan pengekstrakan. Teknik yang berkaitan dengan makanan terproses seperti pembungkusan, penyempritan dan pembentukan juga akan dibincangkan

This course covers the principles of physical unit and ancillary operations in food processing. These include size reduction and solids filtration, homogenization and emulsification, mixing, separation techniques and extraction. Techniques that are associated with processed foods such as packaging, extrusion and forming will also be discussed

FST3305 Operasi Unit Pemprosesan Makanan II/ *Unit Operation in Food Processing II* 3(2+1)

Prasyarat : FST3401, FST3304

Kursus ini meliputi prinsip operasi unit pengawetan dalam pemprosesan makanan, teknik pengawetan seperti pemprosesan terma, pengawetan suhu rendah, pengeringan, penyejatan dan pemekatan, pemprosesan tekanan tinggi dan penyinaran makanan

This course covers the principles of food preservation unit operations in food processing, preservation techniques such as thermal processing, low temperature preservation, dehydration, evaporation and concentration, high pressure processing and food irradiation

FST4001 Makanan Halal/ *Halal Food* 2(2+0)

Prasyarat : Tiada

Kursus ini meliputi konsep makanan halal dan haram dalam Islam, sumber makanan halal dan haram, kaedah penyembelihan, konsep pemprosesan makanan halal dari ladang ke pinggan, ramuan dan aditif makanan halal. Kursus ini juga membincangkan peraturan dan perundangan berhubung dengan makanan halal, analisis, piawaian makanan halal MS1500:2004, pensijilan dan logo halal, kaitan halal dan sistem kualiti dan insentif produk halal. Isu semasa dalam industri dan pasaran makanan halal global juga akan dibincangkan

This course covers the concept of halal and haram in Islam, sources of halal and haram food, slaughtering methods, halal food processing concept from farm to plate, halal food ingredients and additives. The course also cover regulations and legislation related to halal food, analysis, halal standard MS1500:2004, halal certification and logo, relationship between halal and quality systems and halal products incentives. Current issues in global halal food industries and market will also be discussed

FST4405 Sifat Kejuruteraan Makanan/ *Engineering Properties of 3(2+1)
Foods*

Prasyarat : FST3401

Kursus ini meliputi sifat kejuruteraan makanan merangkumi sifat fizikokimia bahan biologi dan makanan, air dan sifat makanan, sifat reologi makanan pepejal, sifat reologi makanan viskoelastik, sifat terma makanan, sifat aerodinamik dan hidrodinamik makanan, dan sifat optik makanan

This course covers engineering properties of food encompassing biological and physico-chemical properties of foods, water and food properties, rheological properties of solid foods, rheological properties of viscoelastic foods, thermal properties of foods, aerodynamic and hydronamic properties of foods, and optical properties of foods

FST4406 Rekabentuk Proses dan Loji Makanan/ *Food Process and 4(4+0)
Plant Design*

Prasyarat : FST3304, FST3305

Kursus ini meliputi prinsip dan prosedur dalam membangun dan merencana loji dalam industri makanan, perkembangan proses dan projek makanan, penilaian proses dan loji makanan, penilaian projek dan pelaburan, pemilihan dan spesifikasi alatan, pemilihan tapak dan susun atur loji, pengurusan projek makanan, pengurusan sistem kawalan kualiti dan keselamatan proses dan loji makanan, kajian kes perancangan perniagaan projek makanan

This course covers principles and procedures in developing plant and planning in food industry, development of food projects and processes, evaluation of food processes and plants, project evaluation and investment, equipment selection and specifications, site selection and plant layout, food project management, food plant and process safety and quality control system management, case studies on business plans of food projects

FST4821 Kimia dan Teknologi Hasil Tumbuhan dan Haiwan/ 3(3+0)
Chemistry and Technology of Plant and Animal Products

Prasyarat : FST3111, FST3112

Kursus ini merangkumi kimia dan teknologi hasil tumbuhan dan haiwan meliputi perubahan fisiko-kimia dan biokimia lemak dan minyak, buah dan sayur, kacang dan bijirin, daging, makanan laut dan tenusu semasa pengendalian, pemprosesan dan penyimpanan

This course covers chemistry and technology of plant and animal products which encompasses the physico-chemical and biochemical changes of fats and oils, fruits and vegetables, beans and legume products, meat, seafoods and dairy products during handling, processing and storage

