UPM

UNIVERSITI PUTRA MALAYSIA

BERILMU BERBAKTI

BUKU PANDUAN PROGRAM

SESI AKADEMIK **2021/2022** *ACADEMIC SESSION*

UNDERGRADUATE STUDY PROGRAMME HAND BOOK

FAKULTI PERHUTANAN DAN ALAM SEKITAR

FACULTY OF FORESTRY AND ENVIRONMENT

FAKULTI PERHUTANAN DAN ALAM SEKITAR

Maklumat Am

Fakulti Perhutanan dan Alam Sekitar (FHAS) ditubuhkan pada 1 Mac 2020 merupakan hasil transformasi governans antara Fakulti Perhutanan dan Fakulti Pengajian Alam Sekitar dengan matlamat memperkukuhkan alam semulajadi (*Fortifying Mother Nature*). Selari dengan transformasi governan Universiti Putra Malaysia, gabungan fakulti ini bukan sahaja akan memantapkan kualiti perkhidmatan dalaman, malah dapat memberi impak kepada kelestarian program yang ditawarkan ke arah penghasilan graduan versatil dan berkualiti. Untuk mencapai tahap kecemerlangan dalam pengajaran dan penyelidikan, FHAS telah menjalin kerjasama rapat dengan Fakulti lain di UPM dan juga dengan agensi dan institut perhutanan dalam negara dan juga di peringkat antarabangsa. Kerjasama ini dapat mempertingkatkan keupayaan FHAS menyelia pelajar pada peringkat pengajian siswazah.

Sejak penubuhannya, FHAS telah berkembang dengan pesat dalam aspek pendidikan dan penyelidikan serta pembangunan sumber. FHAS bertekad untuk menjadi sebuah pusat kecemerlangan yang unggul dalam pendidikan dan penyelidikan dalam bidang Perhutanan dan Alam Sekitar. Dalam membangunkan sumber manusia serta kemudahan prasarana profesional yang cemerlang, FHAS sentiasa berusaha meningkat dan memantapkan keupayaan pengajaran, penyelidikan dan perkhidmatan ke tahap yang terbaik.

FHAS mempunyai empat jabatan iaitu :

i) Jabatan Sains Perhutanan dan Biodiversiti
ii) Jabatan Industri Sumber Alam
iii) Jabatan Taman Alam dan Rekreasi
iv) Jabatan Alam Sekitar

<u>Jabatan Sains Perhutanan dan Biodiversiti</u>

Jabatan Sains Perhutanan dan Biodiversiti telah diberi penamaan semula dari Jabatan Pengurusan Hutan yang ditubuhkan pada tahun 1973 bersama Fakulti Perhutanan. Matlamat Jabatan adalah untuk melahirkan graduan berpengetahuan dan berkemahiran untuk mengurus sumber hutan berlandaskan prinsip pengurusan hutan secara berkekalan. Ini adalah selari dengan matlamat sektor perhutanan negara yang melihat bidang perhutanan bukan lagi berasaskan ekonomi (hasil kayu) semata-mata tetapi menjangkaui lebih daripada itu yang melihat sumber kawasan berhutan sebagai nadi kepada kehidupan dan sumber kekayaan dengan tema ‘Forest Beyond Timbers’ (Perutusan Ketua Pengarah JPSM 2016).

Sehubungan itu, Jabatan menawarkan program Bacelor Sains Perhutanan dengan Kepujian dengan empat (4) opsyen iaitu Pengurusan Hutan, Perhutan Bandar, Ekologi dan Konservasi Hidupan Liar serta Perladangan Hutan. Penawaran pilihan opsyen Ekologi dan Konservasi Hidupan Liar adalah sejajar dengan Dasar Kepelbagaian Biologi Kebangsaan (2015-2020) yang memerlukan lebih ramai tenaga pakar terutamanya ahli perhutanan dalam pengurusan dan konservasi sumber hidupan liar secara lestari.Bagi elektif Perhutanan Bandar, ianya mengambil kira keperluan semasa hutan buatan di kawasan perbandaran dan penempatan. Ini dinyatakan dalam Dasar Landskap Negara (2011) yang antaranya bertujuan mengekalkan, memelihara dan memulihara sumber pokok di kawasan perbandaran dan perumahan (hutan bandar).

Bagi memperkukuhkan bidang pengurusan hutan dan bidang berkaitan perhutanan, jabatan menyediakan prasarana makmal dan modal insan dengan kepakaran yang pelbagai bagi melaksanakan pengajaran, pembelajaran dan penyelidikan serta khidmat masyarakat. Jabatan juga dilengkapi dengan makmal dan peralatan pengajaran seperti herbarium, sains tanah, operasi hutan, hidrologi, entomologi dan patologi, fisiologi, ekologi hutan, bioteknologi, teknologi biji benih, teknologi maklumat dan teknologi geospatial.

Jabatan Industri Sumber Alam

Jabatan Industri Sumber Alam telah diberi penamaan semula dari Jabatan Pengeluaran Hutan yang ditubuhkan pada tahun 1973. Matlamat Jabatan adalah untuk melahirkan graduan terlatih, profesional dalam bidang sumber hutan dan perkayuan. Untuk mencapai matlamat tersebut, jabatan menawarkan program Bacelor Sains dan Teknologi Kayu. Bagi memperkukuhkan bidang hasil hutan, jabatan menyediakan prasarana dan modal insan bagi melaksanakan penyelidikan dan khidmat masyarakat.

Program Bacelor Sains dan Teknologi Kayu dengan Kepujian merupakan program pelbagai disiplin yang melibatkan komponen sains asas, sains kayu, teknologi pemprosesan, dan ekonomi dan pengurusan dalam pemasaran sumber hutan. Disamping itu, pelajar juga akan didedahkan dengan Latihan profesional di mana pelajar ditempatkan di pelbagai agensi awam untuk meningkatkan kemahiran insaniah dalam menyelesaikan masalah secara lebih praktik dalam keadaan sebenar.

Pegawai Akademik Jabatan ini mempunyai pelbagai latar belakang dalam bidang pengkhususan yang berkaitan dengan perkayuan dan sumber hutan. Di antara aktiviti penyelidikan dan kerja perundingan yang dijalankan merangkumi bidang sains kayu dan gentian, pemprosesan kayu, peningkatan mutu kayu, biokomposit, teknologi pulpa dan kertas, ekonomi dan pemasaran hasil hutan, operasi dan aplikasi geoinformasi hutan.

Jabatan juga dilengkapi dengan peralatan pengajaran dan makmal seperti Bengkel Teknologi Kayu, Anatomi Kayu, Kimia Kayu, Pulpa dan Kertas, Uji Bahan, Komposit, Kemerosotan Kayu dan Pengawalan, Hasil Hutan, dan Zilarium. Antara alatan utama dalam makmal ini adalah alatan mesin uji kayu (Instron), *image analyzer*, spektrofotometer, pemesinan kayu, penekan panas, tanur, silinder rawatan bertekanan dan ketuhar gelombang berskala industri.

Dengan gabungan modal insan dan peralatan yang ada, jabatan juga menawarkan kursus jangka pendek kepada masyarakat dan pengusaha industri yang berminat untuk meningkatkan kemahiran dan pengetahuan dalam bidang berkaitan industri berasas kayu. Diantara kursus lazim yang ditawarkan adalah kursus pengeringan dan pengawetan kayu, pulpa dan kertas, aplikasi GIS dalam industri perhutanan, analisis kewangan untuk industri perkayuan, dan analisis statistik perkayuan.

Jabatan Taman Alam dan Rekreasi

Jabatan Taman Alam dan Rekreasi telah diberi penamaan semula dari Jabatan Rekreasi dan Ekopelancongan telah ditubuhkan secara rasminya pada 1 September 2012. Jabatan menawarkan program Bacelor Sains Taman dan Rekreasi mulai Sesi 2011/2012. Nama program ini mula ditukar ke Bacelor Sains Taman dan Rekreasi dengan Kepujian mulai Sesi 2020/2021. Penawaran program ini akan mengeluarkan pemimpin yang akan mengetuai serta merancang program dalam bidang taman alam dan rekreasi dengan lebih beretika serta kompeten keprofesionalismanya.

Pengkhususan kepakaran pegawai akademik Jabatan ini termasuklah dalam bidang Ekologi Rekreasi (*Recreation Ecology*), Pemprograman Rekreasi (*Recreation Programming*), Keusahawanan Rekreasi (*Recreation Entrepreneurship*), Kemahiran Rekreasi Luar (*Outdoor Recreation Skills*), Pentadbiran Taman (*Parks Administration*) Perancangan dan Rekabentuk Taman (*Parks Planning and Designing*), Interpretasi Persekitaran (*Environmental Interpretation*), Kepemimpinan Rekreasi (*Recreation Leadership*), Rekreasi Terapi (*Therapeutic Recreation*), Pengurusan Risiko Alam Liar (*Wilderness Risk Management*), dan Ekopelancongan (*Ecotourism*).

Penubuhan Jabatan ini adalah seiring dengan aspirasi negara untuk mewujudkan industri pelancongan sebagai pemacu kekuatan ekonomi negara bersesuaian dengan prinsip pembangunan industri pelancongan yang mapan. Bidang ekopelancongan merupakan salah satu daripada 11 sektor yang terangkum di dalam Bidang Ekonomi Utama Negara (NKEA). Di bawah pelaksanaan program NKEA, bidang ekopelancongan akan bakal meningkatkan permintaan tenaga kerja professional dalam dalam industri pelancongan yang berteraskan alam semulajadi. Pihak Jabatan juga menawarkan program Master Ekopelancongan dengan kursus-kursus berteraskan prinsip ekopelancongan di peringkat pasca siswazah. Tenaga akademik dan kepakaran Jabatan ini berpotensi untuk memantapkan program akademik yang ada di Fakulti Perhutanan dan Alam Sekitar secara khususnya serta Universiti Putra Malaysia secara amnya.

Jabatan Alam Sekitar

Jabatan Alam Sekitar (JAS) adalah gabungan daripada dua (2) Jabatan terdahulu di Fakulti Pengajian Alam Sekitar iaitu Jabatan Sains Alam Sekitar dan Jabatan Pengurusan Alam Sekitar. Selari dengan aspirasi universiti berhubung kepentingan pengurusan alam sekitar lestari dalam pembangunan negara serta matlamat pembangunan mampan global, jabatan ini memainkan peranan penting dalam melahirkan graduan bidang sains dan teknologi (S&T) dan pengurusan alam sekitar yang kalis masa hadapan. Jabatan Alam Sekitar, FHAS menawarkan dua program di peringkat Bacelor iaitu Bacelor Pengurusan Alam Sekitar dengan Kepujian (BPAS) yang mula ditawarkan pada 2006 dan Bacelor Sains dan Teknologi Alam Sekitar dengan Kepujian (BSTAS) mula ditawarkan pada 2009 serta satu program Master iaitu Master Alam Sekitar (MEnv). Kesemua program di Jabatan Alam Sekitar telah mendapat akreditasi peringkat antarabangsa daripada Committee of Heads of Environmental Sciences, The Institution of Environmental Sciences, iaitu satu badan antarabangsa yang mengiktiraf kurikulum program dalam bidang sains alam sekitar. Akreditasi ini membuktikan kualiti tinggi kurikulum program serta membuka peluang kerjaya sebagai saintis profesional alam sekitar yang diiktiraf.

General Information

The Faculty of Forestry and Environment (FHAS) was established on March 1, 2020 as a result of the transformation of governance between the Faculty of Forestry and the Faculty of Environmental Studies with the goal of strengthening nature (Fortifying Mother Nature). In line with the transformation of the governing body of Universiti Putra Malaysia, this combination of faculties will not only strengthen the quality of internal services, but also have an impact on the sustainability of the programs offered towards the production of versatile and quality graduates. To achieve excellence in teaching and research, the Faculty works closely with other faculties in UPM as well as other forestry related agencies and institutions, local as well as international. These partnerships serve to enhance the ability of the Faculty to supervise students at the Graduate level.

Since its establishment, the Faculty has grown rapidly in terms of education and research as well as resource development. FHAS is determined to be a center of excellence in education and research in the field of Forestry and Environment. The Faculty of Forestry and Environment constantly strives to improve and enhance its abilities in teaching, research and services to the highest levels in pursuit of its goals of developing excellent human resources as well as state-of-the-art professional facilities.

FHAS has four departments, namely :

i) Department of Forestry Science and Biodiversity
ii) Department of Natural Resource Industry
iii) Department of Natural Parks and Recreation
iv) *Department of Environment*

Department of Forestry Science and Biodiversity

The Department of Forestry Science and Biodiversity has been renamed from the Department of Forest Management that was established in 1973 together with the Faculty of Forestry. The Department's goal is to produce knowledgeable and skilled graduates to manage forest resources based on the principles of sustainable forest management. This is in line with the goal of national forestry sector which sees that the forestry field is no longer based solely on the economy (timber) but goes beyond that, which sees forest resources as the pulse of life and wealth resources with the theme 'Forest Beyond Timbers' (Director of JPSM Message 2016).

In this regard, the department offers the Bachelor of Forestry Science Program with Honours with 4 options, namely Forest Management, Urban Forestry, Ecology and Wildlife Conservation and Forest Plantation. The selection of Ecological and Wildlife Conservation option is in line with the National Policy on Biological Diversity (2015-2020) that requires more experts, especially forestry experts, in the sustainable management and conservation of wildlife resources. For Urban Forestry option, it takes into account the current needs of the artificial forests in urban and settlemet areas. This is stated in the National Landscape Policy (2011) which among others aims to maintain, preserve and conserve tree resources in urban and residential areas (urban forests).

To strengthen the field of forest management and forestry-related fields, the department provides laboratory infrastructure and human capital with various expertise to implement teaching, learning and research as well as community service. The department is also equipped with laboratories and teaching equipment such as herbarium, soil science, forest operations, hydrology, entomology and pathology, physiology, forest ecology, biotechnology, seed technology, information technology and geospatial technology.

Department of Natural Resource Industry

Department of Natural Resources Industry was was renamed after the previous Department of Forest Production, which was formed in 1973. The aim of the department was to produce professional and trained graduates in the field of wood industry. To achieve this objective, the department offered the programme, Bachelor of Wood Science and Technology with Honours.In order to strengthen the field of wood products, the department provides the infrastructure and human capital to carry out research and community services.

The Bachelor of Wood Science and Technology Program with Honours is a multi-disciplinary program, that incorporates basic sciences, wood science, processing technology, as well as marketing and management of wood products. Apart from that the students are also exposed to professional training, where the students undergo interships in various government agencies and private organizations to increase their soft skills and also enable them to solve problems in a practical manner.

The academics at the department have various backgrounds and expertise related to forest resources and wood industry. Among the research and consultancy tasks undertaken include wood science, fiber science, wood processing, enhancement of wood products, biocomposites, pulp and paper technology, economics and marketing of wood products and also application of forest geoinformatics.

The department is also equipped with teaching equipments and laboratories, such as Wood Technologist Workshop, Wood Anatomy, Wood Chemistry, Pulp and Paper, Materials Testing, Composites, Wood Deterioration and Protection, Forest Product and Xylarium. Among the notable equipments used include the Instron universal testing machine, image nalyzer, spectrophotometer, woodworking machines, hot press, kiln, treatment chamber, pressure vessel and industry-scale microwave oven.

With the human capital and infrastructure available, the department also offers short courses to the community and industry players who are interested to enhance their knowledge and skills in specific areas of the wood industry. Among the notable courses offered include the wood drying and treatment, pulp and paper, GIS application in forest industry, financial analysis for wood industry and statistical analysis for the wood industry.

Department of Nature Parks and Recreation

Established on 1 September 2012, the Department of Nature Parks and Recreation was formerly known as the Department of Recreation and Ecotourism. The Department began offering the Bachelor of Parks and Recreation Science program since the 2011/2012 as it aspires to produce graduates who are professionally ethical and competent in leading and planning programs in the field of nature parks and recreation. The program is revised to Bachelor of Parks and Recreation with Honours starting 2020/2021 session. The academic staffs in the Department specializes in various fields including *Recreation Ecology*, *Recreation Programming*, *Recreation Entrepreneurship*, *Outdoor Recreation Skills*, *Parks Administration Parks Planning and Designing*, *Environmental Interpretation*, *Recreation Leadership*, Therapeutic *Recreation*, *Wilderness Risk Management*, and *Ecotourism*.

The Department's establishment is in line with the country's aspiration in developing the tourism industry towards steering the country's economy parallel to the principles of sustainable tourism. Ecotourism being one of the 11 sectors listed under the country's National Key Economic Areas is set to increase the demand for professional work force in the tourism industry, specifically nature-based tourism. The department is planning to offer the Master in Ecotourism program that offers courses based on the principles of tropical ecotourism. The programs offered in the Department will enhance the academic programs and expertise available in the Faculty of Forestry, specifically and Universiti Putra Malaysia, as a whole.

Department of Environment

The Department of Environment (DOE) is a combination of the previous two (2) departments in the Faculty of Environmental Studies, namely the Department of Environmental Science and the Department of Environmental Management. In line with the university's aspirations on the importance of sustainable environmental management in national development as well as global Sustainable Development Goals, the department plays an important role in producing future-proof graduates inthe field of environmental science and technology (S&T) and environmental management.

The Department of Environment, FHAS offers two programs at the Bachelor's level, namely the Bachelor of Environmental Management with Honors (BEM) which was first offered in 2006 and the Bachelor of Environmental Science and Technology with Honors (BEST) was offered in 2009, as well as from one Master's program, Master of Environment (MEnv).

All programs in the Department have received international accreditation from the Committee of Heads of Environmental Sciences, The Institution of Environmental Sciences, an international body that recognizes the program curriculum in the field of environmental sciences. This accreditation proves the high quality of the program curriculum as well as opening up career opportunities as a recognized chartered environmental professional and scientist.

