

ILMU DEMI FAEDAH INSAN



PANDUAN PRASISWAZAH

Sesi Akademik 2018/2019

Fakulti Biosumber dan Industri Makanan

Universiti Sultan Zainal Abidin



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PANDUAN PRASISWAZAH

Sesi Akademik 2018/2019

Fakulti Biosumber dan Industri Makanan

Fakulti Biosumber dan Industri Makanan,
Universiti Sultan Zainal Abidin, Kampus Besut 2018

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FAKULTI BIOSUMBER DAN INDUSTRI MAKANAN
Universiti Sultan Zainal Abidin
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Kandungan

Kata Aluan Naib Canselor	4
Sekapur Sirih Dekan	5
Kalendar Akademik Program Sarjana Muda Sesi 2018/2019	7
Latar Belakang UniSZA	8
Visi, Misi, Nilai Teras, NIC dan Moto	10
Piagam Pelanggan Universiti	11
Penerangan Logo	12
Pihak Berkuasa dan Pegawai Universiti	13
Lembaga Pengarah Universiti	15
Pengurusan Tertinggi Universiti	18
Latar Belakang Fakulti	19
Visi dan Misi Fakulti	20
Piagam Pelanggan Fakulti	21
Carta Organisasi Pengurusan Fakulti	22
Staf Akademik	24
Staf Bukan Akademik	34
Program Pengajian	41
Sarjana Muda Bioteknologi Pertanian	42
Sarjana Muda Perniagaantani dengan Kepujian	61
Sarjana Muda Produksi dan Kesihatan Haiwan	76
Sarjana Muda Sains (Kepujian) Sains Akuatik	94
Sarjana Muda Teknologi Makanan	114
Kursus Universiti	133
Skema Pemarkahan	142
Kelab Pelajar	143
Jawatankuasa Buku Panduan Prasiswazah	144

Kata Aluan Naib Canselor

Assalamualaikum Warahmatullahi wa Barakatuh dan salam sejahtera.



Saya dahului kata aluan dengan memanjatkan kesyukuran ke hadrat Ilahi kerana dengan limpah rahmat dan izin-Nya, Buku Panduan Akademik Sesi 2018/2019 Fakulti Biosumber dan Industri Makanan (FBIM) Universiti Sultan Zainal Abidin (UniSZA) dapat diterbitkan.

Saya ingin mengucapkan selamat datang dan setinggi-tinggi tahniah kepada semua pelajar yang terpilih mengikuti pengajian di UniSZA. Sesungguhnya kehadiran saudara/saudari di UniSZA merupakan langkah yang tepat bagi melengkapkan dan mempersiapkan diri sebagai seorang insan cemerlang yang berilmu, berketerampilan serta mempunyai akhlak dan sifat kepimpinan terpuji untuk kesejahteraan agama, bangsa dan negara.

Objektif utama buku panduan ini diterbitkan adalah sebagai bahan rujukan bagi para pelajar FBIM dalam memahami dan mengenali fakulti, sistem akademik dan program pengajian yang ditawarkan. Saudara/saudari akan melalui fasa pengenalan kepada dunia ilmu pengetahuan. Ia bertujuan untuk membina minda dari aspek falsafah, konseptual dan spiritual serta mengukuhkan kepercayaan dan komitmen jitu untuk berbakti sepenuhnya kepada negara.

Akhir kata, syabas dan tahniah kepada semua pihak yang berganding bahu bagi menyiapkan penerbitan Buku Panduan Akademik ini. Usaha yang diberikan sepatutnya menjadi contoh dan teladan yang perlu diikuti oleh semua warga UniSZA dan juga para pelajar sejajar dengan proses merealisasikan Ilmu Demi Faedah Insan.

Sekian, terima kasih.

Profesor Dato' Dr. Ahmad Zubaidi bin A. Latif

Naib Canselor
Universiti Sultan Zainal Abidin

Sekapur Sirih Dekan

Assalamualaikum Wm. Wbt. dan salam sejahtera,



Selamat datang diucapkan kepada semua pelajar-pelajar baharu di Fakulti Biosumber dan Industri Makanan (FBIM), Universiti Sultan Zainal Abidin (UniSZA). Saya ingin mengambil kesempatan ini untuk mengalu-alukan kedatangan dan mengucapkan setinggi-tinggi tahniah kepada saudara/i yang telah berjaya menjejaskan kaki ke FBIM bagi sesi 2018/2019. Saudara/i antara pelajar yang bertuah kerana terpilih untuk melanjutkan pengajian di fakulti ini berbanding sebilangan besar calon yang juga mempunyai kelayakan tetapi tidak berjaya mendapat tempat. Sehubungan itu, saya menyeru kepada saudara/i menggunakan peluang ini dengan sebaik mungkin bagi mendapatkan pengetahuan dan pengalaman.

Sebagai makluman kepada saudara/i, Buku Panduan Prasiswazah Sesi Akademik 2018/2019 ini disediakan bagi menyalurkan maklumat-maklumat berkaitan kursus dan kegiatan akademik kepada saudara/i untuk merancang pengajian sepanjang empat tahun pengajian di FBIM. Maklumat yang dimuatkan dalam buku panduan ini juga diharap dapat membantu saudara/i, untuk mengenali fakulti dan pusat pengajian serta program pengajian yang diikuti.

Saudara/i juga dinasihatkan untuk memanfaatkan sepenuhnya peluang semasa di UniSZA untuk terlibat dengan sebanyak mungkin aktiviti ko-kurikulum program atau kursus supaya dapat membentuk sahsiah diri dan meningkatkan kecemerlangan peribadi. Bagi membantu saudara/i semasa berada FBIM, pihak fakulti telah melantik Penasihat Akademik untuk saudara/i, berbincang sekiranya menghadapi masalah dalam pembelajaran dan ketidakpastian mengenai kursus, tugas dan perkara-perkara yang berkaitan semasa berada di fakulti. Saudara/i, juga perlu memahami serta mematuhi kaedah-kaedah dan peraturan yang telah ditetapkan oleh pihak pengurusan UniSZA.

Di akhir kata, saya ingin mendoakan kejayaan saudara/i dalam apa jua bidang yang diceburi. Saya juga percaya itulah juga harapan dan doa kedua ibu bapa dan keluarga saudara/i.

Sekian, terima kasih

Prof. Madya Dr. Khamsah Suryati Mohd
Dekan
Fakulti Biosumber dan Industri Makanan

Kalendar Akademik

Program Ijazah Sarjana Muda

Sesi 2018/2019

Semester Pertama		
Pendaftaran Diri Pelajar Baharu Program Sarjana Muda Sesi Akademik 2018/2019	2 Sep 2018	1 hari
Minggu Mesra Siswa	3 – 8 Sep 2018	6 hari
Kuliah	9 Sep – 1 Nov 2018	8 minggu
Cuti Pertengahan Semester	2 Nov – 10 Nov 2018	9 hari
Kuliah	11 Nov – 20 Dis 2018	6 Minggu
Cuti Ulangkaji	21 Dis – 27 Dis 2018	7 hari
Peperiksaan	28 Dis 2018 – 9 Jan 2019	13 hari
Cuti	10 Jan – 19 Jan 2019	10 hari
Semester Kedua		
Kuliah	20 Jan – 14 Mac 2019	8 minggu
Cuti Pertengahan Semester	15 – 23 Mac 2019	9 hari
Kuliah	24 Mac - 2 Mei 2019	6 minggu
Cuti Ulangkaji	3 – 7 Mei 2019	5 hari
Peperiksaan Akhir	8 – 25 Mei 2019	18 hari
Cuti	26 – September 2019	11 Minggu

Universiti Sultan Zainal Abidin Sepintas Lalu

Tradisi ilmu di Terengganu bersemarak dengan peranan umara' yang meletakkan ulama sebagai penasihat di Istana. Imbauan sejarah Islam di Terengganu menyaksikan semenjak dari zaman Sultan Zainal Abidin I telah menjadikan ulama sebagai penasihat istana, tetamu Diraja, guru, mufti dan syeikhul ulama. Apa jua gelaran yang diberi, hubungan rapat antara pemerintah dengan ulama menyemarakkan perkembangan Islam di Terengganu. Kemuncak penyebaran Islam di Terengganu adalah zaman pemerintahan Sultan Zainal Abidin III, di mana istana telah menjadi penyebaran ilmu agama. Berdamping rapat dengan ulama seperti Tok Ku Paloh dan Tok Syeikh Duyong untuk sama-sama mewarnai citra keislaman di Terengganu. Baginda sendiri mencemar duli menuntut ilmu di rumah-rumah ulama dan dikatakan selalu berulang-alik ke Paloh untuk berguru dengan Tok Ku Paloh.

Sebilangan ulama dan ilmuan mengakui Sultan Zainal Abidin III adalah antara Sultan Melayu yang paling alim pada zamannya. Dua ulama yang berasal dari dunia Melayu di Mekah yang paling dekat dan menjadi rujukan pelbagai masalah Baginda ialah Sheikh Muhammad bin Ismail al-Fathani (Syeikh Nik Mat Kecil) dan Syeikh Ahmad bin Muhammad Zain al Fathani.

Pertumbuhan dan perkembangan Islam di Terengganu memberi ruang kepada pertubuhan institusi pondok yang diasaskan oleh Tok Pulau Manis pada zaman pemerintahan Sultan Zainal Abidin I (1726-1733M) sebagai pusat pengajian Islam yang mendorong kepada penubuhan sekolah agama atau madrasah Arab. Pada tahun 1925, sebuah madrasah al-Arabiah ditubuhkan di daerah Kuala Terengganu yang ditukarkan namanya kepada Madrasah Sultan Zainal Abidin pada tahun 1933. Penubuhan madrasah ini mendapat sokongan dan galakan daripada istana dan sultan pada ketika itu iaitu Sultan Terengganu yang ke-13, Sultan Zainal Abidin diambil sempena nama Baginda Almarhum Sultan Zainal Abidin III yang terkenal dengan sifat warak dan berpegang kuat kepada ajaran Islam.

Pada tahun 1980, Kerajaan Negeri Terengganu di bawah pimpinan Y.A.B. Dato' Seri Amar Diraja Tan Sri Haji Wan Mokhtar Ahmad selaku Menteri Besar Terengganu ketika itu telah menubuhkan Kolej Ugama Sultan Zainal Abidin

(KUSZA) di Gong Badak, Kuala Terengganu. Penubuhan KUSZA telah memartabatkan pendidikan berorientasikan Islam di Terengganu khususnya dan Malaysia amnya. KUSZA telah melahirkan ramai ilmuan yang telah memberi sumbangan besar kepada negara terutama dalam pembangunan modal insan.

Pada tahun 2006, KUSZA telah dimansuhkan dan digantikan dengan Universiti Darul Iman Malaysia (UDM) sebelum ditukar kepada Universiti Sultan Zainal Abidin pada 13 Mei 2010 melalui Perintah Universiti Darul Iman Malaysia (Pemerbadanan) (Pindaan) 2010. Dengan pewartaan ini, sekali lagi mengabadikan nama Sultan Zainal Abidin yang alim, berperibadi mulia serta berjiwa rakyat pada sebuah Universiti Awam. Semoga legasi ketokohan Baginda Sultan Zainal Abidin khususnya Sultan Zainal Abidin III dapat dijadikan contoh oleh seluruh warga UniSZA dalam meletakkan UniSZA di persada antarabangsa.

Visi, Misi, Moto, Nilai Teras dan NIC UniSZA

VISI

Universiti Pilihan Dunia

MISI

Menzahirkan insan holistik melalui kecemerlangan akademik

MOTO

Ilmu Demi Faedah Insan
(Knowledge for the Benefit of Humanity)

NILAI TERAS

- i. Beretika dan berakhlak
- ii. Kompeten dan berkemahiran
- iii. Profesionalisme
- iv. Permuafakatan telus/kerja berpasukan
- v. Kreatif dan inovatif
- vi. Fokus pelanggan
- vii. Kebertanggungjawaban
- viii. Kecaknaan dan kekitaan
- ix. Kebolehpercayaan

NIC

Peradaban Insan dan Teknologi Pengurusan

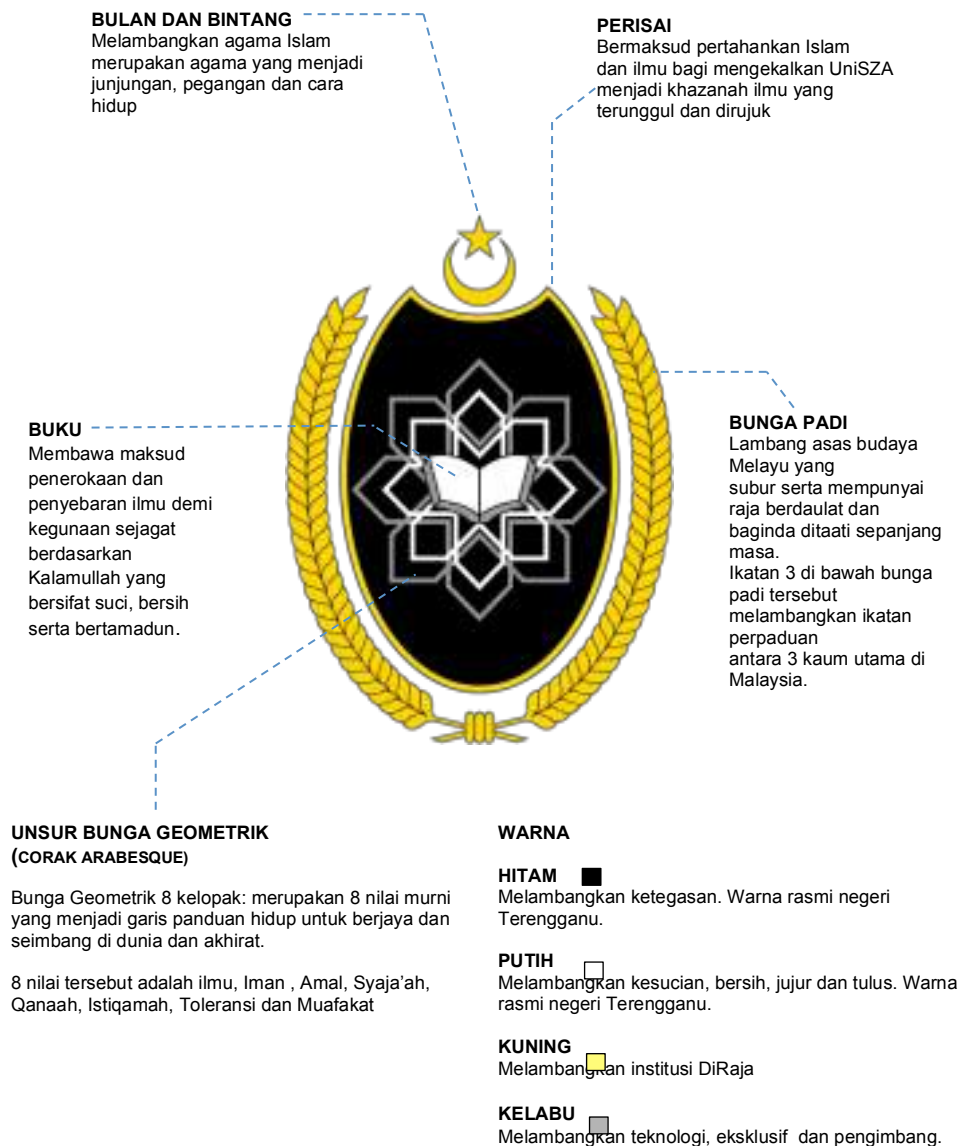
Piagam Pelanggan UniSZA

Universiti Sultan Zainal Abidin (UniSZA) berikrar akan melaksanakan perkhidmatan sebagaimana yang dijanjikan berikut :

1. Mengumumkan keputusan peperiksaan dalam tempoh satu (1) hari selepas pengesahan keputusan peperiksaan dalam Mesyuarat Senat.
2. Menyedia dan memaparkan Jadual Waktu Peperiksaan Akhir pada Minggu ke-13 perkuliahan sebelum peperiksaan akhir.
3. Menyedia Jadual Waktu Akademik bagi setiap semester satu (1) minggu sebelum kuliah bermula.
4. Menyediakan surat pengesahan pelajar selewat-lewatnya tiga (3) hari bekerja bermula dari tarikh menerima permohonan pelajar.
5. Menyediakan surat tawaran kemasukan pelajar siswazah dalam masa tujuh (7) hari bekerja.
6. Memastikan 100% staf UniSZA menggunakan sistem e-online yang disediakan oleh Pusat Teknologi Maklumat (PTM), UniSZA dalam urusan kerja harian.
7. Memastikan 85% staf UniSZA hadir tujuh (7) hari berkursus.
8. Memberi maklumbalas kepada pelanggan melalui pro@unisza.edu.my dalam tempoh tujuh (7) hari bekerja.

Logo Universiti Sultan Zainal Abidin

RASIONAL REKA BENTUK LOGO LOGO UTAMA



Pihak Berkuasa dan Pegawai Universiti

CANSELOR

Kebawah Duli Yang Maha Mulia Sultanah Terengganu

Sultanah Nur Zahirah

D.K., D.M.N., S.S.M.Z., S.S.M.T., D.K. (Kedah),

*Knight Grand Cross (First Class) of the Most Illustrious Order of Chula Chom
Klao (Thailand)*



PRO CANSELOR

YBHG TAN SRI DATO' PROFESOR DR. MOHAMAD YUSOF BIN HAJI MOHAMED NOR
P.S.M., S.P.M.T., D.S.S.A., J.M.N., P.P.T.



Lembaga Pengarah Universiti

AHLI-AHLI LEMBAGA

YBhg. Profesor Dato' Dr. Ahmad Zubaidi A. Latif

YBhg. Profesor Dr. Ahmad Shukri Yazid

YBhg. Datuk Seri Mohamed Azahari Mohamed Kamil

YBhg. Dr. Azmi Omar

YBhg. En. Suhaili Ahmad

SETIAUSAHA

En. Ismail Ahmad
Pendaftar

Pengurusan Tertinggi Universiti 2018

NAIB CANSOLOR

YBhg. Profesor Dato' Dr. Ahmad Zubaidi A. Latif

TIMBALAN NAIB CANSOLOR

Timbalan Naib Canselor (Akademik dan Antarabangsa)

Profesor Dr. Mahadzirah Mohamad

Timbalan Naib Canselor (Penyelidikan dan Inovasi)

Profesor Ir. Dr. R. Badlishah Ahmad

Timbalan Naib Canselor (Hal Ehwal Pelajar dan Alumni)

Prof. Madya Dr. Mohd Afandi Salleh (Menjalankan tugas)

PEGAWAI KANAN UNIVERSITI

Pendaftar

Encik Ismail Ahmad

Bendahari

Puan Shakimah Endut

Penasihat Undang-undang

Profesor Dr. Zuhairah Ariff Abd. Ghadas

Pengarah Pembangunan

Ir. Mohd Yasim A. Ghani

Latar Belakang Fakulti

Fakulti ini ditubuhkan secara rasminya pada 1 Julai 2006, dengan pelantikan Dekan Pengasas Profesor Dr Abdul Manaf Ali, dengan pengambilan pertama seramai 25 orang pelajar Program Sarjana Muda Bioteknologi Pertanian ke Fakulti Biosumber dan Industri Makanan, Universiti Sultan Zainal Abidin.

Penubuhan fakulti ini adalah bertujuan untuk melahirkan sumber insan profesional dalam bidang pertanian yang meneruskan kesinambungan bekalan sumber makanan di Malaysia. Ini bagi menyokong usaha kerajaan yang telah mengenalpasti bidang pertanian sebagai "*third engine of growth*" yang berupaya memacu ekonomi negara ke arah Wawasan 2020. Pengaplikasian bidang teknologi dan sains dalam pertanian adalah dikenalpasti sebagai perangsang bagi peningkatan dalam memenuhi keselamatan makanan negara. Selari dengan usaha ini fakulti berperanan aktif menjalankan tiga teras kefungsiannya iaitu pengajaran, penyelidikan dan perkhidmatan bagi pengembangan dalam masyarakat.

Ketiga-tiga teras kefungsiannya ini memacu pembangunan kepakaran kumpulan profesional berdasarkan bidang tujuh kritikal pertanian dan bioteknologi bagi mencapai kecemerlangan ilmu dan praktis. Usaha ini diperlengkapi dengan pembangunan sumber manusia semua lapisan ahli fakulti yang strategik, sistematik dan berterusan.

Fakulti Biosumber dan Industri Makanan menawarkan lima program pengajian iaitu Sarjana Muda Bioteknologi Pertanian (2006), Sarjana Muda Teknologi Makanan (2007) dan Sarjana Muda Produksi dan Kesihatan Haiwan (2008), Sarjana Muda Sains (Kepujian) Sains Akuatik (2017) dan Sarjana Muda Perniagaantani dengan Kepujian (2017).

Pendekatan pengajaran di fakulti menggabungkan teori dan praktikal serta pendedahan secara langsung dalam industri pertanian berintegrasikan bioteknologi dan mempelajari semua aspek makanan. Bidang teras penyelidikan berasaskan pertanian, bioteknologi pertanian dan makanan yang dijalankan akan menjadi input kepada ransangan perkembangan industri pertanian setempat khususnya di Terengganu dan di Rantau Ekonomi Pantai Timur amnya. Sumber kepakaran dengan gabungan hasil penyelidikan serta kemudahan sedia ada akan disalurkan kepada khidmat nasihat yang diperlukan oleh komuniti setempat, usahawan tani serta agensi atau industri dalam sektor pertanian.

Visi dan Misi Fakulti

Visi

Fakulti Biosumber dan Industri Makanan, berhasrat untuk menjadi pemimpin dan peneraju integrasi bidang Sains Pertanian dan Makanan untuk faedah masyarakat dan negara.

Misi

Melahirkan graduan yang berkualiti, berhemah tinggi serta berkarisma yang dapat memodenkan sektor pertanian bagi menjamin pengeluaran makanan untuk keperluan negara. Membangun dan memajukan sektor Sains Makanan di Malaysia melalui penyelidikan intensif serta pengembangan teknologi untuk faedah masyarakat dan negara.

Piagam Pelanggan Fakulti Biosumber dan Industri Makanan

Fakulti Biosumber dan Industri Makanan beriltizam untuk memberikan perkhidmatan secara professional yang memenuhi kepuasan pelanggan selari dengan moto universiti 'Ilmu Demi Faedah Insan', maka kami dengan penuh tekad berjanji untuk memenuhi hak-hak pelanggan seperti berikut:

KEPADA PELAJAR

Menyediakan pendidikan bertaraf global, prasarana pengajaran & pembelajaran yang kondusif dan sistem pengurusan yang terbaik berlandaskan piawaian-piawaian yang ditetapkan.

KEPADA STAF

Menyediakan calon pelajar yang berkualiti

Menyediakan kemudahan terbaik bagi melicinkan proses kerja

Menawarkan insentif dan ganjaran yang adil dan peluang pengembangan ilmu yang adil dan saksama ke arah pembangunan kerjaya kakitangan

KEPADA NEGARA

Menyediakan sumber manusia yang berkualiti untuk memenuhi keperluan negara

Menyediakan perkhidmatan latihan, penyelidikan dan perundingan untuk menggalakkan perkembangan ilmu

Carta Organisasi Pengurusan Fakulti



Dekan

Prof. Madya Dr. Khamsah Suryati Mohd



Timbalan Dekan

(Akademik dan Siswazah)

Dr. Ahmad Syazni Kamarudin



Timbalan Dekan

(Penyelidikan dan Pembangunan)

Dr. Nadiawati Alias



Timbalan Dekan

(Hal Ehwal Pelajar dan Alumni)

Dr. Nurul Zaizuliana Rois Anwar



**Ketua Pusat Pengajian Sains
Pertanian dan Bioteknologi**

Dr. Noor Afiza Badaluddin



**Ketua Pusat Pengajian Sains
Haiwan**

Dr. Mohd Nizam Haron



**Ketua Pusat Pengajian Industri
Makanan**

Dr. Norlia Muhamad



Penyelaras Jaminan Kualiti dan e-Pembelajaran
Dr. Nornasuha Yusoff



Penyelaras Data dan Latihan Industri
Dr. Saiful Iskandar Khalit



Penyelaras Siswazah
Dr. Ho Lee Hoon



Penyelaras Janaan Hasil
Dr. Norshazila Shahidan



Penyelaras Jaringan dan Publisiti
Prof. Madya Dr. Nalini Arumugam



Penyelaras Makmal
Dr. Norshida Ismail



Penyelaras Ladang
Mohammad Hailmi Sajili



Penolong Pendaftar Kanan
Fadlina Ismail

Dekan

Prof. Madya Dr. Khamsah Suryati Mohd
PhD (Dundee), MSc, BApplSc Hons (USM)

Timbalan Dekan (Akademik dan Siswazah)

Dr. Ahmad Syazni Kamarudin
PhD (Hiroshima), MSc (UMT), BSc (UKM)

Timbalan Dekan (Penyelidikan dan Pembangunan)

Dr. Nadiawati Alias
PhD (St Andrews), MEng, BSc (UTM)

Timbalan Dekan (Hal Ehwal Pelajar dan Alumni)

Dr. Nurul Zaizuliana Rois Anwar
PhD (Birmingham), MEng, BEng (UTM)

Ketua Pusat Pengajian Sains Pertanian dan Bioteknologi

Dr. Noor Afiza Badaluddin
PhD (Kobe), MSc(UMT), BSc(UPM)

Ketua Pusat Pengajian Sains Haiwan

Dr. Mohd Nizam Haron
PhD, MSc (USM), BSc (UKM)

Ketua Pusat Pengajian Industri Makanan

Dr. Norlia Muhamad
PhD (UMP), MSc, BEng (UTM)

Penyelaras Jaminan Kualiti dan e-Pembelajaran

Dr. Nornasuha Yusoff
PhD(UKM), BSc (UniSZA)

Penyelaras Data dan Latihan Industri

Dr. Saiful Iskandar Khalit
PhD, MSc, BSc(UPM)

Penyelaras Siswazah

Dr. Ho Lee Hoon
PhD (USM), BSc (UPM)

Penyelaras Janaan Hasil

Dr. Norshazila Shahidan
PhD (UIAM), MSc, BSc (UKM)

Penyelaras Jaringan dan Publisiti

Prof. Madya Dr. Nalini Arumugam
PhD, MSc, BSc (UPM), PGDE (Cambridge)

Penyelaras Makmal

Dr. Norshida Ismail
PhD (Hiroshima), MSc, BSc (UMT)

Penyelaras Ladang

Mohammad Hailmi Sajili
MAgricSc, BSc, Dip Agric (UPM)

Penolong Pendaftar Kanan

Fadlina Ismail
MBA (UMK), BHRM (UUM)

Staf Akademik

Staf Akademik Pusat Pengajian Sains Pertanian & Bioteknologi



Barisan hadapan dari kiri: Tajul Afif Abdullah, Dr. Khairil Mahmud, Dr. Mohammad Moneruzzaman Khandaker, Mohammad Hailmi Sajili dan Wan Musa Wan Muda.