FST4822 Amali Kimia dan Teknologi Hasil Tumbuhan dan Haiwan/ 2(0+2)
*Laboratory for Chemistry and Technology of Plant and
Animal Products*

Prasyarat : FST3111, FST3112

Kursus ini merangkumi amali pemprosesan hasil komoditi tumbuhan dan haiwan. Kursus ini memberi pendekatan secara praktik untuk memahami kaitan fungsian komponen makanan ke atas kualiti hasil komoditi makanan

This course covers practical in the processing of plant and animal-based commodities. It will give a practical approach in understanding the functional roles of food components on the quality attributes of the food

FST4825 Perundangan Makanan/ Food Law

2(2+0)

Prasyarat : BSTM : FST4821, BS(PMK) : FST 4826

Kursus ini meliputi perundangan makanan di Malaysia merangkumi Akta Makanan 1983 dan Peraturan Makanan 1985 termasuk pentadbiran dan penguatkuasaan, perantaraan juruanalisis dan pegawai penguatkuasa, kuasa dan prosedur persampelan, piawaian, pembungkusan dan pelabelan makanan, aditif dan zat makanan, kuasa membuat peraturan, pendakwaan serta pemanggilan balik produk. Undang-undang Malaysia lain yang berkaitan dengan industri makanan, peranan Jabatan Kastam dan Eksais DiRaja, Codex Alimentarius dan pergerakan pengguna juga akan dibincangkan

This course covers Food Laws Malaysia i.e. Food Act 1983 and Food Regulations 1985 which includes administration and enforcement, appointment of analysts and authorised officers, power and procedure of sampling, standards, packaging and labelling of foods, additives and food composition, power to make regulations, litigation and product recall. Other laws of Malaysia concerning the food industry, the role of Royal Customs and Excise Department, Codex Alimentarius and consumer movements will also be discussed

**FST4826 Pemprosesan Hasil Tumbuhan Dan Haiwan/ Processing 4(3+1)
of Plant and Animal Products**

Prasyarat : FSM3101

Kursus ini merangkumi komposisi kimia serta perubahan sifat fiziko-kimia hasil tumbuhan dan haiwan semasa pengendalian dan pemprosesan. Teknologi penghasilan dan analisis kualiti berkaitan pelbagai hasil berasaskan tumbuhan dan haiwan turut diberi penekanan dalam amali yang dijalankan

This course covers chemical composition and changes in the physico-chemical properties of plant and animal products during handling and processing. Technology and analysis of quality related to various plant and animal based products will also be emphasized during laboratory practical

**FST4828 Pembangunan Produk Makanan Baru/ New Food Product 3(1+2)
Development**

Prasyarat : FST4821, FST4822

Kursus ini merangkumi pembangunan produk makanan baharu yang meliputi peranan dan kepentingan perkembangan produk baharu dalam syarikat pengeluaran makanan, takrifan produk, penjaan idea, tinjauan pengguna, penilaian dan penyaringan idea. Pelajar akan dilatih tentang kaedah membina konsep produk, merancang projek, menghasilkan prototaip, menguji dan mengenalpasti kecacatan produk serta menyelesaikan masalah. Pelajar akan berpengalaman dalam proses pembangunan produk, merancang pengeluaran menjalankan ujian pengguna, pemasaran dan pelancaran produk

This course covers new food product development which encompasses the role and importance of new product development in a food manufacturing company, definition of product, idea generation, consumer survey, idea evaluation and screening. Students will be trained in development of product concept, project planning, production of prototype, testing and identification of defects as well as problem solving. Students will have experience in the product development process, production plan, consumer testing, marketing and product launching

**FST4914 Kejuruteraan Sisa Industri Makanan/ Food Industry Waste 2(2+0)
Engineering**

Prasyarat : Tiada

Kursus ini merangkumi kejuruteraan sisa industri makanan meliputi sumber dan klasifikasi sisa industri, masalah pengurusan sisa, proses rawatan sisa secara fizikal dan kimia, integrasi proses fizikal dan biologi, proses rawatan sisa secara termal, dan strategi pengurangan sisa.