Pengurusan Fakulti

Dekan/*Dean*
Prof. Dr. Hazandy Abdul Hamid

Timbalan Dekan (Akademik dan Hal Ehwal Pelajar & Alumni)
Deputy Dean (Academic and Student Affairs & Alumni)
Prof. Madya Dr. Kamziah Abd. Kudus

Timbalan Dekan (Siswazah, Penyelidikan & Antarabangsa)
Deputy Dean (Graduates, Research and International)
Prof. Madya Dr. Latifah Abd Manaf

Timbalan Dekan (Pendanaan, Pembangunan dan Jaringan Industri & Masyarakat)
Deputy Dean (Funding, Development and Industry & Community Engagement)
Prof. Dr. Azlizam Aziz

Ketua, Jabatan Sains Perhutanan dan Biodiversiti
Head, Department of Forestry science and Biodiversity
Prof. Madya Dr. Norizah Kamarudin

Ketua, Jabatan Industri Sumber Alam
Head, Department of Natural Resource Industry
Prof. Dr. Jegatheswaran Ratnasingam

Ketua, Jabatan Taman Alam dan Rekreasi
Head, Department of Nature Parks and Recreation
Prof. Madya Dr. Mohamad Azani Alias

Ketua, Jabatan Alam Sekitar
Head, Department of Environment
Gs. Dr. Zakiah Ponrahono

Program Prasiswazah yang ditawarkan/ *Undergraduate programs offered*

Bacelor/*Bachelor*

1. Bacelor Sains Perhutanan dengan Kepujian/*Bachelor of Forestry Science with Honours*
2. Bacelor Sains dan Teknologi Kayu dengan Kepujian/*Bachelor of Wood Science and Technology with Honours*
3. Bacelor Sains Taman dan Rekreasi dengan Kepujian /*Bachelor of Parks & Recreation Science with Honours*
4. Bacelor Pengurusan Alam Sekitar dengan Kepujian/*Bachelor of Environmental Management with Honours*
5. Bacelor Sains dan Teknologi Alam Sekitar dengan Kepujian/*Bachelor of Environmental Science and Technology with Honours*

MAKLUMAT DAN SKEMA PENGAJIAN PAKEJ ELEx UNTUK PROGRAM 4 TAHUN
(Berkuatkuasa Untuk Ambilan Oktober 2021 Dan Seterusnya)

CEFR Tahap	MUET Tahap	TOEFL/IELTS Skor	CIEP Tahap	Pearson Test of English (PTE) Academic Skor	Cambridge English Skor	Keperluan Bergraduat
C1 – C2	5.0 – 5+	TOEFL iBT 95 – 120 IELTS 7.0 – 9.0	-	76 - 90	180 – 230	2 LPE + 1 CEL + 24 mata LAX atau 1 LPE + 1 CEL + 24 mata LAX + 1 Bahasa global
B1 – B2	3.0 – 4.5	TOEFL iBT 42 – 94 IELTS 4.0 – 6.5	104 – 109	43 – 75	140 – 179	2 LPE + 2 CEL + 24 mata LAX
A2	2.0 - 2.5	TOEFL iBT N/A IELTS 3.0 – 3.5	101 – 103	30 – 42	120 – 139	3 LPE + 3 CEL + 24 mata LAX

Semester	SKEMA UNTUK PROGRAM 4 TAHUN			
	MUET 2.0 – 2.5 IELTS 3.0 – 3.5 CIEP 101 – 103 PTE 30 – 42 CE 120 – 139		MUET 3.0 – 4.5 TOEFL iBT 42 – 94 IELTS 4.0 – 6.5 CIEP 104 – 109 PTE 43 – 75 CE 140 – 179	MUET 5.0 – 5+ TOEFL iBT 95 – 120 IELTS 7.0 – 9.0 PTE 76 – 90 CE 180 – 230
1	LAX 12 mata		LAX 6 mata	LAX 6 mata
2	CEL2102	LAX 6 mata	LPE2301	Pilih SATU: CEL 2103/2104
3	LPE2401		LPE2501	Pilih SATU: LPE2402/LPE2502/ Bahasa global
4	LPE2301		LAX 6 mata	LAX 6 mata
5	LPE2501		Pilih SATU: CEL 2105/2106/2107	Pilih SATU: LPE2402/LPE2502/ Bahasa global
6	Pilih SATU: CEL 2105/2106/2107		Pilih SATU: CEL 2105/2106/2107	LAX 6 mata
7	Pilih SATU: CEL 2105/2106/2107		LAX 6 mata	LAX 6 mata
8	LAX 6 mata		LAX 6 mata	-

Maklumat Pakej ELEx

I. Kursus LPE [kredit (3+0)]

- LPE 2401 (Reading for Academic Purposes)
- LPE 2301 (Academic Interaction and Presentation)
- LPE 2501 (Academic Writing)
- LPE 2502 – untuk pelajar MUET Band 5 & 6 sahaja
- LPE 2402 – untuk pelajar MUET Band 5 & 6 sahaja

Nota: Jika pelajar gagal kursus LPE, mereka perlu mengulang kursus tersebut sehingga lulus sebelum mengikuti kursus yang seterusnya.

II Kursus CEL

- CEL 2102 (Effective Listening and Speaking)
- CEL 2103 (Writing Academic Texts)
- CEL 2105 (Spoken Communication for the Workplace)
- CEL 2106 (Communication for Professional Development)
- CEL 2107 (Written Business Communication)

Nota: Jika pelajar memperolehi TAHAP 1 dalam kursus CEL, mereka perlu mengulang kursus tersebut sehingga lulus (TAHAP 2 ke atas).

III. LAX

- LAX (6 mata atau 12 mata); 1 mata = 2 jam seminggu
- 6-mata LAX = 6 minggu x 2 jam seminggu
- 12-mata LAX = 12 minggu x 2 jam seminggu

Nota: Jika pelajar memperolehi TM (Tidak Memuaskan), mereka perlu menjalani aktiviti LAX yang sama atau yang berlainan menggantikan mata aktiviti yang gagal (TM). Pelajar hendaklah memastikan syarat jumlah mata LAX dipenuhi sebelum bergraduat.

IV. Pra-syarat Kursus

- LPE 2401: MUET Band 1 – 2/yang setara
- LPE 2301: Lulus LPE 2401 atau MUET Band 3 – 4 /yang setara
- LPE 2501: Lulus LPE 2301
- CEL 2103: Lulus LPE 2501 atau MUET Tahap 5 – 6/yang setara
- CEL 2102, 2105, 2106, 2107: Tiada Pra-Syarat

Bacelor Sains Perhutanan dengan Kepujian

Bachelor of Forestry Science with Honours

STRUKTUR KURIKULUM/ *CURRICULUM STRUCTURE*

Nama Program ***Program Name***	:	**Bacelor Sains Perhutanan dengan Kepujian / *Bachelor of Forestry Science with Honours***
Jumlah Kredit Bergraduat ***Total Credits to Graduate***	:	**129 Jam Kredit/ *Credit Hours***
Tempoh Pengajian ***Period of Study***	:	**8 Semester/ *Semesters* (4 Tahun/ *Years*)**
Matlamat Program ***Program Outcomes***	:	1. Melahirkan eksekutif yang berpengetahuan, berkemahiran dan profesional dalam bidang sains perhutanan dan bidang berkaitan perhutanan selaras dengan pembangunan dan kelestarian sumber hutan. *To produce knowledgeable, skilled and professional executives in the field of forestry science and forestry related fields in line with the development and sustainability of forest resources.* 2. Melahirkan eksekutif yang berkeupayaan dalam penyelesaian masalah berkaitan perhutanan dan mengamalkan pembelajaran sepanjang hayat demi menjamin kelestarian sumber hutan. *To produce executives who are capable in solving problems related to forestry and practice lifelong learning to ensure the sustainability of forest resources.* 3. Melahirkan eksekutif yang bertanggungjawab ke atas masyarakat dalam menjaga dan mengurus sumber hutan. *To produce executives who are responsible to the community in caring for and managing forest resources*

RINGKASAN HASIL PEMBELAJARAN PROGRAM
SUMMARY OF PROGRAM LEARNING OUTCOMES

Program	Pengetahuan dan Kefahaman/ *Knowledge and Understanding*	Kemahiran Praktikal/*Practical Skills*	Kemahiran kognitif / *Cognitive Skills* (CTPS)	Kemahiran Berkomunikasi/ *Communication Skills* (CS)	Kemahiran Interpersonal/ *Interpersonal Skills* (TS)	Etika dan Professionalisme/ *Ethics and Professionalism* (EM)	Kemahiran digital dan pendidikan Sepanjang Hayat / *Digital Skills and Life-Long Learning* (LL)	Kemahiran personal dan keusahawanan/ *Personal and Entrepreneurial Skills* (KK)	Kepimpinan, autonomi dan tanggungjawab/ *Leadership, autonomy and responsibility* (LS)	Kemahiran numerasi/ *Numeracy Skills* (NS)
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
Bacelor Sains Perhutanan dengan Kepujian *Bachelor of Forestry Science with Honours*	41	31	30	10	10	19	14	8	9	4

1. Kursus Universiti/ *University Courses* (25 Kredit/ *credits*)

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T	PRASYARAT/ *PREREQUISITE*
LPE2301	*Academic Interaction and Presentation*	3	2	1	LPE2401 atau MUET Band 3-4
LPE2501	*Academic Writing*	3	2	1	LPE2301
FCE3204	Kemahiran Berfikir/*Thinking Skills*	2	2	0	Tiada/ *None*
MGM3180	Asas Keusahawanan/*Basic Entrepreneurship*	3	2	1	Tiada/ *None*
KOM3403	Pengucapan Awam/ *Public Oration*	3	3	0	Tiada/ *None*
PRT2009	Pertanian dan Kehidupan/*Agriculture and Life*	2	1	1	Tiada/ *None*
SKP2101*	Kenegaraan Malaysia/ *Malaysian Nationhood*	3	3	0	Tiada/ *None*
FEM2401**	Politik Malaysia Dan Masyarakat/ *Malaysian Politics And Society*	2	2	0	
SKP3112*	Falsafah dan Isu Semasa/ *Philosophy and Current Issues*	2	2	0	Tiada/ None
SKP3113**	Falsafah dan Isu Semasa Masyarakat Sivil/ *Philosophy and Current Issues in Civil Society*	3	3	0	Tiada/ None
atau/ *or* SKP3123**	atau/ *or* Penghayatan Etika dan Peradaban di Malaysia/ *Internalization of Ethics and Civilization in Malaysia*				
SKP3122*	Penghayatan Etika dan Peradaban/ *Internalization of Ethics and Civilization*	2	2	0	Tiada/ None
LPM2100**	Bahasa Melayu Komunikasi/ *Malay Language Communication*	2	2	0	Tiada / None
QKK2101	Bakti Siswa	1	0	1	
QKX	Kokurikulum 2/Co-curriculum 2	1	0	1	

Nota: * pelajar tempatan/ *local student* **pelajar antarabangsa/ *international student*

2. Kursus Teras/ *Core Courses* (68 kredit/ *credits*)

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T	PRASYARAT/ *PREREQUISITE*
FHH3101	Sains Kayu/ *Wood Science*	3	2	1	Tiada/ *None*
FHM3112	Kaedah Kuantitatif Dalam Perhutanan/ *Quantitative Methods in Forestry*	4	3	1	Tiada/ *None*
FHM3201	Survei Hutan/ *Forest Survey*	3	2	1	Tiada/ *None*
FHM3206	Sistem Maklumat Geografi Dalam Perhutanan/ *Geographic Information System in Forestry*	3	2	1	Tiada/ *None*
FHM3303	Pengurusan Hidupan Liar/ *Wildlife Management*	3	2	1	Tiada/ *None*
FHM3108	Entomologi Hutan/ *Forest Entomology*	2	1	1	Tiada/ *None*
FHM3109	Patologi Hutan/ *Forest Pathology*	2	1	1	Tiada/ *None*
FHM3203	Sivikultur Hutan/ *Forest Silviculture*	4	3	1	Tiada/ *None*
FHM3107	Tanah Hutan/ *Forest Soil*	3	2	1	Tiada/ *None*
FHM3103	Dendrologi Dipterokarpa/ *Dendrology of Dipterocarps*	2	1	1	Tiada/ *None*
FHM3104	Dendrologi Bukan Dipterokarpa/ *Dendrology of Non-Dipterocarps*	2	1	1	Tiada/ *None*
FHM3105	Fisiologi Pokok/ *Tree Physiology*	3	2	1	Tiada/ *None*
FHM3106	Ekologi Hutan/ *Forest Ecology*	3	2	1	Tiada/ *None*
FHS4959	Disertasi Bacelor/ *Bachelor Dissertation*	6	0	6	Tiada/ *None*
FHS4903	Latihan Industri/ *Industrial Training*	8	0	8	Tiada/ *None*
FHS4904	Kem Perhutanan/ *Forestry Camp*	2	0	2	Tiada/ *None*
FHM3202	Sukatan Hutan/ *Forest Mensuration*	3	2	1	Tiada/ *None*
FHM3301	Pengurusan Hutan / *Forest Management*	3	2	1	Tiada/ *None*
FHM3306	Undang-Undang Dalam Perhutanan/ *Laws in Forestry*	3	3	0	Tiada/ *None*
FHM3110	Ekonomi Perhutanan/ *Forestry Economics*	3	3	0	Tiada/ *None*
FHM3305	Pengurusan Kawasan Legeh/ *Watershed Management*	3	2	1	Tiada/ *None*

3. Kursus Elektif (36 kredit /*credits)*

Pelajar perlu mengambil sebanyak 30 kredit (9 kredit dari kursus generik dan 21 kredit dari pakej) daripada senarai kursus yang dipakejkan dan 6 kredit elektif bebas.

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T	PRASYARAT/ *PREREQUISITE*
KURSUS ELEKTIF GENERIK / *GENERIC ELECTIVE COURSES* (Pilih/*Choose* 9 kredit/*credits*)					
FHM3204	Kejuruteraan Hutan/ *Forest Engineering*	3	2	1	Tiada/ *None*
FHH3201	Hasil Hutan Bukan Kayu/ *Non-Wood Forest Products*	3	2	1	Tiada/ *None*
FHM4206	Pengukuran Dan Pemantauan Karbon/ *Carbon Measurement and Monitoring*	3	2	1	Tiada/ *None*
FHM4101	Biodiversiti dan Pemuliharaan/ *Biodiversity and Conservation*	3	2	1	Tiada/ *None*
FHM4202	Penilaian Ekonomi Sumber Hutan Dan Biodiversiti/ *Economic Valuation of Forest Resource and Biodiversity*	3	2	1	Tiada/ *None*
PAKEJ ELEKTIF PENGURUSAN HUTAN/ *FOREST MANAGEMENT ELECTIVE PACKAGE* (Pilih/*Choose* 21 kredit/*credits*)					
FHM3205	Penuaian Hutan/ *Forest Harvesting*	3	2	1	FHK3403
FHM4201	Penderiaan Jauh Dalam Perhutanan/ *Remote Sensing in Forestry*	3	2	1	Tiada/ *None*
FHM3111	Kebakaran Hutan/ *Forest Fire*	2	1	1	Tiada/ *None*
FHM3208	Pembaikbiak Pokok/ *Tree Improvement*	3	2	1	Tiada/ *None*
FHM4301	Pengurusan Hutan Lanjutan/ *Advance Forest Management*	2	1	1	Tiada/ *None*
FHM4203	Perhutanan Antarabangsa/ *International Forestry*	2	2	0	Tiada/ *None*
FHM3211	Pemulihan Ekosistem/ *Ecosystem Restoration*	3	2	1	Tiada/ *None*
FHM3213	Perhutanan Tani/ *Agroforestry*	3	2	1	Tiada/ *None*
FHM3210	Etnobotani/ *Ethnobotany*	3	2	1	Tiada/ *None*
FHM4204	Aplikasi Bioteknologi Dalam Perhutanan/ *Biotechnology Application in Forestry*	3	2	1	Tiada/ *None*
FHM4205	Teknik Hidrologi Hutan/ *Forest Hidrology Technique*	2	1	1	Tiada/ *None*
FHM3304	Pengurusan Hutan Ladang/ *Forest Plantation Management*	3	2	1	Tiada/ *None*
FHM3214	Teknologi Biji Benih/ *Seed Technology*	2	1	1	Tiada/ *None*

PAKEJ ELEKTIF EKOLOGI DAN KENSERVASI HIDUPAN LIAR/ *ELECTIVE PACKAGE* (Pilih/*Choose* 21 kredit/*credits*)					
FHM3212	Kaedah Pensampelan Hidupan Liar/ *Wildlife Sampling Methods*	3	2	1	Tiada/ *None*
FHM4102	Ekologi Komuniti Hidupan Liar/ *Wildlife Community Ecology*	3	3	0	Tiada/ *None*
FHM4103	Ekologi Perilaku Hidupan Liar/ *Wildlife Behavioural Ecology*	3	2	1	Tiada/ *None*
FHM4302	Konflik Manusia dan Hidupan Liar/ *Human and Wildlife Conflicts*	3	3	0	Tiada/ *None*
FHR3625	Pengurusan Hidupan Liar Dalam Rekreasi/ *Wildlife Management in Recreation*	3	2	1	Tiada/ *None*
FHR4608	Pengurusan Kawasan Perlindungan/ *Protected Areas Management*	3	2	1	Tiada/ *None*
FHM3210	Etnobotani/ *Ethnobotany*	3	2	1	Tiada/ *None*
FHM3211	Pemulihan Ekosistem/ *Ecosystem Restoration*	3	2	1	Tiada/ *None*
FHR4501	Pendidikan Alam Semulajadi/ *Environmental Education*	3	2	1	Tiada/ *None*
FHR4503	Pengurusan Ekopelancongan/ *Ecotourism Management*	3	2	1	Tiada/ *None*
FHM3213	Perhutanan Tani/ *Agroforestry*	3	2	1	Tiada/ None
FHR3205	Operasi dan Senggaraan Taman/*Parks Maintenance and Operation*	2	1	1	Tiada/ None
FHM4201	Penderiaan Jauh dalam Perhutanan/ *Remote Sensing in Forestry*	3	2	1	Tiada/ None
PAKEJ ELEKTIF PERHUTANAN BANDAR/ *FOREST MANAGEMENT ELECTIVE PACKAGE* (Pilih/*Choose* 21 kredit/*credits*)					
FHM3302	Pengurusan Hutan Bandar/ *Urban Forest Management*	3	2	1	Tiada/ *None*
FHM3209	Arborikultur/ *Arboriculture*	3	2	1	Tiada/ *None*
FHM3307	Penyelenggaraan Dan Pengurusan Tapak Semaian/ *Nursery Management and Maintainance*	2	1	1	Tiada/ *None*
FHM3310	Pengurusan Bersepadu Perosak Hutan Bandar/ *Integrated Pest Management of Urban Forests*	3	2	1	Tiada/ *None*
FHM3311	Pengurusan Kesihatan Pokok Hutan Bandar/ *Urban Tree Health Management*	2	1	1	Tiada/ *None*
FHM4207	Ekologi Perbandaran/ *Urban Ecology*	3	2	1	Tiada/ *None*

FHM4303	Pengurusan Risiko Dalam Hutan Bandar/ *Risk Management in Urban Forestry*	3	2	1	Tiada/ *None*
FHR3610	Operasi Dan Senggaraan Taman/ *Park Operation and Maintenance*	2	1	1	Tiada/ *None*
FHM3216	Ekonomi Persekitaran Dan Hutan Bandar/ *Environmental Economics and Urban Forestry*	2	2	0	Tiada/ *None*
FHM3215	Infrastruktur Hijau Dalam Perhutanan Bandar/ *Green Infrastructure in Urban Forestry*	2	1	1	Tiada/ *None*
FHM4302	Konflik Manusia Dan Hidupan Liar/ *Human and Wildlife Conflicts*	3	3	0	Tiada/ *None*
FHR3602	Interpretasi Persekitaran/ *Environmental Interpretation*	3	2	1	Tiada/ *None*
FHR3625	Pengurusan Hidupan Liar Dalam Rekreasi/ *Recreational Wildlife Management*	3	2	1	Tiada/ None
PAKEJ ELEKTIF PERHUTANAN LADANG/ *ELECTIVE PACKAGE* (Pilih/*Choose* 21 kredit/*credits*)					
FHM3217	Sistem Penuaian Dalam Ladang Hutan/ *Harvesting System in Forest Plantations*	3	2	1	Tiada/ *None*
FHM3307	Penyelenggaraan Dan Pengurusan Tapak Semaian/ *Nursery Management and Maintainance*	2	1	1	Tiada/ *None*
FHM3304	Pengurusan Hutan Ladang/ *Forest Plantation Management*	3	2	1	Tiada/ *None*
FHM3309	Pensijilan Ladang Hutan/ *Forest Plantation Certification*	2	1	1	Tiada/ *None*
FHM4201	Penderiaan Jauh Dalam Perhutanan/ *Remote Sensing in Forestry*	3	2	1	Tiada/ *None*
FHM3308	Pengurusan Kebakaran Dalam Ladang Hutan/ *Fire Management in Forest Plantations*	2	1	1	Tiada/ *None*
FHH3230	Kualiti Dan Hasil Kayu/ *Wood Quality and Products*	3	2	1	Tiada/ *None*
FHM4304	Pengurusan Konflik Dalam Ladang Hutan/ *Conflict Management in Forest Plantations*	3	2	1	Tiada/ *None*
FHM4302	Konflik Manusia Dan Hidupan Liar/ *Human and Wildlife Conflicts*	3	3	0	Tiada/ *None*
FHM3218	Penghasilan Bahan Tanaman Hutan Ladang/ *Planting Material Production for Forest Plantation*	3	2	1	Tiada/ *None*

FHM3214	Teknologi Biji Benih/ *Seed Technology*	2	1	1	Tiada/ *None*
FHM4203	Perhutanan Antarabangsa/ *International Forestry*	2	2	0	Tiada/ *None*
FHM3213	Perhutanan Tani/ *Agroforestry*	3	2	1	Tiada/ *None*

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

Nota Penting/*Notes* :

1. Pelajar diwajibkan memilih 2 kredit daripada kursus kokurikulum yang ditawarkan oleh universiti/ It is *compulsory for students to take 2 credits of co-curriculum courses offered by the university*
2. *Pelajar perlu melengkapkan pakej keperluan bahasa inggeris seperti jadual Pakej ELEx di atas.*
   (Butiran lanjut mengenai CEL dan LAX sila rujuk pada Pakej ELEx di atas (halaman 7&8)
   Students need to complete the ELEx Package as the table above (page 7&8).