Barisan belakang dari kiri: Dr. Nadiawati Alias, Nurul Aisyah Mohd Suhaimi, Dr. Noor Afiza Badaluddin (KPP), Dr. Nornasuha Yusoff, Prof. Madya Dr. Khamsah Suryati Mohd dan Prof. Madya Dr. Nalini Arumugam.

Profesor

Abdul Manaf Ali
PhD (St Andrews), MSc (Dundee), SmSn (UKM)

Nashriyah Mat
PhD (St Andrews), SmSn Kep (UKM)

Profesor Madya

Hasbullah Hj Muhammad
PhD (Wales), MSc (Hawaii), BAgricSc (UPM)

Md Sarwar Johan
PhD (Okayama), MSc (UPM), MS, BSc Agric (BAU)

Nalini Arumugam
PhD, MSc, BSc (UPM), PGDE (Cambridge)

Khamsah Suryati Mohd
PhD (Dundee), MSc, BApplSc Hons (USM)

Pensyarah Kanan

Abd Jamil Zakaria
PhD (Wales), MSc (Saga), BSc (UPM)

Khairil Mahmud
PhD (Aberdeen), MSc, SmSn (UKM)

Mohammad Moneruzzaman Khandaker
PhD (UM), MS in Horticulture, BSc (Bangladesh Agricultural University)

Nadiawati Alias
PhD (St. Andrews), MEng, BSc (UTM)

Noor Afiza Badaluddin
PhD (Kobe), MSc (UMT), BSc (UPM)

Nor Hasima Mahmud
PhD, MSc (Bath), BSc, (UIA)

Norhayati Ngah
PhD (Reading), MSc, BScBioInd (UPM)

Nornasuha Yusoff
PhD (UKM), BSc (UniSZA)

Nurul Aini Kamaruddin
PhD (Kyoto), MSc, BSc (UMS)

Salmah Mohamed
PhD (UPM), MSc, SmSn (UKM)

Wan Musa Wan Muda
MAExt (Georgia), BSc (Iowa State), Dip Agric (UPM)

Pensyarah

Afnani Alwi@Ali
MSc (UMT), BSc (Malaya)
(Cuti belajar)

Dhiya Dalila Zawawi
MSc (UniSZA), BSc (UPM)
(Cuti belajar)

Mohammad Hailmi Sajili
MAgricSc, BSc, Dip Agric (UPM)

Noor Asidah Mohamed
MBioinformatics, BSc (Malaya)

Nur Fatihah Hasan Nudin
MSc (Birmingham), BSc (UPM)

Nurul Aisyah Mohd Suhaimi
MSc, BSc (UPM)

Nurul Asma Hasliza Zulkifly
MSc, BSc (UTM)

Siti Aishah Abu Bakar
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(Cuti belajar)

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Zanariah Mohd Nor
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Penolong Pensyarah

Bibi Nazihah Mohd Din

Mohd Fahmi Abu Bakar

Muhammad Azharuddin Azali

Muslianie Md Isa

Nur Athiqah Md Yusof

Tuan Syaripah Najihah Tuan Mohd Razali

Staf Akademik Pusat Pengajian Sains Haiwan



Dari kiri: Dr. Azman Azid, Dr. Ahmad Syazni Kamarudin, Dr. Mohd Nizam Haron (KPP), Prof. Madya Dr. Connie Fay Komilus, Dr. Asmad Kari dan Dr. Norshida Ismail.

Profesor

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Penolong Pensyarah

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Muhammad Firdaus Hashim

Noor Syaheera Ibrahim

Sholeha Abd Rahim

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Barisan belakang dari kiri: Prof. Madya Dr. Kamarul 'Ain Mustafa, Dr. Zalilawati Mat Rashid, Prof. Madya Dr. John Tang Yew Huat, Prof. Dr. Che Abdullah Abu Bakar, Dr. Wan Anwar Fahmi Wan Mohamad, Prof. Madya Dr. Nurul Huda dan Dr. Zarinah Zakaria.

Profesor

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Pensyarah Kanan

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Noroul Asyikeen Zulkifli
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Norshazila Shahidan
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Wan Anwar Fahmi Wan Mohamad
PhD (Monash), MEng (Birmingham)

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PhD (Muenster), MSc, BSc (UMT)

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Asmaliza Abd Ghani@ Yaacob
PhD (Ehime), MEng, BEng (Hokkaido)

Pensyarah

Ishamri Ismail
MSc, BSc (USM)
(Cuti belajar)

Mohd Tarmizan Ibrahim
MSc (Magdeburg), BEng (Nuremberg)
(Cuti belajar)

Wan Mohd Fadli Wan Mokhtar
MSc (UPM), BEng (UTM)
(Cuti belajar)

Penolong Pensyarah

Hanis Syazwani Mat Ghani

Norzaida Yusof

Nurhayati Yusof

Tengku Farizan Izzi Che Ku Jusoh

Staf Bukan Akademik

Pentadbiran Fakulti



Dari kiri: Azizun Musa, Fadlina Ismail, Mohd Zulfazilan Nawang, Shafiyah Nabilah Abdul Aziz dan Nurul Akma Mamat

Pentadbiran Fakulti

Penolong Pendaftar Kanan

Fadlina Ismail
MBA (UMK), BHRM (UUM)

Setiausaha Pejabat

Azizun Musa

Penolong Pegawai Tadbir

Wan Nor Husniza Wan Husain

Pembantu Tadbir

Shafiyah Nabilah Abdul Aziz

Nurul Akma Mamat

Pembantu Operasi

Mohd Zulfazilan Nawang

Pengurusan Makmal



Barisan hadapan dari kiri: Mohd Faiz Mohamad, Mohamad Hafizi Mohamad Roni, Mohd Haziq Abdul Hamid dan Faris Ilyamuddin Hamzah

Barisan belakang dari kiri: Wan Nor Saidatul Aida Shazwa Wan Rosli, Sharifah Amirah Husna Tuan Mazlam, Syaidatul Najiah Zakaria, Nor Afiza Yusoff, Dr Norshida Ismail, dan Rokiah Zainuddin, Siti Husna Zakaria dan Norhaslinda Haron

Penyelaras Jawatankuasa Pengurusan Makmal

Dr Norshida Ismail
PhD (Hiroshima), MSc, BSc (UMT)

Pegawai Sains Kanan

Norhaslinda Haron
Noor Muzamil Mohamad
Roslan Arshad
Siti Husna Zakaria
Syed Ahmad Tajudin Tuan Johari

Pegawai Sains

Rokiah Zainuddin
Syahril Amin Hashim
Syaidatul Najiah Zakaria
Mohd Haziq Abdul Hamid
Noor Aida Aini Nawawi
Athirah Hazwani Ali

Penolong Pegawai Sains

Suziani Muda
Faris Ilyamuddin Hamzah
Nor Afiza Yusoff
Wan Nor Saidatul Aida Shazwa Wan Rosli
Sharifah Amirah Husna Tuan Mazlam

Pembantu Makmal

Ahmad Zamri Yusoh

Mohamad Hafizi Mohamad Roni

Mohd Faiz Mohamad

Unit Ladang



Dari kiri: Ahmad Faizal Jaafar, Mohd Jusoh Omar, Nur Nadhirah Abdul Halim, Mohammad Hailmi Sajili, Mohd Sabri Sulaiman dan Mohd Noor Hazwan Noor Azlan (telah berpindah ke Jabatan Veterinar Pahang).

Penyelaras Jawatankuasa Unit Ladang

Mohammad Hailmi Sajili
MAgricSc, BSc, Dip (UPM)

Penolong Pegawai Pertanian

Nur Nadhirah Abdul Halim

Penolong Pegawai Veterinar

Mohd Sapiram Md Azam

Pembantu Awam

Mohd Sabri Sulaiman

Mohd Jusoh Omar

Ahmad Faizal Jaafar

Program Pengajian

Fakulti Biosumber dan Industri Makanan Universiti Sultan Zainal Abidin (UniSZA) menawarkan lima program di peringkat Pengajian Ijazah Pertama. Program-program yang ditawarkan itu menjurus kepada penganugerahan ijazah:

- **Sarjana Muda Bioteknologi Pertanian**
- **Sarjana Muda Perniagaantani dengan Kepujian**
- **Sarjana Muda Produksi dan Kesihatan Haiwan**
- **Sarjana Muda Sains (Kepujian) Sains Akuatik**
- **Sarjana Muda Teknologi Makanan**

Program Pengajian

Sarjana Muda Bioteknologi Pertanian

Pendahuluan

Sarjana Muda Bioteknologi Pertanian adalah persediaan terbaik untuk kerjaya dalam bidang pertanian dan bioteknologi pertanian. Program ini menyediakan pelajar dengan pengetahuan asas dan lanjutan dalam pengeluaran produk pertanian dan bioteknologi melalui pelbagai kursus universiti, bidang pengkhususan teras, elektif dan audit.

Semasa tahun pertama pengajian, para pelajar didedahkan kepada kursus-kursus seperti mikrobiologi, kimia organik, biokimia, prinsip pengeluaran tanaman sayuran dan ladang, botani pertanian dan ekonomi pertanian. Pada tahun kedua dan ketiga pengajian, kursus-kursus seperti prinsip pengeluaran ternakan, agroteknologi tanaman industri, sains tanah, kultur tisu tumbuhan, amalan ladang ternakan, prinsip perlindungan tanaman, mekanisasi ladang, fisiologi tanaman, sains rumpai, biologi sel dan molekul, prinsip kultura tisu sel haiwan, pembiakbakaan tumbuhan, teknologi pasca-tuai, proses pemindahan dan pengeluaran tanaman secara komersial, bioinformatik, biostatistik, keusahawanan tani dan pengembangan pertanian diajar. Pada tahun akhir pengajian, pelajar akan melaksanakan projek penyelidikan tahun akhir, pembentangan seminar, agroteknologi tanaman komoditi, sistem pengairan, teknologi penapaian, bioteknologi tumbuhan lanjutan, isu etika dan harta intelek dalam bioteknologi dan pertanian, pemasaran pertanian dan komunikasi dalam pertanian.

Peluang Kerjaya

Graduan pengajian ini mempunyai peluang kerjaya profesional yang luas dalam bidang pertanian dan bioteknologi. Ini adalah kerana gabungan pengajian yang berteraskan pengaplikasian teknik moden bioteknologi bagi meningkatkan kesuburan dan produktiviti tanaman. Di antara peluang kerjaya graduan ini adalah pegawai pertanian, pegawai pengembangan pertanian, pegawai agronomi dan pengurusan ladang, pegawai pembiakbakaan tanaman, pegawai perlindungan tanaman dan keselamatan biologi. Bagi sektor kerajaan, graduan ini juga boleh menceburi kerjaya berasaskan makmal dan lapangan, seperti pegawai penyelidik atau pegawai teknikal di institusi penyelidikan pertanian dan universiti bagi sektor swasta dan juga sektor industri berteraskan bioteknologi pertanian.

Di samping itu, graduan juga boleh menjadi pegawai di sektor pendidikan atau media berkaitan bioteknologi dan pertanian. Graduan turut berpotensi untuk menjadi usahawantani moden yang mengaplikasikan teknik moden bioteknologi dalam pertanian.

Jangkamasa

Pengajian ijazah ini mengambil masa selama empat (4) tahun dengan keperluan bergraduasi adalah 130 kredit.

Syarat kemasukan

STPM	MATRIKULASI	DIPLOMA
1. Mendapat sekurang-kurangnya PNGK 2.50 pada peringkat STPM DAN 2. Mendapat sekurang-kurangnya Gred C+ pada peringkat STPM dalam mata pelajaran berikut: • Biology • Chemistry • Physics / Mathematics (M) / Mathematics (T) DAN 3. Mendapat sekurang-kurangnya kepujian Gred C pada peringkat SPM dalam mata pelajaran berikut: • Bahasa Inggeris • Biology • Chemistry • Mathematics / Physics / Additional Mathematics / Sains Pertanian DAN 4. Mendapat mana-mana SATU (1) Gred C mata pelajaran lain tidak termasuk Bahasa Melayu dan mata pelajaran di atas DAN 5. Mendapat sekurang-kurangnya Tahap 2 (Band 2) dalam MUET DAN 6. Tiada kecacatan anggota serta pertuturan dan buta warna	1. Mendapat sekurang-kurangnya PNGK 2.50 pada peringkat Matrikulasi / Asasi DAN 2. Mendapat sekurang-kurangnya Gred C+ pada peringkat Matrikulasi / Asasi dalam mata pelajaran berikut : • Biology • Chemistry • Physics / Mathematics DAN 3. Mendapat sekurang-kurangnya Gred C pada peringkat SPM dalam mata pelajaran berikut: • Bahasa Inggeris • Biology • Chemistry • Mathematics / Additional Mathematics / Physics / Sains Pertanian DAN 4. Mendapat mana-mana SATU (1) Gred C mata pelajaran lain tidak termasuk Bahasa Melayu dan mata pelajaran di atas DAN 5. Mendapat sekurang-kurangnya Tahap 2 (Band 2) dalam MUET DAN 6. Tiada kecacatan anggota serta pertuturan dan buta warna	1. Mendapat sekurang-kurangnya PNGK 3.50 pada peringkat Diploma dalam bidang berkaitan DAN 2. Mendapat sekurang-kurangnya Gred C pada peringkat SPM dalam mata pelajaran berikut: • Bahasa Inggeris • Biology / Chemistry / Mathematics • Physics / Additional Mathematics / Sains Pertanian DAN 3. Mendapat mana-mana SATU (1) Gred C mata pelajaran lain tidak termasuk Bahasa Melayu dan mata pelajaran di atas DAN 4. Mendapat sekurang-kurangnya Tahap 2 (Band 2) dalam MUET DAN 5. Tiada kecacatan anggota serta pertuturan dan buta warna

Struktur Pengajian

1	4	12	-	16
2	7	11	-	18
3	2	7	10	19
4	4	9	6	19
5	3	5	9	17
6	-	8	8	16
7	-	8	5	13
8	-	12	-	12
Jumlah Kredit	20	72	38	130

Semester Satu (Tahun 1)

Kod	Nama Kursus	Jam Kredit
PBI 10102	Inggeris untuk Komunikasi I English for Communication I	2 (U)
MPU 31022	Tamadun Islam dan Tamadun Asia Islamic Civilization and Asian Civilization	2 (U)
ABT 10103	Botani Pertanian Agriculture Botany	3 (S)
ABT 10203	Sains Tanaman Crop Science	3 (S)
ABT 10503	Mikrobiologi Microbiology	3 (S)
ABT 10603	Genetik Asas Fundamental Genetics	3 (S)
Jumlah		16

Semester Dua (Tahun 1)

Kod	Nama Kursus	Jam Kredit
KKK xxx	Ko-Kurikulum Co-curriculum	3 (U)
PBI 10202	Inggeris untuk Komunikasi II English for Communication II	2 (U)
MPU 33032 MPU 33042	Ilmu Wahyu dan Kemasyarakatan (Muslim) Perbandingan Agama II (Bukan Muslim) Comparative Religion II (Non Muslim)	2 (U)
ABT 12103	Mekanisasi Ladang dan Sistem Pengairan Farm Mechanization and Irrigation System	3 (S)
ABT 21003	Biologi Sel dan Molekul Cell and Molecular Biology	3 (S)
FSI 10103	Kimia Organik Analisis Analytical Organic Chemistry	3 (S)
FSI 16902	Asas Sains Makanan Fundamental of Food Science	2 (E)
Jumlah		18

Semester Tiga (Tahun 2)

Kod	Nama Kursus	Jam Kredit
MPU 31012	Hubungan Etnik Ethnic Relations	2 (U)
ABT 10303	Biokimia Biochemistry	3 (S)
ABT 22204	Sains Tanah dan Fertiliti Soil Science and Fertility	4 (E)
ABT 25003	Fisiologi Tumbuhan Plant Physiology	3 (E)
ABT 27704	Teknologi Penghasilan Tanaman Crop Production Technology	4 (E)
ABT 47003	Entomologi Entomology	3 (E)
Jumlah		19

Semester Empat (Tahun 2)

Kod	Nama Kursus	Jam Kredit
PBI xxxx	Bahasa Asing Foreign Language	2 (U)
MPU 33012 MPU 33022	Ilmu Wahyu dan Sains (Muslim) Moral dan Etika II (Bukan Muslim) Moral and Ethics II (Non-muslim)	2 (U)
ABT 10403	Ekonomi Pertanian Agricultural Economics	3 (S)
ABT 21103	Prinsip Kultura Sel dan Tisu Principles of Cell and Tissue Culture	3 (S)
ABT31503	Bioinformatik Bioinformatics	3 (S)
ABT 46503	Akuakultur Aquaculture	3 (E)
ABT 46903	Patologi Tumbuhan Plant Pathology	3 (E)
Jumlah		19

Semester Lima (Tahun 3)

Kod	Nama Kursus	Jam Kredit
ABT 22403	Keusahawanan Tani Agricultural Entrepreneurship	3 (U)
ABT 32402	Biokimia Tumbuhan Plant Biochemistry	2 (S)
ABT 31403	Pembiakbakaan Tumbuhan Plant Breeding	3 (S)
ABT 46103	Sains Rumpai Weed Science	3 (E)
AST 35503	Teknologi Produksi Haiwan Animal Production Technology	3 (E)
ABT 35303	Fisiologi Isyarat Tumbuhan Plant Signalling Physiology	3 (E)
ABT 36203	Mikropropagasi Komersial Commercial Micropropagation	3 (E)
ABT 35503	Kepelbagaian Biologi dan Ekologi Tumbuhan Plant Biodiversity and Ecology	3 (E)
ABT 35603	Diagnostik Molekul Molecular Diagnostic	3 (E)
Jumlah		17

Semester Enam (Tahun 3)

Kod	Nama Kursus	Jam Kredit
ABT 41803	Projek Penyelidikan I Research Project I	3 (S)
ABT 31603	Pengembangan Pertanian Agricultural Extension	3 (S)
ABT 32502	Rekabentuk Penyelidikan Pertanian dan Analisis Data Agricultural Research Design and Data Analysis	2 (S)
ABT 45803	Perladangan Jitu Precision Farming	3 (E)
ABT 35203	Teknologi Bioreaktor Bioreactor Technology	3 (E)
ABT 37903	Topik-topik Khas Special Topics	3 (E)
ABT 35403	Pengurusan Perosak Bersepadu Integrated Pest Management	3 (E)
ABT 37802	Pengurusan Sisa Pertanian Agricultural Waste Management	2 (E)
Jumlah		16

Semester Tujuh (Tahun 4)

Kod	Nama Kursus	Jam Kredit
ABT 42003	Projek Penyelidikan II Research Project II	3 (S)
ABT 41903	Bioteknologi Tumbuhan Lanjutan Advanced Plant Biotechnology	3 (S)
ABT 42602	Rekabentuk Penyelidikan Pertanian dan Analisis Data II Agricultural Research Design and Data Analysis II	2 (S)
ABT 46703	Post Harvest Technology Teknologi Pasca Tuai	3 (E)
ABT 46002	Pemasaran Pertanian Agricultural Marketing	2 (E)
ABT 46302	Komunikasi Pertanian Agricultural Communication	2 (E)
ABT 47602	Isu-isu Etika dan Harta Intelekt dalam Bioteknologi dan Pertanian Ethical and Intellectual Properties Issues in Biotechnology and Agriculture	2 (E)
Jumlah		13

Semester Lapan (Tahun 4)

Kod	Nama Kursus	Jam Kredit
ABT 31712	Latihan Industri Industrial Training	12 (S)
Jumlah		12

Nota: A -Kursus Audit S -Kursus Teras E -Kursus Elektif U -Kursus Umum

Sinopsis Kursus

Sarjana Muda Bioteknologi Pertanian

Semester Satu (Tahun 1)

Kod Kursus	Nama Kursus	Jam Kredit
ABT 10103	Botani Pertanian Agricultural Botany	3
This course discusses topics on the morphological types and parts of stem, leaf, root, flower, fruit, and seed. The anatomy of the organs; including cell types and distribution in the epidermal, ground, and vascular tissues. Development during primary and secondary growth, pollen grain and embryo sac formation, fertilization, and seed formation will also be discussed. This is followed with the discussion on the principles of identification, nomenclature, and classification.		
ABT 10203	Sains Tanaman Crop Science	3
This course discusses production of vegetable, fruit, ornamental, field, and industrial crops which include planning, variety selection, site preparation, propagation, planting, irrigation, fertilization, mulching, staking, pruning, weeding, pest and disease control, fruit thinning and harvesting. Cropping system, hydroponic and organic farming are also included.		
ABT 10503	Mikrobiologi Microbiology	3
This course serves as an introduction to the principles and concepts of microbiology and includes the following topics: classification of microorganisms, microscopy, organization and structure of prokaryotic and eukaryotic cells, growth and cultivation of microorganisms, sterilization and disinfection, antibiotics and antimicrobial therapy, introduction to microbial genetics, diversity of microbial metabolism, diversity of viruses, prokaryotes and eukaryotic microorganisms, and applications of microbiology in industry, agriculture and the environment.		
ABT 10603	Genetik Asas Fundamental Genetics	3
This course discusses various aspects of fundamental genetics especially those related to genes, molecules, cells, organisms and population status. It develops the basis of understanding to how life can exist at all levels of complexity, ranging from the molecular to the population level. This course also covers Mendelian and Non-Mendelian principles, inheritance, and related probability methods. Variation in chromosome structure and number are also discussed in relation to plant breeding. Genetic variation deals with the natural diversity that can be observed among members of the same species as well as among different species are also discussed.		

Semester Dua (Tahun 1)

ABT 12103	Mekanisasi Ladang dan Sistem Pengairan Farm Mechanization and Irrigation System	3
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This course emphasized the use of machinery in agricultural production. The students will expose to the design, type and application of machine. During practical session, the students will be required to understand how to operate the machine, perform calculation on machine efficiency and writes practical report on basic maintenance of agricultural machinery. At the end of the lesson, students will have the knowledge to determine the methods and functions of the irrigation system. Ability to make a selection of equipment, materials and equipment for irrigation systems. Students are exposed to design, testing and method of irrigation system.

ABT 21003	Biologi Sel dan Molekul Cell and Molecular Biology	3
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This course emphasizes the principles of cell biology and compares various cell types such as prokaryotes, viruses and eukaryotes in terms of physiology and genome organization. Structure and molecular macromolecules such as DNA, RNA and protein. Replication, transcription and translation stages. Process responsible in gene regulation and expression in prokaryotes and eukaryotes. Application of basic techniques in molecular biology including principle of cloning and DNA manipulation.

FSI 10103	Kimia Organik Analisis Analytical Organic Chemistry	3
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This course is designed to introduce students to the analytical and organic chemistry. It outlines the reactions, some techniques such as analysis and uses of molecules containing one functional group such as alcohols, aldehydes, ketones, carboxylic acids, amines in both aliphatic and aromatic. The course includes compulsory laboratory experiments, and student will be guided to conduct experiments that cover techniques, methods, observations and data collections.

FSI 16902	Asas Sains Makanan Fundamental of Food Science	2
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This course discusses the major components and characteristics of biochemical processes occurring in living system. The topics discussed include: physico-chemical properties and functions of carbohydrates, proteins, lipids and nucleic acids; enzymology including enzyme kinetics, mechanism of reaction and factors that influence enzyme activity; bioenergetics, integration and control of metabolism of carbohydrates, proteins, lipids and nucleic acids; role of nucleic acids in genetics and reproduction; biochemical nature of membranes, hormones and their functions.