This course covers food industry waste engineering which encompasses sources and classification of industrial wastes, problems in waste management, physical and chemical waste treatment processes, integrated physical and biological processes, thermal waste treatment processes, and waste reduction strategies

FST4920 Pembungkusan Makanan/ *Food Packaging* 3(2+1)

Prasyarat : FST4821

Kursus ini merangkumi pembungkusan makanan meliputi konsep dan fungsi pembungkusan, perlindungan makanan, bahan pembungkus dan pembuatan, kaedah ujian terhadap bahan pembungkus, jenis kegagalan dalam pembungkusan, bentuk sistem pembungkusan, pembungkusan dan aplikasi, alatan pembungkusan, peraturan dan undang-undang pembungkusan makanan, dan perkembangan semasa dan masa depan dalam bidang pembungkusan makanan.

This course covers food packaging which encompasses concept and functions of packaging, food protection, packaging materials and manufacturing, packaging materials testing methods, type of failures in food packaging, forms of packaging system, packaging and application, packaging equipment, laws and regulation on food packaging, and current and future developments in food packaging

FSM 3601 Pengurusan Operasi dalam Industri Makanan/ *Food Industry Operations Management* 3(3+0)

Prasyarat : FSM 3001 dan MTH 3003

Kursus ini meliputi aplikasi teknik analitikal dalam industri pembuatan makanan. Penekanan diberi kepada aplikasi teori pemodelan untuk merancang dan membuat keputusan

This course covers the analytical techniques application in the food manufacturing industry. The course focuses on the application of modeling theory to planning and decision-making

FSM 4401 Sistem Maklumat Pengurusan dalam Industri Makanan/ *Information System in Food Industry* 3(2+1)

Prasyarat : Tiada

Kursus ini merangkumi pengurusan sistem maklumat yang meliputi aspek pengurusan, organisasi, penggunaan teknologi, pentadbiran dan pemasaran dalam industri pembuatan makanan

This course covers the computer technology management which includes the aspect of management, organization, technology usage, administration and marketing in the food manufacturing industry

FSM 4502 Pemasaran dan Penjualan dalam Industri Makanan/ *Marketing and Sales in Food Industry* 3(3+0)

Prasyarat : Tiada

Kursus ini merangkumi prinsip pemasaran dan gelagat pengguna dalam industri pembuatan makanan. Aktiviti perancangan pemasaran dan penjualan turut dibincangkan

This course covers the marketing principles and consumer behaviour in food manufacturing industry. The activities pertaining to marketing planning and sales will be discussed

FSM 4658 Isu Semasa dalam Perniagaan Makanan/ *Current Issue in Food Business* 3(3+0)

Prasyarat : Tiada

Kursus ini merangkumi perbincangan mengenai isu semasa dalam industri makanan. Cadangan dan tindakan penyelesaian untuk isu semasa turut diberi penekanan

This course covers the discussion of current issues in food industry. Proposal and solution to the current issues are also emphasized

FSM 4801 Seminar/ *Seminar*

1(0+1)

Prasyarat : Tiada

Kursus ini merangkumi persediaan dan teknik pembentangan berkesan. Pelajar perlu membentangi penemuan projek penyelidikan yang telah dijalankan

This course covers the preparation and effective presentation techniques. Students are required to present the findings of their research project

FST 4829 Penilaian Deria Makanan/ *Sensory Evaluation of Food*

3(2+1)

Prasyarat : MTH 3003

Kursus ini merangkumi konsep penilaian deria serta kegunaannya, kaedah penilaian deria, pemilihan dan latihan ahli panel, format dan tatacara memperolehi data, penyediaan dan persembahan sampel, faktor mempengaruhi pengukuran penilaian deria, pengujian pengguna dan analisis data

This course covers sensory evaluation concept and its applications, sensory evaluation method, selection and training of panel members, format and techniques for obtaining data, preparation of sample for presentation, factors which influence measurement of sensory evaluation, consumer testing and data analysis

(Sila rujuk sinopsis pada fakulti berkenaan)