SKEMA PENGAJIAN/ *STUDY SCHEME*

TAHUN 1/ *1ST YEAR*

SEMESTER 1/ *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T
LPE2301	*Academic Interaction and Presentation*	3	2	1
PRT2009	Pertanian dan Kehidupan/*Agriculture and Life*	2	1	1
SKP2101*	Kenegaraan Malaysia/ *Malaysian Nationhood*	3	3	0
FEM2401**	Politik Malaysia Dan Masyarakat/ *Malaysian Politics And Society*	2	2	0
SKP3112*	Falsafah dan Isu Semasa/ *Philosophy and Current Issues*	2	2	0
SKP3113**	Falsafah dan Isu Semasa Masyarakat Sivil/ *Philosophy and Current Issues in Civil Society*	3	3	0
atau/ *or*	atau/ *or*			
SKP3123**	Penghayatan Etika dan Peradaban di Malaysia/ *Internalization of Ethics and Civilization in Malaysia*			
FHM3103	Dendrologi Dipterokarpa/ *Dendrology of Dipterocarps*	2	1	1
FHH3101	Sains Kayu/ *Wood Science*	3	2	1
FHM3105	Fisiologi Pokok/ *Tree Physiology*	3	2	1
QKK2101	Bakti Siswa (Ko-Kurikulum)	1	0	1
	JUMLAH/ *TOTAL*	**19**	**13**	**6**

SEMESTER 2/ *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T
LPE2501	*Academic Writting*	3	2	1
KOM3403	Pengucapan Awam/ *Public Oration*	3	2	1
SKP3122*	Penghayatan Etika dan Peradaban/ *Internalization of Ethics and Civilization*	2	2	0
LPM2100**	Bahasa Melayu Komunikasi/ *Malay Language Communication*			
FCE3204	Kemahiran Berfikir/*Thinking Skills*	2	2	0
FHM3104	Dendrologi Bukan Dipterokarpa/ *Dendrology of Non-Dipterocarps*	2	1	1
FHM3107	Tanah Hutan/ *Forest Soil*	3	2	1
FHM3108	Entomologi Hutan/ *Forest Entomology*	2	1	1
QK XXXX	Ko-Kurikulum II	1	0	1
	JUMLAH/ *TOTAL*	**8**	**12**	**6**

TAHUN 2/ *2ND YEAR*

SEMESTER 1/ *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
FHM3106	Ekologi Hutan/ *Forest Ecology*	3	2	1
FHM3201	Survei Hutan/ *Forest Survey*	3	2	1
FHM3202	Sukatan Hutan/ *Forest Mensuration*	3	2	1
FHM3203	Sivikultur Hutan/ *Forest Silviculture*	4	3	1
FHM3112	Kaedah Kuantitatif Dalam Perhutanan/ *Quantitative Methods in Forestry*	4	3	1
FHS4904	Kem Perhutanan/ *Forestry Camp*	2	0	2
	JUMLAH/ *TOTAL*	**19**	**12**	**7**

SEMESTER 2/ *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
FHM3109	Patologi Hutan/ *Forest Pathology*	2	1	1
FHM3110	Ekonomi Perhutanan/ *Forestry Economics*	3	3	0
FHM3206	Sistem Maklumat Geografi Dalam Perhutanan/ *Geographic Information System in Forestry*	3	2	1
FHM3301	Pengurusan Hutan/ *Forest Management*	3	2	1
FHM3303	Pengurusan Hidupan Liar/ *Wildlife Management*	3	2	1
FHM3305	Pengurusan Kawasan Legeh/ W*atershed Management*	3	2	1
FHM3306	Undang-Undang Dalam Perhutanan/ *Laws in Forestry*	3	3	0
	JUMLAH/ *TOTAL*	**20**	**15**	**5**

TAHUN 3/ *3RD YEAR*

SEMESTER 1/ *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
	PAKEJ ELEKTIF PENGURUSAN HUTAN			
FHM3204	Kejuruteraan Hutan/ *Forest Engineering* [*Elektif Generik 1*]	3	2	1
FHM3205	Penuaian Hutan/ Forest Harvesting [*Elektif Pakej 1*]	3	2	1
FHM3208	Pembaikbiak Pokok/ *Tree Improvement* [*Elektif Pakej 2*]	3	2	1
FHM4201	Penderiaan Jauh Dalam Perhutanan/ *Remote Sensing in Forestry* [*Elektif Pakej 3*]	3	2	1
FHMXXXX	*Elektif Generik2*	3	2	1
FHMXXXX	*Elektif Generik 3*	3	2	1
	JUMLAH/ *TOTAL*	**18**	**12**	**6**
	PAKEJ ELEKTIF EKOLOGI DAN KONSERVASI HIDUPAN LIAR			
FHM3212	Kaedah Pensampelan Hidupan Liar/ *Wildlife Sampling Methods* [*Elektif Pakej 1*]	3	2	1
FHR3505	Pengurusan Hidupan Liar Dalam Rekreasi/*Wildlife Management in Recreation* [*Elektif Pakej 2*]	3	2	1
FHM4101	Biodiversiti dan Pemuliharaan/ *Biodiversity and Conservation* [*Elektif Generik 1*]	3	2	1
FHM4103	Ekologi Perilaku Hidupan Liar/ *Wildlife Behavioural Ecology* [*Elektif Pakej 3*]	3	2	1
FHXXXX	*Elektif Generik 2*	3	2	1
FHXXXX	*Elektif Generik 3*	3	2	1
	JUMLAH/ *TOTAL*	**18**	**12**	**6**
	PAKEJ ELEKTIF PERHUTANAN BANDAR			
FHM3209	Arborikultur/ *Arboriculture* [*Elektif Pakej 1*]	3	2	1
FHM3302	Pengurusan Hutan Bandar/ *Urban Forest Management* [*Elektif Pakej 2*]	3	2	1
FHM3307	Penyelenggaraan Dan Pengurusan Tapak Semaian/ *Nursery Management and Maintainance* [*Elektif Pakej 3*]	3	2	1
FHM3311	Pengurusan Kesihatan Pokok Hutan Bandar/ *Urban Tree Health Management* [*Elektif Pakej 4*]	2	1	1
FHMXXXX	*Elektif Pakej5*	2	1	1

FHM4206	Pengukuran Dan Pemantauan Karbon/ *Carbon Measurement and Monitoring* [*Elektif Generik 1*]	3	2	1
FHMXXXX	*Elektif Generik 2*	3	2	1
	JUMLAH/ *TOTAL*	**19**	**12**	**7**

	PAKEJ ELEKTIFPERHUTANAN LADANG			
FHM3204	Kejuruteraan Hutan/ *Forest Engineering* [*Elektif Generik 1*]	3	2	1
FHM3304	Pengurusan Hutan Ladang/ *Forest Plantation Management* [*Elektif Pakej 1*]	3	2	1
FHM3307	Penyelenggaraan Dan Pengurusan Tapak Semaian/ *Nursery Management and Maintainance* [*Elektif Pakej2*]	3	2	1
FHM4201	Penderiaan Jauh Dalam Perhutanan/ *Remote Sensing in Forestry* [*Elektif Pakej3*]	3	2	1
FH XXXX	*Elektif Generik 2*	3	2	1
FHXXXX	*Elektif Generik 3*	3	2	1
	JUMLAH/ *TOTAL*	**18**	**12**	**6**

SEMESTER 2/ *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
	KURSUS TERAS			
FHS4959A	Disertasi Bacelor/ *Bachelor Dissertation*	3	0	3
	PAKEJ ELEKTIF PENGURUSAN HUTAN			
FHM4202	Penilaian Ekonomi Sumber Hutan dan Biodiversiti/ *Economic Valuation of Forest Resource and Biodiversity* [*Elektif Pakej 5*]	3	2	1
FHMXXXX	*Elektif Pakej 4*	2	2	0
XXXXXX	*Elektif Bebas 1*	3	2	1
XXXXXXX	*Elektif Bebas 2*	3	2	1
	JUMLAH/ *TOTAL*	**14**	**8**	**6**

	PAKEJ ELEKTIF EKOLOGI DAN KONSERVASI HIDUPAN LIAR			
FHM4102	Ekologi Komuniti Hidupan Liar/ *Wildlife Community Ecology* [*Elektif Pakej 4*]	3	3	0
FHM4302	Konflik Manusia dan Hidupan Liar/ *Human and Wildlife Conflicts* [*Elektif Pakej 5*]	3	3	0
FHXXXX	*Elektif Pakej 6*	3	2	1
XXXXXX	*Elektif Bebas 1*	3	2	1
	JUMLAH/ *TOTAL*	**15**	**10**	**5**

PAKEJ ELEKTIF PERHUTANAN BANDAR				
FHM4207	Ekologi Perbandaran/ *Urban Ecology* [*Elektif Pakej 6*]	2	1	1
FHM4303	Pengurusan Risiko Dalam Hutan Bandar/ *Risk Management in Urban Forestry* [*Elektif Pakej 7*]	3	2	1
XXXXXX	*Elektif Generik3*	3	2	1
XXXXXX	*Elektif Bebas 1*	3	2	1
	JUMLAH/ *TOTAL*	**14**	**7**	**7**

PAKEJ ELEKTIFPERHUTANAN LADANG				
FHM3217	Sistem Penuaian Dalam Ladang Hutan/ *Harvesting System in Forest Plantations* [*Elektif Pakej4*]	3	2	1
FHM3309	Pensijilan Ladang Hutan/ *Forest Plantation Certification* [*Elektif Pakej5*]	2	1	1
XXXXXX	*Elektif Bebas 1*	3	2	1
XXXXXX	*Elektif Bebas 2*	3	2	1
	JUMLAH/ *TOTAL*	**14**	**7**	**7**

TAHUN 4/ *4TH YEAR*

SEMESTER 1/ *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
	KURSUS TERAS			
FHS4959B	Disertasi Bacelor/ *Bachelor Dissertation*	3	0	3
MGM3180	Asas Keusahawanan/ *Basic Entrepreneurship*	3	2	1

PAKEJ ELEKTIF PENGURUSAN HUTAN				
FHM3111	Kebakaran Hutan/ *Forest Fire* [*Elektif Pakej 6*]	2	1	1
FHM4301	Pengurusan Hutan Lanjutan/ *Advance Forest Management* [*Elektif Pakej 7*]	2	1	1
FHMXXXX	*Elektif Pakej 8*	3	2	1
	JUMLAH/ *TOTAL*	**13**	**6**	**7**

PAKEJ ELEKTIF EKOLOGI DAN KONSERVASI HIDUPAN LIAR				
FHXXXX	*Elektif Pakej 7*	3	2	1
XXXXXX	*Elektif Bebas 2*	3	2	1
	JUMLAH/ *TOTAL*	**12**	**6**	**6**

PAKEJ ELEKTIF PERHUTANAN BANDAR				
FHXXXX	*Elektif Pakej 8*	3	2	1
XXXXXXX	*Elektif Bebas 2*	3	2	1
	JUMLAH/ *TOTAL*	**12**	**6**	**6**

PAKEJ ELEKTIF PERHUTANAN LADANG				
FHH3230	Kualiti Dan Hasil Kayu/ *Wood Quality and Products* [*Elektif Pakej6*]	3	2	1
FHM3308	Pengurusan Kebakaran Dalam Ladang Hutan/ *Fire Management in Forest Plantations* [*Elektif Pakej 7*]	2	1	1
FHXXXXX	*Elektif Pakej 8*	2	1	1
	JUMLAH/ *TOTAL*	**13**	**6**	**7**

***** Satu daripada Elektif Bebas adalah Bahasa Global

SEMESTER 2/ *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T
FHS4903	Latihan Industri/ *Industrial Training*	8	0	8
	JUMLAH/ *TOTAL*	**8**	**0**	**8**

Bacelor Sains dan Teknologi Kayu dengan Kepujian/

Bachelor of Wood Science and Technology with Honours

STRUKTUR KURIKULUM/ *CURRICULUM STRUCTURE*

Nama Program ***Program Name***	:	**Bacelor Sains dan Teknologi Kayu dengan Kepujian/ *Bachelor of Wood Science and Technology with Honours***
Jumlah Kredit Bergraduat *Total Credits to Graduate*	:	**126 Jam Kredit/ *Credit Hours***
Tempoh Pengajian ***Period of Study***	:	**8 Semester/ *Semesters* (4 Tahun/ *Years*)**
Matlamat Program ***Program Outcomes***	:	1. Menghasilkan eksekutif yang berpengetahuan, berkemahiran dan profesional dalam bidang perkayuan. *Produce knowledgeable, skilled and professional executives in the field of wood science and technology.* 2. Menghasilkan eksekutif yang kompeten dan boleh menyelesaikan masalah dalam bidang perkayuan. *Produce competent excecutive who are capable to solve problems in the field of wood science and technology.* 3. Menghasilkan eksekutif yang mengamalkan pembelajaran sepanjang hayat dan berupaya mengembangkan potensi sumber dan produk dalam bidang perkayuan. *Produce executives who practice lifelong learning and are able to extend resource and product potentials in the field of wood science and technology.*

RINGKASAN HASIL PEMBELAJARAN PROGRAM
SUMMARY OF PROGRAM LEARNING OUTCOMES

Program	Pengetahuan dan Kefahaman/ *Knowledge and Understanding*	Kemahiran Praktikal/*Practical Skills*	Kemahiran kognitif / *Cognitive Skills* (CTPS)	Kemahiran Berkomunikasi/ *Communication Skills* (CS)	Kemahiran Interpersonal/ *Interpersonal Skills* (TS)	Etika dan Professionalisme/ *Ethics and Professionalism* (EM)	Kemahiran digital dan pendidikan Sepanjang Hayat / *Digital Skills and Life-Long Learning* (LL)	Kemahiran personal dan keusahawanan/ *Personal and Entrepreneurial Skills* (KK)	Kepimpinan, autonomi dan tanggungjawab/ *Leadership, autonomy and responsibility* (LS)	Kemahiran numerasi/ *Numeracy Skills* (NS)
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
Bacelor Sains dan Teknologi Kayu dengan Kepujian *Bachelor of Wood Science and Technology with Honours*	38	25	25	14	16	13	11	4	6	3

1. Kursus Universiti/ *University Courses* (25 kredit/ *credits*)

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T	PRASYARAT/ *PREREQUISITE*
SKP2101*	Kenegaraan Malaysia/ *Malaysian Nationhood*	3	3	0	Tiada/ *None*
FEM2401**	Politik Malaysia Dan Masyarakat/ *Malaysian Politics And Society*	2	2	0	
SKP3112*	Falsafah dan Isu Semasa/ *Philosophy and Current Issues*	2	2	0	Tiada/ None
SKP3113** atau/ *or* SKP3123**	Falsafah dan Isu Semasa Masyarakat Sivil/ *Philosophy and Current Issues in Civil Society* atau/ *or* Penghayatan Etika dan Peradaban di Malaysia/ *Internalization of Ethics and Civilization in Malaysia*	3	3	0	Tiada/ None
SKP3122*	Penghayatan Etika dan Peradaban/ *Internalization of Ethics and Civilization*	2	2	0	Tiada/ None
LPM2100**	Bahasa Melayu Komunikasi/ *Malay Language Communication*	2	2	0	Tiada / None
FCE3204	Kemahiran Berfikir/*Thinking Skills*	2	2	0	Tiada/ *None*
KOM3403	Pengucapan Awam/ *Public Oration*	3	2	1	Tiada/ *None*
MGM3180	Asas Keusahawanan/*Basic Entrepreneurship*	3	2	1	Tiada/ *None*
PRT2009	Pertanian dan Kehidupan/*Agriculture and Life*	2	1	1	Tiada/ *None*
LPE2301	*Academic Interaction and Presentation*	3	2	1	LPE2401 atau MUET Band 3-4
LPE2501	*Academic Writing*	3	2	1	LPE2301
QKK2101	Bakti Siswa	1	0	1	
QKX	Kokurikulum 2/*Co-curriculum 2*	1	0	1	

Nota: * pelajar tempatan/ *local student* **pelajar antarabangsa/ *international student*