Semester Tiga (Tahun 2)

ABT 10303	Biokimia Biochemistry	3
This course discusses the major components and characteristics of biochemical processes occurring in living system. The topics discussed include: physico-chemical properties and functions of carbohydrates, proteins, lipids and nucleic acids; enzymology including enzyme kinetics, mechanism of reaction and factors that influence enzyme activity; bioenergetics, integration and control of metabolism of carbohydrates, proteins, lipids and nucleic acids; role of nucleic acids in genetics and reproduction; biochemical nature of membranes, hormones and their functions.		
ABT 22204	Sains Tanah dan Fertiliti Soil Science and Fertility	4
This course is designed to introduce students to some extend of fundamental concepts of soil science and lead to the development of student understands of the properties and processes that are basic to the use and management of soils. This course is also designed to describe biochemical cycling of nutrients, mechanisms of nutrient transport, nutrient uptake from soils, function and nutrient deficiencies, evaluation of the fertility, fertilization, especially of problem soils, interpretation of analytical data, maintenance and improvement of soil fertility.		
ABT 25003	Fisiologi Tumbuhan Plant Physiology	3
Physiological processes including germination, plant hormone and its application for plantation crop, growth, respiration, photosynthesis, photomorphogenesis, water relation and plant, mineral nutrition, translocation, as well as post-harvest physiology and plant ecology-physiology such as morphological, anatomical and physiological adaptation of plant organs will be discussed in this course.		
ABT 27704	Teknologi Penghasilan Tanaman Crop Production Technology	4
This is an intermediate course that introduce as well as enable the students to practice the present technology of crop production. Aspects of the course are; historical and origin, botany, physiology, agronomy, breeding and seed production, soil suitability, control of pest and diseases, mechanization of all phases of production with reference to the traditional methods and automation potential, and post-harvest handling. The practical sessions includes the planting and management of crop (and the possible harvest).		
ABT 47003	Entomologi Entomology	3
An introduction to fundamentals of entomology compassing insect development, external morphology and internal system of insect, structure and function, systematic and diversity, distribution, abundance, and insect population dynamics.		

Semester Empat (Tahun 2)

ABT 10403	Ekonomi Pertanian Agricultural Economics	3
This course covers demand supply, types of markets, international trade and effects of government policies, including government intervention in markets. Problems in the agricultural sector, especially problems in Malaysia, will be emphasized. Project evaluation methods will also be introduced.		
ABT 21103	Prinsip Kultura Sel dan Tisu Principles of Cell and Tissue Culture	3
This course explains the development of animal and plant tissue culture, organization and laboratory practices and preparation required to carry out aseptic manipulations. In addition, this course also emphasizes on several important aspects of preparation of stocks and media, concept of totipotency, juvenility gradient, somaclonal variation; types of cultures such as callus culture, somatic embryogenesis, anther and ovule cultures, meristem culture and protoplast culture. Topics such as principle of large scale culture, generation of hybridoma cells and culture of hemopoietic stem cells will be also discussed.		
ABT 31503	Bioinformatik Bioinformatics	3
This course presents an introduction to bioinformatics, its principles and application in solving biological problems. The course emphasizes on use of appropriate bioinformatics software, the criteria of biological data that is applicable in bioinformatics analysis and the application of bioinformatics tools to laboratory based research. The course features hands on approach and the extensive use of programmers available over the World Wide Web to biologist. Students will be taught on how to access appropriate public databases and utilize correct search strategies and tools used in bioinformatics to topical problem drawn from ongoing research and application in variety of field.		
ABT 46503	Akuakultur Aquaculture	3
This course will cover the knowledge of the development of aquaculture; good aquaculture practices; the biology of common cultured species and economics of aquaculture. Students will be exposed to the basic system of aquafarm construction and the management of aquafarm.		
ABT 46903	Patologi Tumbuhan Plant Pathology	3
This course emphasizes several aspects of basic plant pathology including the morphology and characteristics of plant pathogens such as bacteria, phytoplasma, fungus, virus and nematodes. Principles of plant pathology; plant disease diagnose. Biodiversity and plant disease pathogen ecology and their diseases. Host-parasite relationship and epidemiology. Methods and principles of plant disease management.		

Semester Lima (Tahun 3)

ABT 32402	Biokimia Tumbuhan Plant Biochemistry	2
This course discusses the major components and characteristics of biochemical processes occurring in plant system. The topics discussed include: biochemistry of herbicide action, biochemical mechanisms of plant hormone function, photosynthesis, antibody production in plants, pharmaceutical production in plants, metabolomics, plant micro RNAs and transcriptional regulation of metabolic pathways.		
ABT 31403	Pembiakbakaan Tumbuhan Plant Breeding	3
This course discusses plant breeding principles which include general biological concepts, germplasm issues, genetic analysis and tools commonly used in plant breeding. It also discusses tissue culture aspect and breeding for clonally propagated plants, self-pollinated species, cross pollinated species and hybrid cultivars. Some examples of breeding in oil palm and rubber will be highlighted.		
ABT 46103	Sains Rumpai Weed Science	3
Concept of weeds and weed management, identification of common weeds in crop and non-crop situations, and their control. An introduction to weed ecology also will be discussed.		
ABT 37703	Teknologi Produksi Haiwan Animal Production Technology	3
This course emphasizes the important use of water in agricultural production with relationship between soil, plant and water networking. The students will expose on detail knowledge of irrigation pump, irrigation practice for commercial cultivation as well as plans for farm irrigation system and design.		
ABT 35303	Fisiologi Isyarat Tumbuhan Plant Signalling Physiology	3
This course will be focused on concepts, principles and practices of plant stress conditions as well as experimental skill on how plants response and cope to hormonal signalling, environmental stress signalling, photoreceptor signalling. Also understanding key experimental approaches and biological methods related to different stress signaling to the plants and modulation of their growth performance, and sustainable production.		

ABT 46203	Mikropropagasi Komersial Commercial Micropropagation	3
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The course is a continuation of the course on Plant Tissue Culture (ABT 21203 : *In vitro* plant Technology), covering more hands on experience on commercial scale plantlet production. Students are given task and they are guided to plan and design their own experiments to achieve the objectives of the task which is to conduct a plantlet production via micropropagation from the commercial aspect.

ABT 35503	Kepelbagaian Biologi dan Ekologi Tumbuhan Plant Biodiversity and Ecology	3
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This course provides an exposure to the students about the basic concepts of species, communities and ecosystems. In addition to the principles in ecology and plant taxonomy and systematic reviews will also be presented in this course. The methods of recognition and identification of several plant species of higher plants and lower plants are also being taught. Students will carry out presentations based on the species data obtained during field work.

ABT 35603	Diagnostik Molekul Molecular Diagnostic	3
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This course covers the discoveries that have created a field called molecular diagnostic. Scientific concepts that surround the revolution in molecular diagnostic will be examined in details to allow the students to be aware of the strengths and shortcomings of a molecular approach for diagnostic purposes. Selected topics such as cell analysis, gene regulation and expression, molecular detection of microbes, genetic diseases, the immune system and cancer cells, cancer and carcinogenesis will be discussed and examined. New discoveries such as the intelligent molecular diagnostic approach will be covered.

Semester Enam (Tahun 3)

ABT 41803	Projek Penyelidikan I Research Project I	3
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This course involves a practical research project for agricultural biotechnology programme. Student will undergo planning and preparation of a written research project proposal and a research project oral presentation with the help of coordinator and supervisor(s).

ABT 31603	Pengembangan Pertanian Agricultural Extension	3
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This course is introduced to expose students to the background and extension definition relating to concepts, objectives and the agricultural extension model. The course also addresses the extension strategies, the image of extension agent, understanding of theories and methods and the planning process. Exposure to how extension can play an effective role in the dissemination of the farm practices information will also be discussed. At the end of the course the students are expected to know the real role of agriculture extension.

ABT 32502	Rekabentuk Penyelidikan Pertanian dan Analisis Data I Agriculture Research Design and Data Analysis I	2
This course involves a practical research project for agricultural biotechnology program. Student will undergo planning and preparation of a written research project proposal and a research project oral proposal presentation with the help of coordinator and supervisor(s).		
ABT 45803	Perladangan Jitu Precision Farming	3
This course emphasizes on the concept of farm management that based on observation and conservation for handling ever-changing environment nowadays. The students will expose with latest technologies application of satellite, information technology and the detection tool for positioning like Global Positioning System (GPS). The acquired digital information will use to estimate fertilizer requirement and weed information that purposely to increase the quality and quantity of agricultural production.		
ABT 35203	Teknologi Bioreaktor Bioreactor Technology	3
This course would emphasis on the fundamental aspect of continuous culture and fed batch fermentation. Students would be exposed to preliminary knowledge required for implementation, advantages and disadvantages between fed batch and continuous culture. This also includes the understanding of specific growth rate and growth associated product formation of desired micro organism cultivation. This course also emphasis on the application of bioreactors in propagation of plant cells, microorganism and animal cell. This would include understanding of formation of cells in liquid suspension and scale up to bioreactor. Students would be exposes to factors determining growth of plant cells in the bioreactor such as inoculums size, $k_L a$ and agitation speed. Introduction to monolayer culture system and suspension culture system for animal cell and plant cell growth.		
ABT 37903	Topik-topik Khas Special Topics	3
The course will provide the current knowledge and research about agrobiotechnology. The course will also cover emerging issues in the field of agriculture and biotechnology not represented in the main curriculum.		
ABT 35403	Pengurusan Perosak Bersepadu Integrated Pest Management	3
This course will exposethe students to the methods used in Integrated Pest Management (IPM). This includes the control of weeds, insects and microbes that become pests in crops. Focus will be given to methods of pest control in chemical, biological, cultural, legal and other related. Students will be taught to analyze appropriate methods of pest control which the correct application techniques will be implemented.		

ABT 37802	Pengurusan Sisa Pertanian Agricultural Waste Management	2
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This course consist a series of lectures and group discussions in discussing various aspects of fields of waste management. This course also covers the importance of correct disposal of agricultural waste management derived from intensive farming. It includes the application of recent and appropriate technologies and enforcing the relevant regulations and legislation since environmental management issues are considered in a global context. The students manage to know how to do the best management practices in agriculture field based on their lab work and farm visits..

Semester Tujuh (Tahun 4)

ABT 42003	Projek Penyelidikan II Research Project II	3
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This course involves a practical research project for agricultural biotechnology programme. Student will undergo research project practical (basic data collection and data analysis), planning and preparation of a draft thesis, research project oral presentations (progress reports and also of the thesis) and thesis preparation, correction and submission of a complete thesis; with the help of supervisor(s), coordinator and lecturers.

ABT 41903	Bioteknologi Tumbuhan Lanjutan Advanced Plant Biotechnology	3
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This course introduces the student to the characteristics and functions of the plant genome including the phenomenon of RNA interference (RNAi). The various techniques available for plant transformation including Agrobacterium tumefaciens-mediated transformation and physical transformation techniques will be covered. Typical features of plant transformation vectors and the concept of binary vectors will be discussed, as are the characteristics of plant selectable markers and reporter genes. Various methods for the detection and analysis of transgenic plants will be presented. The second part of the course will describe the various applications of plant genetic engineering in the creation of transgenic crops that are resistant to herbicides and pests, various diseases as well as improvement of crop yield and productivity. The concept of the production of recombinant proteins in plants, or molecular farming will also be described. Various issues on the use and ethics of genetically modified plants will be discussed at the end of the course.

ABT 32502	Rekabentuk Penyelidikan Pertanian dan Analisis Data II Agriculture Research Design and Data Analysis II	2
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This course introduces students to a basic and practical overview of agricultural experimentation, and to enable students to collect data, summarize, analyze, and draw conclusions from agricultural research data.

ABT 46703	Teknologi Pasca-Tuai Post-Harvest Technology	3
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This course emphasizes several aspects of basic information about the structure of fruits, vegetables and ornamentals, and how this influences their post-harvest behavior, then summarizes key information about their composition, biochemistry, respiration, and physiology. Managing produce temperature is the core technology for maintaining fresh quality. How this is achieved, and the influence of temperature on relative humidity and water loss, is discussed in depth.

ABT 46002	Pemasaran Pertanian Agricultural Marketing	2
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This course covers the application of marketing concept in the agribusiness firm and system, evaluation of performance of marketing systems and understanding of marketing environment. It further examines the development of a marketing plan and management of marketing mix.

ABT 46302	Komunikasi Pertanian Agricultural Communication	2
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Introduction to theories, definition and models of individuals and mass groups communications and its role in attitude change and persuasion in the society and agriculture particularly. Familiarize the students with selected variety of social-psychological theories of attitude change and persuasion. Expose on various communication techniques, its' characteristics and applications. This course provide an understanding on how to select appropriate communication techniques in relation to the audiences groups and situations. Students will deliver public speaking, group oral presentation and method demonstration technique.

ABT 47602	Isu-isu Etika dan Harta Intelekt dalam Bioteknologi dan Pertanian Ethical and Intellectual Properties Issues in Biotechnology and Agriculture	2
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The course will provide the current knowledge about genetically engineered products in relation to food safety and environmental conservation. The role of ethical considerations will be highlighted. The course will also provide an understanding in intellectual property, focusing on biotechnology. It is expected the students will have, on completion of the course, a practical understanding of the management of intellectual property rights in the field of biotechnology.

Semester Lapan (Tahun 4)

ABT 31712	Latihan Industri Industrial Training	12
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This course will expose students to the actual career training and working environment in agriculture related to farming, animal husbandry, aquaculture, biotechnologyor agribusiness entrepreneurship. This will develop soft skill after theoretical and practical study in the faculty. Students may choose the various work places including government or private sector.

Latihan Industri

Sarjana Muda Bioteknologi Pertanian

(ABT31712)

Merit

Pelajar Ijazah Sarjana Muda Bioteknologi Pertanian diwajibkan menjalani Latihan Industri pada semester keenam dan berjumlah 12 kredit. Nilai grednya akan diambil kira dalam pengiraan Purata Nilai Gred Semester (PNGS) dan Purata Nilai Gred Kumulatif (PNGK).

Pengenalan Kursus

Latihan industri merupakan satu kursus yang memberi pendedahan kepada dunia kerjaya agar para pelajar diperlengkapi dengan pelbagai amalan kerja serta aspek praktikal dalam bidang pertanian berkaitan tanaman dan haiwan. Melalui pendedahan ini diharapkan pelajar dapat menghubungkan apa yang dipelajari secara teori dengan realiti suasana pekerjaan dan kerja sebenar supaya mereka lebih bersedia dengan suasana kerja di sektor kerajaan dan swasta yang diceburi kelak. Bagi pelajar yang beraspirasi untuk menjadi usahawan, mereka berpeluang mendapatkan pengalaman suasana dan kerja sendiri melalui latihan industri ini tentang bagaimana sesebuah perusahaan swasta beroperasi.

Objektif Kursus

Latihan industri mempunyai objektif kursus seperti berikut:

1. Memberi pendedahan kepada pelajar terhadap suasana kerja agar mereka dapat menyesuaikan diri dengan mudah apabila menyertai sektor pekerjaan kelak;
2. Memberi pelajar pengalaman kerja berpasukan dan mencontohi kepimpinan baik pemimpin di tempat kerja;
3. Membangunkan kemahiran insaniah dalam pengurusan sumber manusia daripada peringkat atasan dan bawahan; dan
4. Memperlengkapi dengan pengetahuan mengenai proses industri hulu dan hilir serta industri menengah dan perkhidmatan pengembangan di organisasi sektor kerajaan dan swasta.

Penempatan

Pelajar digalakkan untuk mencari tempat latihan industri sendiri yang hampir dengan tempat tinggal bagi mengurangkan kos. Penyelaras kursus akan menentukan kesesuaian dan akan membantu menguruskan penempatan latihan industri. Pelajar boleh menjalani latihan industri di mana-mana organisasi, syarikat, perusahaan, agensi, institut penyelidikan pertanian dan bioteknologi, universiti dan lain-lain dalam sektor kerajaan dan swasta. Penempatan ini akan dapat memberi pendedahan persekitaran kerja dan pelbagai aspek praktikal dalam bidang pertanian berkaitan tanaman dan haiwan di Malaysia.

Semasa latihan industri berlangsung, pelajar akan diletakkan di bawah pengawasan seorang pegawai yang berperanan sebagai penyelia di tempat latihan yang bersesuaian. Penyelia ini akan bertanggungjawab merancang latihan yang diberi dan di akhir sesi latihan, beliau bertanggungjawab untuk menilai dan melaporkan prestasi pelajar kepada penyelaras kursus. Penyelaras kursus atau pensyarah yang dilantik akan melawat pelajar sekurang-kurangnya sekali dalam tempoh latihan bagi memastikan latihan industri pelajar berjalan lancar.

Setelah tamat latihan, pelajar dikehendaki mendokumentasikan pengalaman latihan industri mereka mengikut format laporan yang ditetapkan dan menyerahkan laporan lengkap tersebut kepada penyelarass kursus. Para pelajar akan membentangkan laporan latihan industri dalam sesi kolokium pembentangan latihan industri seperti yang ditetapkan.

Penilaian

Penilaian keseluruhan latihan industri pelajar adalah gabungan penilaian oleh Penyelia Industri (35%), Penyelia Akademik (20%), buku log dan laporan akhir latihan industri serta pembentangan (45%).

Program Pengajian

Sarjana Muda Perniagaantani dengan Kepujian

Pendahuluan

Sarjana Muda Perniagaantani dengan kepujian adalah persediaan terbaik untuk kerjaya dalam bidang pertanian dan perniagaan. Program ini menggabungkan ilmu perniagaan dengan ilmu sains pertanian, sains makanan serta sains haiwan dengan tujuan supaya graduan bidang ini dapat menjadi usahawantani (*Agropreneur*) dan pengurus-pengurus yang cekap untuk mengendalikan firma-firma yang berasaskan pertanian dan sumber asli. Program ini menyediakan pelajar dengan pengetahuan asas dan lanjutan dalam pengeluaran produk pertanian dan makanan melalui pelbagai kursus universiti, bidang pengkhususan teras, elektif dan audit.

Semasa tahun pertama pengajian, para pelajar didedahkan kepada kursus-kursus seperti prinsip ekonomi, pengenalan kepada perniagaantani, pengurusan perniagaantani, pengenalan kepada sains makanan, prinsip perakaunan, pengurusan sumber manusia, pemasaran perniagaantani serta pengenalan bioteknologi pertanian. Pada tahun kedua dan ketiga pengajian, kursus-kursus seperti ekonomi pertanian, prinsip pengeluaran tanaman, perakaunan pengurusan, prinsip akuakultur, pengenalan kepada produksi haiwan, statistik perniagaan, komunikasi dalam pertanian, teknologi pasca tuai, rantai bekalan makanan, keusahawanan Pertanian, pengurusan kewangan, komunikasi dalam perniagaan, kaedah penyelidikan perniagaan, pembangunan pertanian, polisi dan peraturan agribisnes, pembangunan produk makanan, etika perniagaan, pengurusan strategi, projek penyelidikan I serta perniagaan antarabangsa akan diajar. Pada tahun akhir pengajian iaitu dalam semester ketujuh, pelajar akan melaksanakan projek penyelidikan tahun akhir II, pengurusan ladang, produksi padi, agrostologi serta perancangan dan pengurusan projek perniagaantani. Para pelajar akan menjalani latihan industri pada semester kelapan bagi tujuan memperolehi pengalaman menjalankan perniagaan persendirian.

Peluang Kerjaya

Graduan pengajian ini mempunyai peluang kerjaya profesional yang luas dalam bidang pertanian dan perniagaan. Di antara peluang kerjaya graduan ini adalah usahawantani, Pengurus dan pegawai pemasaran, pegawai bank, eksekutif kewangan, pegawai ekonomi (FAMA, LPP), pensyarah (Politeknik, Kolej Professional MARA, Kolej Komuniti), pegawai penyelidik, pegawai tadbir, dan pengurus ladang, pegawai pertanian, pegawai pembangunan pertanian, pegawai agronomi dan pengurusan ladang. Graduan turut berpotensi untuk menjadi usahawantani moden yang mengaplikasikan teknik moden bioteknologi dalam pertanian.

Jangkamasa

Pengajian ijazah ini mengambil masa selama empat (4) tahun dengan keperluan bergraduasi adalah 120 kredit.

Syarat kemasukan

STPM	MATRIKULASI	DIPLOMA
1. Mendapat sekurang-kurangnya PNGK 2.50 pada peringkat STPM DAN 2. Mendapat sekurang-kurangnya Gred C pada peringkat STPM dalam mata pelajaran berikut: - Biology/Chemistry/ Physics / Mathematics (M) / Mathematics (T) - Mana-mana SATU(1) mata pelajaran lain DAN 3. Mendapat sekurang-kurangnya kepujian Gred C pada peringkat SPM dalam mata pelajaran berikut: - Bahasa Inggeris - Biology/ Chemistry/ Prinsip Perakuanan - Mana-mana DUA (2) DAN 4. Mendapat sekurang-kurangnya Tahap 2 (Band 2) dalam MUET DAN 5. Tiada kecacatan anggota serta pertuturan dan buta warna	1. Mendapat sekurang-kurangnya PNGK 2.50 pada peringkat Matrikulasi / Asasi DAN 2. Mendapat sekurang-kurangnya Gred C pada peringkat Matrikulasi / Asasi dalam mata pelajaran berikut: - Biology - Chemistry - Physics/ Mathematics - Ekonomi /Perakuanan DAN 3. Mendapat sekurang-kurangnya kepujian Gred C pada peringkat SPM dalam mata pelajaran berikut: - Bahasa Inggeris - Biology / Chemistry / Prinsip Perakaunan - Mana-mana DUA (2) mata pelajaran lain DAN 4. Mendapat sekurang-kurangnya Tahap 2 (Band 2) dalam MUET DAN 5. Tiada kecacatan anggota serta pertuturan dan buta warna	1. Mendapat sekurang-kurangnya PNGK 2.50 pada peringkat Diploma dalam bidang berkaitan DAN 2. Mendapat sekurang-kurangnya Gred C pada peringkat SPM dalam mata pelajaran berikut: - Bahasa Inggeris - Biology / Chemistry / Prinsip Perakaunan - Mana-mana DUA(2) mata pelajaran lain DAN 3. Mendapat sekurang-kurangnya Tahap 2 (Band 2) dalam MUET DAN 4. Tiada kecacatan anggota serta pertuturan dan buta warna

Struktur Pengajian

1	4	12	-	16
2	6	11	-	17
3	3	12	3	18
4	4	5	6	15
5	3	12	3	18
6	-	3	12	15
7	-	6	9	15
8	-	6	-	6
Jumlah Kredit	20	67	33	120

Semester Satu (Tahun 1)

Kod	Nama Kursus	Jam Kredit
PBI 10102	Inggeris untuk Komunikasi I English for Communication I	2 (U)
MPU 31022	Tamadun Islam dan Tamadun Asia Islamic Civilization and Asian Civilization	2 (U)
ECS 10103	Prinsip Ekonomi Principles of Economics	3 (S)
ABB 10103	Pengenalan Kepada Perniagaantani Introduction to Agribusiness	3 (S)
ABB 10203	Pengurusan Perniagaantani Agribusiness Management	3 (S)
ABB 10303	Pengenalan kepada Sains Makanan Introduction to Food Sciences	3 (S)
Jumlah		16

Semester Dua (Tahun 1)

Kod	Nama Kursus	Jam Kredit
PBI 10202	Inggeris untuk Komunikasi II English for Communication II	2 (U)
MPU 33032 MPU 33042	Islam Wahyu dan Kemasyarakatan (Muslim) Perbandingan Agama II (Bukan Islam) Comparative Religion II (Non Muslim)	2 (U)
MPU 31012	Hubungan Etnik Ethnic Relations	2 (U)
ABS 12303	Prinsip Perakaunan Principles of Accounting	3 (S)
MSS 22203	Pengurusan Sumber Manusia Human Resource Management	3 (S)
ABB 10403	Pemasaran Perniagaantani Agribusiness Marketing	3 (S)
ABB 10503	Pengenalan kepada Bioteknologi Introduction to Agricultural Biotechnology	2 (S)
Jumlah		17

Semester Tiga (Tahun 2)

Kod	Nama Kursus	Jam Kredit
KKX xxxx	Ko-Kurikulum Co-curriculum	3 (U)
ABB 20603	Ekonomi Pertanian Agricultural Economics	3 (S)
ABB 20703	Prinsip Pengeluaran Tanaman Principles of Crop Protection	3 (S)
ACB 10203	Perakaunan Pengurusan Management Accounting	3 (E)
ASQ 21003	Prinsip Akuakultur Principles of Aquacultures	3 (S)
ABB 20803	Pengenalan kepada Produksi Haiwan Introduction to Animal Production	3 (S)
Jumlah		18

Semester Empat (Tahun 2)

Kod	Nama Kursus	Jam Kredit
PBI xxxx	Bahasa Asing Foreign Language	2 (U)
MPU 33012 MPU 33022	Ilmu Wahyu dan Sains (Muslim) Moral dan Etika II (Bukan Muslim) Moral and Ethics II (Non-muslim)	2 (U)
MSS 21903	Statistik Perniagaan Business Statistics	3 (S)
ABB 20902	Komunikasi dalam Pertanian Agriculture Communication	2 (E)
ABB 25103	Technologie Pasca Tuai Post Harvest Technology	3 (E)
ABB 25203	Rantaian Bekalan Makanan Supply Chain Management	3 (E)
Jumlah		15

Semester Lima (Tahun 3)

Kod	Nama Kursus	Jam Kredit
ABT 22403	Keusahawanan Tani Agricultural Entrepreneurship	3 (U)
FBF 10103	Pengurusan Kewangan Financial Management	3 (S)
MSS 11203	Komunikasi Dalam Perniagaan Business Communication	3 (S)
MSS 22103	Kaedah Penyelidikan Perniagaan Business Research Methods	3 (S)
ABB 35303	Pengembangan Pertanian Agriculture Extension	3 (E)
ABB 31003	Polisi dan Peraturan Agribisnes Agribusiness Policy and Regulations	3 (S)
Jumlah		18

Semester Enam (Tahun 3)

Kod	Nama Kursus	Jam Kredit
ABB 35403	Pembangunan Produk Makanan Food Product Development	3 (E)
MSS 11203	Etika Perniagaan Business Ethics	3 (E)
MSS 32403	Pengurusan Strategi Strategic Management	3 (E)
ABB 31103	Projek Penyelidikan I Research Project I	3 (S)
MSS 22003	Perniagaan Antarabangsa International Business	3 (E)
Jumlah		15

Semester Tujuh (Tahun 4)

Kod	Nama Kursus	Jam Kredit
ABB 41303	Perancangan dan Pengurusan Projek Perniagaantani Agribusiness Project Planning and Management	3 (S)
ABB 45503	Agrostologi Agrostology	3 (E)
ABB 45603	Produksi Padi Production of Paddy	3 (E)
ABB 41203	Projek Penyelidikan II Research Project II	3 (S)
ABB 45703	Pengurusan Perladangan Farm Management	3 (E)
Jumlah		15

Semester Lapan (Tahun 4)

Kod	Nama Kursus	Jam Kredit
ABB 41406	Latihan Industri Industrial Training	6 (S)
Jumlah		6

Nota: A -Kursus Audit S -Kursus Teras E* -Kursus Elektif U -Kursus Umum

Sinopsis Kursus

Sarjana Muda Perniagaantani dengan Kepujian

Semester Satu (Tahun 1)

Kod Kursus	Nama Kursus Teras	Jam Kredit
ABB 10103	Pengenalan Kepada Perniagaantani Introduction to Agribusiness	3
	This course provides a comprehensive understanding of the business, interests and relationships with the general economic sector and employment opportunities in the field of business in Malaysia. Discussions include the production, processing and marketing of entrepreneurial, consumer, credit and finance products, governmental roles, and future entrepreneurship.	
ABB 10203	Pengurusan Perniagaantani Agribusiness Management	3
	This course discusses the basic principles of business management. The discussions are about covering management functions, strategic management of inventory management, financial management and human resource management. Management of production, processing and marketing in agribusiness is also discussed in details.	
ABB 10303	Pengenalan kepada Sains Makanan Introduction to Food Sciences	3
	The course is arranged to introduce basics of food science and technology and to stimulate students' interest in this field. General aspects of up-to-date food science and technology will be covered, including: food industry outlook, food chemistry, nutrition, food processing including food packaging and engineering, food microbiology, food safety, halal food and food biotechnology.	