1. FAKULTI EKOLOGI MANUSIA
 - 1.1 SKP2101 Kenegaraan Malaysia/ *Malaysian Nationhood* 3 (3+0)
 - 1.2 SKP2203 Tamadun Islam dan Tamadun Asia/ *Asian and Islamic Civilization* 2 (2+0)
 - 1.3 SKP2204 Hubungan Etnik /*Ethnic Relation* 2 (2+0)
2. FAKULTI PERTANIAN
 - 2.1 PRT2008 Pertanian dan Manusia/ *Agriculture and Man* 2(2+0)
3. PUSAT PEMAJUAN DAN KOMPETENSI BAHASA (CALC)
 - 3.1 BBI24233 Academic Interaction and Presentation 3 (2+1)
 - 3.2 BBI24244 Academic Writing 3 (2+1)
 - 3.3 BBI2422 *Skills in Grammar* 3 (3+0)
 - 3.4 BBI2410 *Skills in Grammar* 3 (2+1)
4. FAKULTI EKONOMI DAN PENGURUSAN
 - 4.1 MGM3180 Asas Keusahawanan/ *Basic Entrepreneurship* 3 (2+1)
 - 4.2 MGM3101 Prinsip Pengurusan/ *Principles of Management* 3 (2+1)
 - 4.3 MGM3113 Gelagat Organisasi/ *Organizational Behavior* 3 (3+0)
 - 4.4 ACT2112 Perakaunan Pengenalan/ *Introductory Accounting* 4 (3+1)
 - 4.5 ACT2131 Perakaunan Kos dan Pengurusan/ *Cost and Management Accounting* 3 (3+0)
 - 4.6 ACT3211 Pengurusan Kewangan/ *Financial Management* 3 (3+0)
5. FAKULTI SAINS
 - 5.1 PHY2001 Fizik Am/ *General Physics* 4 (3+1)
 - 5.2 CHM3201 Kimia Organik 1/ *Organic Chemistry I* 4 (3+1)
 - 5.3 CHM3401 Kimia Analisis/ *Analytical Chemistry* 3 (2+1)
 - 5.4 CHM3010 Kimia Fizik dan Tak Organik/ *Physical and Inorganic Chemistry* 4 (3+1)
 - 5.5 MTH3002 Pengenalan Kepada Kalkulus/ *Introduction to Calculus* 4 (3+1)
 - 5.6 MTH3003 Statistik Bagi Sains Gunaan/ *Statistics for Applied Sciences* 4 (3+1)

ELEX SCHEME FOR 4 YEARS PROGRAMMES FROM SEPTEMBER 2013

MUET Band	Graduation Requirements for 4-year programmes
1 & 2	3 BBI + 3 CEL + 24 LAX points
3 & 4	2 BBI + 2 CEL + 36 LAX points
5 & 6	3 CEL + 36 LAX points

Sem	4 - Years Programme					
	MUET 1 & 2		MUET3 & 4		MUET 5 & 6	
Sem 1	BBI2422	CEL101	CEL102	LAX	LAX	
Sem 2	LAX	CEL102	BBI2423		CEL103	
Sem 3	BBI2423		BBI2424		LAX	
Sem 4	BBI2424		LAX		Choose ONE : CEL104/105	
Sem 5	LAX		LAX		LAX	
Sem 6	Choose ONE : CEL105/106/107		Choose ONE : CEL105/106/107		LAX	
Sem 7	LAX		LAX		Choose ONE : CEL105/106/107	
Sem 8	LAX or	OPTIONS : CEL104/105/106/107	LAX or	OPTIONS : CEL104/105/106/107	LAX or	OPTIONS : CEL104/105/106/107

Note :

Students who are away on Industrial Training in any semester need not enroll in any course or LAX for that particular semester, but they must enroll in a course LAX in subsequent semesters.

BBI courses

- BBI2422 (Reading for Academic Purpose)
- BBI2423 (Academic Interaction and Presentation)
- BBI2424 (Academic Writing)

CEL courses

- CEL101 (Vocabulary and Grammar for Communication)
- CEL102 (Effective Listening and Speaking)
- CEL103 (Writing Academic Texts)
- CEL104 (Oral Presentation)
- CEL105 (Spoken Communication for the Workplace)
- CEL106 (Communication for Professional Development)
- CEL107 (Written Business Communication)

LAX

- LAX (6 points or 12 points)
- 1 point = 2 hours per week

Pre-requisites for courses

- CEL102 : Level 2 in CEL101 **or** MUET Band 5-6
- CEL103 : Passed BBI2424 or MUET Band 5 - 6

- BBI2423 : Level 2 in CEL102
- BBI2424 : Passed BBI2423
- CE2104,105,106,107 :Passed BBI2424 **or** MUET Band 5 – 6