2. Kursus Teras/ *Core Courses* (74 kredit/ *credits*)

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T	PRASYARAT/ *PREREQUISITE*
FHH3201	Hasil Hutan Bukan Kayu /*Non-Wood Forest Products*	3	2	1	Tiada/ *None*
FHH3207	Teknologi Pulpa dan Kertas/ *Pulp and Paper Technology*	3	2	1	Tiada/ *None*
FHH3302	Pemasaran Hasil Hutan/*Forest Products Marketing*	3	3	0	Tiada/ *None*
FHH3102	Anatomi Kayu / *Wood Anatomy*	3	2	1	Tiada/ *None*
FHH3103	Fizik Kayu / *Wood Physics*	3	2	1	Tiada/ *None*
FHH3104	Kimia Kayu / *Wood Chemistry*	3	2	1	Tiada/ *None*
FHH3205	Biokomposit/ *Biocomposites*	3	2	1	Tiada/ *None*
FHH3202	Pengilangan Dan Pengeringan Kayu/ *Sawmilling and Wood Drying*	3	2	1	Tiada/ *None*
FHH3206	Pemesinan Kayu/ *Wood Machining*	3	2	1	FHH3202
FHH3203	Kemerosotan Kayu dan Rawatan/ *Wood Deterioration and Treatment*	3	2	1	Tiada/ *None*
FHH3204	Perekat dan Teknologi Perekatan Kayu/ *Wood Adhesive and Adhesion Technology*	3	2	1	Tiada/ *None*
FHH3106	Pengenalan kepada Operasi Hutan/	3	2	1	Tiada/ *None*
FHM3102	Botani Hutan/ *Forest Botany*	3	2	1	Tiada/ *None*
FHS4903	Latihan Industri/ *Industrial Training*	8	0	8	Tiada/ *None*
FHS4904	Kem Perhutanan/ *Forestry Camp*	2	0	2	Tiada/ *None*
FHS4959	Disertasi Bacelor/ *Bachelor Dissertation*	6	0	6	Tiada/ *None*
FHM3112	Kaedah Kuantitatif Dalam Perhutanan/ *Quantitative Methods in Forestry*	4	3	1	Tiada/ *None*
FHH3303	Ekonomi Industri Perkayuan/*Wood Industry Economics*	3	3	0	Tiada/ *None*
FHM3101	Sains Perhutanan/*Forest Science*	3	3	0	Tiada/ *None*
FHH3105	Mekanik Kayu/ *Wood Mechanics*	3	2	1	Tiada/ *None*
FHH3301	Perolehan Bekalan Hasil Hutan/ *Forest Products Procurement*	3	2	1	Tiada/ *None*
FHH3304	Analisis Operasi Industri Hasil Hutan/ *Operation Analysis in Forest Products Industries*	3	2	1	Tiada/ None

3. Kursus Elektif/ Elective Courses (27 kredit/ *credits*)

Pelajar pelajar perlu mengambil 27 kredit bagi kursus elektif yang merangkumi 21 kredit Elektif Program dan 6 kredit Elektif Bebas/ *BI*

i. ELEKTIF / *ELECTIVE*

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T	PRASYARAT/ *PREREQUISITE*
FHH3208	Proses Pembuatan Perabot/ *Furniture Manufacturing Process*	3	2	1	Tiada/ *None*
FHH3210	Biojisim Dan Biotenaga/ *Biomass and Bioenergy*	3	2	1	Tiada/ *None*
FHH4203	Biokomposit Termaju/ *Advanced Biocomposite*	3	2	1	Tiada/ *None*
FHH4201	Teknologi Penglitup dan Kemasiapan Kayu/ *Wood Coating and Finishing Technology*	3	2	1	Tiada/ *None*
FHH4303	Pengurusan Dan Penggunaan Sisa Kayu/ *Wood Waste Management and Utilisation*	3	2	1	Tiada/ *None*
FHH3209	Aplikasi Komputer Dalam Reka Bentuk Produk Kayu/ *Computer Application in Wood Product Design*	3	1	2	Tiada/ *None*
FHH4301	Pencemaran Dan Kawalan Dalam Industri Hutan/ *Pollution and Control in Forest Industries*	3	3	0	Tiada/ *None*
FHH4302	Sistem Pengawalan Mutu Pemprosesan Kayu/ *Wood Processing Quality Control System*	3	2	1	Tiada/ *None*
FHH3305	Analisis Kewangan Industri Hasil Hutan/ Financial Analysis of Forest Products Industries	3	3	0	Tiada/ *None*
FHH4304	Pengurusan Industri Perhutanan/ *Forest Industry Management*	3	3	0	Tiada/ *None*
FHH4305	Perdagangan Kayu Antarabangsa/ *International Timber Trade*	3	3	0	Tiada/ *None*
FHH3307	Ergonomik Hutan/ *Forest Ergonomics*	3	2	1	Tiada/ *None*
FHH4202	Penambahbaikan Mutu Kayu/ *Wood Quality Improvement*	3	2	1	Tiada/ *None*
FHM3306	Undang-Undang Dalam Perhutanan/ *Laws in Forestry*	3	3	0	Tiada/ *None*
BB_	Bahasa Global/ Glonal Language	3			
	Elektif Bebas	3			

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

Nota Penting/*Notes* :

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

2. *Pelajar perlu melengkapkan pakej keperluan bahasa inggeris seperti jadual Pakej ELEx di atas.*
   (Butiran lanjut mengenai CEL dan LAX sila rujuk pada Pakej ELEx di atas (halaman 7&8)
   Students need to complete the ELEx Package as the table above (page 7&8).

SKEMA PENGAJIAN/ *STUDY SCHEME*

TAHUN 1/ *1ST YEAR*

SEMESTER 1/ *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
PRT2009	Pertanian dan Kehidupan/*Agriculture and Life*	2	1	1
SKP2101*	Kenegaraan Malaysia/ *Malaysian Nationhood*	3	3	0
FEM2401**	Politik Malaysia Dan Masyarakat/ *Malaysian Politics And Society*	2	2	0
SKP3112*	Falsafah dan Isu Semasa/ *Philosophy and Current Issues*	2	2	0
SKP3113**	Falsafah dan Isu Semasa Masyarakat Sivil/ *Philosophy and Current Issues in Civil Society*	3	3	0
atau/ *or*	atau/ *or*			
SKP3123**	Penghayatan Etika dan Peradaban di Malaysia/ *Internalization of Ethics and Civilization in Malaysia*			
FHM3101	Sains Perhutanan/ *Forest Science*	3	3	0
FHM3102	Botani Hutan/ *Forest Botany*	3	2	1
FHH3102	Anatomi Kayu / *Wood Anatomy*	3	2	1
QKX	Kokurikulum 1/ *Co-curriculum 1*	1	0	1
	JUMLAH/ *TOTAL*	**17**	**14**	**3**

SEMESTER 2/ *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T
LPE2301	*Academic Interaction and Presentation*	3	2	1
KOM3403	Pengucapan Awam/ *Public Oration*	3	2	1
SKP3122*	Penghayatan Etika dan Peradaban/ *Internalization of Ethics and Civilization*	2	2	0
LPM2100**	Bahasa Melayu Komunikasi/ *Malay Language Communication*	2	2	0
FHH3201	Hasil Hutan Bukan Kayu/ *Non-Wood Forest Products*	3	2	1
FHH3103	Fizik Kayu / *Wood Physics*	3	2	1
FHH3104	Kimia Kayu / *Wood Chemistry*	3	2	1
	JUMLAH/ *TOTAL*	**17**	**12**	**5**

TAHUN 2/ *2ND YEAR*

SEMESTER 1/ *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T
LPE2501	*Academic Writing*	3	2	1
FHH3202	Pengilangan Dan Pengeringan Kayu/ *Sawmilling and Wood Drying*	3	2	1
FHH3204	Perekat dan Teknologi Perekatan Kayu/ *Wood Adhesive and Adhesion Technology*	3	2	1
FHH3106	Pengenalan Kepada Operasi Hutan/	3	2	1
FHH3105	Mekanik Kayu/ *Wood Mechanics*	3	2	1
FHS4904	Kem Perhutanan/ *Forestry Camp*	2	0	2
	JUMLAH/ *TOTAL*	**17**	**10**	**7**

SEMESTER 2/ *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
FHH3205	Biokomposit/ *Biocomposites*	3	2	1
FHH3206	Pemesinan Kayu/ *Wood Machining*	3	2	1
FHH3301	Perolehan Bekalan Hasil Hutan/ *Forest Products Procurement*	3	2	1
FHH3203	Kemerosotan Kayu dan Rawatan/ *Wood Deterioration and Treatment*	3	2	1
FHH3303	Ekonomi Industri Perkayuan/*Wood Industry Economics*	3	3	0
MGM3180	Asas Keusahawanan/*Basic Entrepreneurship*	3	2	1
	JUMLAH/ *TOTAL*	**18**	**13**	**5**

TAHUN 3/ *3RD YEAR*

SEMESTER 1/ *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
FCE3204	Kemahiran Berfikir/*Thinking Skills*	2	2	0
FHH3207	Teknologi Pulpa dan Kertas/ *Pulp and Paper Technology*	3	2	1
FHM3112	Kaedah Kuantitatif Dalam Perhutanan/ *Quantitative Methods in Forestry*	4	3	1
	Elektif I/ *Elective I*	3	-	-
	Elektif II/ *Elective II*	3	-	-
	Elektif III/ *Elective III*	3	-	-
	JUMLAH/ *TOTAL*	**18**		

SEMESTER 2/ *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
FHH3304	Analisis Operasi Industri Hasil Hutan/ *Operation Analysis in Forest Products Industries*	3	2	1
FHS4959A	Disertasi Bacelor/ *Bachelor Dissertation*	3	0	3
	Elektif IV/ *Elective IV*	3	-	-
	Elektif V/ *Elective V*	3	-	-
	Elektif VI/ *Elective VI*	3	-	-
	JUMLAH/ *TOTAL*	**15**	**7**	**6**

TAHUN 4/ *4TH YEAR*

SEMESTER 1/ *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
FHH3302	Pemasaran Hasil Hutan/*Forest Products Marketing*	3	3	0
FHS4959B	Disertasi Bacelor/ *Bachelor Dissertation*	3	0	3
QKK2101	Bakti Siswa	1	0	1
	Elektif VII/ *Elective VII*	3	-	-
	Elektif VIII/ *Elective* VIII	3	-	-
	Elektif IX/ *Elective* IX	3	-	-
	JUMLAH/ *TOTAL*	**16**	**6**	**6**

SEMESTER 2/ *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
FHS4903	Latihan Industri/ *Industrial Training*	8	0	8
	JUMLAH/ *TOTAL*	**8**	**0**	**8**

Bacelor Sains Taman dan Rekreasi dengan Kepujian/

Bachelor of Parks and Recreation Science with Honours

STRUKTUR KURIKULUM/ *CURRICULUM STRUCTURE*

Nama Program ***Program Name***	:	**Bacelor Sains Taman dan Rekreasi dengan Kepujian/ *Bachelor of Parks and Recreation Science with Honours***
Jumlah Kredit Bergraduat ***Total Credits to Graduate***	:	**126 Jam Kredit/ *Credits Hours***
Tempoh Pengajian ***Period of Study***	:	**8 Semester/ *Semesters* (4 Tahun/ *Years*)**

Matlamat Program :
Program Outcomes

1. Menghasilkan eksekutif yang kompeten dalam bidang berkaitan sains taman dan rekreasi.
   To produce excecutive who are competent in the field of nature park and recreation.
2. Menghasilkan eksekutif yang berupaya meningkatkan nilai tambah diri dan daya saing untuk menyumbang kepada penerokaan ilmu di dalam bidang sains taman dan rekreasi.
   To produce excecutive who are able to increase their self-added value and be competitive in exploring and contributing to body of knowledge in the field of nature park and recreation.
3. Menghasilkan eksekutif yang mampu memimpin pengorganisasian program berkaitan rekreasi dan ekopelancongan secara kreatif dan berkesan.
   To produce excecutive who are capable to lead the organization of programs related to recreation and ecotourism creatively and effectively.

RINGKASAN HASIL PEMBELAJARAN PROGRAM
SUMMARY OF PROGRAM LEARNING OUTCOMES

Program	Pengetahuan dan Kefahaman/ *Knowledge and Understanding*	Kemahiran Praktikal/*Practical Skills*	Kemahiran kognitif / *Cognitive Skills* (CTPS)	Kemahiran Berkomunikasi/ *Communication Skills* (CS)	Kemahiran Interpersonal/ *Interpersonal Skills* (TS)	Etika dan Professionalisme/ *Ethics and Professionalism* (EM)	Kemahiran digital dan pendidikan Sepanjang Hayat / *Digital Skills and Life-Long Learning* (LL)	Kemahiran personal dan keusahawanan/ *Personal and Entrepreneurial Skills* (KK)	Kepimpinan, autonomi dan tanggungjawab/ *Leadership, autonomy and responsibility* (LS)	Kemahiran numerasi/ *Numeracy Skills* (NS)
	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10
Bacelor Sains Taman dan Rekreasi dengan Kepujian *Bachelor of Parks and Recreation Science with Honours*	37	26	19	18	16	19	9	6	12	2

1. Kursus Universiti/ *University Courses* (25 kredit/ *credits*)

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T	PRASYARAT/ *PREREQUISITE*
LPE2301	*Academic Interaction and Presentation*	3	2	1	LPE2401 atau MUET Band 3-4
LPE2501	*Academic Writing*	3	2	1	LPE2301
FCE3204	Kemahiran Berfikir/*Thinking Skills*	2	2	0	Tiada/ *None*
SKP2501	Pengantar Psikologi/ *Introduction to Psychology*	3	3	0	Tiada/ *None*
PRT2009	Pertanian dan Kehidupan/*Agriculture and Life*	2	1	1	Tiada/ *None*
SKP2101*	Kenegaraan Malaysia/ *Malaysian Nationhood*	3	3	0	Tiada/ *None*
FEM2401**	Politik Malaysia Dan Masyarakat/ *Malaysian Politics And Society*	2	2	0	
SKP3112*	Falsafah dan Isu Semasa/ *Philosophy and Current Issues*	2	2	0	Tiada/ None
SKP3113**	Falsafah dan Isu Semasa Masyarakat Sivil/ *Philosophy and Current Issues in Civil Society*	3	3	0	Tiada/ None
atau/ *or*	atau/ *or*				
SKP3123**	Penghayatan Etika dan Peradaban di Malaysia/ *Internalization of Ethics and Civilization in Malaysia*				
SKP3122*	Penghayatan Etika dan Peradaban/ *Internalization of Ethics and Civilization*	2	2	0	Tiada/ None
LPM2100**	Bahasa Melayu Komunikasi/ *Malay Language Communication*	2	2	0	Tiada / None
QKxxxx	Kokurikulum 1/*Co-curriculum 1*	1	0	1	
QKxxx	Kokurikulum 2/*Co-curriculum 2*	1	0	1	

Nota: * pelajar tempatan/ *local student* **pelajar antarabangsa/ *international student*

2. Kursus Teras/ *Core Courses* (69 kredit/ *credits*)

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T	PRASYARAT/ *PREREQUISITE*
FHR4301	Penilaian Sumber Rekreasi/ *Recreation Resource Valuation*	4	4	0	Tiada/ *None*
FHR3202	Inventori Sumber Taman Dan Rekreasi/ *Park and Recreation Resources Inventory*	3	2	1	Tiada/ *None*
FHM3102	Botani Hutan/ *Forest Botany*	3	2	1	Tiada/ *None*
FHR3503	Keusahawanan Dalam Taman Dan Rekreasi/ *Entrepreneurship in Parks and Recreation*	3	2	1	Tiada/ *None*
FHR3101	Pengenalan Kepada Rekreasi Luar/ *Introduction to Outdoor Recreation*	3	2	1	Tiada/ *None*
FHR3203	Interpretasi Persekitaran/ *Environmental Interpretation*	3	2	1	Tiada/ *None*
FHR3204	Perancangan Rekreasi Luar/ *Outdoor Recreation Planning*	3	2	1	Tiada/ *None*
FHR3501	Perilaku Pengguna Rekreasi/ *Recreational User Behaviour*	3	3	0	Tiada/ *None*
FHR3301	Pengurusan Risiko Dalam Rekreasi/ *Risk Management in Recreation*	3	2	1	Tiada/ *None*
FHR3302	Pemprograman Dan Kepemimpinan Rekreasi/*Recreation Programming and Leadership*	3	2	1	Tiada/ *None*
FHR4401	Pengurusan Taman Dan Rekreasi/ *Parks and Recreation Management*	3	3	0	Tiada/ *None*
FHR3201	Kemahiran Rekreasi Luar/*Outdoor Recreation Skills*	3	1	2	Tiada/ *None*
FHR3102	Ekologi Sumber Rekreasi/*Recreation Resource Ecology*	3	2	1	Tiada/ *None*
FHR4402	Pengurusan Pelancongan Warisan Dan Komuniti/*Heritage and Community Tourism Management*	3	2	1	Tiada/ *None*
FHS4903	Latihan Industri/ *Industrial Training*	8	0	8	Tiada/ *None*
FHS4904	Kem Perhutanan/ *Forestry Camp*	2	0	2	Tiada/ *None*
FHS4959	Disertasi Bacelor/ *Bachelor Dissertation*	6	0	6	Tiada/ *None*
FHR4302	Kaedah Penyelidikan Dalam Rekreasi Dan Ekopelancongan/ *Research Method in Recreation and Ecotourism*	3	3	0	Tiada/ *None*
FHM3112	Kaedah Kuantitatif Dalam Perhutanan/ *Quantitative Methods in Forestry*	4	3	1	Tiada/ *None*
FHM3101	Sains Perhutanan/ *Forest Science*	3	3	0	Tiada/ *None*

FHR3507	Hospitaliti Dalam Taman dan Rekreasi/*Hospitality in Parks and Recreation*	3	2	1	Tiada/ *None*

3. Kursus Elektif/ *Elective Courses* (Pilih/Choose 33 credit/ *credits*)

Pelajar perlu mengambil 33 kredit bagi kursus elektif merangkumi 27 kredit minimum bagi Elektif Teras dan 6 kredit Elektif Bebas.

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T	PRASYARAT/ *PREREQUISITE*
FHR3502	Perancangan Dan Rekabentuk Tapak Kawasan Rekreasi/ *Recreation Site Planning and Design*	3	2	1	Tiada/ *None*
FHM3209	Arborikultur/ *Arboriculture*	3	2	1	Tiada/ *None*
FHR3504	Pengurusan Dan Operasi Prasarana Rekreasi/ *Recreational Facilities Operation and Management*	3	2	1	Tiada/ *None*
FHR3506	Rekreasi Terapeutik Bagi Golongan Istimewa/ *Therapeutic Recreation for Special People*	3	2	1	Tiada/ *None*
FHR3505	Pengurusan Hidupan Liar Dalam Rekreasi/*Wildlife Management in Recreation*	3	2	1	Tiada/ *None*
FHR4501	Pendidikan Alam Semulajadi/ *Environmental Education*	3	2	1	Tiada/ *None*
FHR4503	Pengurusan Ekopelancongan/ *Ecotourism Management*	3	2	1	Tiada/ *None*
FHR4504	Pembangunan Produk Rekreasi/*Development of Recreation Products*	3	2	1	Tiada/ *None*
FHR4502	Pemasaran Rekreasi/ *Recreation Marketing*	3	2	1	Tiada/ *None*
FHR3205	Operasi dan Senggaraan Taman/*Parks Maintenance and Operation*	2	1	1	Tiada/ *None*
FHR4608	Pengurusan Kawasan Perlindungan/ *Protected Areas Management*	3	2	1	Tiada/ *None*
FHM3301	Pengurusan Hutan / *Forest Management*	3	2	1	Tiada/ *None*
	Elektif Bebas Bahasa Global				Tiada/ *None*
	Elektif Bebas				Tiada/ *None*

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

Nota Penting/*Notes* :

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

2. *Pelajar perlu melengkapkan pakej keperluan bahasa inggeris seperti jadual Pakej ELEx di atas.*
   (Butiran lanjut mengenai CEL dan LAX sila rujuk pada Pakej ELEx di atas (halaman 7&8)
   Students need to complete the ELEx Package as the table above (page 7&8).