Semester Dua (Tahun 1)

ABS 12303	Prinsip Perakaunan Principles of Accounting	3
	This course will introduce the objectives, concepts, principles, accounting conventions and recording processes. It also focuses on the accounting cycle starting from analyzing and recording business transactions using system notes to prepare financial statements.	
MSS 22203	Pengurusan Sumber Manusia Human Resource Management	3
	This course focuses on the concept of 'collaboration' between human resource managers and other managers in implementing human resource management activities such as employment planning, recruitment, selection, training and development, rewards, and employer relationships -employee; It focuses on the techniques and methods of enhancing organizational effectiveness through proper human resource management practices; comparisons are made between human resource management practices in the private sector and	

government as well as between human resource management philosophy from western and non-western perspectives like Japan.

ABB 10403 Pemasaran Pertiagaanani 3
Agribusiness Marketing

This course covers the application of firm marketing concepts and enterprise systems, performance appraisal of marketing systems and understanding of marketing environments. It also examines the development of marketing mix and marketing mix management.

ABB 10503 Pengenalan Bioteknologi Pertanian 2
Introduction to Agricultural Biotechnology

This course will cover most applications of Biotechnology : plant, animal, industrial, medical and environmental. The growth of biotechnology will continue to impact world trade, global economics etc. and it success and growth will depend on consumer perception and acceptance of the technology and applications.

Semester Tiga (Tahun 2)

ABB 20603 Ekonomi Pertanian 3
Agricultural Economics

This course explores the economic foundations for public policy analysis related to agricultural issues in rural areas. The emphasis of this course is on concepts and introduction of various tools required for policy analysis and empirical research in agricultural economics. In particular, the course aims to deepen students' understanding of how economic theory can be applied to analyze policy problems of agricultural sectors. This course is suitable for individuals who have strong interest in economic development and agricultural economics, and want to examine these issues with quantitative and econometric methods as a policy analyst.

ABB 20703 Prinsip Pengeluaran Tanaman 3
Principles of Crop Production

This course discusses the factors that influence crop production which include morphology, taxonomy, physiology, genetic, climate, soil, land preparation, planting, fertilizer, water, pests and harvesting. This is followed with the discussion on the general principle of the production of vegetable, fruit, ornamental, field and industrial crop.

ACB 10203 Perakaunan Pengurusan 3
Management Accounting

The course is specially designed for non-accounting students. Students will be introduced and exposed to the cost and management accounting and its role in an organizations as an aid to ehe management functions. The course emphasis on the aspects of determining product cost, costs analysis, costs controls and also uses and importance of cost to the managements functions and the decision making process.

ASQ 21003	Prinsip Akuakultur Principles of Aquacultures	3
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This course will cover the knowledge of the development of aquaculture; good aquaculture practices; the biology of common cultured species and economics of aquaculture. Students will be exposed to the basic system of aqua farm construction and the management of aqua farm.

ABB 20803	Pengenalan Produksi Haiwan Introduction to Animal Production	3
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This course will incorporate an overview of the livestock and poultry industries in Malaysia. It will also include basic requirement of animals, different production systems, the various sectors involved in producing high quality halal products. This course also covers aspects on proper waste disposal, GAHP and role of animals in plantation crops.

Semester Empat (Tahun 2)

MSS 21903	Statistik Perniagaan Business Statistics	3
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The course will introduce the fundamental concepts of statistics and a variety of descriptive and inferential statistical techniques to prepare the students for performing statistical analyses. The topics include fundamental probability theory, T-Test, Chi-square Test, Analysis of Variance, Correlation, Regression and Non-Parametric Analyses. This course focuses on the applied rather than the theoretical aspects of statistics.

ABB 20902	Komunikasi dalam Pertanian Agriculture Communication	2
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Introduction to theories, definition and models of individuals and mass groups communications and its role in attitude change and persuasion in the society and agriculture particularly. Familiarize the students with selected variety of social-psychological theories of attitude change and persuasion. Expose on various communication techniques, its' characteristics and applications. This course provide an understanding on how to select appropriate communication techniques in relation to the audiences groups and situations. Students will deliver public speaking, group oral presentation and method demonstration technique.

ABB 25103	Teknologi Pasca Tuai Post-Harvest Technology	3
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This course emphasizes several aspects of basic information about the structure of fruits, vegetables and ornamentals, and how this influences their post-harvest behavior, and then summarizes key information about their composition, biochemistry, respiration, and physiology. Managing produce temperature is the core technology for maintaining fresh quality. How this is achieved, and the influence of temperature on relative humidity and water loss, is discussed in depth.

ABB 25203	Pengurusan Rantaian Bekalan Supply Chain Management	3
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This course develops the ability to conceptualize, design, and implements supply chains aligned with product, market, and customer characteristics. Business competition is now between supply networks rather than individual corporations. Managing the flow of products, information, and revenue across supply chains differentiates the ability of supply networks to fulfill customer needs. Students develop the ability to evaluate how information flows can substitute for the stock of physical resources, such as inventory, and why such systems succeed or fail. They assess how internet technologies, dynamic markets, and globalization are impacting supply chain strategies and practices, including logistics, digital coordination of decisions and resources, inventory and risk management, procurement and supply contracting, product and process design, and revenue management.

Semester Lima (Tahun 3)

ABB 22403	Keusahawanan Pertanian Agricultural Entrepreneurship	3
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The course covers the role and responsibilities of an entrepreneur, problems and techniques in management, business planning, project evaluation, marketing, credit, business strategies, and management of resources and current issues of entrepreneurship in agribusiness. This course also introduces the participants to the concept of entrepreneurship and its role in economic and business development specifically in the agricultural industry.

FBF 10103	Pengurusan Kewangan Financial Management	3
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This course covers the use of financial management principles to achieve optimum utilization of capital resources in entrepreneurial operations and credit management aspects covering loan, leasing and hire purchase financing discussed to improve student skills in analyzing financial management problems.

MSS 22103	Komunikasi dalam Perniagaan Business Communication	3
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Application of business communication principles through creation of effective business documents and oral presentations. Includes study and application of team communication and use of technology to facilitate the communication process.

ABB 35303	Pengembangan Pertanian Agriculture Extension	3
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This course is introduced to expose students to the background and extension definition relating to concepts, objectives and the agricultural extension model. The course also addresses the extension strategies, the image of extension agent, understanding of theories and methods and the planning process. Exposure to how extension can play an effective role in the dissemination of the farm practices information will also be discussed. At the end of the course the students are expected to know the real role of agriculture extension.

ABB 31003	Polisi dan Peraturan Agribisnis Agribusiness Policy and Regulations	3
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This course covers government policies including the National Agriculture Policy (DPN) and Industrial Master plan (IMP), as well as nutritional policies and regulations. The government organizations involved in implementing this policy will be explained. The best production rules and practices such as HACCP principles, certifications and ISO standards will also be discussed. Trade aspects covering AFTA, NAFTA, GATT, WTO and its impact on the business sector will be discussed.

Semester Enam (Tahun 3)

ABB 35403	Pembangunan Produk Makanan Food Product Development	3
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This course covers the theory and practical concepts involve in designing and developing new food products. The three major components of food product development steps which are development and evaluation of product concept, development of a prototype food product including packaging, evaluation of product attributes, safety, shelf life, and also market evaluation of the prototype products will be covered. Students will be exposed to various techniques to evaluate sensory attributes of food products. At the end of the course, students will be required to work through a food product development proposal using the product development team approach that is prevalent in the food industry.

MSS 11203	Etika Perniagaan Business Ethics	3
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This course focusing on the relationships between the business entity and the society as well as the administrator. The discussion covered on the consumerization issues, ecology and environment, community, management and control, as well as social responsibility for profit-oriented company.

MSS 32403	Pengurusan Strategik Strategic Management	3
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This course contents comprise of analytical aspects of organizational external environment in order to identify any future or current opportunities and threats; analytical aspects of organizational internal environment for strengths and weaknesses analysis; and to project various alternatives for strategic formation and program implementation towards organization objectives and mission achievement.

ABB 31103	Projek Penyelidikan I Research Project I	3
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This course involves a practical research project for agricultural biotechnology programme. Student will undergo planning and preparation of a written research project proposal and a research project oral presentation with the help of supervisor(s).

MSS 22003	Perniagaan Antarabangsa International Business	3
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This course covers the introduction of an international business that includes an international environment that covers the economic dimensions, culture, politics and international law. This course also covers the management and regulation of international marketing.

Semester Tujuh (Tahun 4)

ABB 41303	Perancangan dan Pengurusan Projek Perniagaantani Agribusiness Project Planning and Management	3
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This course covers project evaluation theory and techniques including net present value, internal rate of return and cost benefit ratios. It also includes important steps in planning a business project. Project management processes and techniques such as PERT / CPM and project organizations are also discussed.

ABB 45503	Agrostologi Agrostology	3
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This course discusses the importance of pasture plants as ruminant feed resources. It includes the characteristics of important grasses and legumes species, method of establishment, fertilization and pasture managements. Systems of utilization, nutritive value and conservation of pasture will also be covered.

ABB 45603	Produksi Padi Paddy Production	3
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This course discusses the basic principles of crop production, improvement and management of paddy. This is an intermediate course that introduce as well as enable the students to practice the present technology of paddy production. Aspects of the course are; historical and origin, botany, pshysiology, agronomi, breeding and seed production, soil suitability, control of pest and diseases, mechanization of all phases of production with reference to the traditional methods and automation potential, and post harvest handling. The practical sessions includes the planting and management of padi plant (and the possible harvest). Some operations in the practical activities will be mechanised, otherwise it will be supplemented by practicals at KETARA facilities at Besut.

ABB 41203	Projek Penyelidikan II Research Project II	3
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This course involves a practical research project for agricultural biotechnology programme. Student will undergo research project practical (basic data collection and data analysis), planning and preparation of a draft thesis, research project oral presentations (progress reports and draft of a thesis) and thesis preparation, correction and submission of a complete thesis; with the help of supervisor(s).

ABB 45703	Pengurusan Ladang Farm Management	3
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This course explains and discusses the use of theory and economic principles in the field decision-making process. Decision making is the basis for the execution of all management functions that include planning, implementation and control. In this course also, students will learn the different approaches, methods and tools used in planning, implementing, controlling and analyzing the performance of a farm business.

Semester Lapan (Tahun 4)

ABB 41406	Latihan Industri Industrial Training	6
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This industrial training covers some related topics taught during the eight semesters which requires hands-on to give the experience to students to work in the real working condition.

Latihan Industri

Sarjana Muda Perniagaantani dengan Kepujian

(ABB41406)

Merit

Pelajar Ijazah Sarjana Muda Perniagaantani dengan Kepujian diwajibkan menjalani Latihan Industri pada semester keenam dan berjumlah 6 kredit. Nilai grednya akan diambil kira dalam pengiraan Purata Nilai Gred Semester (PNGS) dan Purata Nilai Gred Kumulatif (PNGK).

Pengenalan Kursus

Latihan industri merupakan satu kursus yang memberi pendedahan kepada dunia kerjaya agar para pelajar diperlengkapi dengan pelbagai amalan kerja serta aspek praktikal dalam bidang pertanian berkaitan tanaman dan haiwan. Melalui pendedahan ini diharap pelajar dapat menghubungkan apa yang dipelajari secara teori dengan realiti suasana pekerjaan dan kerja sebenar supaya mereka lebih bersedia dengan suasana kerja di sektor kerajaan dan swasta yang diceburi kelak. Bagi pelajar yang beraspirasi untuk menjadi usahawan, mereka berpeluang mendapatkan pengalaman suasana dan kerja sendiri melalui latihan industri ini tentang bagaimana sesebuah perusahaan swasta beroperasi.

Objektif Kursus

Latihan industri mempunyai objektif kursus seperti berikut:

1. Memberi pendedahan kepada pelajar terhadap suasana kerja agar mereka dapat menyesuaikan diri dengan mudah apabila menyertai sektor pekerjaan kelak;
2. Memberi pelajar pengalaman kerja berpasukan dan mencontohi kepimpinan baik pemimpin di tempat kerja;
3. Membangunkan kemahiran insaniah dalam pengurusan sumber manusia daripada peringkat atasan dan bawahan; dan
4. Memperlengkapi dengan pengetahuan mengenai proses industri hulu dan hiliran serta industri menengah dan perkhidmatan pengembangan di organisasi sektor kerajaan dan swasta.

Penilaian

Penilaian keseluruhan latihan industri pelajar adalah gabungan penilaian oleh Penyelia Industri (35%), Penyelia Akademik (20%) dan laporan akhir latihan industri serta pembentangan (45%).

Program Pengajian

Sarjana Muda Produksi dan Kesihatan Haiwan

Pendahuluan

Sarjana Muda Produksi dan Kesihatan Haiwan adalah persediaan terbaik untuk kerjaya dalam bidang produksi dan kesihatan haiwan. Program ini adalah ijazah sains gunaan yang menggabungkan asas-asas sains dengan bidang-bidang sains haiwan dan diperlengkapkan dengan kerja-kerja amali. Pada tahun pertama pengajian, pelajar didedahkan dengan sistem produksi dan kesihatan haiwan melalui pelbagai kursus seperti kimia, biokimia, biologi sel, ekonomi, perakaunan dan genetik. Pada tahun dua dan tiga pengajian, kursus-kursus yang diajar merangkumi asas anatomi, fisiologi, fisiologi reproduksi, pemakanan, pembiakbakaan haiwan, biostatistik, produksi ruminan dan bukan ruminan, mikrobiologi, penyakit haiwan, parasitologi, keusahawanan dan agen penyebab penyakit. Pada tahun keempat pengajian, pelajar akan melaksanakan projek penyelidikan, pembentangan seminar, amalan veterinar, kesihatan awam veterinar, pengurusan sisa haiwan, tabiat dan kebajikan haiwan, struktur ladang ternakan, pengembangan pertanian dan komunikasi.

Peluang Kerjaya

Graduan pengajian ini mempunyai peluang kerjaya profesional dalam bidang pertanian haiwan, perniagaantani (pakar runding dan perkhidmatan nasihat), kesihatan dan kebajikan haiwan, pemasaran, pengurusan keusahawanan bandar dan luar bandar (termasuk ladang-ladang), industri ternakan dan penyelidikan.

Jangkamasa

Ijazah ini mengambil masa selama empat (4) tahun dengan keperluan bergraduasi ialah 125 kredit.

Syarat kemasukan

STPM	MATRIKULASI	DIPLOMA
1. Mendapat sekurang-kurangnya PNGK 2.50 pada peringkat STPM DAN 2. Mendapat sekurang-kurangnya Gred C+ pada peringkat STPM dalam mata pelajaran berikut: • Biology • Chemistry • Physics / Mathematics (M) / Mathematics (T) DAN 3. Mendapat sekurang-kurangnya kepujian Gred C pada peringkat SPM dalam mata pelajaran berikut: • Bahasa Inggeris • Biology • Chemistry • Mathematics / Physics / Additional Mathematics / Sains Pertanian DAN 4. Mendapat mana-mana SATU (1) Gred C mata pelajaran lain tidak termasuk Bahasa Melayu dan mata pelajaran di atas DAN 5. Mendapat sekurang-kurangnya Tahap 2 (Band 2) dalam MUET DAN 6. Tiada kecacatan anggota serta pertuturan dan buta warna	1. Mendapat sekurang-kurangnya PNGK 2.50 pada peringkat Matrikulasi / Asasi DAN 2. Mendapat sekurang-kurangnya Gred C+ pada peringkat Matrikulasi / Asasi dalam mata pelajaran berikut : • Biology • Chemistry • Physics / Mathematics DAN 3. Mendapat sekurang-kurangnya Gred C pada peringkat SPM dalam mata pelajaran berikut: • Bahasa Inggeris • Biology • Chemistry • Mathematics / Additional Mathematics / Physics / Sains Pertanian DAN 4. Mendapat mana-mana SATU (1) Gred C mata pelajaran lain tidak termasuk Bahasa Melayu dan mata pelajaran di atas DAN 5. Mendapat sekurang-kurangnya Tahap 2 (Band 2) dalam MUET DAN 6. Tiada kecacatan anggota serta pertuturan dan buta warna	1. Mendapat sekurang-kurangnya PNGK 3.50 pada peringkat Diploma dalam bidang berkaitan DAN 2. Mendapat sekurang-kurangnya Gred C pada peringkat SPM dalam mata pelajaran berikut: • Bahasa Inggeris • Biology / Chemistry / Mathematics • Physics / Additional Mathematics / Sains Pertanian DAN 3. Mendapat mana-mana SATU (1) Gred C mata pelajaran lain tidak termasuk Bahasa Melayu dan mata pelajaran di atas DAN 4. Mendapat sekurang-kurangnya Tahap 2 (Band 2) dalam MUET DAN 5. Tiada kecacatan anggota serta pertuturan dan buta warna

Struktur Pengajian

1	6	8	3	17
2	14	2	2	18
3	-	15	-	15
4	-	10	8	18
5	-	10	6	16
6	-	7	8	15
7	-	8	6	14
8	-	12	-	12
Jumlah Kredit	20	72	33	125

Semester Satu (Tahun 1)

Kod	Nama Kursus	Jam Kredit
MPU 31022	Tamadun Islam dan Tamadun Asia Islamic Civilization and Asian Civilization	2 (U)
PBI 10102	Inggeris untuk Komunikasi I English for Communication	2 (U)
MPU 33012 MPU 33022	Ilmu Wahyu dan Sains (Muslim) Moral dan Etika II (Bukan Muslim) Moral and Ethics II (Non Muslim)	2 (U)
ASH 10202	Produk Haiwan Animal Products	2 (S)
ASH 10303	Biokimia Asas Sains Haiwan Fundamental Biochemistry in Animal Science	3 (S)
ASH 12103	Genetik dan Pembiakan Haiwan Animal Genetics and Breeding	3 (S)
ABS 12303	Prinsip Akaun Principles of Accounting	3 (E)
Jumlah		17

Semester Dua (Tahun 1)

Kod	Nama Kursus	Jam Kredit
KKK xxxx	Kokurikulum Co-Curriculum	3 (U)
PBI *****	Bahasa Asing I Foreign Language I	2 (U)
MPU 31012	Hubungan Etnik Ethnic Relations	2 (U)
PBI 10202	Inggeris untuk Komunikasi II English for Communication II	2 (U)
MPU 33032 MPU 33042	Ilmu Wahyu dan Kemasyarakatan (Muslim) Perbandingan Agama II (Bukan Muslim) Comparative Religion II (Non Muslim)	2 (U)
ABT 22403	Keusahawanan Tani Agricultural Entrepreneurship	3 (U)
ASH 16402	Biostatistik Sains Haiwan Biostatistics in Animal Science	2 (E)
ASH 16502	Amalan Haiwan I Animal Practice I	2 (E) (WBL)
Jumlah		18

Semester Tiga (Tahun 2)

Kod	Nama Kursus	Jam Kredit
ASH 21203	Parasitologi Haiwan Animal Parasitology	3 (S)
ASH 22203	Anatomi Haiwan Animal Anatomy	3 (S)
ASH 22303	Fisiologi Haiwan Animal Physiology	3 (S)
ASH 22403	Pemakanan Haiwan Animal Nutrition	3 (S)
ASH 22503	Mikrobiologi Haiwan Animal Microbiology	3 (S)
Jumlah		15

Semester Empat (Tahun 2)

Kod	Nama Kursus	Jam Kredit
ASH 20504	Produksi Bukan Ruminan Non Ruminant Production	4 (S)
ASH 21303	Penyakit Haiwan Animal Diseases	3 (S)
ASH 22603	Reproduksi Haiwan Animal Reproduction	3 (S)
ASH 25203	Tabiat dan Kebajikan Haiwan Animal Behaviour and Welfare	3 (E)
ASH 26602	Kesihatan Awam Veterinar Veterinary Public Health	2 (E)
ASH 26703	Sains Ekuin Equine Science	3 (E) (WBL)
Jumlah		18

Semester Lima (Tahun 3)

Kod	Nama Kursus	Jam Kredit
ASH 31604	Projek Penyelidikan I Research Project I	4 (S) (WBL)
ASH 32703	Produksi Ruminan I (Daging) Ruminant Production I (Meat)	3 (S) (WBL)
ASH 32903	Agrostologi Agrostology	3 (S) (WBL)
ASH 35603	Teknologi Reproduksi Haiwan Animal Reproduction Technology	3 (E) (WBL)
ASH 35903	Akuakultur Aquaculture	3 (E)* (WBL)
ASH 36003	Pembangunan dan Operasi Ladang Farm Development and Operation	3 (E)* (WBL)
Jumlah		16

* Pilihan satu kursus elektif

Semester Enam (Tahun 3)

Kod	Nama Kursus	Jam Kredit
ASH 32803	Produksi Ruminan II (Tenusu) Ruminant Production II (Dairy)	3 (S) (WBL)
ASH 33004	Projek Penyelidikan II Research Project II	4 (S) (WBL)
ASH 35503	Makanan Haiwan dan Teknologi Pemprosesan Animal Feed and Processing Technology	3 (E) (WBL)
ASH 36803	Pengurusan Sisa Haiwan Animal Waste Management	3 (E)
ASH 35702	Pengembangan Pertanian Agricultural Extension	2 (E)* (WBL)
ABT 46302	Komunikasi Pertanian Communication in Agriculture	2 (E)* (WBL)
Jumlah		15

* Pilihan satu kursus elektif

Semester Tujuh (Tahun 4)

Kod	Nama Kursus	Jam Kredit
ASH 41904	Latihan Sangkut Poltri/Khinzir/Akuakultur Poultry/Swine/Aquaculture Internship	4 (S) (WBL)
ASH 43102	Amalan Ternakan Ladang Animal Farm Practice	2 (E) (WBL)
ASH 43204	Amalan Haiwan II Animal Practice II	4 (S) (WBL)
ASH 43304	Latihan Sangkut Ruminan/Ekuin Ruminant/Equine Internship	4 (S) (WBL)
Jumlah		15

Semester Lapan (Tahun 4)

Kod	Nama Kursus	Jam Kredit
ASH 42012	Latihan Industri Industrial Internship	12 (S) (WBL)
Jumlah		13

Nota: S-Kursus Teras ; E-Kursus Elektif ; U-Kursus Umum; WBL – Work Based-Learning

Sinopsis Kursus

Sarjana Muda Produksi dan Kesihatan Haiwan

Semester Satu (Tahun 1)

Kod Kursus	Nama Kursus	Jam Kredit
ASH 10202	Produk Haiwan Animal Products	2
This course integrates class discussions and laboratory exercises to introduce the students to the biochemical and physical changes that occur during the conversion of meat, poultry, milk and eggs to finished products, including the traditional processing of meat, poultry, milk and eggs ; equipment, ingredients and additives used in the manufacturing of these products; major problems that can occur in these products and potential solutions and recent advanced technology in meat, poultry, milk and egg processing.		
ASH 10303	Biokimia Asas Sains Haiwan Fundamental Biochemistry in Animal Science	3
This course discusses the major components and characteristics of biochemical processes occurring in living system. The topics discussed include: physico-chemical properties and functions of carbohydrates, proteins, lipids and nucleic acids; enzymology including enzyme kinetics, mechanism of reaction and factors that influence enzyme activity; bioenergetics, integration and control of metabolism of carbohydrates, proteins, lipids and nucleic acids; role of nucleic acids in genetics and reproduction; biochemical nature of membranes, hormones and their functions.		
ASH 12103	Genetik dan Pembiakbakaan Haiwan Animal Genetics and Breeding	3
This course introduces the basic principles of genetics as applied to animals. Basic Mendelian Genetics is reviewed with examples from livestock. The course emphasises the fundamentals of gene transmission and expression, especially with reference to qualitative traits. The topics discussed will also address chromosomal and molecular basis of variation and the factors influencing genetic structure of populations.		
ABS 12303	Prinsip Akaun Principles of Accounting	3
This course will introduce the objectives of accounting, concepts, principles, conventions of accounting and recording process. It focuses on the accounting cycle starting from analysing and recording the business transactions using the double-entry system to preparing the financial statement.		