SKEMA PENGAJIAN/ *STUDY SCHEME*

TAHUN 1/ *1ST YEAR*

SEMESTER 1/ *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T
LPE2301	*Academic Interaction and Presentation*	3	2	1
FCE3204	Kemahiran Berfikir/*Thinking Skills*	2	2	0
FHM3101	Sains Perhutanan/ *Forest Science*	3	3	0
FHR3101	Pengenalan Kepada Rekreasi Luar/ *Introduction to Outdoor Recreation*	3	2	1
PRT2009	Pertanian dan Kehidupan/*Agriculture and Life*	2	1	1
SKP2101*	Kenegaraan Malaysia/ *Malaysian Nationhood*	3	3	0
FEM2401**	Politik Malaysia Dan Masyarakat/ *Malaysian Politics And Society*	2	2	0
QKxxxx	Kokurikulum 1/*Co-curriculum 1*	1	0	1
	JUMLAH/ *TOTAL*	**17**	**14**	**3**

SEMESTER 2/ *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T
LPE2501	*Academic Writing*	3	2	1
FHM3102	Botani Hutan/ *Forest Botany*	3	2	1
FHR3201	Kemahiran Rekreasi Luar/*Outdoor Recreation Skills*	3	1	2
SKP2501	Pengantar Psikologi/ *Introduction to Psychology*	3	3	0
SKP3112*	Falsafah dan Isu Semasa/ *Philosophy and Current Issues*	2	2	0
SKP3113**	Falsafah dan Isu Semasa Masyarakat Sivil/ *Philosophy and Current Issues in Civil Society*	3	3	0
atau/ *or*	atau/ *or*			
SKP3123**	Penghayatan Etika dan Peradaban di Malaysia/ *Internalization of Ethics and Civilization in Malaysia*			
SKP3122*	Penghayatan Etika dan Peradaban/ *Internalization of Ethics and Civilization*	2	2	0
LPM2100**	Bahasa Melayu Komunikasi/ *Malay Language Communication*	2	2	0
	JUMLAH/ *TOTAL*	**16**	**12**	**4**

TAHUN 2/ *2ND YEAR*

SEMESTER 1/ *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
FHR3102	Ekologi Sumber Rekreasi/*Recreation Resource Ecology*	3	2	1
FHR3202	Inventori Sumber Taman Dan Rekreasi/ *Park and Recreation Resources Inventory*	3	2	1
FHR3203	Interpretasi Persekitaran/ *Environmental Interpretation*	3	2	1
FHS4904	Kem Perhutanan/ *Forestry Camp*	2	0	2
FHR3501	Perilaku Pengguna Rekreasi/ *Recreational User Behaviour*	3	3	0
	Elektif/*Elective*	3		
	JUMLAH/ *TOTAL*	**17**	**11**	**6**

SEMESTER 2/ *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
FHR3204	Perancangan Rekreasi Luar/ *Outdoor Recreation Planning*	3	2	1
FHM3112	Kaedah Kuantitatif Dalam Perhutanan/ *Quantitative Methods in Forestry*	4	3	1
FHR3503	Keusahawanan Dalam Taman Dan Rekreasi/ *Entrepreneurship in Parks and Recreation*	3	2	1
	Elektif/*Elective*	3		
	Elektif/*Elective*	3		
QKxxxx	Kokurikulum 2/*Co-curriculum 2*	1	0	1
	JUMLAH/ *TOTAL*	**17**		

TAHUN 3/ *3RD YEAR*

SEMESTER 1/ *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
FHR3301	Pengurusan Risiko Dalam Rekreasi/ *Risk Management in Recreation*	3	2	1
FHR3302	Pemprograman Dan Kepemimpinan Rekreasi/*Recreation Programming and Leadership*	3	2	1
FHR4401	Pengurusan Taman Dan Rekreasi/ *Parks and Recreation Management*	3	3	0
FHR4302	Kaedah Penyelidikan Dalam Rekreasi Dan Ekopelancongan/ *Research Method in Recreation and Ecotourism*	3	3	0
FHR3507	Hospitaliti Dalam Taman dan Rekreasi/*Hospitality in Parks and Recreation*	3	2	1
	Elektif /*Elective*	3		
	JUMLAH/ *TOTAL*	**18**		

SEMESTER 2/ *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
FHS4959A	Disertasi Bacelor/ *Bachelor Dissertation*	3	0	3
	Elektif/*Elective*	3		
	Elektif/*Elective*	3		
	Elektif/*Elective*	3		
	Elektif/*Elective*	3		
	Elektif/*Elective*	2		
	JUMLAH/ *TOTAL*	**17**		

TAHUN 4/ *4TH YEAR*

SEMESTER 1/ *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
FHR4301	Penilaian Sumber Rekreasi/ *Recreation Resource Valuation*	4	4	0
FHR4402	Pengurusan Pelancongan Warisan Dan Komuniti/*Heritage and Community Tourism Management*	3	2	1
FHS4959B	Disertasi Bacelor/ *Bachelor Dissertation*	3	0	3
	Elektif/*Elective*	3		
	Elektif/*Elective*	3		
	JUMLAH/ *TOTAL*	**16**		

SEMESTER 2/ *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
FHS4903	Latihan Industri/ *Industrial Training*	8	0	8
	JUMLAH/ *TOTAL*	**8**	**0**	**8**

Nota Penting/*Notes* :

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

3. *Pelajar perlu melengkapkan pakej keperluan bahasa inggeris seperti jadual Pakej ELEx di atas.*
   (Butiran lanjut mengenai CEL dan LAX sila rujuk pada Pakej ELEx di atas.
   Students need to complete the ELEx Package as the table above.

Bacelor Pengurusan Alam Sekitar dengan Kepujian

Bachelor of Environmental Management with Honours

STRUKTUR KURIKULUM/ *CURRICULUM STRUCTURE*

Nama Program ***Program Name***	:	**Bacelor Pengurusan Alam Sekitar dengan Kepujian** ***Bachelor of Environmental Management with Honours***
Jumlah Kredit Bergraduat ***Total Credits to Graduate***	:	**125 Jam Kredit / *Credit Hours***
Tempoh Pengajian ***Period of Study***	:	**8 Semester / Semesters (4 Tahun / Years)**
Matlamat Program ***Program Outcomes***	:	1. Menghasilkan pegawai atau eksekutif yang kompeten untuk mengurus dan menyelesaikan masalah alam sekitar *(To produce competent officers or executives to manage and solve environmental problems)* 2. Menghasilkan pegawai yang mampu menyumbang kepada pembangunan mampan dan kesejahteraan masyarakat yang berkaitan alam sekitar. *(To produce officers who can contribute towards sustainable development and social wellbeing related to the environment)* 3. Menghasilkan pengamal atau penyelidik yang berupaya menjalankan penyelidikan dan mempunyai inisiatif pembelajaran sepanjang hayat dalam bidang berkaitan pengurusan alam sekitar. *(To produce practitioners or researchers who are capable to conduct researches and have lifelong learning initiatives in the field related to environmental management)*

RINGKASAN HASIL PEMBELAJARAN PROGRAM/ *SUMMARY OF PROGRAM LEARNING OUTCOMES*

Program	Pengetahuan dan Kefahaman/ *Knowledge and Understanding*	Kemahiran Praktikal/*Practical Skills*	Kemahiran kognitif / *Cognitive Skills* (CTPS)	Kemahiran Berkomunikasi/ *Communication Skills* (CS)	Kemahiran Interpersonal/ *Interpersonal Skills* (TS)	Etika dan Professionalisme/ *Ethics and Professionalism* (EM)	Kemahiran digital dan pendidikan Sepanjang Hayat / *Digital Skills and Life-Long Learning* (LL)	Kemahiran personal dan keusahawanan/ *Personal and Entrepreneurial Skills* (KK)	Kepimpinan, autonomi dan tanggungjawab/ *Leadership, autonomy and responsibility* (LS)	Kemahiran numerasi/ *Numeracy Skills* (NS)
	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Bacelor Pengurusan Alam Sekitar dengan Kepujian/ *Bachelor of Environmental Management with Honours*	41	19	17	9	9	13	15	6	6	7

1. Kursus Universiti/ University Courses (23 jam kredit / *credit hours*)

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T	PRASYARAT/ *PREREQUISITE*
LPE2301	*Academic Interaction and Presentation*	3	3	0	LPE2401 atau MUET Band 3-4
LPE2501	*Academic Writing*	3	3	0	LPE2301
MGM3101	Prinsip Pengurusan*/Principles of Management*	3	3	0	Tiada/None
MGM3180	Asas Keusahawanan/ *Basic Entrepreneurship*	3	2	1	Tiada/None
PRT 2009	Pertanian dan Kehidupan	2	1	1	Tiada/None
QKSxxxx	Kokurikulum Berkredit/ *Cocurriculum*	1	0	1	Tiada/None
QKSxxxx	Kokurikulum Berkredit/ *Cocurriculum*	1	0	1	Tiada/None
SKP2101*	Kenegaraan Malaysia/ *Malaysian Nationhood*	3	3	0	Tiada/None
FEM2401**	Politik Malaysia Dan Masyarakat/ *Malaysian Politics And Society*	2	2	0	
SKP3122*	Penghayatan Etika dan Peradaban/ *Internalization of Ethics and Civilization*	2	2	0	Tiada/ None
LPM2100**	Bahasa Melayu Komunikasi/ *Malay Language Communication*	2	2	0	Tiada / None
SKP3112*	Falsafah dan Isu Semasa/ *Philosophy and Current Issues*	2	2	0	Tiada/ None
SKP3113**	Falsafah dan Isu Semasa Masyarakat Sivil/ *Philosophy and Current Issues in Civil Society*	3	3	0	Tiada/ None
atau/ *or*	atau/ *or*				
SKP3123**	Penghayatan Etika dan Peradaban di Malaysia/ *Internalization of Ethics and Civilization in Malaysia*				

Nota: * pelajar tempatan/ *local student* **pelajar antarabangsa/ *international student*

2. Kursus Teras/ *Core Courses* (70 jam kredit / *credit hours*)

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A	PRASYARAT/ *PREREQUISITE*
EMG3008	Pengenalan Kepada Sistem Semulajadi/ *Introduction to Natural Systems*	3	3	0	Tiada/None
EMG3010	Pengurusan Kualiti Alam Sekitar/ *Environmental Quality Management*	3	3	0	Tiada/None
EMG3105	Pengurusan Sumber Alam/ *Natural Resources Management*	2	2	0	Tiada/None
EMG3203	Pengenalan Perancangan Alam Sekitar/ *Introduction to Environmental Planning*	3	3	0	Tiada/None
EMG3204	Studio Perancangan Alam Sekitar I/ *Environmental Planning Studio I*	3	0	3	Tiada/None
EMG3206	Penilaian Kesan Alam Sekitar dan Pelan Pengurusan Alam Sekitar/ *Environmental Impact Assessment and Environmental Management Plan*	3	3	0	EMG3503 atau EMG3203
EMG3302	Ekonomi dan Pengurusan Alam Sekitar/ *Environmental Economics and Management*	3	3	0	ECN3010
EMG3303	Pengurusan dan Operasi Projek/ *Project Management and Operation*	3	3	0	Tiada/None
EMG3401	Masyarakat, Etika dan Alam Sekitar/ *Society, Ethics and the Environment*	3	3	0	Tiada/None
EMG3503	Pengenalan Kepada Undang-Undang Alam Sekitar/ *Introduction to Environmental Law*	3	3	0	Tiada/ None
EMG3802	Pengenalan Kepada Kerja Lapangan Pengurusan Alam Sekitar/ *Introduction to Environmental Management Fieldwork*	3	1	2	Tiada/None
EMG4102	Sistem Pengurusan Kualiti Alam Sekitar/ *Environmental Quality Management Systems*	3	3	0	Tiada/None
EMG4206	Studio Perancangan Alam Sekitar II/*Environmental Planning Studio II*	3	0	3	EMG3203 dan EMG3204

EMG4301	Penilaian Sumber Asli dan Perkhidmatan Ekosistem/ *Ecosystem Services And Natural Resource Valuation*	3	3	0	Tiada/None
EMG4804	Kerja Lapangan Bersepadu Pengurusan Perancangan Alam Sekitar/ *Integrated Environmental Management Planning Fieldwork*	3	0	3	Tiada/None
EMG4902	Kaedah Penyelidikan Untuk Pengurusan Alam Sekitar/ *Research Methodologies for Environmental Management*	3	2	1	Tiada/None
EMG4991	Teknik Seminar Pengurusan Alam Sekitar/ *Environmental Management Seminar Techniques*	2	1	1	Tiada/None
EMG4959	Disertasi Bacelor/ Bachelor Disertation	6	0	6	Tiada/None
EMP4901	Latihan Industri/ *Industrial Training*	12	0	12	Tiada/None
ECN3010	Prinsip Ekonomi/ *Principles of Economics*	3	3	0	Tiada/ None

3. Kursus Elektif/ *Elective Courses* (32 jam kredit / *credit hours*)

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T	PRASYARAT/ *PREREQUISITE*
EMG3003	Sistem Maklumat Alam Sekitar/ *Environmental Information Systems*	3	2	1	Tiada/None
EMG3007	Kaedah Kuantitatif Untuk Pengurusan Alam Sekitar/ *Quantitative Methods for Environmental Management*	3	1	2	Tiada/None
EMG3011	Kemampanan Dan Kemasyarakatan/ *Sustainability and Society*	2	2	0	Tiada/None
EMG3012	Lukisan Pelan dan Isometrik dalam Pengurusan Alam Sekitar/ *Plan and Isometric Drawing in Environmental Management*	3	1	2	Tiada/ None
EMG3103	Pengurusan Kualiti Air dan Udara/ *Air and Water Quality Management*	3	3	0	Tiada/None

EMG3104	Prinsip Pengurusan Sisa Pepejal/ *Principles of Solid Waste Management*	3	3	0	Tiada/None
EMG3205	Geografi Fizikal/ *Physical Geography*	3	3	0	Tiada/None
EMG3402	Kaedah Penyelidikan Kualitatif untuk Alam Sekitar/ *Qualitative Research Methods for the Environment*	4	3	1	Tiada/ None
EMG4001	Statistik untuk Perancangan dan Pengurusan Alam Sekitar/ *Statistics for Environmental Planning and Management*	3	2	1	EMG3007
EMG4105	Pengurusan Projek Dalam Sekitaran Terkawal/ *Management of Projects in Controlled Environments*	3	2	1	EMG3303
EMG4106	Perubahan Alam Sekitar dan Isu Semasa/ *Environmental Change and Current Issues*	2	2	0	Tiada/None
EMG4107	Pengurusan Pinggir Laut dan Marin/ *Coastal and Marine Management*	3	3	0	Tiada/None
EMG4202	Perancangan Pengangkutan/ *Transport Planning*	3	3	0	Tiada/None
EMG4203	Perancangan dan Pengurusan Alam Sekitar Gunaan/ *Applied Environmental Planning and Management*	3	2	1	EMG3204
EMG4205	Perancangan Respons Tumpahan Minyak/ *Oil Spill Response Planning*	2	2	0	Tiada/None
EMG4401	Geografi Kemanusiaan/ *Human Geography*	3	3	0	Tiada/None
EMG4402	Gender dan Pengurusan Bersepadu Sumber Asli/ *Gender and Integrated Natural Resources Management*	3	2	1	Tiada/None
EMG4403	Penyelidikan Dalam Sosiologi Alam Sekitar/ *Research in Environmental Sociology*	3	2	1	Tiada/None
EMG4404	Ekopelancongan Dan Alam Sekitar/ *Ecotourism and Environment*	3	2	1	Tiada/None
EMG4405	Pemikiran Kitar Hayat Dalam Pembangunan Mampan/ *Life cycle thinking in sustainable development*	3	3	0	Tiada/None

EMG4501	Polisi dan Pentadbiran Alam Sekitar/ *Policy and Environmental Administration*	3	3	0	EMG3503
EMG4502	Undang-undang Alam Sekitar dan Perancangan/ *Environmental Law and Planning*	3	3	0	EMG3503
EMG4504	Undang-Undang Berkaitan Pemuliharaan Kepelbagaian Biologi Dan Perubahan Iklim/ *Laws relating to Biodiversity Conservation and Climate Change*	3	3	0	EMG3503
EMG4992	Pemudahcaraan Dalam Pengurusan Alam Sekitar/ Facilitation in Environmental Management	2	1	1	Tiada/None
ESC3101	Prinsip Kesihatan Alam Sekitar/ *Principles of Environmental Health*	3	2	1	Tiada/None
ESC3510	Sistem Maklumat Geografi Dan Penderiaan Jarak Jauh Alam Sekitar/ *Environmental Geographic Information System and Remote Sensing*	3	2	1	Tiada/None
ESC4502	Respons Kecemasan Alam Sekitar/ *Environmental Emergency Response*	3	3	0	Tiada/None
LPX21YZ	Bahasa Global	3	3	0	
XXXX	Elektif Bebas 1	3	3	0	
XXXX	Elektif Bebas 2	2	2	0	

1. Pelajar mestilah memilih 32 kredit daripada kursus elektif / *Students are required to choose 32 credits from the elective courses.*

2. *Cadangan kursus yang digunakan untuk pengiraan kursus elektif, walau bagaimanapun pelajar boleh memilih mana-mana kursus yang disenaraikan dan ditawarkan dibawah program BPAS sebanyak 24 kredit, dan 8 kredit elektif bebas daripada program lain di UPM atau mana-mana universiti dalam dan luar negara/ **The proposed courses used for the calculation of elective courses but students can choose any course listed and offered under the BPAS program amounting to 24 credits, and 8 credits free elective from other programs at UPM or any university inside and outside the country.*

Nota Penting/Notes :

1. Pelajar mestilah memilih 33 kredit daripada kursus elektif termasuk 3 kredit kursus Bahasa Asing (BB*24**) yang ditawarkan oleh Jabatan Bahasa Asing, FBMK, UPM.
   *Students are required to choose 33 credits for elective courses including 3 credit hours Foreign Language (BB*24**) that is offered by Department of Foreign Languages, FMLC, UPM.*

2. Pelajar diwajibkan memilih **2 kredit** daripada **kursus kokurikulum** yang ditawarkan oleh universiti. *It is compulsory for students to take **2 credits of co-curriculum courses** offered by the university.*

3. *Pelajar perlu melengkapkan pakej keperluan bahasa inggeris seperti jadual Pakej ELEx di atas. (Butiran lanjut mengenai CEL dan LAX sila rujuk pada Pakej ELEx di atas (halaman 7&8).*
   Students need to complete the ELEx Package as the table above (Page 7& 8).