Semester Dua (Tahun 1)

ABT 22403	Keusahawanan Tani Agricultural Entrepreneurship	3
The course covers the role and responsibilities of an entrepreneur, problems and techniques in management, business planning, project evaluation, marketing, credit, business strategies, and management of resources and current issues of entrepreneurship in agribusiness. This course also introduces the participants to the concept of entrepreneurship and its role in economic and business development specifically in the agricultural industry.		
ASH 16402	Biostatistik Sains Haiwan Biostatistic in Animal Science	3
The course will introduce the fundamental concepts of statistics and a variety of descriptive and inferential statistical techniques to prepare the students for performing statistical analyses. The topics include fundamental probability theory, T-Test, Chi-square Test, Analysis of Variance, Correlation, Regression and Non-Parametric Analyses. This course focuses on the applied rather than the theoretical aspects of statistic.		
ASH 16502	Amalan Haiwan I Animal Practice I	2
This is a practical course where students are introduced in clinical examination of animals, managing healthy, sick and diseased animals. Basic sample collection techniques like blood collection and faecal sampling for laboratory analysis shall be taught. Euthanasia and post mortem on dead animals is carried out to identified the causal diseases. Students are also taught basic pharmacology, performing treatments together with prevention of diseases occurring in the farm.		

Semester Tiga (Tahun 2)

ASH 21203	Parasitologi Haiwan Animal Parasitology	3
This course introduces various species of important parasites present and harmful to the domestic animals with identification of life-cycles of each group of parasites. Morphology of parasites will be studied to identify the common parasite found. Students will conduct various laboratory procedures and diagnosis based on particular parasitic condition.		
ASH 22203	Anatomi Haiwan Animal Anatomy	3
This course in anatomy, histology and embryology deals with cell structure, basic tissues, basic embryology, lymphoid tissues, introductory neuroanatomy, cardiovascular and digestive systems, urogenital, respiratory, musculoskeletal, endocrine, arthrology, integumentary system, central nervous system, special senses, postural reactions, and applied and regional anatomy. A coordinated systems approach is applied in the teaching of gross anatomy, histology and embryology.		
ASH 22303	Fisiologi Haiwan Animal Physiology	3
This course in animal physiology aims to establish knowledge of normal function of domestic animals. This course will include the general cellular, cardiovascular, digestive, renal, nervous and endocrine systems, reproduction, respiration, the sense organ and environmental physiology. The practical classes are conducted during this course in which selected principles described in the lectures are illustrated.		
ASH 22403	Pemakanan Haiwan Animal Nutrition	3
This course covers topics on the characteristics and importance of various nutrients and feed additives in the nutrition of livestock. It encompasses voluntary feed intake, nutrient utilization and nutrient requirements of different types of farm animals as well as the importance of feedstuffs, processing and methods of formulating rations.		
ASH 22503	Mikrobiologi Haiwan Animal Microbiology	3
This course covers general microbiology and to provide basic knowledge for students to understand microbes and viruses as biological agents – their physical properties and characteristics, modes of existence in health and diseases, classification of pathogenic microorganisms, microbial genetics, nutrition, metabolism and laboratory methods of isolation and identification.		

Semester Empat (Tahun 2)

ASH 20504	Produksi Bukan Ruminan Non Ruminant Production	4
This course places emphasis on the application of basic knowledge in non ruminant mainly poultry and swine production in order to identify the problems that normally occur in small and commercial non ruminant production, especially on the aspects of management, nutrition and environment. The course requires the student to discuss the problems in non ruminant production and ways to overcome the problems. The information obtained from the discussion will be strengthened with lectures related to the subject.		
ASH 21303	Penyakit Haiwan Animal Disease	3
This course covers important diseases of ruminants, swine and poultry, with emphasis on important diseases occurring in Malaysia. Diseases are presented according to their animal species and aetiology. Diagnosis, prevention, treatments, control and eradication are stressed.		
ASH 22603	Reproduksi Haiwan Animal Reproduction	3
This course covers anatomy and physiology of male and female reproductive systems, oestrous cycle, pregnancy, parturition and artificial insemination. Factors that influence fertility and sterility of livestock animals are also discussed. The use of biotechnology tools in improving reproductive performance and to increase livestock production as a whole are emphasized.		
ASH 25203	Tabiat dan Kebajikan Haiwan Animal Behaviour and Welfare	3
This course covers various aspects of farm, wildlife, laboratory and companion animal behaviour, causes of behaviour and their implications on management, production, health and welfare of animals. Emphasis will be given to the problems, assessments and improvement of livestock welfare. The course also includes the influence of human-animal interaction, domestication and physical environment provided by human beings on behaviour and welfare of animals.		
ASH 26602	Kesihatan Awam Veterinar Veterinary Public Health	2
This course encompasses zoonotic diseases, especially the occurrence, modes of transmission from animals to human, with emphasis to diseases prevalent in Malaysia. Microbial quality of meat, milk, eggs and fish with principles and procedures of inspections, cleanliness and quality control of the food with toxic residues in foods of animal origin.		

ASH 26703	Sains Ekuin Equine Science	3
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This course covers the principles and management practices of the production of healthy horses, both for sport and leisure. It includes the application of concepts in stable management, nutrition, health and reproduction, economics and practical and profitable and sustainable management for horses under tropical conditions.

Semester Lima (Tahun 3)

ASH 31604	Projek Penyelidikan I Research Project I
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This course involves the execution of a research in animal science, either on livestock or non-food animals. The research shall be conducted in two academic semesters of the final year under the supervision of an academic staff. Each student will propose research topics or choose one from the allocated topics. The student will present a seminar on the research proposal at the end of the semester. This course also involves the execution of a research in animal science, either on livestock or non-food animals.

ASH 32703	Produksi Ruminan I (Daging) Ruminant Production I (Meat)	3
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This course emphasizes the understanding of good management practice on meat producing ruminant derived from beef cattle and small ruminant (goat/sheep). A wide range of knowledge of an application skills on the managements of commercial beef cattle and small ruminant production system are included in the syllabus.

ASH 32903	Agrostologi Agrostology
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This course discusses the importance of pasture plants as ruminant feed resources. It includes the characteristics of important grasses and legume species, method of establishment, fertilization and pasture managements. System of utilization, nutritive value and conservation of pasture will also be covered.

ASH 35603	Teknologi Reproduksi Haiwan Animal Reproduction Technology	3
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This course is encompassing all current and anticipated uses of technology in animal reproduction to treat infertility and increase productivity of farm animals through enhanced control of reproductive function. The topics in this course include the basic knowledge of anatomy and physiology of male and female reproductive systems, the use of assisted reproductive technology (ART) in domestic animals including artificial insemination, cryopreservation (freezing) of gametes or embryos, induction of multiple ovulations (superovulation), oestrous synchronization, embryo transfer, *in vitro* fertilization, sex determination of sperm or embryos, nuclear transfer, cloning and pregnancy diagnosis, and ethical, moral and social aspects of reproductive biotechnology.

ASH 35903	Akuakultur Aquaculture	3
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This course will cover the knowledge of the development of aquaculture, good aquaculture practices, the biology of common cultured species, and economics of aquaculture. Students will be exposed to the basic system of aquafarm construction and the management of aquafarm.

ASH 36003	Pembangunan dan Operasi Ladang Farm Development and Operation	3
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This is a theory and practical course, where the students are taught to develop and operate a livestock or poultry farms. They will learn the various processes involved before a farm is developed from land clearing to construction of various infrastructures. Student will also learn how to operate a farm, audit and evaluate the farm effectively.

Semester Enam (Tahun 3)

ASH 32803	Produksi Ruminan II (Tenusu) Ruminant Production II (Dairy)
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This is a practical course where students are introduced important aspects of dairy cow management, from calf to lactating cows, milking and drying - off period. Methods of milking and maintaining milk quality will also be covered. This course will be conducted by lectures and practical that will cover all aspects of daily and routine activities related to dairy cattle farming.

**ASH 33004 Projek Penyelidikan II
Research Project II**

This course involves the execution of a research in animal science, either on livestock or non-food animals. The research shall be conducted in two academic semesters of the final year under the supervision of an academic staff. Each student will propose research topics or choose one from the allocated topics. The student will present a seminar on the research progress and conduct the research in the laboratory, field or both. At the end of the research project, the student is required to submit a dissertation of the research and presenting the finding. Final presentation of the research also will be evaluated at the end of the research project.

**ASH 35503 Makanan Haiwan dan Teknologi Pemprosesan
Animal Feed and Processing Technology**

3

This course includes feed resources and the methods of processing to enhance the nutritive value of feedstuffs through physical chemical and biological processes. It includes processing and its effects on the nutritive value of feedstuffs and current processing. This course discusses introduction to animal nutrition, characteristics of conventional feeds, characteristics of non-conventional feeds, effects of manufacturing process to nutritive value and feeding, processes of cereals, processes of high fibre, processes of feed made from animal, processes of additional feed supplements from oil palm, paddy, sugarcane and human food, use of preservative and additive in feed formulations, processes of fermentation in improving feed quality, use of nutraceutical in animal feed, factories equipment in feed processing and processed of feeds for aquatic animal. Students will be expected to identify suitable technology and its mechanism in the whole feed production chain. Assessments will be by assignments, field visits, laboratory reports, presentation, midterm exam and final exam. The goal of this course is to build up a team of animal nutritionists who is able to identify, use and manage feed production technology to produce mass production of animal feed.

**ASH 36803 Pengurusan Sisa Haiwan
Animal Waste Management**

3

This course consists of a series of lectures and group discussions in discussing various aspects of fields of waste management. This course also covers the importance of correct disposal of agricultural waste management derived from intensive farming of livestock farm. It includes the application of recent and appropriate technologies and enforcing the relevant regulations and legislation since environmental management issues are considered in a global context. At the end of the semester, the students will know how to detect bacteria derived from non-point sources and know how to do the best management practices in agriculture field based on their lab work and farm visits on how to manage the waste.

ASH 35702	Pengembangan Pertanian Agricultural Extension	2
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This course is introduced to expose students to the background and extension definition relating to concepts, objectives and the agricultural extension model. The course also addresses the extension strategies, the image of extension agent, understanding of theories and methods and the planning process. Exposure to how extension can play an effective role in the dissemination of the farm practices information will also be discussed. At the end of the course, the students are expected to know the real role of agriculture extension.

ABT 46302	Komunikasi Pertanian Communication in Agriculture	2
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This course covers Introduction to theories, definition and models of individuals and mass groups' communications and its role in attitude change and persuasion in the society and agriculture particularly. Topics include Introduction to basic theories on attitude change and persuasion, Diffusion on innovations on extension, the teaching and learning of adults in extension, Extension teaching method, Extension teaching methods: individual and group methods, Extension teaching methods: mass communication, Participatory – Oriented Method of Agricultural Extension Strategic Extension Campaign, Using Extension Strategies and Organizing for Extension Communication and Determining Target Groups/Rural Community Needs. Assessments will be by public speaking, group oral presentation and method demonstration. This source will also familiarize the students with selected variety of social-psychological theories of attitude change and techniques, its characteristics and applications. This course provides an understanding on how to select appropriate communication techniques in relation to the audience groups and situation.

Semester Tujuh (Tahun 4)

ASH 41904	Latihan Sangkut Poltri/Khinzir/Akuakultur Poultry/Swine/Aquaculture internship	4
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This course involves the attachment of student at a governmental or private poultry farms. Student will be exposed to the actual working conditions and management practices carried out in the farm.

ASH 43102	Amalan Ternakan Ladang Animal Farm Practice	2
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This is a practical course, where the students are taken into the animal farms to know various animals. The students would study the production methods, including feeds and feeding, reproductive system, record keeping and finally marketing. The students are required to evaluate the farm at the end of the study.

ASH 43204	Amalan Haiwan II Animal Practice II	4
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This course involves the attachment of student at governmental or private animal farms. Student will be exposed to the actual working conditions and management practices carried out in the farm.

ASH 43304	Latihan Sangkut Ruminan/Ekuin Ruminant/Equine Internship
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This course involves the attachment of student at governmental or private ruminant farms. Student will be exposed to the actual working conditions and management practices carried out in the farm.

Semester Lapan (Tahun 4)

ASH 42012	Industrial Internship Latihan Industri
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This course involves the attachment of student at governmental or private ruminant/poultry/swine/aquaculture farms. Student will be exposed to the actual working conditions and management practices carried out in the farm.

LATIHAN INDUSTRI

Sarjana Muda Produksi dan Kesihatan Haiwan

(ASH 41904, ASH 43304, ASH 42012)

Merit

Pelajar Ijazah Sarjana Muda Produksi dan Kesihatan Haiwan diwajibkan menjalani latihan industri sebanyak TIGA KALI, iaitu:

- i. Semester tujuh (7)
 - a. Latihan Sangkut Poltri/Khinzir/Akuakultur (8 minggu)
 - b. Latihan Sangkut Ruminan/Ekuin (8 minggu)
- ii. Semester lapan (8) – Latihan Industri (24 minggu)

Keseluruhan jam kredit latihan industri adalah 20 jam kredit dan pelajar akan diberikan gred. Nilai grednya akan diambil kira dalam pengiraan Purata Nilai Gred Semester (PNGS) atau Purata Nilai Gred Kumulatif (PNGK).

Pengenalan Kursus

Latihan industri merupakan satu kursus yang memberi pendedahan kepada dunia kerjaya agar para pelajar diperlengkapi dengan pelbagai amalan kerja serta aspek praktikal dalam bidang penternakan haiwan ruminan dan bukan ruminan. Pendedahan ini dapat menghubungkan apa yang dipelajari secara teori dan praktikal dengan realiti suasana pekerjaan. Bagi pelajar yang beraspirasi untuk menjadi usahawan, mereka berpeluang mendapatkan pengalaman dan jaringan luar.

OBJEKTIF KURSUS

Latihan industri mempunyai objektif kursus seperti berikut:

1. Memberi pendedahan kepada pelajar terhadap suasana kerja agar mereka dapat menyesuaikan diri dengan mudah apabila menyertai sektor pekerjaan kelak;
2. Memberi pelajar pengalaman kerja berpasukan dan mencontohi kepimpinan baik pemimpin di tempat kerja;
3. Membentuk kemahiran insaniah dalam pengurusan sumber manusia daripada peringkat atasan dan bawahan; dan
4. Pengalaman yang ditimba semasa menjalani latihan menjadikan pelajar lebih berdaya saing di pasaran pekerjaan kerana telah dilengkapi dengan pengetahuan kemahiran, sikap dan pengalaman praktikal yang sesuai.

Penempatan

Pelajar digalakkan untuk mencari tempat latihan industri sendiri yang hampir dengan tempat tinggal bagi mengurangkan kos. Penyelaras kursus akan menentukan kesesuaian dan akan membantu menguruskan penempatan latihan industri ini. Pelajar boleh menjalani latihan industri di mana-mana organisasi, syarikat, perusahaan, agensi, institut penyelidikan dan bioteknologi, universiti dan lain-lain dalam sektor kerajaan dan swasta. Penempatan ini akan dapat memberi pendedahan persekitaran kerja dan pelbagai aspek praktikal dalam bidang penternakan di Malaysia.

Latihan Sangkut I (ASH 41904 Latihan Sangkut Poltri/Khinzir/Akuakultur)

Tumpuan latihan adalah produksi dan kaedah dalam pengurusan haiwan bukan ruminan. Pelajar akan didedahkan kepada industri atau ladang ternakan untuk mempelajari perkara yang berkaitan dengan produksi dan pendekatan yang digunakan dalam mengurus ladang. Di antara aktiviti yang akan dijalankan termasuklah pengurusan dan perumahan poltri. Pemakanan poltri dan juga teknik pengurusan hasil haiwan akan dilakukan oleh para pelajar. Aspek biosekuriti yang diaplikasikan di ladang akan didedahkan bagi mengawal dan membendung penyakit yang melibatkan unggas. Selain itu, para pelajar akan mempelajari cara pemasaran produk yang telah dihasilkan. Kepentingan produk nilai tambah untuk menjana pendapatan dalam bidang perladangan juga dititikberatkan.

Latihan Sangkut II (ASH 43304 Latihan Sangkut Ruminan/Ekuin)

Tumpuan latihan difokuskan kepada produksi dan kaedah dalam pengurusan haiwan ruminan. Pelajar akan didedahkan kepada industri atau ladang ternakan untuk mempelajari perkara yang berkaitan dengan produksi dan pendekatan yang digunakan dalam mengurus ladang tersebut dalam semua aspek termasuk kesihatan haiwan dan pengurusan kewangan. Di antara aktiviti latihan yang akan dilakukan termasuklah dalam pembiakan dan pembakaan haiwan ruminan. Peranian beradas, pemprosesan air mani dan pengesanan kebuntingan turut diberi keutamaan semasa latihan. Selain itu para pelajar juga akan menimba pengalaman dalam agrostologi di mana mereka akan terlibat dalam penanaman dan penjagaan rumput untuk pemakanan haiwan diladang tersebut. Kepentingan pengeluaran produk nilai tambah untuk menjana pendapatan dalam bidang perladangan juga dititikberatkan.

Latihan Industri (ASH 42012)

Tumpuan latihan adalah produksi dan kaedah dalam pengurusan haiwan samaada ruminan, bukan ruminan, khinzir, ekuin ataupun akuakultur. Pelajar akan didedahkan kepada industri atau ladang ternakan untuk mempelajari perkara yang berkaitan dengan produksi dan pendekatan yang digunakan dalam mengurus ladang.

Penilaian

Penilaian keseluruhan latihan industri pelajar adalah gabungan penilaian oleh Penyelai Industri (40%), Penyelai Akademik (25%), laporan akhir latihan industri (20%) serta pembentangan (15%).

Program Pengajian **Sarjana Muda Sains (Kepujian) Sains Akuatik**

Pendahuluan

Sarjana Muda Sains (Kepujian) Sains Akuatik adalah persediaan terbaik untuk kerjaya dalam bidang sains akuatik. Program ini adalah ijazah sains gunaan yang menggabungkan asas sains dengan bidang sains akuatik dan diperlengkapkan dengan kerja-kerja amali. Dasar penawaran Program Sarjana Muda Sains (Kepujian) Sains Akuatik adalah selaras dengan sasaran Dasar Agromakanan Negara (DAN), 2011-2020 bagi mendokong usaha kerajaan dalam menjamin bekalan makanan yang mencukupi dan selamat kepada rakyat serta meningkatkan sumbangan kepada pendapatan negara dan usahawan tani. Pada tahun pertama pengajian, pelajar didedahkan dengan sistem sains akuatik melalui pelbagai kursus asas seperti biokimia, genetik, mikrobiologi, kimia analitikal, iktiologi, oseanografi dan limnologi. Pada tahun pengajian yang kedua dan ketiga, kursus-kursus yang diajar merangkumi biostatistik, hidrologi, prinsip akuakultur, renang dan keselamatan air, biologi kerang-kerangan, kaedah penyelidikan dan penulisan saintifik, kejuruteraan akuatik, pencemaran akuatik, pengembangan pertanian, makanan dan pemakanan ikan, penguluran ikan, pengurusan hatceri dan ladang, akuakultur bersepadu, akuaponik, anatomi mikro, ekonomi pertanian, pemprosesan dan pengawetan ikan serta teknologi bioflok. Pada tahun keempat pengajian, pelajar akan melaksanakan projek penyelidikan, mendedahkan kepada isu-isu semasa dalam sains akuatik, entomologi akuatik, kesihatan dan penyakit ikan, pengurusan perikanan secara pendekatan ekosistem, polisi dan akta, algalogi, komunikasi dalam pertanian, pengurusan sungai dan mitigasi banjir, rangkaian nilai perikanan serta toksikologi akuatik.

Peluang Kerjaya

Program ini merupakan satu pelantar perolehan ilmu serta pembangunan kapasiti dan sekaligus mampu melahirkan sumber tenaga yang mahir dalam bidang sains akuatik. Graduan pengajian ini akan mempunyai peluang kerjaya profesional dalam bidang sains akuatik, perniagaantani (pakar runding dan perkhidmatan nasihat), kesihatan dan kebajikan haiwan akuatik, pemasaran, pengurusan keusahawanan bandar dan luar bandar, industri akuakultur, sains perikanan dan penyelidikan.

Jangkamasa

Ijazah ini mengambil masa selama empat (4) tahun dengan keperluan bergraduasi ialah 120 kredit.

Syarat kemasukan

STPM	MATRIKULASI	DIPLOMA
1. Mendapat sekurang-kurangnya PNGK 2.50 pada peringkat STPM DAN 2. Mendapat sekurang-kurangnya Gred C pada peringkat STPM dalam mata pelajaran berikut: • Biology/Chemistry/ Mathematics (M) / Mathematics (T) • Physic / Ekonomi / Perakaunan / Geografi DAN 3. Mendapat sekurang-kurangnya kepujian Gred B dalam mata pelajaran Mathematics pada peringkat SPM DAN 4. Mendapat sekurang-kurangnya Gred C pada peringkat SPM dalam mata pelajaran berikut: • Biology / Chemistry / Physics • Mana-mana TIGA (3) mata pelajaran lain DAN 5. Mendapat sekurang-kurangnya Tahap 2 (Band 2) dalam MUET DAN 6. Tiada kecacatan anggota serta pertuturan dan buta warna	1. Mendapat sekurang-kurangnya PNGK 2.50 pada peringkat Matrikulasi / Asasi DAN 2. Mendapat sekurang-kurangnya Gred C pada peringkat Matrikulasi / Asasi dalam mata pelajaran berikut: • Biology / Chemistry / Sains Pertanian DAN 3. Mendapat sekurang-kurangnya kepujian Gred B dalam mata pelajaran Mathematics pada peringkat SPM DAN 4. Mendapat sekurang-kurangnya Gred C pada peringkat SPM dalam mata pelajaran berikut: • Biology / Chemistry / Physics • Mana-mana TIGA (3) mata pelajaran lain DAN 5. Mendapat sekurang-kurangnya Tahap 2 (Band 2) dalam MUET DAN 6. Tiada kecacatan anggota serta pertuturan dan buta warna	1. Mendapat sekurang-kurangnya PNGK 2.50 pada peringkat Diploma dalam bidang berkaitan DAN 2. Mendapat sekurang-kurangnya Gred C pada peringkat SPM dalam mata pelajaran berikut: • Mathematics • Biology / Chemistry / Physics • Mana-mana TIGA (3) mata pelajaran lain DAN 3. Mendapat sekurang-kurangnya Tahap 2 (Band 2) dalam MUET DAN 4. Tiada kecacatan anggota serta pertuturan dan buta warna

Struktur Pengajian

1	4	12	-	16
2	6	9	-	15
3	3	12	-	15
4	7	6	-	13
5	-	9	9	18
6	-	3	11	14
7	-	9	7	16
8	-	4	9	13
Jumlah Kredit	17	67	36	120

Semester Satu (Tahun 1)

Kod	Nama Kursus	Jam Kredit
MPU 31022	Tamadun Islam dan Tamadun Asia Islamic Civilization and Asian Civilization	2 (U)
PBI 10102	Inggeris untuk Komunikasi I English for Communication I	2 (U)
ASQ 10103	Asas Biokimia Fundamental Biochemistry	3 (S)
ASQ 10203	Asas Genetik Fundamental Genetic	3 (S)
ASQ 10303	Iktiologi Ichthyology	3 (S)
ASQ 10403	Oseanografi Oceanography	3 (S)
Jumlah		16

Semester Dua (Tahun 1)

Kod	Nama Kursus	Jam Kredit
MPU 31012	Hubungan Etnik Ethnic Relations	2 (U)
PBI 10202	Inggeris untuk Komunikasi II English for Communication II	2 (U)
MPU 33032	Ilmu Wahyu dan Kemasyarakatan (Muslim)	2 (U)
MPU 33042	Perbandingan Agama II (Bukan Muslim) Comparative Religion II (Non Muslim)	2 (U)
ASQ 10503	Asas Mikrobiologi Fundamental Microbiology	3 (S)
ASQ 10603	Kimia Analitikal Analytical Chemistry	3 (S)
ASQ 10703	Limnologi Limnology	3 (S)
Jumlah		15

Semester Tiga (Tahun 2)

Kod	Nama Kursus	Jam Kredit
KKK xxx	Ko-Kurikulum Co-curriculum	3 (U)
ASQ 20804	Biostatistik Biostatistics	4 (S)
ASQ 20903	Hidrologi Hydrology	3 (S)
ASQ 21003	Prinsip Akuakultur Principle of Aquaculture	3 (S)
ASQ 21102	Renang dan Keselamatan Air Swimming and Water Safety	2 (S)
Jumlah		15

Semester Empat (Tahun 2)

Kod	Nama Kursus	Jam Kredit
PBI xxxx	Bahasa Asing Foreign Language	2 (U)
MPU 33012	Ilmu Wahyu dan Sains (Muslim)	2 (U)
MPU 33022	Moral dan Etika II (Bukan Muslim) Moral and Ethics II (Non-muslim)	
ABT 22403	Keusahawanan Tani Agricultural Entrepreneurship	3 (U)
ASQ 21203	Biologi Kerang-kerangan Biology of Shellfishes	3 (S)
ASQ 21203	Kaedah Penyelidikan dan Penulisan Saintifik Research Methods and Scientific Writing	3 (S)
Jumlah		13

Semester Lima (Tahun 3)

Kod	Nama Kursus	Jam Kredit
ASQ 20143	Latihan Industri I Industrial Training I	3 (S)
ASQ 31503	Kejuruteraan Akuatik Aquatic Engineering	3 (S)
ASQ 31603	Pencemaran Akuatik Aquatic Pollution	3 (S)
ASQ 35003	Makanan dan Pemakanan Ikan Fish Feeds and Feeding	3 (E)
ASQ 35103	Pengulturan Ikan Fish Culture	3 (E)
ASQ 35203	Pengurusan Hatceri dan Ladang Hatchery and Farm Management	3 (E)
Jumlah		18

Semester Enam (Tahun 3)

Kod	Nama Kursus	Jam Kredit
ABT 31603	Pengembangan Pertanian Agricultural Extension	3 (S)
ASQ 35302	Akuakultur Bersepadu Integrated Akuakultur	2 (E)*
ASQ 35402	Akuaponik Aquaponic	2 (E)*
ASQ 35502	Anatomi Mikro Micro Anatomy	2 (E)*
ASQ 35603	Ekonomi Pertanian Agricultural Economic	3 (E)*
ASQ 35703	Pemprosesan dan Pengawetan Ikan Fish Preservation and Processing	3 (E)*
ASQ 35802	Teknologi Bioflok Biofloc Technology	2 (E)*
Jumlah		14

* Pilihan lima kursus elektif

Semester Tujuh (Tahun 4)

Kod	Nama Kursus	Jam Kredit
ASQ 30143	Latihan Industri II Industrial Training II	3 (S)
ASQ 41802	Isu-isu Semasa dalam Sains Akuatik Current Issues in Aquatic Science	2 (S)
ASQ 41904	Projek Penyelidikan I Research Project I	4 (S)
ASQ 45902	Entomologi Akuatik Aquatic Entomology	2 (E)*
ASQ 46002	Kesihatan dan Penyakit Ikan Fish Health and Diseases	2 (E)*
ASQ 46102	Pengurusan Perikanan secara Pendekatan Ekosistem Ecosystem Approach to Fisheries Management	2 (E)*
ASQ 46203	Polisi dan Akta Policy and Act	3 (E)*
Jumlah		16

* Pilihan tiga kursus elektif

Semester Lapan (Tahun 4)

Kod	Nama Kursus	Jam Kredit
ASQ 42004	Projek Penyelidikan II Research Project II	4 (S)
ASQ 46303	Algologi Algology	3 (E)*
ASQ 46402	Komunikasi dalam Pertanian Agricultural Communication	2 (E)*
ASQ 46502	Pengurusan Sungai dan Mitigasi Banjir Riverine Management and Flood Mitigation	2 (E)*
ASQ 46602	Rantaian Nilai Perikanan Fisheries Value Chain	2 (E)*
ASQ 46702	Toksikologi Akuatik Aquatic Toxicology	2 (E)*
Jumlah		13

* Pilihan empat kursus elektif

Nota: A - Kursus Audit S - Kursus Teras E* - Kursus Elektif pilihan U - Kursus Umum

Sinopsis Kursus

Sarjana Muda Sains (Kepujian) Sains Akuatik

Semester Satu (Tahun 1)

Kod Kursus	Nama Kursus	Jam Kredit
ASQ 10103	Biokimia Asas Fundamental Biochemistry	3
This course discusses the major components and characteristics of biochemical processes occurring in living system. The topics discussed include: physicochemical properties and functions of carbohydrates, proteins, lipids and nucleic acids; enzymology including enzyme kinetics, mechanism of reaction and factors that influence enzyme activity; bioenergetics, integration and control of metabolism of carbohydrates, proteins, lipids and nucleic acids; role of nucleic acids in genetics and reproduction; biochemical nature of membranes, hormones and their functions. Students are expected to enhance their understanding and application skill in biochemical calculations as foundations for advance biochemistry.		
ASQ 10203	Genetik Asas Fundamental Genetics	3
This course discusses various aspects of fundamental genetics especially those related to genes, molecules, cells, organisms and population status. It develops the basis of understanding to how life can exist at all levels of complexity, ranging from the molecular to the population level. This course also covers Mendelian and Non-Mendelian principles, inheritance, and related probability methods. Variation in chromosome structure and number are also discussed in relation to plant breeding. Genetic variation deals with the natural diversity that can be observed among members of the same species as well as among different species are also discussed.		
ASQ 10303	Iktiologi Ichthyology	3
This course introduces students to a branch of zoology that studies on fish. Students will learn the taxonomy, diversity, organizational structure, survival and various relationships in life cycle of fish, method of determining the age, growth, feeding habits, breeding and other features that are important to fish. This course will include discussions of Ichthyology application in aquaculture. Most of the practical will be conducted in the laboratory, and some training will involve field work. Through series of exercises and sharing, students will understand the specialized topics in Ichthyology and sustainable management of fishery resources.		

ASQ 10403	Oseanografi Oceanography	3
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This course provides the underlying concepts of oceanography that relates to marine science. Topics include origin of ocean, history of marine science, earth structure and plate tectonics, ocean basins, ocean sediments, water, atmospheric circulation, ocean circulation, waves, tides, coasts, pelagic communities, benthic communities, uses and abuses of the ocean. Students will be expected to demonstrate knowledge in oceanography and its application. Assessments will be by assignments, quiz, field visit, laboratory reports, mid-term exam and final exam. The goal of this course is to produce graduates who knowledgeable in oceanography and its application in marine science.

Semester Dua (Tahun 1)

ASQ 10503	Mikrobiologi Asas Fundamental Microbiology	3
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The purposes of this course are intended to provide student with an overview, appreciation as well as adequate knowledge of animal microbiology, especially in relation to infectious disease. The focus of this course will therefore be on the core information relevant to understanding the diagnosis, pathogenesis, prevention and treatment of bacterial, viral and fungi infection towards animal. Thus, will provide the student with a foundation in animal microbiology from which further in-depth microbiology and disease related research and training is possible. This programme also had a strong practical emphasis, providing students with the basic laboratory skills required for a career in their applied or research microbiology.

ASQ 10603	Kimia Analitikal Analytical Chemistry	3
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This course covers the basic learning in analytical chemistry and understanding of water element, application in conservation and utilization of aquatic resources. Topics include basic units of concentration, oxidation, alkalinity, acidity and chemical integration. Initial discussions cover water quality, which including dissolved gases, nutrients and other substances. The course also emphasizes analytical chemistry in waste from aquaculture. The synopsis course also includes pollution, methods of measurement and control of pollution that is needed in generating activities of aquatic resources. Students are also required to analyse aquatic matters that maximize the benefits of analytical chemistry.

ASQ 10703	Limnologi Limnology	3
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To study freshwater science as a division of ecology or environmental science. It covers the biological, chemical, physical, geological, and other attributes of all inland waters (running and standing waters, fresh and saline, natural or manmade).

Semester Tiga (Tahun 2)

ASQ 20804	Biostatistik Biostatistics	4
The course will introduce the fundamental concepts of statistics and a variety of descriptive and inferential statistical techniques to prepare the students for performing statistical analyses. The topics include fundamental probability theory, T-Test, Chi-square Test, Analysis of Variance, Correlation, Regression and Non-Parametric Analyses. This course focuses on the applied rather than the theoretical aspects of statistics.		
ASQ 20903	Hidrologi Hydrology	3
This course provides the underlying concepts of hydrology which is relevant to many other disciplines namely environmental, meteorology, agronomy, geology, climatology, oceanography, glaciology and other earth sciences. Topics include water aloft, precipitation, evaporation, water on land surface, overland and stream flow, water beneath the ground, infiltration and unsaturated flows, streamflow, catchment, elements and water circulation on Earth. Students will be expected to demonstrate knowledge in basic hydrology and its application. Assessments will be by assignments, quiz, field visit, laboratory reports, mid-term exam and final exam. The goal of this course is to produce graduates who knowledgeable on hydrology and its application on earth science.		
ASQ 21003	Prinsip Akuakultur Principles of Aquaculture	3
This course will cover the knowledge of the development of aquaculture; good aquaculture practices; the biology of common cultured species and economics of aquaculture. Students will be exposed to the basic system of aquafarm construction and the management of aquafarm.		
ASQ 21102	Renang dan Keselamatan Air Swimming and Water Safety	2
This course provides knowledge swimming techniques and water safety applications when in aquatic environment. Topics include Introduction to swimming and water safety, breathing, floating, flutter kick technique, diving, front crawl, frog style, breaststroke, backstroke, freestyle, butterfly, CPR, survival swimming and rescue. Assessments will be by assignments and practical tests. Students will be expected to be able to swim for survival and demonstrate CPR and rescue measures during emergency.		

Semester Empat (Tahun 2)

ABT 22403	Keusahawanan Tani Agricultural Entrepreneurship	3
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The course covers the role and responsibilities of an entrepreneur, problems and techniques in management, business planning, project evaluation, marketing, credit, business strategies, and management of resources and current issues of entrepreneurship in agribusiness. This course also introduces the participants to the concept of entrepreneurship and its role in economic and business development specifically in the agricultural industry

ASQ 21203	Biologi Kerang-kerangan Biology of Shellfishes	3
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This course covers various aspects learning of shellfish including oysters, snails, lobsters and crabs. The course introduces the biological functions of shellfish, including feed and nutrition, growth, reproduction, genetics and biology. At the end of the course, students can comprehend and recognize the various species of shellfish through the practical sampling, identification of taxa, population biology, preservation and ecology.

ASQ 21303	Kaedah Penyelidikan dan Penulisan Saintifik Research Methods and Scientific Writing	3
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This course was introduced to assist students in research methodology and scientific writing. Topics include the principles and measures of aquatic science research using experimental design and statistical analysis. The design takes into account the type of structure and style, and the steps in scientific literature starting from title selection, problems descriptions, hypotheses, literature review, research design, data collection, analysis, results, discussion, recommendations and conclusions. Trial design will include Completely Randomized, Randomized Complete Block, Latin Square and Split Plot Designs. Design and analysis of Factorial Experiments will be taught. Statistic comparison of mean test and measurement concepts will be repeated. Emphasis is also given to the documents organization, drafting a clear scientific report and comprehensive scientific literature.

Semester Lima (Tahun 3)

ASQ 20143	Latihan Industri I Industrial Training I	3
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This course exposes students to reality of the working environment in the field of aquatic science namely environment sector, fisheries sector, development sector, entrepreneurship sector, research sector and governance sector. Students will be expected to practice the theoretical knowledges that they obtained in their studies. Students are also allowed to choose their industrial training organisation, whether at local or foreign countries. Students are expected to do oral presentation of their industrial training outputs and submit log book and a comprehensive report after training.

ASQ 31503	Kejuruteraan Akuatik Aquatic Engineering	3
This course provides an overview of the design and construction process as well as introduction to water management planning. Topics include general water supply design, well, chemical handling and storage, coagulation, flocculation and lime-soda softening, sedimentation, filtration, disinfection, drinking water plant and integration, general wastewater, sanitary sewer design collection and design, wastewater microbiology, general water treatment, wastewater plant residual and clean water management. Students will be expected to demonstrate knowledge in basic hydrology and its application. Assessments will be by assignments, quiz, field visit, laboratory reports, mid-term exam and final exam. The goal of this course is to produce graduates who knowledgeable on planning, design, construction, monitoring and supervision of water.		
ASQ 31603	Pencemaran Akuatik Aquatic Pollution	3
This course provides knowledge about the physical, biological and chemical changes that harmful to aquatic resources. Topics include the factors that influence the production, eutrophication, pollution, sewage treatment, pathogens, toxicology, industrial pollution, pesticides, thermal pollution, radioactivity of coal plants, waste acids and soil pollution. At the end of the course, students expected to understand the pollution effects and play important role in suppressing the aquatic pollution and regulating the development of aquatic ecosystem.		
ASQ 35003	Makanan dan Pemakanan Ikan Fish Feeds and Feeding	3
This course provides technical know-how knowledge of fish feeds and feeding which is vital in aquaculture sustainability. Topics include Introduction to fish nutrition, fish dietary requirements, diet determinants, amino acids and protein, lipids, vitamin requirements, minerals, feeds and feeding, nutritional physiology, feed ingredients and formulation, manufacturing of feeds, fish husbandry and feeds, fish health and quality. Students will be expected to identify suitable alternative feed ingredients to suit fish nutritional requirements, formulate and manufacture formulated diets accordingly. Assessments will be by assignments, quiz, field visit, laboratory reports, mid-term exam and final exam. The goal of this course is to produce aquatic animal nutritionists for the aquaculture and fisheries development in Malaysia.		
ASQ 35103	Pengkulturan Ikan Fish Culture	3
This course discusses the seed production technique and cultivation of several commercial aquatic organisms in Malaysia and Southeast Asia regions. Selected species including Tilapia (<i>Saleserodon niloticus</i>), catfish (<i>Pangasius hypophthalmus</i>), African catfish (<i>Clarias gariepinus</i>) and lobster (<i>Macrobrachium rosenbergii</i>). The course covers the environmental requirements, breeding, seed production, growth, health and disease control, nutrition and elements in sustainable management in fish culture.		

ASQ 35203	Pengurusan Hatceri dan Ladang Hatchery and Farm Management	3
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This course discusses the design and location of fish hatchery, including equipment and accessories needed for effective operation. Topics discussed include water supply, water storage and distribution, water recycling and reconditioning facility; hatchery operations and maintenance; management parent fish, breeding and seed production; handling, feeding and larval rearing, growth and harvesting. It also gives a comprehensive understanding of the roles and responsibilities as a manager or entrepreneur in operation and management of aquaculture farms. Pros and cons of various aquaculture systems that practiced currently are also discussed in this course. Students will get to know and understand differences in management system between government and private sector. The synopsis also includes topics in aquaculture systems, planning, productivity, responsibility and ethics for farm manager. It is hope that this course will produce hatchery managers who are good in technical know-how in hatchery operation in future.

Semester Enam (Tahun 3)

ABT 31603	Pengembangan Pertanian Agricultural Extension	3
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This course is introduced to expose students to the background and extension definition relating to concepts, objectives ant the agricultural extension model. The course also addresses the extension strategies, the image of extension agent, understanding of theories and methods and the planning process. Exposure to how extension can play an effective role in the dissemination of the farm practices information will also be discussed. At the end of the course, the students are expected to know the real role of agriculture extension.

ASQ 35302	Akuakultur Bersepadu Integrated Aquaculture	2
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This course provides an understanding on the scope of the integration of aquaculture with farming and agriculture. Detailed description includes the feasibility of aquaculture in the livestock and agriculture for economic growth and balance of the ecosystem. This course will cover topics such as the use of nutrients in integrated systems, ecosystem of ponds, various agroecological farming systems, public health and utilization animal waste. Students are given the opportunity to visit the farm to get information and direct feedback from farmers on the land settlements, farm management and marketing of agricultural products.

ASQ 35402	Akuaponik Aquaponic	2
This course provides comprehensive teaching of the concept, functions and management systems in relation to the circulation of bio-integrated aquaculture with hydroponic vegetable, flower and herb. Topics will emphasize on selection of fish, aquatic animals and plants to aquaponic, components and design of system, nitrification, subsystem hydroponics and aquaculture, history and challenges of aquaponic, advantages and disadvantages of system. In this course, students are required to build a simple aquaponic system. Assessment is based on design and construction of the system, operation and production in a sustainable manner.		
ASQ 35502	Anatomi Mikro Micro Anatomy	2
This course is designed to study the examination of micro anatomical structures such as cells, tissues, organs and organ systems under light and electron microscope. This course will use microscope slides of anatomical structures as teaching aids in discussions of anatomy. Student will be able to study structure of cells or tissue as compared to normal structure, identify abnormal features and to comprehend the mechanisms that underlie the pathology of these microscopic structures.		
ASQ 35603	Ekonomi Pertanian Agricultural Economics	3
This course covers demand supply, types of markets, international trade and effects of government policies, including government intervention in markets. Topics include definition of economics, economic problem, demand and supply, elasticity, utility and demand, possibilities, preferences and choices, organizing production, output and cost, perfect competition and oligopoly, measuring GDP and economic growth, national income accounting, money, the price level and inflation and food marketing. Assessments will be by assignments, case studies, mid-term exam and final exam. Students will be expected to be able to explain, analyse and evaluate the problems in the agricultural sector, especially problems in Malaysia.		
ASQ 35703	Pemprosesan dan Pengawetan Ikan Fish Processing and Preservation	3
This course provides technical know-how knowledge of fish processing and preservation which is important in fish postharvest sector. Topics include Introduction to fish processing and preservation, Harvesting techniques, fish/crustaceans/ molluscs processing, packaging, freezing, handling of fresh fish, cleaning and sanitation, waste treatment, fish meal and oil, regulations, smoked, cured and dried fish and transportation, distribution and food security. Students will be expected to demonstrate knowledge in fish processing and preservation. Assessments will be by assignments, quiz, field visit, laboratory reports, mid-term exam and final exam. The goal of this course is to produce skilled graduates in postharvest development of aquatic products.		

**ASQ 35802 Teknologi Bioflok
Biofloc Technology**

2

This course is the introduction of using Biofloc Technology in managing poor water quality. The topics cover introduction to biofloc systems, nitrogen syndrome, BFT to control inorganic nitrogen build up, feeding with bioflocs, exsitu biofloc technology, optimizing microbial activities in ponds, aeration and aerator deployment, pond management, pond construction, biofloc technology for super intensive aquaculture, BFT effects of aquatic animals disease control, biology and biotechnology behind bioflocs, biofloc technology applied to aquatic animal bloodstocks and bioflocs technology and sustainable aquaculture development. At the end of the course, students are able to learn the application of bioflocs as an alternative ecosystem of rich and potent particles suspended in relatively poor water.

Semester Tujuh (Tahun 4)

**ASQ 31403 Latihan Industri II
Industrial Training II**

3

This course exposes students to reality of the working environment in the field of aquatic science namely environment sector, fisheries sector, development sector, entrepreneurship sector, research sector and governance sector. Students will be expected to practice the theoretical knowledges that they obtained in their studies. Students are also allowed to choose their industrial training organisation, whether at local or foreign countries. Students are expected to do oral presentation of their industrial training outputs and submit log book and a comprehensive report after training.

**ASQ 41802 Isu-isu Semasa dalam Sains Akuatik
Current Issues in Aquatic Science**

2

This course provides general knowledge of current issues related to aquatic science. Topics include Issues on complex biodiversity in aquatic science, irrigation and water management, climate change adaptation and mitigation measures, carbon capping and trading, invasive species, trans-boundary species, effluents from urbanization and agriculture, aquaculture development, food security. Aquatic community protection, flooding, food safety, aquatic security and legislation-illegal, unregulated and unreported fisheries. Students will be expected to understand context of issues related to aquatic environment, fisheries, economics and governance and their relations to aquatic development. Assessments will be by assignments, case studies, mid-term exam, final exam and presentation/seminar. This course will expose students to real scenarios or crisis in aquatic environment through case studies. Students will be expected to be able to explain, analyse and suggest suitable strategies which can be used to overcome the crisis in aquatic environment.

ASQ 41904	Projek Penyelidikan I Research Project I	4
This course involves a practical research project part I for aquatic science programme. Student will undergo planning and preparation of a written research project proposal and a research project oral presentation with the help of coordinator and supervisor(s). Student is expected to present his/her research proposal at the faculty level, revise and implement research based on the proposal.		
ASQ 45902	Entomology Akuatik Aquatic Entomologi	2
This course provides an understanding on the scope of agriculture entomology. This course will cover topics such as Introduction to importance of insect, Insects diversity, External structure of insects and functions, Insects classification, Internal structure of insects: Digestive and excretory systems, Internal structure of insects: Respiratory and circulatory system, Internal structure of insects: Circulatory system, Internal structure of insects: Auditory system, Internal structure of insects: Nervous system, Describe behaviourism of insects and explain sampling method, Reproduction, growth and development of insect, Insect Ecology I, Insect Ecology I and Pests and outbreaks. Students are expected to produce a detailed insect collection and distinguish the taxa and importance.		
ASQ 46002	Kesihatan dan Penyakit Ikan Fish Health and Diseases	2
This course discusses the types of non-infectious diseases (environment, food and genetics) and infectious diseases caused by viruses, bacteria, fungi, protozoa, worms and crustacean with detailed descriptions of the symptoms, diagnosis, pathogen life cycle and means infection. Key topics such as immunology and vaccines fish will be studied. Students are expected to apply this knowledge in fish health management of aquaculture practices.		
ASQ 46102	Pengurusan Perikanan Secara Pendekatan Ekosistem Ecosystem Approach to Fisheries Management	2
This course provides knowledge of Ecosystem Approach to Fisheries Management (EAFM) that strives to balance diverse societal objectives, by taking into account the knowledge and uncertainties about biotic, abiotic, and human components of ecosystems and their interactions and applying an integrated approach to fisheries within ecologically meaningful boundaries (FAO, 2003). Topics include definition of EAFM, steps to implement EAFM, EAFM plan, fishery management unit, prioritization of issues and goals, developing EAFM plan, implementation of EAFM and monitor, evaluate and adaptation of EAFM. Students will be expected to analyse issues in EAFM, form Fisheries Management Unit of any related EAFM projects and plan EAFM projects accordingly. Assessments will be by assignments, mid-term exam, final exam and presentation/seminar. The goal of this course is to train students to be future trainers in EAFM for Malaysia.		

**ASQ 46203 Polisi dan Akta
Policy and Act**

3

This course provides knowledge of policy, acts and its application in aquatic and environment management. Topics include Issues pertaining to aquatic environment, Introduction to law and policy, International law/federal law/state law, Ecosystem Approach to Fisheries Management (EAFM), Criminal Law, Fisheries Law, Native Law, Environmental Law, policies in Malaysia and international commitment of Malaysia towards aquatic environment management. Students will be expected to understand context of issues related to aquatic environment, fisheries, economics and governance and their relations to government policies and acts. Assessments will be by assignments, case studies, mid-term exam, final exam and presentation/seminar. This course will expose students to real scenarios of poor management of aquatic environment through case studies. Students will be expected to be able to explain, analyse and suggest suitable policies and acts which can be use in governing the future management of the declining environment.

Semester Lapan (Tahun 4)

**ASQ 42004 Projek Penyelidikan II
Research Project II**

4

This course involves the continuity of practical research project part I for aquatic science programme. Student will undergo implementation of research work followed with preparation of a written thesis. At the end of the semester, students are expected to complete their respective research with the help of coordinator and supervisor(s). Students are expected to defend their thesis at the faculty level, revise content of thesis and submit thesis to their respective faculty as proof of completion.

**ASQ 46303 Algalogi
Algology**

3

This course is a study of planktons in waters. The synopsis course covers the learning of phycology, taxonomy, physiology, biochemistry, genetics, hydrobiology and algae culture. Students will be exposed to practical training for better understanding of algology. At the end of the course, students will be able to identify aquatic alga including the development phases.

ASQ 46402	Komunikasi dalam Pertanian Agricultural Communication	2
This course covers Introduction to theories, definition and models of individuals and mass groups' communications and its role in attitude change and persuasion in the society and agriculture particularly. Topics include Introduction to basic theories on attitude change and persuasion, Diffusion on innovations on extension, The teaching and learning of adults in extension, Extension teaching method, Extension teaching methods: individual and group methods, Extension teaching methods: mass communication, Participatory – Oriented Method of Agricultural Extension Strategic Extension Campaign, Using Extension Strategies and Organizing for Extension Communication and Determining Target Groups/Rural Community Needs. Assessments will be by public speaking, group oral presentation and method demonstration. This source will also familiarize the students with selected variety of social-psychological theories of attitude change and techniques, its characteristics and applications. This course provides an understanding on how to select appropriate communication techniques in relation to the audience groups and situation.		
ASQ 46502	Pengurusan Sungai dan Mitigasi Banjir Riverine Management and Flood Mitigation	2
This course provides students a basic knowledge on riverine management and strategies to mitigate flood. Topics include introduction to riverine ecosystem, perspectives in riverine concepts, hierarchical patch dynamics in riverine landscape, special arrangement of river systems, hydrogeomorphic characters of a riverine ecosystem, ecological implications of riverine ecosystem, ecogeomorphology of altered riverine landscapes, practical applications of riverine ecosystem synthesis and conservation settings, flood risk management, flood hazard modelling, flood forecasting, vulnerability and flood damage, mitigation measures, historical floods, transboundary issues and research. Students will be expected to demonstrate knowledge in riverine management and action plans for flood mitigation. Assessments will be by assignments, quiz, field visit, laboratory reports, mid-term exam and final exam. The goal of this course is to develop knowledgeable graduates in riverine management, river modelling and able to develop appropriate recommendations for action plans on flood management and flood mitigation in Malaysia.		
ASQ 46602	Rantaian Nilai Perikanan Fisheries Value Chain	2
This course provides a basic framework of development planning by using value chain approach. Topics include competitive and technology strategies, Competitor selection, Inter-relationships among business units, Defensive strategy, Horizontal strategy, complementary products, industries and competitive strategy, strategic decisions, capacity expansion, governance in value chain and Strategic analysis of vertical integration. Students will be expected to analyse industrial scenarios both vertically and horizontally, identify pitfalls, stakeholders, governance, competitors and strategic strategies to overcome the pitfalls that occur in the industry. Assessments will be by assignments, case studies, mid-term exam, final exam and presentation/seminar. The goal of this course is to train students to practice a technical know-how in producing a value chain.		

This course is about the study of harmful effects of chemicals found in aquatic organisms. The topics cover introduction chemistry, biology, symptoms, mechanisms, treatments and detection of toxic materials. This course will be multi-disciplinary as it related to other fields like synthetic chemistry, proteomic, drug metabolism, mechanism of action, bioinformatics, bioanalytical chemistry, biological chemistry and molecular epidemiology. At the end of the course, students are able to learn the relationship dose and the effect of exposure of living organisms.