SKEMA PENGAJIAN/ *STUDY SCHEME*

TAHUN 1 / *1st YEAR*

SEMESTER 1 / *1st SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
	LAX (6 points)			
EMG3008	Pengenalan Kepada Sistem Semulajadi/ *Introduction to Natural Systems*	3	3	0
EMG3105	Pengurusan Sumber Alam/ *Natural Resource Management*	2	2	0
PRT2009	Pertanian dan Kehidupan/ *Agriculture and Life*	2	1	1
QKSxxxx	Ko-kurikulum/ *Co-curriculum*	1	0	1
SKP2101*	Kenegaraan Malaysia/ *Malaysian Nationhood*	3	3	0
FEM2401**	Politik Malaysia Dan Masyarakat/ *Malaysian Politics And Society*	2	2	0
SKP3112*	Falsafah dan Isu Semasa/ *Philosophy and Current Issues*	2	2	0
SKP3113** atau/ *or* SKP3123**	Falsafah dan Isu Semasa Masyarakat Sivil/ *Philosophy and Current Issues in Civil Society* atau/ *or* Penghayatan Etika dan Peradaban di Malaysia/ *Internalization of Ethics and Civilization in Malaysia*	3	3	0
	JUMLAH/ *TOTAL*	**13**	**11**	**2**

SEMESTER 2 / *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
EMG3203	Pengenalan Perancangan Alam Sekitar/ *Introduction to Environmental Planning*	3	3	0
EMG3802	Pengenalan Kepada Kerja Lapangan Pengurusan Alam Sekitar/ *Introduction to Environmental Management Fieldwork*	3	1	2
ECN3010	Prinsip Ekonomi/ *Principles of Economics*	3	3	0
LPE2301	Academic Interaction and Presentation	3	2	1
MGM3101	Prinsip Pengurusan/ *Principles of Management*	3	3	0
QKSxxxx	Ko-kurikulum Berkredit / *Co-curriculum*	1	0	1

SKP3122*	Penghayatan Etika dan Peradaban/ *Internalization of Ethics and Civilization*	2	2	0
LPM2100**	Bahasa Melayu Komunikasi	2	2	0
	JUMLAH/ *TOTAL*	**18**	**14**	**4**

TAHUN 2 / *2ND YEAR*

SEMESTER 1 / *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A/T**
EMG3010	Pengurusan Kualiti Alam Sekitar/ *Environmental Quality Management*	3	3	0
EMG3204	Studio Perancangan Alam Sekitar I	3	0	3
EMG3302	Ekonomi dan Pengurusan Alam Sekitar/ *Environmental Economics and Management*	3	3	0
EMG3503	Pengenalan kepada Undang-Undang Alam Sekitar/*Introduction of Environmental law*	3	3	0
MGM3180	Asas Keusahawanan/ *Basic Entrepreneurship*	3	2	1
LPE2501	Academic Writing	3	2	1
	Elektif/*Electives*	3		
	JUMLAH/ *TOTAL*	**21**	**13**	**5**

SEMESTER 2 / *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A**
	LAX (12 points)			
EMG3303	Pengurusan dan Operasi Projek/ *Project Management and Operation*	3	3	0
EMG4102	Sistem Pengurusan Kualiti Alam Sekitar/ *Environmental Quality management system*	3	3	0
EMG4206	Studio Perancangan Alam Sekitar II/ *Environmental Planning Studio II*	3	0	3
EMG4301	Penilaian Sumber Asli dan Perkhidmatan Ekosistem/ *Ecosystem Services And Natural Resource Valuation*	3	3	0
EMG4991	Seminar Pengurusan Alam Sekitar/ *Environmental Management Seminar*	2	1	1
	Elektif/ *Elective*	3		
	JUMLAH/ *TOTAL*	**17**	**10**	**4**

TAHUN 3 / *3RD YEAR*

SEMESTER 1 / *1ST YEAR*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A**
	CEL2103			
EMG4804	Kerja Lapangan Bersepadu Pengurusan Perancangan Alam Sekitar/ *Integrated Environmental Management Planning Fieldwork*	3	0	3
EMG4902	Kaedah Penyelidikan Untuk Pengurusan Alam Sekitar/ *Research Methodologies for Environmental Management*	3	2	1
	Elektif/ *Elective*	11		
	JUMLAH/ *TOTAL*	**17**	**2**	**4**

SEMESTER 2 / *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A**
	CEL 2102/2105/2106/2017			
EMG3401	Masyarakat, Etika dan Alam Sekitar/ *Society, Ethics and the Environment*	3	3	0
EMG4959A	Disertasi Bacelor/ *Bachelor Dissertation*	3	0	3
	Elektif/ Electives	9		
	JUMLAH/ *TOTAL*	**15**	**3**	**3**

TAHUN 4 / *4TH YEAR*

SEMESTER 1 / *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A**
	Lax (6 points)			
EMG3206	Penilaian Kesan Alam Sekitar dan Pelan Pengurusan Alam Sekitar/ *Environmental Impact Assessment and Environmental Management Plan*	3	3	0
EMG4959B	Disertasi Bacelor/ *Bachelor Dissertation*	3	0	3
	Elektif/ Electives	6		
	JUMLAH/ *TOTAL*	**12**	**3**	**3**

SEMESTER 2 / *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A**
EMP4901	Latihan Industri/ *Industrial Training*	12	0	12
	JUMLAH/ *TOTAL*	**12**	**0**	**12**

Bacelor Sains dan Teknologi Alam Sekitar dengan Kepujian

Bachelor of Environmental Science and Technology with Honours

STRUKTUR KURIKULUM / *CURRICULUM STRUCTURE*

Nama Program ***Program Name***	**:**	**Bacelor Sains dan Teknologi Alam Sekitar dengan Kepujian** ***Bachelor of Environmental Science and Technology with Honours***
Jumlah Kredit Bergraduat ***Total Credits to Graduate***	**:**	**120 Jam Kredit / *Credit Hours***
Tempoh Pengajian ***Period of Study***	**:**	**8 Semester / *Semesters* (4 Tahun / *Years*)**
Matlamat Program ***Program Outcomes***	**:**	1. Menghasilkan eksekutif atau pegawai yang berpengetahuan tinggi dalam pelbagai bidang berkaitan alam sekitar. (*To produce highly knowledgeable executives or officers in various environmental fields.)* 2. Menghasilkan pengamal bertauliah atau kompeten dalam penawaran perkhidmatan bagi penyelesaian masalah alam sekitar. *(To produce qualified or competent practitioners in offering services for solving environmental problems.)* 3. Melahirkan penyelidik atau pelatih yang berupaya mengaplikasikan kemahiran teknikal dan kaedah alam sekitar dalam latihan profesional dan pengajian lanjutan. *(To produce researchers or trainees who are able to apply technical skills and environmental methods in professional training and further studies.)* 4. Melahirkan pekerja mahir yang kreatif, inovatif dan peka terhadap kepentingan menjaga kelestarian alam sekitar dengan mendidik masyarakat melalui pelbagai aspek kehidupan. *(To produce skilled workers who are creative, innovative and sensitive to the importance of maintaining environmental sustainability by educating the society through various aspects of life.)*

RINGKASAN HASIL PEMBELAJARAN PROGRAM
SUMMARY OF PROGRAM LEARNING OUTCOMES

PROGRAM	Pengetahuan dan Kefahaman/ *Knowledge and Understanding*	Kemahiran Praktikal/*Practical Skills*	Kemahiran kognitif / *Cognitive Skills* (CTPS)	Kemahiran Berkomunikasi/ *Communication Skills* (CS)	Kemahiran Interpersonal/ *Interpersonal Skills* (TS)	Etika dan Professionalisme/ *Ethics and Professionalism* (EM)	Kemahiran digital dan pendidikan Sepanjang Hayat / *Digital Skills and Life-Long Learning* (LL)	Kemahiran personal dan keusahawanan/ *Personal and Entrepreneurial Skills* (KK)	Kepimpinan, autonomi dan tanggungjawab/ *Leadership, autonomy and responsibility* (LS)	Kemahiran numerasi/ *Numeracy Skills* (NS)
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**
Bacelor Sains dan Teknologi Alam Sekitar dengan Kepujian *(Bachelor of Environmental Science and Technology)*	38	16	21	15	4	11	12	3	4	4

1. Kursus Universiti/ *University Courses* (22 jam kredit / *credit hours*)

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T	PRASYARAT/ *PREREQUISITE*
FCE3204	Kemahiran Berfikir/*Thinking Skills*	2	2	0	Tiada/ None
LPE2301	*Academic Interaction and Presentation*	3	3	0	LPE2401/ MUET Band 3-4
LPE2501	*Academic Writing*	3	3	0	LPE2301
MGM3180	Asas Keusahawanan/*Basic Entrepreneurship*	3	2	1	Tiada/ None
PRT2009	Pertanian dan Kehidupan/ *Agriculture and Life*	2	1	1	Tiada/ None
SKP2101*	Kenegaraan Malaysia/ *Malaysian Nationhood*	3	3	0	Tiada/ None
FEM2401**	Politik Malaysia Dan Masyarakat/ *Malaysian Politics And Society*	2	2	0	
SKP3112*	Falsafah dan Isu Semasa/ *Philosophy and Current Issues*	2	2	0	Tiada/ None
SKP3113**	Falsafah dan Isu Semasa Masyarakat Sivil/ *Philosophy and Current Issues in Civil Society*				
	atau/ *or*	3	3	0	Tiada/ None
atau/ *or* SKP3123**	Penghayatan Etika dan Peradaban di Malaysia/ *Internalization of Ethics and Civilization in Malaysia*				
SKP3122*	Penghayatan Etika dan Peradaban/ *Internalization of Ethics and Civilization*	2	2	0	Tiada/ None
LPM2100**	Bahasa Melayu Komunikasi	2	2	0	Tiada / None
	Ko-kurikulum/ *Co-curriculum*	1	0	1	
	Ko-kurikulum/ *Co-curriculum*	1	0	1	

Nota: * pelajar tempatan/ *local student* **pelajar antarabangsa/ *international student*

2. Kursus Teras/ *Core Courses* (68 jam kredit / *credit hours*)

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T	PRASYARAT/ *PREREQUISITE*
ESC3009	Analisis dan Instrumentasi Alam Sekitar/ *Instrumentation and Environmental Analysis*	3	2	1	Tiada/ None
ESC3016	Kemampanan, Etika dan Isu Alam Sekitar/ *Sustainability, Ethics and Environmental Issues*	3	3	0	Tiada/ None
ESC3017	Ekologi Biosfera/ *Biosphere Ecology*	3	3	0	Tiada/ None
ESC3018	Pengurusan Sisa/ *Waste Management*	3	3	0	Tiada/ None
ESC3019	Hidrosfera dan Litosfera/ *Hydrosphere and Lithosphere*	3	3	0	Tiada/ None
ESC3020	Teknik Lapangan Alam Sekitar/ *Environmental Fieldwork Techniques*	2	0	2	Tiada/ None

ESC3021	Sains Atmosfera dan Perubahan Iklim/ *Atmospheric Science and Climate Change*	3	3	0	Tiada/ None
ESC3101	Prinsip Kesihatan Alam Sekitar/ *Principles of Environmental Health*	3	2	1	Tiada/ None
ESC3508	Matematik Gunaan Untuk Alam Sekitar/ *Applied Mathematics for the Environment*	3	2	1	Tiada/ None
ESC3509	Pengenalan Kepada Envirometriks/ *Introduction to Environmetrics*	3	2	1	Tiada/ None
ESC3510	Sistem Maklumat Geografi dan Penderiaan Jarak Jauh Alam Sekitar/ *Environmental Geographic Information System and Remote Sensing*	3	2	1	Tiada/ None
ESC3511	Pengurusan dan Sistem Pelaporan Projek Alam Sekitar/ *Environmental Project Management and Reporting System*	3	3	0	Tiada/ None
ESC4507	Forensik Alam Sekitar/ *Environmental Forensics*	3	2	1	Tiada/ None
ESC4801	Kajian Lapangan Alam Sekitar Bersepadu/ *Integrated Environmental Field Study*	2	0	2	Tiada/ None
ESC4803	Komunikasi Saintifik dalam Alam Sekitar/ *Scientific Communication in Environment*	1	0	1	Tiada/ None
EMG3206	Penilaian Kesan Alam Sekitar dan Pelan Pengurusan Alam Sekitar/ *Environmental Impact Assessment and Environmental Management Plan*	3	3	0	EMG3503 / EMG3203
EMG3503	Pengenalan Kepada Undang-Undang Alam Sekitar/ *Introduction to Environmental Law*	3	3	0	Tiada/ None
EMG4301	Penilaian Sumber Asli dan Perkhidmatan Ekosistem/ *Ecosystem Services and Natural Resource Valuation*	3	3	0	Tiada/ None
ESC4901	Latihan Industri/ *Industrial Training*	12	0	12	Tiada/ None
ESC4959	Disertasi Bacelor/ *Bachelor Dissertation*	6	0	6	Tiada/ None

3. Kursus Elektif/ *Elective Courses* (30 kredit/ credits)

i. Sains Alam Sekitar/ *Environmental Science* (Pilih 12 jam kredit / *Choose 12 credit hours*)

KOD KURSUS/ *COURSE CODE*	NAMA KURSUS/*COURSE NAME*	Kr	K	A/T	PRASYARAT/ *PREREQUISITE*
ESC3203	Hidrologi Alam Sekitar/ *Environmental Hydrology*	3	2	1	Tiada/ None
ESC3401	Geologi Alam Sekitar/ *Environmental Geology*	3	2	1	Tiada/ None
ESC4002	Hidrokimia dan Geokimia Alam Sekitar/ *Environmental Hydrochemistry and Geochemistry*	3	2	1	Tiada/ None
ESC4101	Penilaian Risiko Kesihatan Alam Sekitar/ *Environmental Health Risk Assessment*	3	3	0	ESC3101 atau setara
ESC4103	Mikrobiologi Alam Sekitar/ *Environmental Microbiology*	3	3	0	Tiada/ None
ESC4201	Pengurusan Kualiti Air Sungai/ *River Water Quality Management*	3	3	0	Tiada/ None
ESC4202	Hidrogeologi/ *Hydrogeology*	3	2	1	Tiada/ None
ESC4204	Analisis Lembangan/ *Watershed Analysis*	3	3	0	Tiada/ None
ESC4205	Kimia Marin/ *Marine Chemistry*	3	2	1	Tiada/ None
ESC4406	Geofizik Alam Sekitar/ *Environmental Geophysics*	3	2	1	Tiada/ None
ESC4502	Respons Kecemasan Alam Sekitar/ *Environmental Emergency Response*	3	3	0	Tiada/ None
ESC4503	Biologi Pencemaran/ *Pollution Biology*	3	2	1	Tiada/ None
ESC4505	Ekologi Industri/ *Industrial Ecology*	3	3	0	Tiada/ None
ESC4508	Pemuliharaan dan Pengurusan Biodiversiti/ *Biodiversity Conservation and Management*	3	3	0	Tiada/ None
ESC4509	Ekologi Sumber Asli/ *Ecology Of Natural Resources*	3	3	0	Tiada/ None
ESC4512	Kimia Alam Sekitar Lanjutan/ *Advance Environmental Chemistry*	3	2	1	Tiada/ None
ESC4701	Interaksi Tumbuhan dan Alam Sekitar/ *Plant and Environment Interactions*	3	3	0	Tiada/ None

ii. Teknologi Alam Sekitar/ *Environmental Technology* (Pilih 12 jam kredit / *Choose 12 credit hours*)

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/COURSE NAME**	**Kr**	**K**	**A/T**	**PRASYARAT/ *PREREQUISITE***
ESC3012	Teknologi Rawatan Sisa Pepejal/ *Solid Waste Treatment Technology*	3	3	0	Tiada/ None
ESC3204	Rawatan Air Sisa/ *Wastewater Treatment*	3	2	1	Tiada/ None
ESC3205	Rawatan Air Minum/ *Drinking Water Treatment*	3	3	0	Tiada/ None
ESC3507	Envirometriks/ *Environmetrics*	3	2	1	Tiada/ None
ESC4102	Penilaian Pendedahan Pencemaran/ *Pollution Exposure Assessment*	3	2	1	ESC3101 atau setara
ESC4301	Pemencilan Karbon dan Perubahan Iklim*/ Carbon Sequestration And Climate Change*	3	2	1	ESC3021 atau setara
ESC4303	Teknologi Pengawalan Pencemaran Udara/ *Air Pollution Control Technology*	3	3	0	Tiada/ None
ESC4401	Kaedah Penyiasatan Subpermukaan/ *Subsurface Investigation Technique*	3	2	1	ESC3019 atau setara
ESC4404	Teknologi Rawatan Sisa Berbahaya/ *Hazardous Waste Treatment Technology*	3	3	0	Tiada/ None
ESC4405	Pengurusan Kawalan Hakisan Tanah, Sedimen dan Air Larian Permukaan/ *Soil Erosion, Sediment and Stormwater Management Control*	3	2	1	Tiada/ None
ESC4504	Pemodelan Sistem Alam Sekitar/ *Environmental Modeling*	3	2	1	ESC3508 atau setara
ESC4506	Teknologi Pintar untuk Alam Sekitar/ *Intelligent Technology For Environment*	3	3	0	Tiada/ None
ESC4513	Bioremediasi Alam Sekitar/ *Environmental Bioremediation*	3	2	1	Tiada/ None
ESC4515	Sistem Kesihatan Dan Keselamatan Industri/ *Industrial Health And Safety System*	3	3	0	Tiada/ None
ESC4517	Sistem Maklumat Geografi dan Penderiaan Jarak Jauh Alam Sekitar Lanjutan/ *Advanced Environmental Geographic Information System and Remote Sensing*	3	2	1	ESC3510 atau setara
ESC4518	Inovasi Alam Sekitar dan Teknologi Hijau/ *Environmental Innovation and Green Technology*	3	1	2	Tiada/ None
ESC4603	Sistem Tenaga dan Alam Sekitar/ *Energy System And Environment*	3	3	0	Tiada/ None
ESC4802	Dokumentari Alam Sekitar/ *Environmental Documentaries*	3	1	2	Tiada/ None

iii. Elektif bebas / *Free Electives* (6 jam kredit / c*redit hours*).

Nota/ *Notes* :

Kr = Jam Kredit/ *Credit Hour*, K = Kuliah/ Lecture, A = Amali/ *Laboratory* atau*/or* Tutorial

Nota Penting/*Notes* :

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

2. *Pelajar perlu melengkapkan pakej keperluan bahasa inggeris seperti jadual Pakej ELEx di atas. (Butiran lanjut mengenai CEL dan LAX sila rujuk pada Pakej ELEx di atas (halaman 7&8).*
   Students need to complete the ELEx Package as the table above (Page 7& 8).

SKEMA PENGAJIAN/ *STUDY SCHEME*

TAHUN 1 / *1ST YEAR*

SEMESTER 1 / *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A**
ESC3016	Kemampanan, Etika dan Isu Alam Sekitar/ / *Sustainability, Ethics and Environmental Issues*	3	3	0
ESC3017	Ekologi Biosfera/ *Biosphere Ecology*	3	3	0
ESC3019	Hidrosfera dan Litosfera/ *Hydrosphere and Lithosphere*	3	3	0
ESC3509	Pengenalan kepada Envirometriks/ *Introduction to Environmetrics*	3	2	1
SKP3112*	Falsafah dan Isu Semasa/ *Philosophy and Current Issues*	2	2	0
SKP3113** atau/ *or* SKP3123**	Falsafah dan Isu Semasa Masyarakat Sivil/ *Philosophy and Current Issues in Civil Society* atau/ *or* Penghayatan Etika dan Peradaban di Malaysia/ *Internalization of Ethics and Civilization in Malaysia*	3	3	0
	Ko-kurikulum/ *Co-curriculum*	1	0	1
	LAX 6 points			
	JUMLAH/ *TOTAL*	**15**	**13**	**2**

SEMESTER 2 / *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A**
ESC3018	Pengurusan Sisa/ *Waste Management*	3	3	0
ESC3020	Teknik Lapangan Alam Sekitar/ *Environmental Fieldwork Techniques*	2	0	2
ESC3101	Prinsip Kesihatan Alam Sekitar/ *Principles of Environmental Health*	3	2	1
ESC3508	Matematik Gunaan untuk Alam Sekitar/ *Applied Mathematics for the Environment*	3	2	1
LPE2301	*Academic Interaction and Presentation*	3	3	0
SKP3122*	Penghayatan Etika dan Peradaban/*Internalization of Ethics and Civilization*	2	2	0
LPM2100**	Bahasa Melayu Komunikasi	2	2	0
	Ko-kurikulum/ *Co-curriculum*	1	0	1
	JUMLAH/ *TOTAL*	**17**	**12**	**5**

TAHUN 2 / *2ND YEAR*

SEMESTER 1 / *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A**
ESC3009	Analisis dan Instrumentasi Alam Sekitar/ *Instrumentation and Environmental Analysis*	3	2	1
ESC3021	Sains Atmosfera dan Perubahan Iklim/ *Atmospheric Science and Climate Change*	3	3	0
FCE3204	Kemahiran Berfikir/ *Thinking Skills*	2	2	0
PRT2009	Pertanian dan Kehidupan/ *Agriculture and Life*	2	1	1
SKP2101*	Kenegaraan Malaysia/ *Malaysian Nationhood*	3	3	0
FEM2401**	Politik Malaysia Dan Masyarakat/ *Malaysian Politics And Society*	2	2	0
LPE2501	Academic Writing	3	3	0
	JUMLAH/ *TOTAL*	**16**	**14**	**2**

SEMESTER 2 / *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A**
EMG3503	Pengenalan Kepada Undang-Undang Alam Sekitar/ *Introduction to Environmental Law*	3	3	0
ESC3510	Sistem Maklumat Geografi dan Penderiaan Jarak Jauh Alam Sekitar/ *Environmental Geographic Information System and Remote Sensing*	3	2	1
MGM3180	Asas Keusahawanan/ *Basic Entrepreneurship*	3	2	1
	Elektif/ *Electives*	6		
	LAX 6 Points			
	JUMLAH/ *TOTAL*	**15**	**7**	**2**

TAHUN 3 / *3RD YEAR*

SEMESTER 1 / *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A**
EMG4301	Penilaian Sumber Asli dan Perkhidmatan Ekosistem/ *Ecosystem Services and Natural Resource Valuation*	3	3	0
ESC3511	Pengurusan dan Sistem Pelaporan Projek Alam Sekitar/ *Environmental Project Management and Reporting System*	3	3	0
ESC4801	Kajian Lapangan Alam Sekitar Bersepadu/ *Integrated Environmental Field Study*	2	0	2
	Elektif/ *Electives*	9		
	CEL 2103			
	JUMLAH/ *TOTAL*	**17**	**6**	**2**

SEMESTER 2 / *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A**
EMG3206	Penilaian Kesan Alam Sekitar dan Pelan Pengurusan Alam Sekitar/ *Environmental Impact Assessment and Environmental Management Plan*	3	3	0
ESC4507	Forensik Alam Sekitar/ *Environmental Forensics*	3	2	1
ESC4803	Komunikasi Saintifik dalam Alam Sekitar/ *Scientific Communication in Environment*	1	0	1
ESC4959A	Disertasi Bacelor/ *Bachelor Dissertation*	3	0	3
	Elektif/ *Electives*	6		
	CEL 2102/2105/2106/2107			
	JUMLAH/ *TOTAL*	**16**	**5**	**5**

TAHUN 4 / *4TH YEAR*

SEMESTER 1 / *1ST SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A**
ESC4959B	Disertasi Bacelor/ *Bachelor Dissertation*	3	0	3
	Elektif/ *Electives*	9		
	LAX 6 Points			
	JUMLAH/ *TOTAL*	**12**	**0**	**3**

SEMESTER 2 / *2ND SEMESTER*

KOD KURSUS/ *COURSE CODE*	**NAMA KURSUS/*COURSE NAME***	**Kr**	**K**	**A**
ESC4901	Latihan Industri/ *Industrial Training*	12	0	12
	JUMLAH/ *TOTAL*	**12**	**0**	**12**

SINOPSIS KURSUS/ *COURSE SYNOPSIS*

Jabatan Sains Perhutanan dan Biodiversiti / *Department of Forestry Science and Biodiversit*

FHM3101 Sains Perhutanan/ Forest Science 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi prinsip asas sains perhutanan dan kepentingannya. Jenis, ekosistem dan pengurusan hutan, serta industri perhutanan ditumpukan. Isu perhutanan semasa di peringkat tempatan dan global dibincangkan

This course encompasses the basic principles of forest science and its importance. Forest types, ecosystem, and management, as well as forest industries are emphasized. Forestry issues at the local and global levels are discussed

FHM3102 Botani Hutan/ *Forest Botany* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi dendrologi dalam perhutanan dan taksonomi tumbuhan. Morfologi untuk pengecaman tumbuhan Gimnosperma dan Angiosperma ditumpukan. Nilai kepelbagaian tumbuhan dan habitatnya dibincangkan.

This course encompasses dendrology in forestry and plant taxonomy. Morphological characters for identification of Gymnosperm and Angiosperm are emphasized. Value of diversities of plants and its habitats are discussed

FHM3103 Dendrologi Dipterokarpa/ *Dendrology of Dipterocarps* 2 (1+1)

Prasyarat : Tiada

Kursus ini membincangkan dendrologi famili Dipterocarpaceae. Penekanan diberikan kepada tatanama moden, habitat tumbuhan, kekunci pengecaman, petunjuk botani dan pengumpulan spesimen herbarium. Huraian genus dan spesis dipterokarpa serta kepentingannya dalam perhutanan dibincangkan.

This course discuss on the dendrology of family Dipterocarpaceae. Emphasizes are on modern nomenclature, plant habitats, keys identification, botanical indicators and collection of herbarium specimens. Description on genera and species for dipterocarps and its importance in forestry is discussed

FHM3104 Dendrologi Bukan Dipterokarpa/*Dendrology of Non-Dipterocarps* 2 (1+1)

Prasyarat : Tiada

Kursus ini membincangkan dendrologi famili bukan Dipterokarpa.

Penekanan diberikan kepada tatanama moden, habitat tumbuhan, kekunci pengecaman, petunjuk botani dan pengumpulan spesimen herbarium. Huraian famili dan genus bukan dipterokarpa serta kepentingannya dalam perhutanan dibincangkan

This course discuss on the dendrology of family non-Dipterocarps. Emphasizes are on modern nomenclature, plant habitats, keys identification, botanical indicators and collection of herbarium specimens. Description on family and genera for non-dipterocarps and its importance in forestry is discussed

FHM3105 Fisiologi Pokok/ *Tree Physiology* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi peranan, fungsi dan proses fisiologi pokok dalam ekosistem perhutanan seperti fotosintesis, metabolisma karbohidrat, asimilasi dan respirasi. Hubungkait antara proses fisiologi pokok dengan faktor persekitaran seperti penyerapan, pergerakan dan kehilangan air dari pokok dan pembiakan seksual dan aseksual dibincangkan. Kursus ini menumpukan kepada teknik pengukuran fisiologi pokok yang bersesuaian.

This course covers the role, function and process of tree physiology within forest ecosystem includes photosynthesis, carbohydrate metabolism, assimilation and respiration. The relationship between tree physiological processes with environmental factor such as absorption, movement and loss of water, and sexual and asexual reproductions is discussed. This course focusses on the appropriate techniques for tree physiological measurement

FHM3106 Ekologi Hutan / *Forest Ecology* 3 (2+1)

Prasyarat : Tiada

Kursus ini memberi penekanan kepada konsep ekologi yang mencakupi faktor persekitaran seperti faktor edafik, iklim dan biotik yang mempengaruhi perkembangan tumbuhan, pengkelasan hutan serta dinamik komuniti tumbuhan dan proses seperti pengeluaran bahan organik, aliran tenaga dan kitaran nutrien.

This course emphasises on ecological concept, including environmental factors such as edaphic, climatic and biotic variables that influence the growth and development of vegetation, forest classification as well as community dynamics and processes such as organic matter production, energy flow and nutrient cycling

FHM3107 Tanah Hutan / *Forest Soil* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi topik sains tanah termasuk sifat kimia, fizikal dan biologi, pengecaman dan pengkelasan tanah, kesan aktiviti hutan terhadap ciri tanah serta indeks tapak
This course covers topics in soil sciences including chemical, physical and biological properties, soil classification and identification, effects of forest activities on soil properties as well as site index

FHM3108 Entomologi Hutan/ *Forest Entomology* 2 (1+1)

Prasyarat : Tiada

Kursus ini merangkumi kaedah mengenal pasti dan pengelasan serangga hutan terpilih. Pelajar dapat memahami ekologi, biologi dan kepentingan serangga berkaitan dengan pokok hutan asli, hutan ladang dan hutan bandar. Penelitian kaedah diagnosis, persampelan dan pengawalan serangga perosak pokok berasaskan kepada prinsip pengurusan serangga perosak bersepadu ditekankan.

This course encompasses the identification and classification of selected forest insects. Students will understand the ecology, biology and importance of insects associated with natural forest, plantation and urban forest. Methods of diagnosing, sampling and tree insect pest control based on insect pest management principles are emphasized

FHM3109 Patologi Hutan/ *Forest Pathology* 2 (1+1)

Prasyarat : Tiada

Kursus ini merangkumi konsep penyakit pokok, simptom dan tanda penyakit. Penekanan diberi kepada faktor di dalam pembentukan penyakit, diagnosis penyakit, pengkelasan kulat patogen, biologi patogen yang penting, dan patogenesis. Hubung kait hos dan patogen, mekanisme pertahanan dan kaedah pengawalan bagi penyakit pokok hutan juga dibincangkan

This course covers plant disease concept, disease symptoms and signs. Empasis is given on factors in disease formation, disease diagnosis, classification of fungal pathogen, biology of important pathogens and pathogenesis. Host and pathogen interaction, defense mechanism, and control methods for forest tree diseases are also discussed

FHM3110 Ekonomi Perhutanan/ *Forestry Economics* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi konsep dan teori dalam ekonomi perhutanan. Ini termasuklah struktur pasaran, ekonomi pengeluaran, permintaan dan penawaran barangan perkhidmatan hutan. Penekanan diberikan kepada penilaian ekonomi sumber hutan dan bayaran ke atas perkhidmatan ekosistem (PES). Analisis pelaburan projek perhutanan, serta peranan sektor perhutanan dalam pembangunan ekonomi dibincangkan

This course covers concepts and theories in forest economic. These include of market structure, production economics, demand and supply of forest goods and services. Economic valuation of forest resources and payment for ecosystem services (PES) are emphasized. Investment analysis of forestry projects, and the role of forestry sector in national economic development are discussed

FHM3111 Kebakaran Hutan/ *Forest Fire* 3 (3+0)

Prasyarat : Tiada

Kursus ini meliputi konsep kebakaran hutan, jenis hutan mudah terbakar, implikasi terhadap pengurusan hutan, kaedah mengelak, mengawal dan melawannya dan pengaruh cuaca dan sosial

This course covers the concept of forest fire, forests vulnerable to fire, forest management implications, methods for preventing, controlling and fire fighting as well as weather and social influences

FHM3112 Kaedah Kuantitatif Dalam Perhutanan/ *Quantitative Methods in Forestry* 4 (3+1)

Prasyarat : Tiada

Kursus ini merangkumi pemerihalan dan analisis data parametrik dan bukan parametrik dalam perhutanan. Penekanan diberikan kepada pola pembolehubah rawak dan taburan umum parametrik. Teknik pensampelan, rekabentuk ujikaji, ralat ujikaji, korelasi dan regresi linear dibincangkan.

This course covers parametric and non-parametric of data description and analyses in forestry. The pattern of random variables and some common distributions of parameters are emphasized. Sampling techniques, experimental designs, experimental errors, correlations and linear regression are discussed

FHM3201 Survei Hutan/ *Forest Survey* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi prinsip asas survei hutan, teknik ukuran linear dan sudut yang digunakan dalam perhutanan. Kandungan kursus termasuk kaedah pengukuran kawasan hutan dan penyediaan pelan. Teknik pengiraan ketepatan data dan pembetulan yang bersesuaian dibincangkan

This course covers the basic principles of forest survey, technique of linear and angular measurements which are applied in forestry. The content of this course includes methods of forest area measurement and plan preparation.Calculation tecnique for data accuracy and appropriate corrections are discussed

FHM3202 Sukatan Hutan/ *Forest Mensuration* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi prinsip pengukuran dan pengukuran pokok, dengan memberi penekanan kepada perkaitan antara , penaksiran dan pembolehubah pokok dan dirian hutan., Pertambahan dan pertumbuhan hasil, indeks tapak, stok, kepadatan dirian, termasuk perancangan dan pelaksanaan inventori sumber hutan berdasarkan teknik pensampelan yang digunakan di Malaysia turut dibincangkan.

This course covers the principles of measurement and tree measurement with emphasis on relationship between assessment and tree and stand variables. Growth and yield increment, site index, stocking, stand density including planning and conducting forest resource inventory according to sampling techniques used in Malaysia are also discussed

FHM3203 Sivikultur Hutan/ *Forest Silviculture* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi konsep dan teori silvikultur, system silvikultur am yang diamalkan dalam perhutanan tropika. Penekanan diberikan kepada perkembangan sistem silvikultur di Malaysia termasuk sistem dan kaedah terkini. Diantara aspek yang dibincangkan adalah pengenalan dan penubuhan lading hutan serta rawatan silvikultur yang bersesuaian

This course encompasses the concepts and theory of silviculture, general silvicultural systems practiced in tropical forest.,Emphasized is given to the development of silviculture system in Malaysia that includes the current systems and methods. Aspects of introduction and establishment of forest plantation as well as appropriate silviculture treatments are discussed

FHM3204 Kejuruteraan Hutan/ *Forest Engineering* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi kejuruteraan hutan, sains bahan binaan, penganalisaan kestabilan tebing dan dinding penahan, torque, rimpul, jentera perhutanan terpilih serta ekonomi kejuruteraan hutan yang merangkumi kos mesin dan penggantian termasuk penilaian kos alternatif

This course encompasses forest engineering, building material science, analysis of slope stability and retaining wall, torque, rimpull, selected forest machinery as well as economics of forest engineering including costs of machinery and replacement,including evaluation of alternative costs

FHM3205 Penuaian Hutan/ *Forest Harvesting* 3 (2+1)

Prasyarat : Tiada

Kursus ini meliputi konsep, sistem, teknik dan proses penuaian hutan termasuk menganalisa kadar pengeluaran, kos penuaian, pengawalan kos pengeluaran balak serta penyediaan pelan penuaian hutan.

This course covers forest harvesting concept, system, technique and process of forest harvesting including analysis of production rate, cost of forest harvesting, control of logging production cost as well as development of forest harvesting plans

FHM3206 Sistem Maklumat Geografi Dalam Perhutanan/ *Geographic Information System in Forestry* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi konsep asas sistem maklumat geografi (GIS). Kandungan kursus termasuk kaedah reka bentuk dan pembangunan pengkalan data, automasi, pemprosesan, analisis,paparan dan pemodelan data. Ia penting untuk menyokong proses membuat keputusan, termasuk kajian kes system maklumat geografi dalam perhutanan

This course covers basic concepts of geographic information system (GIS). The content of this course includes method of design and data base development, automation, processing, analysis, display, and modelling of data. It is to support decision making, including case studies of GIS in forestry

FHM3208 Pembaikbiak Pokok/ *Tree Improvement* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi prinsip dan kaedah pembaikbiakan pokok hutan asli dan hutan ladang untuk pengurusan serta pengeluaran mampan stok tanaman berkualiti. Kepentingan dan kegunaan variasi genetik melalui genetik Mendel, genetik kuantitatif, keseimbangan Hardy-Weinberg, pemilihan spesis dan ujian provenans, pembiakan tampang, ujian progeni, dirian biji benih, kebun biji benih dan strategi pembiakan yang efisien akan dibincangkan. Kursus ini akan menumpukan kepada kecekapan penggunaan sumber dan penggunaan teknik pembiakan yang
sesuai dalam pembaikbiak pokok

The course covers the principles and methods of tree improvement of natural and planted forest for sustainable management and production of quality planting stock. The application and importance of genetic variations through Mendelian genetics, quantitative genetics, Hardy-Weinberg equilibrium, species selection, provenance trial, vegetative propagation, progeny trial, seed production area, seed orchard and efficient breeding strategy will be discussed. This course focuses in resource use efficiency and the application of appropriate techniques for tree improvement program

FHM3209 Arborikultur/ *Arboriculture* 3 (2+1)

Prasyarat : Tiada

Kursus ini mendedahkan kepada teori dan konsep arborikultur terutamanya pengurusan dan penyelenggaraan pokok di kawasan bandar. Konsep asas biologi dan fisiologi pokok, pemilihan tapak dan spesies, penanaman dan pemangkasan, kesihatan dan penyakit pokok dibincangkan. Aspek profesionalisme dalam pengurusan pokok bandaran melalui amalan terbaik dan pensijilan arboris ditekankan

This course covers the theory and concept of arboriculture especially on the management and maintenance of trees in urban areas. Basic concept of tree biology and physiology, site and species selection, tree planting and pruning, tree health and diseases are discussed. Professionalism aspect in urban tree management through best practices and arborist certification are emphasized

FHM3210 Etnobotani/ *Ethnobotany* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi konsep asas etnobotani dari segi sejarah dan budaya terhadap manusia. Tajuk yang dibincangkan meliputi kepentingan budaya sebagai perantara dalam penggunaan tumbuhan oleh manusia, peranan tumbuhan liar dan tumbuhan yang telah didomestikasi dalam evolusi manusia, isu semasa etnobotani di peringkat global dan kebergantungan manusia terhadap tumbuhan. Penilaian ke atas impak tumbuhan terhadap aspek ekonomi dan sosial masyarakat setempat

This course covers the basic concept of ethnobotany in terms of its historical and cultural contribution to human. Topics covered include the importance of culture in mediating the use of plants amongst people, the role of wild and plants in domesticated human evolution, current global issues in ethnobotany, and human dependency on plants. Evaluation on the impact of plants to social and economic aspects of local communities

FHM3211 Pemulihan Ekosistem/ *Ecosystem Restoration* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi konsep dan prinsip pemulihan ekosistem dan penilaian faktor yang menyebabkan kemerosotan ekosistem hutan. Penilaian dan penggunaan kaedah bagi pemulihan pelbagai ekosistem berhutan yang rosak

This course covers the concepts and principles of ecosystem restoration and evaluation of factors affecting forest ecosystem degradation. Assessment and application of methods to restore several forest ecosystems