LATIHAN INDUSTRI

Sarjana Muda Sains (Kepujian) Sains Akuatik (ASQ 20143 dan ASQ30143)

Merit

Pelajar Ijazah Sarjana Muda Sains (Kepujian) Sains Akuatik diwajibkan menjalani latihan industri sebanyak DUA KALI semasa antara sesi iaitu, antara Semester Keempat-Kelima dan Semester Keenam-Ketujuh sekurang-kurangnya selama ENAM (6) minggu setiap kali. Kursus-kursus ini bernilai tiga kredit (3) unit dan pelajar akan diberikan gred. Nilai grednya akan diambil kira dalam pengiraan Purata Nilai Gred Semester (PNGS) atau Purata Nilai Gred Kumulatif (PNGK).

Pengenalan Kursus

Latihan industri merupakan satu kursus yang memberi pendedahan kepada dunia kerjaya agar para pelajar diperlengkapkan dengan pelbagai amalan kerja serta aspek praktikal dalam bidang sains akuatik. Pendedahan ini dapat menghubungkan apa yang dipelajari secara teori dan praktikal dengan realiti suasana pekerjaan. Bagi pelajar yang beraspirasi untuk menjadi usahawan, mereka berpeluang mendapatkan pengalaman dan jaringan luar.

OBJEKTIF KURSUS

Latihan industri mempunyai objektif kursus seperti berikut:

1. Memberi pendedahan kepada pelajar terhadap suasana kerja agar mereka dapat menyesuaikan diri dengan mudah apabila menyertai sektor pekerjaan kelak;
2. Memberi pelajar pengalaman kerja berpasukan dan mencontohi kepimpinan baik pemimpin di tempat kerja;
3. Membentuk kemahiran insaniah dalam pengurusan sumber manusia daripada peringkat atasan dan bawahan; dan
4. Pengalaman yang ditimba semasa menjalani latihan menjadikan pelajar lebih berdaya saing dipasaran pekerjaan kerana telah dilengkapi dengan pengetahuan kemahiran, sikap dan pengalaman praktikal yang sesuai.

Penilaian

Penilaian keseluruhan latihan industri pelajar adalah gabungan penilaian oleh Penyelia Industri (25%), Penyelia Akademik (25%) dan laporan akhir latihan industri serta pembentangan (50%).

Program Pengajian

Sarjana Muda Teknologi Makanan

Pendahuluan

Teknologi Makanan mengintegrasikan prinsip dan konsep sains kimia, fizik, mikrobiologi dan kejuruteraan untuk digunakan bagi memilih, merekabentuk, memproses, menganalisis, membungkus, menilai dan menyimpan bahan makanan serta produk makanan dan minuman. Dengan kenaikan kos bahan makanan yang dihadapi sekarang ini, bidang teknologi makanan akan menjadi lebih penting bagi memenuhi keperluan makanan dan minuman yang berkhasiat dan selamat untuk pengguna amnya.

Pelajar yang mengikuti program ini didedahkan kepada semua aspek pembelajaran mengenai makanan; sifat kimia bahan makanan sehingga pengilangan produk makanan yang selamat dan berkualiti tinggi. Mereka perlu mengikuti kurikulum saintifik yang padat sebagai persediaan untuk mendapatkan pelbagai peluang pekerjaan atau untuk melanjutkan pelajaran di peringkat pascasiswazah di dalam bidang berkaitan dengan Teknologi Makanan.

Peluang Kerjaya

Pemprosesan makanan merupakan salah satu industri pembuatan terbesar dan memberi peluang pekerjaan yang amat baik kepada graduan teknologi makanan. Pembangunan dan pemajuan industri ini memerlukan tenaga mahir di dalam bidang yang berkaitan teknologi makanan. Graduan teknologi makanan mempunyai kemahiran yang membolehkan mereka menjadi usahawan makanan atau memegang jawatan penting di kilang memproses makanan, pembekal makanan dan bahan makanan serta di makmal penyelidikan dan perundingan, badan kerajaan, agensi perundangan dan juga agensi penguatkuasaan.

Jangkamasa

Ijazah ini mengambil masa selama empat (4) tahun dengan keperluan minima bergraduasi ialah 123 kredit.

Syarat kemasukan

STPM	MATRIKULASI	DIPLOMA
1. Mendapat sekurang-kurangnya PNGK 2.50 pada peringkat STPM DAN 2. Mendapat sekurang-kurangnya Gred C+ mata pelajaran berikut pada peringkat STPM: • Biology • Chemistry • Physic / Mathematics (M) / Mathematics (T) DAN 3. Mendapat sekurang-kurangnya Gred C mata pelajaran berikut pada peringkat SPM: • Bahasa Inggeris • Biology • Chemistry • Physics / Mathematics / Additional Mathematics DAN 4. Mendapat Gred C SATU (1) mata pelajaran lain selain yang telah dipilih TIDAK TERMASUK Bahasa Melayu pada peringkat SPM DAN 5. Mendapat sekurang-kurangnya MUET Tahap 2 (Band 2) DAN 6. Tiada kecacatan anggota serta pertuturan dan tidak buta warna	1. Mendapat sekurang-kurangnya PNGK 2.50 pada peringkat Matrikulasi / Asasi DAN 2. Mendapat sekurang-kurangnya Gred C+ mata pelajaran berikut pada peringkat Matrikulasi / Asasi: • Biology • Chemistry • Mathematics / Physics DAN 3. Mendapat sekurang-kurangnya Gred C mata pelajaran berikut pada peringkat SPM: • Bahasa Inggeris • Biology • Chemistry • Physics / Mathematics / Additional Mathematics DAN 4. Mendapat Gred C SATU (1) mata pelajaran lain selain yang telah dipilih TIDAK TERMASUK Bahasa Melayu pada peringkat SPM DAN 5. Mendapat sekurang-kurangnya MUET Tahap 2 (Band 2) DAN 6. Tiada kecacatan anggota serta pertuturan dan tidak buta warna	1. Mendapat sekurang-kurangnya PNGK 3.50 pada peringkat Diploma dalam bidang berkaitan DAN 2. Mendapat sekurang-kurangnya Gred C mata pelajaran berikut pada peringkat SPM: • Bahasa Inggeris • Biology / Chemistry / Mathematics • Physics / Additional Mathematics DAN 3. Mendapat Gred C SATU (1) mata pelajaran lain selain yang telah dipilih TIDAK TERMASUK Bahasa Melayu pada peringkat SPM DAN 4. Mendapat sekurang-kurangnya MUET Tahap 2 (Band 2) DAN 5. Tiada kecacatan anggota serta pertuturan dan tidak buta warna

Struktur Pengajian

1	4	12	-	16
2	7	8	3	18
3	2	9	6	17
4	4	10	3	17
5	3	9	6	18
6	-	12	-	12
7	-	6	8	14
8	-	5	6	11
Jumlah Kredit	20	71	32 Keperluan Minimum	123 Keperluan Minimum

Semester Satu (Tahun 1)

Kod	Nama Kursus	Jam Kredit
MPU 31022	Tamadun Islam dan Tamadun Asia Islamic Civilization and Asian Civilization	2 (U)
PBI 10102	Bahasa Inggeris untuk Komunikasi English for Communication I	2 (U)
FSI 10103	Kimia Organik dan Analisis Analytical and Organic Chemistry	3 (S)
FSI 10203	Mikrobiologi Makanan Asas Basic Food Microbiology	3 (S)
FSI 11503	Pengenalan Kepada Sains dan Teknologi Makanan Introduction to Food Science and Technology	3 (S)
FSI 20303	Kalkulus Calculus	3 (S)
Jumlah		16

Semester Dua (Tahun 1)

Kod	Nama Kursus	Jam Kredit
MPU 33032	Ilmu Wahyu dan Kemasyarakatan (Muslim)	2 (U)
MPU 33042	Perbandingan Agama II (Bukan Muslim) Comparative Religion II (Non Muslim)	
PBI 10202	Bahasa Inggeris untuk Komunikasi II English for Communication II	2 (U)
KKK xxxx	Ko-kurikulum I Co-curriculum I	3 (U)
FSI 10803	Mikrobiologi Makanan Food Microbiology	3 (S)
FSI 11302	Fizik Am General Physics	2 (S)
FSI 11603	Kimia Inorganik dan Fizikal Physical and Inorganic Chemistry	3 (S)
FSI 16103	Pemakanan dan Kesihatan Nutrition and Health	3 (E)
Jumlah		18

Semester Tiga (Tahun 2)

Kod	Nama Kursus	Jam Kredit
MPU 33012	Ilmu Wahyu dan Sains (Muslim)	2 (U)
MPU 33022	Moral dan Etika II (Bukan Muslim) Moral and Ethics II (Non-muslim)	
FSI 20403	Kimia Komponen Makanan Chemistry of Food Components	3 (S)
FSI 21203	Asas Kejuruteraan Proses Makanan Fundamental of Food Process Engineering	3 (S)
FSI 22203	Teknologi Pemprosesan Makanan I Food Processing Technology I	3 (S)
ABS 12303	Prinsip Perakaunan Principle of Accounting	3 (E)*
FSI 26703	Teknologi Fermentasi Makanan Food Fermentation Technology	3 (E)*
FSI 26803	Teknologi Konfeksi Koko dan Gula Cocoa and Sugar Confectionary Technology	3 (E)*
Jumlah		17

* Pilihan dua kursus elektif

Semester Empat (Tahun 2)

Kod	Nama Kursus	Jam Kredit
MPU 31012	Hubungan Etnik Ethnic Relationship	2 (U)
PBI xxxxx	Bahasa Asing Foreign Language	2 (A)
FSI 20503	Biokimia Makanan Food Biochemistry	3 (S)
FSI 20602	Analisis Kimia Makanan Food Chemical Analysis	2 (S)
FSI 22303	Teknologi Pemrosesan Makanan II Food Processing Technology II	3 (S)
FSI 22602	Makanan Halal Halal Food	2 (S)
FSI 26303	Penilaian Deria Makanan Sensory Evaluation of Food	3 (E)*
FSI 35203	Teknologi Hasil Bakeri Bakery Products Technology	3 (E)*
Jumlah		17

* Pilihan satu kursus elektif

Semester Lima (Tahun 3)

Kod	Nama Kursus	Jam Kredit
ABT 20803	Biostatistik Biostatistic	3 (S)
ABT 22403	Keusahawanan Tani Agricultural Entrepreneurship	3 (U)
FSI 30903	Pembungkusan Makanan Food Packaging	3 (S)
FSI 31103	Keselamatan dan Pengurusan Kualiti Makanan Food Safety and Quality Management	3 (S)
MSS 11403	Prinsip Pemasaran dan Jualan Principle of Marketing and Selling	3 (E)*
FSI 35303	Teknologi Minuman Beverages Technology	3 (E)*
FSI 36503	Toksikologi Makanan Food Toxicology	3 (E)*
FSI 46603	Makanan Berfungsi Functional Food	3 (E)*
Jumlah		18

* Pilihan dua kursus elektif

Semester Enam (Tahun 3)

Kod	Nama Kursus	Jam Kredit
FSI 31412	Latihan Industri Industrial Training	12 (S)
Jumlah		12

Semester Tujuh (Tahun 4)

Kod	Nama Kursus	Jam Kredit
FSI 41004	Pembangunan Produk Makanan Food Product Development	4 (S)
FSI 42402	Projek Penyelidikan I Research Project I	2 (S)
FSI 35403	Teknologi Tenusu Dairy Technology	3 (E)*
FSI 45003	Analisis Makanan Lanjutan Advances in Food Analysis	3 (E)*
FSI 45503	Rekabentuk Proses dan Loji Makanan Food Process and Plant Design	3 (E)*
FSI 45602	Sains Makanan Forensik Forensic Food Science	2 (E)*
FSI 46003	Teknologi Daging Meat Technology	3 (E)*
FSI 46203	Teknologi Hasil Minyak dan Lemak Oils and Fats Technology	3 (E)*
Jumlah		14

* Pilihan tiga kursus elektif

Semester Lapan (Tahun 4)

Kod	Nama Kursus	Jam Kredit
FSI 42001	Seminar Seminar	1 (S)
FSI 42504	Projek Penyelidikan II Research Project II	4 (S)
FSI 45803	Pengurusan Operasi Loji Makanan Management of Food Plant Operation	3 (E)*
FSI 45103	Teknologi Makanan Hasil Akuatik Aquatic Food Product Technology	3 (E)*
FSI 46403	Lipid Berstruktur dan Minyak Bersifat Istimewa Structured Lipids and Specialty Oils	3 (E)*
Jumlah		11

* Pilihan dua kursus elektif

Nota: U -Kursus Umum S -Kursus Teras E -Kursus Elektif

Sinopsis Kursus

Sarjana Muda Teknologi Makanan

Semester 1 (Tahun 1)

Kod Kursus Nama Kursus

FSI 10103	Kimia Organik dan Analisis Analytical and Organic Chemistry	3
This course is designed to introduce students to the analytical and organic chemistry. It outlines the reactions, some techniques such as analysis and uses of molecules containing one functional group such as alcohols, aldehydes, ketones, carboxylic acids, amines in both aliphatic and aromatic. The course includes compulsory laboratory experiments, and student will be guided to conduct experiments that cover techniques, methods, observations and data collections.		
FSI 10203	Mikrobiologi Makanan Asas Basic Food Microbiology	3
This course introduces the basic study of microorganisms and microbiological techniques used in the laboratory. Topics that will be covered are the role of microorganisms in foods, characteristics and classification of microorganisms, the structure and function of prokaryotic and eukaryotic cell, isolation, cultivation and preservation of microorganisms, growth and development, metabolism and biosynthesis, deterioration and control of microorganisms, mutation, genetic engineering, immune and allergic reactions; laboratory safety and basic techniques in microbiology.		
FSI 11503	Pengenalan kepada Sains dan Teknologi Makanan Introduction to Food Science and Technology	3
The course is arranged to introduce basics of food science and technology and to stimulate students' interest in this field. General aspects of up-to-date food science and technology will be covered, including: food industry outlook, food chemistry, nutrition, food processing including food packaging and engineering, food microbiology, food safety, halal food and food biotechnology.		
FSI 20303	Kalkulus Calculus	3
This course includes first and second degree equation, limit, continuity and derivatives and their applications. Elementary integration and their application, differentiation and integration involving exponential and logarithmic functions, elementary ordinary differential equation also will be covered.		

Semester 2 (Tahun 1)

FSI 10803	Mikrobiologi Makanan Food Microbiology	3
This course comprises lectures and laboratory classes. It covers the role and significance of microorganisms in food and water, factors effecting their growth in food, 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, foodborne diseases, food fermentation and the use of microorganisms as processing aids and sources of food ingredients and additives, probiotics microorganisms and indicator organisms.		
FSI 11302	Fizik Am General Physics	2
This course is introduced to expose students to the general physics which provides sufficient information to enhance the knowledge and understanding of the basic concepts in physics. Topics that will be covered include measurement, work and energy, circular motion, fluids, electricity and magnetism and electromagnetic waves. A strong emphasis will be given on the temperature and heat, the transfer of heat and thermodynamics.		
FSI 11603	Kimia Inorganik dan Fizikal	3
This course covers the basics of important physical and inorganic chemistry which include : modern atomic theory, eriodical relationship, main group element, theory of bonding, roperties of gas, liquid and solid, chemical equilibrium, lectrochemistry, thermodynamics, kinetic and nuclear hemistry. This course is supported with the laboratory experimental works where students develop safe manipulate skills.		
FSI 16103	Pemakanan Dan Kesihatan Nutrition And Health	3
This course gives an understanding of basic nutritional principle, planning nutritious diet and nutrition for a lifetime. Areas covered include the composition of food, human requirements for nutrients and how the body processes food and nutrients. Other areas studied are food intolerance, food toxicology and physiological changes that occur as a result of excesses or deficiencies of various nutrients including food additives, anti-nutritional factors, toxic components in food and nutritional changes in food during food processing and storage.		

Semester 3 (Tahun 2)

FSI 20403	Kimia Komponen Makanan Chemistry Of Food Components	3
This course covers the chemical, physical properties food macro and microcomponents 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.		
FSI 21203	Asas Kejuruteraan Proses Makanan Fundamental of Food Process Engineering	3
This course deals with fundamental aspects of engineering theory and principles in food processing. It provides students an exposure in using food engineering principles for improving the commonly used unit operations in the food processing industry. Topics covered include introduction to food engineering, material and energy balance, fluid flow, energy in food processing, heat and mass transfer, refrigeration, food freezing, material handling, membrane technology and process control. The basic concepts are introduced with discussion of their applications in food processing.		
FSI 22203	Teknologi Pemprosesan Makanan I Food Processing Technology I	3
The basic principles and practices of the major techniques used in food processing are introduced in a series of integrated laboratory exercises and lectures covering preservation method by reducing water activity and utilization of preservatives and antioxidants, and innovative non-thermal methods. The application of basic engineering principles to understand the operation of modern food processing plant facilities to convert raw materials into high quality foods will also be discussed.		
ABS 12303	Prinsip Perakaunan Principles of Accounting	3
This course will introduce the objectives, concepts, principles, accounting conventions and recording processes. It also focuses on the accounting cycle starting from analyzing and recording business transactions using system notes to prepare financial statements.		
FSI 26703	Teknologi Fermentasi Makanan Food Fermentation Technology	3
The industrial microbiology section examines how micro-organisms are obtained, handled and maintained in industry and discusses the application of genetically modified micro-organisms. Fermentation modes and kinetic models are discussed using batch and continuous growth. Downstream processes of industrial fermentations and the role of micro-organisms in producing substances of industrial importance is discussed.		

FSI 26803	Teknologi Konfeksi Koko dan Gula Cocoa and Sugar Confectionery Technology	3
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This course provides an overview of the science and technology of chocolate manufacture from cocoa production, through the manufacturing processes, to the nutrition and health aspects of chocolate consumption. It covers cocoa cultivation and production with special attention paid to post-harvest pretreatments, fermentation and drying processes. The scientific principles behind industrial chocolate manufacture are outlined with detailed explanations of the various stages of chocolate manufacturing including mixing, refining, conching, tempering, moulding, enrobing, cooling and panning. Other topics covered include sugar and related materials, caramel, toffees and fudge, gum, jellies and pastilles, tablets and lozenges and also marshmallow and nougat.

Semester 4 (Tahun 2)

FSI 20503	Biokimia Makanan Food Biochemistry	3
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This course discusses the main components and biochemical processes in living organisms in relation to safety and quality of food. The chapters include: water, acid-base and buffer, enzyme (enzyme kinetic and control of enzyme activity), main metabolic pathways and their implications on the safety and quality food during processing.

FSI 20602	Analisis Kimia Makanan Food Chemical Analysis	2
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This course covers the fundamental of proximate analysis of food and its relation to the nutritional value, shelf life, characteristics and Food Act. The course also features hands on approach to the principle of methodology and equipment such as thin-layer chromatography, GC, GCMS, HPLC, FTIR and PCR in detecting/measuring food components.

FSI 22303	Teknologi Pemrosesan Makanan II Food Processing Technology II	2
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This course describe the different methods and techniques used for high- and low-temperature food processing with the aid of basic engineering principles. This course also focuses on the operation of modern food processing plant facilities to convert raw materials into high quality foods. Common unit operations will be covered as well as the principles that control their operation are emphasized. This course will give a 'hands on' experience to the students as to how to handle the equipments and to interpret the data obtained from laboratory experiments.

FSI 22602	Makanan Halal Halal Food	2
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This course consists of lectures, discussions and class assignments. An assignment will require students to simulate the application of halal certification for a food processing plant. The course includes the concept of halal and haram in Islam, sources of halal food, halal slaughtering methods, halal food processing concept, halal food ingredients and additives. The course also covers legislations related to halal certification and halal mark. Current issues in global halal food industry and markets will also be discussed.

FSI 26303	Penilaian Deria Makanan Sensory Evaluation of Food	3
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This course provide sensory evaluation concepts and application, explanation on methods, formats and techniques for obtaining data through sensory evaluation, preparation of sample for sensory evaluation, factors influencing measurement of sensory evaluation, statistical data analysis and selection and training of sensory panelists.

FSI 35203	Teknologi Hasil Bakeri Bakery Products Technology	3
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This course Integrates class discussions and laboratory exercises to introduce the students to the production of both traditional and modern bakery products. Common practical problems that occur during baking, potential solutions and innovations in baking technology will be discussed.

Semester 5 (Tahun 3)

ABT 20803	Biostatistik Biostatistic	3
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The course introduces the fundamental concepts of statistics and a variety of descriptive and inferential statistical techniques to prepare students for performing statistical analyses using a statistical software, then interpreting and finally, reporting the statistical results/outputs. The topics include probability theory, normal distribution, parametric statistical techniques to explore relationship among variables (correlation, regression), and to compare groups (T-Test, ANOVA). Non-normal distributions and its' non-parametric statistical techniques (examples: Chi-Square, Spearman, Mann-Whitney, Kruskal-Wallis, Friedman) are also introduced. This course focuses on the applied aspects of statistics.

ABT 22403	Keusahawanan Tani Agricultural Entrepreneurship	3
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The course covers the role and responsibilities of an entrepreneur, problems and techniques in management, business planning, project evaluation, marketing, credit, business strategies, and management of resources and current issues of entrepreneurship in agribusiness. This course also introduces the participants to the concept of entrepreneurship and its role in economic and business development specifically in the agricultural industry.

FSI 30903	Pembungkusan Makanan Food Packaging	3
This course covers areas pertaining to food packaging materials, systems, and applications. The course will begin with topics of the properties, fabrication and function of metal, glass, paper and plastic packaging. Packaging technology will include manual, semi-auto and automatic packaging machines, MAP packaging, vacuum packaging, aseptic packaging and retorting. Selected topics for food packaging applications will include packaging of selected products, product shelf life and new trend in food packaging.		
FSI 31103	Keselamatan dan Pengurusan Kualiti Makanan Food Safety and Quality Management	3
This course examines food safety from the perspectives of the consumer, the food industry and regulatory agencies. It addresses chemical, physical and microbiological hazards. Example of risk management tools will also be discussed. This course will focus on food safety and quality management components and the tools used for quality control such as control charts, acceptance sampling, and auditing inspections, Hazard Analysis Critical Control Points (HACCP), Good Manufacturing Practice (GMP). The principles and practices of food plant sanitation will also be covered. Students are required to carry out a mini project on preparation and implementation of GMP & HACCP in selected food factories.		
MSS 11403	Prinsip Pemasaran dan Jualan Principle of Marketing and Selling	3
This course provides an introduction to several aspects of marketing. It contains a general knowledge of marketing emphasizing marketing mix elements and target markets, segmentation and positioning, marketing strategies, market planning and promotion. In details, students are able to understand marketing, the process through which organizations analyze, plan, implement, and control programs to develop and maintain beneficial exchanges with target buyers. Effective marketing is critical for the long-term success of any business organization because this function ensures that the firm attracts, retains, and grows customers by creating, delivering, and communicating superior customer value. In addition, it does provide an overview of the selling process. Identification of the elements of the communications process between buyers and sellers.		
FSI 35303	Teknologi Minuman Beverages Technology	3
This course covers the study of different types of beverages such as plant based beverages, dairy based beverages, carbonated formulated beverages and etc. Essential ingredients such as stabilizers and sweeteners, and significant aspects of formulations such as fortification technology and methods to extend shelf-life will be covered.		

FSI 36503 Toksikologi Makanan 3

This course covers various types of toxicants, including the naturally occurring food toxicants and look at specific toxin action in several food products. The chemical identities of the toxicants and their fates in foods and in the human body are discussed, along with historical notes on the discoveries of the toxins and possible use in ancient times.

**FSI 46603 Makanan Berfungsi
Functional Food 3**

This course consist of scientific literature that examines the proposed mechanisms by which functional foods are able to influence the major metabolic systems of the body with a positive result on overall health, followed with the development, and marketing of functional foods and nutraceuticals product. Overall, the topics that will be covered in this course are functional foods chemistry, its mechanism in human body, technologies and processing, safety and marketing.

Semester 6 (Tahun 3)

FSI 31412 Latihan Industri 12
Industrial Training

Industrial training is a necessity for all students of Bachelor of Food Technology. This course requires students to undergo practical training in any institution related to the food industry to expose students to real working environment in parts such as production, operation, management, analysis and marketing. Industrial Training goal is to enable students to get experience in the organization or related companies in line with the faculty to produce graduates who have the skills and expertise to meet the current needs of the country.

Semester 7 (Tahun 4)

FSI 41004 Pembangunan Produk Makanan 4
Food Product Development

This course covers the theory and practical concepts involve in designing and developing new food products. The three major components of food product development steps which are development and evaluation of product concept, development of a prototype food product including packaging, evaluation of product attributes, safety, shelf life, and also market evaluation of the prototype products will be covered. Students will be exposed to various techniques to evaluate sensory attributes of food products. At the end of the course, students will be required to work through a food product development proposal using the product development team approach that is prevalent in the food industry.

FSI 42402	Projek Penyelidikan I Research Project I	2
This course is introduced to provide students with the skill necessary to undertake original research project and to being able to communicate their project in both writing and oral skills. This course may expose student's creativity in designing a research. The topic of the Research Project will be determined in consultation with the supervisor.		
FSI 35403	Teknologi Tenusu Dairy Technology	3
This course discusses the technology of dairy product including selection and processing of ice cream, yogurt, yogurt drinks, cheese and powdered milk. Topics covered include composition of various products and ingredients used in the manufacturing process of the frozen dairy products. The course includes compulsory laboratory experiment and student will be guided to conduct experiments that cover analysis and evaluation of various types of dairy products.		
FSI 45003	Analisis Makanan Lanjutan Advances in Food Analysis	3
This course gives an understanding of theory, potentials and applications of advanced analytical techniques employed in food analysis. It focus on providing students with knowledge of modern techniques used in research and development as well as inspection of food products.		
FSI 45503	Rekabentuk Proses dan Loji Makanan Food Process and Plant Design	3
This course presents the principles and methodology for food process and plant design to meet the quality standards and requirements set by the local regulatory agencies. In particular, it emphasizes on the key elements of process and site selection, building the process flow diagram (PFD) for food plants, process analysis and process evaluation in generating inherently safe, economic and environmentally friendly processes, material and energy balances, equipment design, equipment selection and material of construction, waste minimization and overall costing.		
FSI 45602	Sains Makanan Forensik Forensic Food Science	3
This course is introduced to expose the students to the various techno-legal issues which frequently confront companies involved in the manufacture and service of food and beverages. A portfolio of case studies will be used to demonstrate the fundamental and practical aspects of the investigative process, compensation claims from consumers who have experienced foodborne illness, food composition and labeling authenticity, including certification for halal, genetic modification using recombinant DNA technology, species homogeneity, sabotage, deliberate adulteration, tampering; protection of intellectual property and patents.		

This course Integrates class discussions and laboratory exercises to introduce the students to the biochemical and physical changes that occur during the conversion of muscle to meat; the traditional processing of meat products; major problems that occur in meat products and potential solutions, innovations and recent advances in the technology for meat processing.

FSI 46003	Teknologi Daging Meat Technology	3
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This course intergrates class discussions and laboratory exercises to introduce the students to the biochemical and physical changes that occur during the conversion of muscle to meat; the traditional processing of meat; equipments, ingredients and additives used in the manufacturing of meat products; major problems that can occur in meat products and potential solutions and recent advanced technology for meat processing.

FSI 46203	Teknologi Hasil Minyak dan Lemak Oils and Fats Technology	3
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This course integrates class discussions, laboratory exercises and factory visits to introduce the students to the technology of fat or oil extraction, purification and modification. The technology to produce specialty fats, downstream products and innovations in the technology for palm oil processing will be covered.

Semester 8 (Tahun 4)

FSI 42001	Seminar Seminar	1
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The seminar is organised for the student to present the findings of their research project. All students will present in seminar and summarizing their research results.

FSI 42504	Projek Penyelidikan II Research Project II	4
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This course will require students to conduct scientific research and eventuate in a producing a thesis. This will proceed under guidance of supervisor and provide the appropriate environment for student to learn the skill required for undertaking successful research.

FSI 45803	Pengurusan Operasi Loji Makanan Management of Food Plant Operation	3
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This course is designed to acquaint students with a basic understanding of how operations management is applied in a modern food manufacturing plant to improve operational performance. Students will be exposed to many of the areas or expertise required of today's food plant managers, which include organisation structure and management, production planning, human resources, supply and inventory management and working with regulatory agencies such as the Department of Environment, Department of Health and Department of Internal Trade and Consumer Affairs.

FSI 45103	Teknologi Makanan Hasilan Akuatik Aquatic Food Product Technology	3
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This course is intended to increase the knowledge and skills of students through class discussions, laboratory exercises and visits to various aquatic food manufacturing plants. Chilling and freezing of fish and processing of surimi and surimi-based products will be covered in detail. Extraction of polysaccharides such as carrageenan from seaweeds and innovations in the processing of aquatic food products will be covered.

FSI 46403	Lipid Berstruktur dan Minyak Bersifat Istimewa Structured Lipids and Specialty Oils	3
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This course discusses the critical topics in the expanding market and production for lipids. It combines novel and traditional methods from technological and biological perspectives to achieve the most effective pathways for production of modified lipids. This course is integrates into three sections which is exploring development, new production methods and successful products and their uses.

Latihan Industri

Sarjana Muda Teknologi Makanan

(FSI 31412)

Merit

Pelajar Ijazah Sarjana Muda Teknologi Makanan diwajibkan menjalani Latihan Industri sebanyak SATU KALI pada Semester Keenam. Ia bernilai dua belas kredit (12) unit dan nilai grednya akan diambil kira dalam pengiraan Purata Nilai Gred Semester (PNGS) dan Purata Nilai Gred Kumulatif (PNGK). Unit kursus ini akan diambil sebagai sebahagian syarat pengajian untuk pengijazahan.

Pengenalan Kursus

Latihan industri merupakan satu kursus yang memberi pendedahan kepada dunia kerjaya agar para pelajar diperlengkapi dengan pelbagai amalan kerja serta aspek praktikal dalam bidang teknologi makanan. Melalui pendedahan ini diharap pelajar dapat menghubungkan apa yang dipelajari secara teori dengan realiti suasana pekerjaan dan kerja sebenar supaya mereka lebih bersedia dengan suasana kerja di sektor kerajaan dan swasta yang diceburi kelak. Bagi pelajar yang beraspirasi untuk menjadi usahawan, mereka berpeluang mendapatkan pengalaman suasana dan kerja sendiri melalui latihan industri ini tentang bagaimana sesebuah perusahaan swasta beroperasi.

Objektif Kursus

Latihan industri mempunyai objektif kursus seperti berikut:

1. Memberi pendedahan kepada pelajar terhadap suasana kerja agar mereka dapat menyesuaikan diri dengan mudah apabila menyertai sektor pekerjaan kelak;
2. Memberi pelajar pengalaman kerja berpasukan dan mencontohi kepimpinan baik pemimpin di tempat kerja;
3. Membangunkan kemahiran insaniah dalam pengurusan sumber manusia daripada peringkat atasan dan bawahan; dan
4. Memperlengkapi dengan pengetahuan mengenai proses industri hulu dan hiliran serta industri menengah dan perkhidmatan pembangunan di organisasi sektor kerajaan dan swasta.

Penilaian

Penilaian keseluruhan latihan industri pelajar adalah gabungan penilaian oleh Penyelia Industri (35%), Penyelia Akademik (20%) dan buku log, laporan akhir latihan industri serta pembentangan (45%).

Kursus Universiti

Program Ijazah

Nama Kursus	Kod Kursus	Jam Kredit
Tamadun Islam Dan Tamadun Asia (TITAS)	MPU 31022	2
Hubungan Etnik	MPU 31012	2
Ilmu Wahyu dan Kemasyarakatan (Muslim)	MPU 33032	2
Perbandingan Agama II (Bukan Muslim)	MPU 33042	2
Ilmu Wahyu dan Sains (Muslim)	MPU 33012	2
Moral dan Etika II (Bukan Muslim)	MPU 33022	2
English For Communication I	PBI 10102	2
English For Communication II	PBI 10202	2
Bahasa Asing [Salah satu yang berkenaan sahaja]	PBI XXXXX	2
Bahasa Thai	PBI 10702	
Bahasa Jepun	PBI 10602	
Bahasa Mandarin	PBI 10502	
Keusahawanan Tani	ABT 22403	3
Kokurikulum	KKK xxxx	3
Jumlah Jam Kredit		20

Senarai Kursus Kokurikulum (untuk Pelajar Sarjana Muda)

Kursus Kokurikulum	Kod Kursus	Nama Kursus
Kebudayaan	KKD 10103	Muzik Kertuk Dan Rebana Ubi
	KKD 10203	Taranum
	KKD 10303	Muzik Kompang
	KKD 10403	Seni Tari
	KKD 10503	Teater
	KKD 10603	Kraftangan
	KKD 10703	Penulisan Khat
	KKD 10803	Iqra
	KKD 10903	Muzik Gamelan
	KKD 11003	Alat Muzik Moden
	KKD 11103	Koir
	KKD 11203	Rodat
	KKD 11303	Muzik Ensemble
Kemasyarakatan & Sukarelawan	KKV 10103	Projek Khidmat Masyarakat
	KKV 10203	Pemadam
	KKV 10303	Briged Perdana
	KKV 10403	Budi Penyayang
	KKV 10503	Rakan Cop
Keusahawanan & Pembinaan Diri	KKN 10103	Asas Keusahawanan
	KKN 10203	Katering
	KKN 10303	Asas Pengucapan Awam
	KKN 10403	Asas Kemahiran Pertanian
	KKN 10503	Rakan Kaunselor
	KKN 10603	Asas Kewartawanan
	KKN 10703	Fotografi
Pasukan Pakaian Seragam Bersenjata	KKW 10211 – 30261	Kor -Sukarelawan Polis I -VI (SUKSIS)
	KKW 10311 – 30361	PALAPES Udara I – VI
	KKW 10411 – 20461	Sukarelawan Siswa Siswi Koreksional I – IV (SISKOR)
	KKW 10511 – 30561	PALAPES Darat I -VI
Pasukan Pakaian Seragam Tanpa Senjata	KKY 10103	Pengakap Kelana Siswa I
	KKY 10311 - 30351	Kor- Siswa Siswi Pertahanan Awam I – V (SISPA)
Sukan	KKX 10103	Bola Sepak
	KKX 10203	Sepak Takraw
	KKX 10403	Tenis
	KKX 10503	Memamah
	KKX 10603	Taekwando
	KKX 10703	Tenpin – Boling
	KKX 10803	Ekuestrian
	KKX 10903	Golf
	KKX 11103	Skuasy
	KKX 11203	Asas Pelayaran
	KKX 11303	Kayak

KKX 11603	Bola Baling
KKX 11703	Sofbol
KKX 11803	Ragbi
KKX 12003	Hoki
KKX 12103	Judo
KKX 12203	Rowing
KKX 12303	Karatedo

Sinopsis Kursus Kokurikulum

Kebudayaan

KKD 10203 Taranum

Kursus ini akan mendedahkan kepada pelajar akan kaedah membaca Al-Quran secara berlagu disamping memperkenalkan jenis – jenis lagu yang digunakan ketika membaca Al-Quran

KKD 10303 Muzik Kompang

Kursus ini memberikan pendedahan kepada pelajar tentang konsep dan permainan asas kompang, konsep bermain kompang dengan betul, mengenalpasti teknik permainan kompang dari segi rentak pukulan dan lagu, mengetahui cara memimpin kumpulan dan bekerjasama dan memahami proses kompang dihasilkan .

KKD 10403 Seni Tari

Kursus ini akan memberikan pendedahan kepada pelajar – pelajar akan menghasilkan persembahan yang berdaya kreatif tarian tradisional dan moden secara perseorangan dan berkumpulan

KKD 10503 Teater

Kursus ini akan mendedahkan pelajar kepada persediaan fizikal dan mental yang menjadi asas kepada lakonan. Persediaan fizikal termasuklah memahami latihan untuk olah tubuh dan vokal (pengucapan). Persediaan mental pula merujuk kepada proses memahami lakonan melalui latihan seperti improvisasi, bahasa badan (body language), pemerhatian dan penghayatan

KKD 10903 Muzik Gamelan

Kursus ini akan memberikan pendedahan kepada pelajar untuk mengenali, membaca nota dan memainkan alat – alat yang terkandung dalam muzik gamelan secara individu atau berkumpulan.

KKD 11003 Alat Muzik Moden

Kursus ini memberikan pendedahan asas kepada pelajar tentang konsep, teknik bermain alat muzik moden seperti alat muzik kugiran dan memerlukan kreativiti kumpulan semasa mengadakan persembahan.

KKD 11103 Koir

Kursus ini akan memberikan pendedahan kepada pelajar asas menyanyi dengan cara mempelajari kaedah suara, teknik, penjiwaan dan persembahan yang betul serta membaca notasi lagu – lagu koir secara individu dan berkumpulan.

KKD 11203 Rodat

Matapelajaran ini akan memberikan pendedahan kepada pelajar – pelajar seni budaya Rodat Negeri Terengganu yang melibatkan aspek iaitu lagu religat, tarian dan alat muzik tradisional menghasilkan persembahan yang berdaya kreatif tarian dan Ton Rodat

KKD 11303 Muzik Ensemble

Kursus ini memberikan pendedahan asas kepada pelajar tentang konsep dan teknik bermain alat muzik mengikut kreativiti kumpulan semasa mengadakan satu-satu persembahan.

Kemasyarakatan & Sukarelawan

KKV 10103 Projek Khidmat Masyarakat

Dalam kursus ini pelajar akan didedahkan dengan program kemasyarakatan, kebajikan dan kesedaran. Pelajar juga akan diajar mengenai ciri – ciri kepimpinan dalam menguruskan sesebuah program kemasyarakatan. Pelajar akan melakukan kerja – kerja amal pada masyarakat tanpa mengira kaum dan agama.

KKV 10203 Pemadam

Subjek ini menerangkan aspek-aspek pengetahuan dan pendidikan asas sejarah dadah, jenis-jenis dadah dan kesan/akibat kepada manusia, penguatkuasaan undang-undang, profil seorang penagih dan bekas penagih, proses pemulihan di pusat serenti, penjara dan pelajar juga dibawa melawat ke pusat serenti dan penjara di dalam negara. Selain dari itu, matapelajaran ini juga memberi peluang kepada pelajar untuk berinteraksi dengan pelatih melalui kaunseling berkelompok dan penganjuran kursus / bengkel dan seminar anti dadah.

Keusahawanan & Pembinaan Diri

KKN 10203 Katering

Kursus ini dibentuk bertujuan untuk mendedahkan pelajar kepada kemahiran dalam bidang katering. Para pelajar akan diberi penerangan dan tunjukajar dalam pelbagai aspek penyediaan makanan, pengurusan dapur, prinsip makanan dan juga perkhidmatan katering.

KKN 10303 Asas Pengucapan Awam

Kursus ini menekankan konsep-konsep asas dalam pengucapan awam bagi membina kecekapan berpidato dan berucap di kalangan pelajar. Bakat dan pengetahuan dalam bidang komunikasi umum yang ada pada pelajar akan digilap melalui latihan-latihan amali pengucapan. Pilihan topik adalah bebas dan terpilih serta pelajar akan membuat persembahan berkumpulan dan individu untuk mempertingkatkan kemahiran pengucapan awam masing – masing

KKN 10503 Rakan Kaunselor

Rakan Kaunselor merupakan subjek yang menekankan aspek-aspek kemahiran asas kaunseling yang dapat digunakan oleh pelajar matapelajaran ini untuk membantu diri, rakan pelajar, keluarga dan masyarakat sekelilingnya menangani masalah. Selain dari itu matapelajaran ini juga memberi peluang kepada pelajar untuk mempelajari kemahiran mengurus dan memimpin dalam sesebuah organisasi.

KKN 10603 Asas Kewartawanan

Memberi pendedahan serta mengenalkan panduan-panduan dalam menghasilkan bahan berita di dalam akhbar menerusi pelbagai isu semasa dalam dan luar negara demi kepentingan umum melalui media cetak dan elektronik di negara ini.

KKN 10703 Fotografi

Kursus ini bertujuan memberi pendedahan dan kemahiran fotografi kepada pelajar – pelajar. Aspek-aspek teori dan pratikal serta teknik-teknik pengambilan gambarfoto yang menarik diberi penekanan. Pelajar berpeluang menghayati seni foto dengan mempraktikkan kombinasi teknologi kamera fotografi digital dan analog (SLR kamera). Suatu latihan amali dan penggambaran di luar kampus akan diadakan sebagai sebahagian daripada keperluan kursus. Pelajar sendiri akan menentukan tempat, tarikh dan pengurusannya.

Pasukan Pakaian Seragam Bersenjata

Kursus Berpakej**1 Jam Kredit Setiap Semester Diambil****KKW 10211 – 30261 Kor -Sukarelawan Polis I -VI (SUKSIS)**

Kursus ini adalah untuk melahirkan seorang Pegawai Sukarelawan Polis Siswa/i (Kor - SUKSIS) yang berpengetahuan tentang undang-undang berkaitan, latihan mingguan, urusan latihan, pentadbiran, daya kepimpinan, disiplin serta ketahanan fizikal/metal yang sesuai di antara pasukan polis dan Universiti.

KKW 10311 – 30361 PALAPES Udara I – VI

Kursus ini mendedahkan kepada para pelajar berkenaan dengan etika kerja dan ianya dapat menguruskan segala maklumat serta idea baru melalui asas ketenteraan yang merangkumi latihan-latihan ilmu medan perang (IMP).

KKW 10411 – 20441 Sukarelawan Siswa Siswi Koreksional I – IV (SISKOR)

Kursus ini akan memberi ruang kepada pelajar mengetahui dengan lebih terperinci mengenai Jabatan Penjara Malaysia termasuklah objektif , fungsi ,misi,visi, motto dan Lagu Jabatan. Pelajar juga akan diperkenalkan dengan Akta Penjara dan Peraturan Penjara, Asas Kesukarelawan termasuk

peranan dan tugas sukarelawan, Kepimpinan Sukarelawan, Kod Etika SISKOR dan latihan fizikal (Kawad Kaki) / SENTAP.

**KKW
10511 –
30561**

PALAPES Darat I –VI

Kursus ini mendedahkan kepada para pelajar berkenaan dengan etika kerja dan ianya dapat menguruskan segala maklumat serta idea baru melalui asas ketenteraan yang merangkumi latihan-latihan ilmu medan perang (IMP).

Pasukan Pakaian Seragam Tanpa Bersenjata

KKY 10103 Pengakap Kelana Siswa

Kursus ini memperkenalkan ilmu kepengakapan, sejarah, struktur organisasi, ilmu asas perkhemahan, kawad kaki, istiadat pengakap, kerja tali menali, mengagak serta ilmu perkhemahan. Kursus ini juga menekankan kepimpinan Manikayu yang akan melayakkan mereka menjadi pemimpin.

**KKY 10311
– 30351 Kor- Siswa Siswi Pertahanan Awam I – V (SISPA)**

Kursus ini akan memberi ruang kepada pelajar mempelajari ilmu kemahiran pertahanan awam dan melahirkan lebih ramai pegawai Pertahanan Awam yang berkaliber serta mampu menghadapi cabaran global. Pegawai Pertahanan awam akan diberi pengetahuan tentang pengetahuan asas pertahanan awam, asas pertolongan cemas, kemahiran asas melawan kebakaran, kemahiran asas menyelamatkan dan etika moral.

Sukan

KKX 10103 Bola Sepak

Kursus ini akan memberikan pendedahan awal kepada para pelajar tentang sejarah permainan bola sepak, peraturan asas, kelengkapan permainan dan peralatan, aspek-aspek kecergasan dan latihan yang sesuai, aktiviti regangan dan teknik – teknik kemahiran asas dalam permainan bola sepak

KKX 10203 Sepak Takraw

Kursus ini memperkenalkan kepada pelajar-pelajar bagaimana bermain Sepak Takraw dengan betul, asas-asas kepada kemahiran bermain Sepak Takraw, Undang-undang permainan Sepak Takraw, serta melibatkan pelajar dengan latihan bermain dan menganjur mengendalikn suatu pertandingan kecil dan juga menyertainya.

KKX 10403 Tenis

Kursus ini memperkenalkan pelajar kepada pengetahuan-pengetahuan asas dan kemahiran-kemahiran asas permainan tenis dan ia juga memperlihatkan pelajar kepada seni pergerakan dan teknik sesuatu pergerakan atau kemahiran yang dilakukan serta teknik boleh menganjurkan pertandingan / kursus.

KKX 10503 Memanah

Kursus ini menekankan kepada pelajar tentang undang-undang dan peraturan permainan sukan memanah , pelajar juga diberikan tumpuan tentang kemahiran-kemahiran asas sukan memanah khususnya dari segi teknik yang betul serta pendedahan penganjuran kejohanan mini.

KKX 10603 Taekwondo

Kursus ini memberi pendedahan terhadap pengurusan fizikal secara saintifik dalam sukan taekwon-do. Pembentukan sahsiah dan jati diri yang seimbang serta memcetuskan semangat daya juang tinggi dalam menghadapi dan mengharungi cabaran kehidupan harian.

KKX 10703 Tenpin – Bowling

Kursus ini akan memberikan pendedahan kepada pelajar – pelajar akan strategi permainan, pengetahuan dalam peralatan serta pengurusan, pemarkahan pertandingan tenpin bowling.

KKX 10803 Ekuestrian

Kursus ini memperkenalkan kepada pelajar sukan berkuda, sejarah serta perkembangannya, pelajar juga akan dibawa menerokai alam kehidupan kuda dan bagaimana menjalin persahabatan dengan haiwan ini serta pelajar dapat mempelajari dan mengenalpasti peralatan-peralatan menunggang,ilmu mengenai kesihatan kuda dan teknik-teknik asas menunggang kuda.

KKX 10903 Golf

Kursus ini mendedahkan peraturan sukan golf, latihan kecergasan, asas pengadilan, teknik permainan dan penganjuran sukan golf.

KKX 11103 Skuasy

Kursus ini memperkenalkan kepada pelajar-pelajar akan kemahiran asas,undang –undang permainan, teknik dan strategi permainan skuasy. Selain itu pelajar didedahkan kepada contoh – contoh kecederaan di dalam sukan ini yang boleh dielakkan .

KKX 11203 Asas Pelayaran

Kursus ini memperkenalkan pelajar kepada pengetahuan-pengetahuan asas dan kemahiran-kemahiran asas pelayaran dan ia juga memperlihatkan pelajar kepada sejarah pelayaran, mengetahui jenis dan bahagian kapal layar. Pelajar juga harus melayarkan kapal layar.

KKX 11303 Kayak

Kursus ini menawarkan pendedahan asas kepada kemahiran berkayak, teknik-teknik kayuhan yang betul, peraturan dan kod keselamatan semasa berkayak atau semasa menjalankan aktiviti di air.

KKX 11603 Bola Baling

Kursus ini akan memberikan pendedahan kepada pelajar – pelajar akan berkebolehan membuat hantaran, rejaman dan tangkapan yang baik bola baling, mengaplikasikan peraturan dalam permainan ini serta berkemahiran dalam penyediaan padang dan alatan permainan ini.

KKX 11703 Sofbol

Kursus ini mengajar peraturan sukan sofbol, latihan kecergasan, asas pengadilan, teknik permainan dan penganjuran sukan sofbol.

KKX 11803 Ragbi

Kursus ini memberikan pendedahan kepada pelajar tentang konsep dan permainan asas ragbi, mengetahui cara memimpin kumpulan dan berkerjasama dalam satu kumpulan serta menggalakkan aktiviti yang diceburi sebagai satu gaya hidup sihat.

KKX 12003 Hoki

Kursus ini memperkenalkan kepada pelajar tentang peraturan, teknik dan amalan permainan hoki yang betul. Kemahiran bermain hoki juga didedahkan dengan penglibatan aktif pelajar secara berkumpulan melalui praktikal dan penganjuran pertandingan.

KKX 12103 Judo

Kursus ini memperkenalkan kepada pelajar tentang peraturan, amalan dan teknik Judo yang betul. Kemahiran kursus ini juga didedahkan dengan penglibatan aktif pelajar melalui praktikal dan penganjuran pertandingan. Kursus ini juga dapat mencungkil bakat-bakat baru dan menarik minat untuk mewakili universiti dalam sukan Judo.

KKX 12203 Rowing

Kursus ini memperkenalkan kepada pelajar tentang peraturan, teknik dan amalan asas Rowing yang betul. Kemahiran asas rowing juga didedahkan dengan penglibatan aktif pelajar secara berkumpulan melalui praktikal dan penganjuran program.

KKX 12303 Karatedo

Kursus ini memperkenalkan kepada pelajar tentang peraturan, amalan dan teknik Karatedo yang betul. Kemahiran kursus ini juga didedahkan dengan penglibatan aktif pelajar melalui praktikal dan penganjuran pertandingan. Kursus ini juga dapat mencungkil bakat-bakat baru dan menarik minat untuk mewakili universiti dalam sukan Karatedo.

Skema Pemarkahan

Gred rasmi Universiti serta markah dan maksudnya adalah seperti berikut:

MARKAH	GRED	NILAI GRED	PRESTASI
80 – 100	A	4.00	Cemerlang
75 – 79	A-	3.67	
70 – 74	B+	3.33	Kepujian/Baik
65 – 69	B	3.00	
60 – 64	B-	2.67	Sederhana
55 – 59	C+	2.33	
50 – 54	C	2.00	
47 – 49	C-	1.67	Pencapaian minimum
44 – 46	D+	1.33	
40 – 43	D	1.00	
39 ke bawah	F	0.00	Gagal

Penganugerahan Ijazah Sarjana Muda

Penganugerahan ijazah tersebut adalah berdasarkan Purata Nilai Gred Kumulatif (PNGK) terakhir yang diperolehi. Untuk melayakkan seseorang pelajar dianugerahkan ijazah kepujian ini, pelajar hendaklah mencapai PNGK terakhir tidak kurang daripada 2.00. Tahap pencapaian penganugerahan ijazah adalah seperti berikut:

PNGK	Kesetaraan Kelas
3.67 - 4.00	Kepujian (Kelas satu)
3.00 - 3.66	Kepujian (Kelas dua atas)
2.33 - 2.99	Kepujian (Kelas dua bawah)
2.00 - 2.32	Kepujian

Kelab Pelajar

Agribiosis

Persatuan Pelajar Sarjana Muda Bioteknologi Pertanian
Universiti Sultan Zainal Abidin (UniSZA)

ALPHA

Persatuan Pelajar Sarjana Muda Produksi dan Kesihatan Haiwan
Universiti Sultan Zainal Abidin (UniSZA)

FOSSAC

Persatuan Pelajar Sarjana Muda Teknologi Makanan
Universiti Sultan Zainal Abidin (UniSZA)

Jawatankuasa Buku Panduan Prasiswazah

Penasihat

Prof Madya Dr Khamsah Suryati Mohd

Pengerusi

Dr Ahmad Syazni Kamarudin

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Dr Siti Mariam Zainal Ariffin

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Fadlina Ismail

Nur Fatihah Hasan Nudin

Nurul Asma Hasliza Zulkifly