FHM3212 Kaedah Pensampelan Hidupan Liar/ *Wildlife Sampling Methods* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi konsep dan kaedah pensampelan, analisis dan interpretasi data hidupan liar di kawasan tropika. Kaedah pensampelan secara langsung dan tidak langsung, penilaian kualiti habitat dan pembolehubah berunsurkan keadaan persekitaran yang berkaitan dengan kehadiran dan kelimpahan hidupan liar akan ditekankan. Pengaruh vegetasi dan faktor persekitaran terhadap taburan hidupan liar ditekankan

This course covers sampling concepts and methodology, data analysis and interpretation in the tropical regions. Direct and indirect sampling methods according to different animal groups, assessment of habitat quality and environmental variables associated with wildlife presence and abundance are emphasized. Vegetation and environmental factor on wildlife distribution are emphasized

FHM3213 Perhutanan Tani/ *Agroforestry* 3 (2+1)

Kursus ini memperkenalkan prinsip dan amalan perhutanan tani di kawasan tropika. Pengajaran akan memfokuskan kepada jenis amalan perhutanan tani, interaksi sistem perhutanan tani dengan alam sekitar dan sosial. Analisa ekonomi digunakan untuk menentukan hasil pulangan yang positif terhadap sistem perhutanan tani yang diamalkan

This course introduces principle of tropical agroforestry system in tropic. The teaching focuses on appropriate systems and the interactions of the agroforestry system with the environment and social. Economic analysis is used to assess the positive return of the agroforestry system

FHM3214 Teknologi Biji Benih/ *Seed Technology* 2 (1+1)

Prasyarat : Tiada

Kursus ini merangkumi isu berkaitan dengan pengeluaran biji benih bagi spesis pokok hutan terpilih dan tanaman serat. Penekanan terhadap teknologi biji benih dan kesannya kepada hasil dan kualiti biji benih akan dibincangkan. Aspek fisiologi pengeluaran biji benih termasuk fenologi, dormansi dan penyimpanan; serta keputusan sistem sokongan seperti pensijilan biji benih dan penyelidikan biji benih diberi penekanan

The course discussed issue related to seed production of selected forest species and fibre crops. Seed technology and its potential effects on the yield and quality of seeds are emphasized. Physiological aspects of seed production including phenology, dormancy and storage; and the decision support system such as seed certification and seed research are emphasized

FHM3215 Infrastruktur Hijau Dalam Perhutanan Bandar/ *Green Infrastructure in Urban Forestry* 2 (1+1)

Prasyarat : Tiada

Kursus ini merangkumi kefahaman pelajar mengenai fungsi dan komponen infrastruktur hijau dalam konteks perhutanan bandar. Kursus ini membantu pelajar untuk mengenalpasti komponen infrastruktur hijau yang terdapat dalam hutan perbandaran dan sumbangan komponen-komponen ini kepada persekitarannya. Kursus ini memberi pendedahan kepada pelajar dalam merancang, mereka dan mengaplikasi penggunaan infrastruktur hijau dalam konteks hutan bandar

This course covers the understanding of the functions and components of green infrastructure in the context of urban forestry.This course help students in identifying green infrastructure components found in urban forests and the benefits of these components to the surroundings. This course exposes students to the planning, designing and applying the use of green infrastructure in the context of urban forests

FHM3216 Ekonomi Persekitaran Dan Hutan Bandar/ *Environmental Economics and Urban Forestry* 2 (2+0)

Prasyarat : Tiada

Kursus ini menyediakan maklumat latar belakang untuk memahami kaedah dan teknik ekonomi berkaitan persekitaran hutan bandar. Teori berkaitan dengan ekonomi persekitaran semula jadi dan bukan semulajadi dijelaskan. Ia merangkumi pemahaman keatas topik (i) ekonomi persekitaran hutan bandar, (ii) analisis kos faedah dan mendiskaunkan alat ekonomi makro, (iii) langkah dan pembangunan mampan dasar, serta (iv) penilaian sumber.

This course provides background information to understand method and economic techniques related to urban forest and its environment. Theories of environmental economics related to both natural and non-natural resources are explained. It includes the development of real understanding on the topics of (i) the environmental economics of urban forest, (ii) cost-benefit analysis and discounting macro-economic tools, (iii) measures and policy sustainable development, (iv) and resource valuation

FHM3301 Pengurusan Hutan (Forest Management) 3(2+1)

Kursus ini merangkumi fungsi dan kepentingan pengurusanhutan secara berkekalan di Malaysia. Amalan dan piawaianpengurusan hutan antarabangsa berkaitan dengan hasil berkekalan, giliran dan pusingan tebangan, pengendalian stok,hasil dan kawalan tebangan berkaitan sistem pengurusan hutan di Malaysia dibincangkan. Penekanan diberi kepada keperluan pensijilan hutan dan pengesahan produk kayu dari sumber yang berkekalan.

(*This course covers the functions and importance of sustainable forest management in Malaysia. The principles and standard of international forest management related to the sustainable yield, rotation and cutting cycle, the manipulation of growing stock, yield, and regulation of fellings related to forest management system in Malaysia are discussed. Forest certification and verification of forest products from sustainable forest are emphasized.)*

FHM3302 Pengurusan Hutan Bandar/ *Urban Forest Management* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi konsep, fungsi dan faedah perhutanan bandar. Penekanan diberi kepada penggunaan prinsip arborikultur dan perancangan kawasan hijau dalam pengurusan hutan bandar. Pemilihan spesies dan tapak, penanaman, penjagaan dan senggaraan pokok dibincangkan.

This course covers the concept, function and benefit of urban forestry. Arboriculture principles and green space planning in urban forest management are emphasized. Species and site matching, planting, tree care and maintenance are discussed

FHM3303 Pengurusan Hidupan Liar (Wildlife Management) 3(2+1)

Kursus ini merangkumi pengkelasan dan aspek ekologi hidupan liar di Malaysia termasuk dinamik populasi, keperluan habitat, tekanan dan gangguan kepada habitat asal. Pengukuran populasi melalui teknik pensampelan bagi anggaran populasi ditekankan. Prinsip pengurusan hutan bagi hidupan liar termasuk pemuliharaan, status kini dan masa hadapan, fungsi agensi, dasar dan polisi negara dan kesedaran umum dibincangkan

The course encompasses classification and ecological aspect of wildlife in Malaysia includes population dynamics, habitat requirement, pressure and disturbance of original habitat. Population measurement through sampling techniques for population estimation is emphasized. Principles of forest management towards wildlife, conservation, current and future status, functions of agencies, national policies and public awareness is discussed.

FHM3305 Pengurusan Kawasan Legeh/ *Watershed Management* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi masalah air dan langkah untuk mengatasinya, edaran hidrologi, kawasan tadahan hutan dan hubungannya dengan hujan, air tanah, pemeluapan, larian air, banjir dan hakisan tanah. Kaedah kawalan kuantiti dan kualiti air dalam pengurusan kawasan legeh serta Masalah sosial yang berkaitan.

The course covers water problems and approaches to their solutions, hydrological cycle, water catchment area and its relation to rainfall, gound water, evapotranspiration, runoff, floods and soil erosion, control methods for water quality and quantity in watershed management as well as related social problems

FHM3306 Undang-Undang Dalam Perhutanan/ *Laws in Forestry* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi peruntukan undang-undang dalam sektor perhutanan termasuk undang-undang berkaitan sumber semula jadi, alam sekitar, hidupan liar, taman negara dan air serta industri hiliran. Perbezaan undang-undang di negeri-negeri berkaitan akan ditekankan. Penggunaan undang-undang dalam menangani masalah pengurusan hutan semasa dibincangkan

This course encompasses provisions of laws in forestry sectors including natural resource, environment, wildlife, national parks, water and upstream industries. Differences between related state laws are emphasized. Application of laws to solve current forest management are discussed

FHM3307 Penyelenggaraan Dan Pengurusan Tapak Semaian/ *Nursery Management and Maintainance* 2 (1+1)

Prasyarat : Tiada

Kursus ini membincangkan asas penubuhan tapak semaian mengikut amalan baik bagi tujuan pemuliharaan dan perniagaan. Penekanan diberi kepada teknik penubuhan tapak semaian, penyelenggaraan tumbuhan dan infrastruktur tapak semaian. Teknik menghasilkan stok tanaman dan pemasaran tumbuhan dibincangkan

This course discusses basic of nursery establishment based on good practices for conservation and business purposes. Emphasized are given on nursery establishment techniques, plant and infrastructure maintenance. Plant propagation techniques and plant marketing are discussed

FHM3310 Pengurusan Bersepadu Perosak Hutan Bandar/ *Integrated Pest Management of Urban Forests* 3 (2+1)

Prasyarat : Tiada

Kursus ini membincangkan identifikasi dan klasifikasi perosak, serangga dan biologi, habitat dan kepentingannya di hutan bandar. Penekanan diberikan kepada pengurusan dengan penggunaan teknik kawalan perosak secara integrasi. Teknik pengawalan dan pengurusan dilapangan dibincangkan.

This course discusses on the identification and classification of selected pests, insects and their biology, habitat and importance in urban forestry. The utilization and integration of pest control tactics for management of insects and pathogens are emphasized. Control technique and management in field are discussed

FHM3311 Pengurusan Kesihatan Pokok Hutan Bandar/ *Urban Tree Health Management* 2 (1+1)

Prasyarat : Tiada

Kursus ini membincangkan ejen dan penyebab kepada penyakit pokok hutan bandar. Penekanan diberikan dalam mengenalpasti penyakit pokok palma, pokok renek, pokok teduhan dan tumbuhan hiasan di hutan bandar. Kaedah pengawalan penyakit pokok hutan bandar dibincangkan

This course discusses agent and causes of urban forest tree diseases. Emphasized are given in identifying diseases of palms, shrubs, and shade trees and ornamental plants in urban forest. Controlling methods of urban tree diseases are discussed

FHM4101 Biodiversiti dan Pemuliharaan/ *Biodiversity and Conservation* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi teori dan prinsip dalam skop biodiversiti dan pemuliharaan termasuk definisi, aras biodiversiti, definisi spesies, habitat, ekosistem dan kepentingan biodiversiti. Penekanan diberikan pada teknik pengukuran, penilaian dan pemantauan biodiversiti bagi tujuan pemuliharaan. Isu semasa, dasar biodiversiti kebangsaan, pengurusan dan mekanisme dalam pemuliharaan biodiversiti

This course encompasses theory and principle in biodiversity and conservation that includes definition, level in biodiversity, definition of species, habitat, ecosystems and importance of biodiversity. Emphasis is given on measuring technique, assessment and biodiversity monitoring for conservation. Current issues, national biodiversity policy, management and mechanism for biodiversity conservation are covered

FHM4102 Ekologi Komuniti Hidupan Liar/ *Wildlife Community Ecology* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi konsep dan teori berkaitan dengan struktur dan dinamik komuniti hidupan liar terestrial. Penekanan diberi ke atas konsep komuniti, interaksi ekologi dan kestabilan populasi. Teori dan model yang berkaitan dengan dinamik ruang, pemilihan habitat dan jaringan makanan dalam komuniti hidupan liar ditekankan

This course covers concepts and theories related to the structure and dynamics of terrestrial wildlife communities. Community concept, ecological interactions and population stability are emphasized. Theory and model related to space dynamic, habitat selection, food web in wildlife community are emphasized

FHM4103 Ekologi Perilaku Hidupan Liar/ *Wildlife Behavioural Ecology* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi teori dan konsep asas dalam ekologi perilaku hidupan liar. Ini termasuk mekanisma perilaku hidupan liar yang berkaitan seperti kemandirian, komunikasi, persaingan sumber, mangsa pemangsa dan pergerakan dan keperluan dari segi ruang. Aplikasi ekologi perilaku dalam konservasi hidupan liar ditekankan

This course covers the theory and fundamental concepts in behavioral ecology of wildlife. It includes mechanisms of wildlife behavior in relation to survival, communication, resource competition, prey and predator, and movement, and space necessity. The applications of behavioral ecology in wildlife conservation are emphasized

FHM4201 Penderiaan Jauh Dalam Perhutanan/ *Remote Sensing in Forestry* 3 (2+1)

Prasyarat : Tiada

Kursus ini memperkenalkan kepada pelajar teori asas penderiaan jauh dan prinsip asas pemprosesan imej satelit. Pengajaran akan memfokus kepada penggunaan perisian pemprosesan imej yang bersesuaian dengan aktiviti perhutanan. Pelajar akan diberi peluang untuk menganalisis data lapangan

This course introduces students to basic theory on remote sensing and basic principles of satellite image processing. The teaching focuses on appropriate used image processing software. The student will be given the opportunity to analyze field data

FHM4202 Penilaian Ekonomi Sumber Hutan Dan Biodiversiti/ *Economic Valuation of Forest Resource and Biodiversity* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi konsep asas dan kaedah dalam menjalankan penilaian ekonomi sumber hutan dan biodiversiti. Penekanan diberikan ke atas pembangunan mampan, kepentingan sumber hutan dan biodiversiti, masalah berkaitan dengan nyah hutan, konsep dan teori utiliti dan ekonomi kebajikan, jenis-jenis nilai ekonomi, pendekatan penilaian ekonomi, langkah terlibat dan kaedah penilaian ekonomi, perakaunan sumber hutan dan aplikasi penilaian ekonomi dalam perhutanan. Kajian kes dalam penilaian ekonomi sumber hutan dan biodiversiti dibincangkan.

This course covers the basic concepts and methods in conducting economic valuation of forest and biological resources. Empashzied are given on sustainable development, the importance of forest and biological resources, problems related to deforestation, concept and theory of utility and welfare economics, types of economic value, approaches in economic valuation, steps involved and methods of economic valuation, forest resource accounting and applications of economic valuation. Case studies in economic valuation of forest resources and biodiversity are covered

FHM4203 Perhutanan Antarabangsa/ *International Forestry* 2 (2+0)

Prasyarat : Tiada

Kursus ini merangkumi status, klasifikasi hutan dunia dan isu semasa global berkaitan dengan sektor perhutanan. Perbincangan berkisar kepada organisasi perhutanan global dan nasional dan perjanjian antarabangsa serta kaitannya dengan pengurusan hutan

This course covers status, classification of forest and current global issues related to forestry sectors. Discussion on global and national forestry organizations, and international treaty related to forest management

FHM4204 Aplikasi Bioteknologi Dalam Perhutanan/ *Biotechnology Application in Forestry* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi teori dan amalan bioteknologi dalam bidang perhutanan termasuk biologi sel, genetik molekul, pengklonan gen, teknologi PCR, penjujukan DNA, kejuruteraan genetik, cap jari DNA dan forensik. Penumpuan diberikan kepada penggunaannya dalam pengurusan biodiversiti hutan, kepelbagaian genetik, perlindungan flora dan fauna terancam, serta kejuruteraan genetik spesies hutan ladang. Kursus ini juga menekankan kepada latihan kemahiran

This course covers the theory and practice of biotechnology in the field of forestry including cell biology, molecular genetics, gene cloning, PCR technology, DNA sequencing, genetic engineering, DNA fingerprinting and forensic. It focuses on its application in the management of forest biodiversity, genetic heterogeneity, protection of endangered flora and fauna, and genetic engineering of plantation forest species. This course also emphasises on hands-on training

FHM4205 Teknik Hidrologi Hutan/ *Forest Hidrology Technique* 3 (2+1)

Prasyarat : Tiada

Kursus ini memberi pendedahan tentang jenis-jenis peralatan dan cara pengukuran proses hidrologi asas. Penekanan diberikan kepada kawasan legeh yang merangkumi kajian mikro dan makro. Kaedah menganalisa data hidrologi dibincangkan

This course gives exposure about equipment types and their measurement of basic hydrological processes. Emphasis is given to the watershed area including the micro and macro research. Hydrological data analysis methods are covered

FHM4206 Pengukuran Dan Pemantauan Karbon/ *Carbon Measurement and Monitoring* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi peranan hutan dengan perubahan iklim. Kerjasama antarabangsa oleh pelbagai pihak berkaitan untuk mengurangkan kesan perubahan iklim dunia dibincangkan. Penekanan diberikan keatas kaedah pengukuran dan pemantauan karbon di kawasan berhutan

This course encompasses the role of forests in climate change. International cooperation by various related agencies in reducing the impact of global climate change is discussed. Emphasized is given on methods in measurement and monitoring of carbon in the forested area

FHM4207 Ekologi Perbandaran/ *Urban Ecology* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi teori, fungsi dan pelbagai komponen dalam skop ekologi perbandaran. Analisa interaksi antara komponen ekosistem perbandaran dan permasalahan yang terdapat dalam ekologi perbandaran ditekankan. Cadangan penyelesaian berkaitan permasalahan ekologi perbandaran dibincangkan

This course encompasses the theory, function and components functions in the scope of urban ecology. Interaction analysis between various components of urban ecosystem and issues in urban ecology are emphasized. Solutions to the problems relating to urban ecology are discussed

FHM4301 Pengurusan Hutan Lanjutan/ *Advance Forest Management* 2 (1+1)

Prasyarat : Tiada

Kursus ini merangkumi prinsip perancangan pengurusan hutan dan penyediaan rancangan pengurusan hutan, termasuk kaedah dan teknik perancangan, pengaturcaraan matematik, simulasi, teori permainan dan analisis rangkaian

The course covers the principles of forest management planning and preparation for forest management plans, including methods and techniques of planning, mathematical programming, simulation, game theory as well as network analysis

FHM4302 Konflik Manusia Dan Hidupan Liar/ *Human and Wildlife Conflicts* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi konsep pengurusan konflik dan peranan manusia dan hidupan liar. Pemahaman fungsi ekosistem dan keupayaan daya tampung sesuatu habitat ditekankan dalam penilaian konflik. Kaedah mitigasi untuk menangani konflik antara manusia dan hidupan liar ditekankan

This course covers concept of conflict management and roles of human and wildlife. The understanding of ecosystem functions and carrying capacity are emphasized in evaluating human and wildlife conflicts. Mitigation methods for solving human and wildlife conflicts are emphasized

FHM4303 Pengurusan Risiko Dalam Hutan Bandar/ *Risk Management in Urban Forestry* 3 (2+1)

Prasyarat : Tiada

Kursus ini membincangkan tanggungjawab pengurus hutan bandar dalam menguruskan risiko yang berlaku. Penekanan diberikan kepada penyediaan dan penghuraian rancangan pengurusan risiko di hutan bandar termasuklah pertimbangan liabiliti, prinsip piawaian hutan bandar dan elemen kesihatan dan keselamatan. Pengurusan pokok bahaya, kesihatan dan keselamatan di tempat kerja dan asas mencari dan menyelamat dibincangkan

This course discusses the responsibility of urban forestry managers in managing risks. Emphasized are given to the preparation and presentation of risk management plan in urban forestry including liability assessment, standard and principle in urban forestry and health and security. Management of hazardous trees, health and security in workplace and search and rescue are discussed

Jabatan Industri Sumber Alam /Department of Nature Resource Industry

FHH3101 Sains Kayu/ *Wood Science* 3 (2+1)

Prasyarat : Tiada

Kursus ini memperkenalkan kepada pelajar berkenaan kepentingan kayu dalam kehidupan manusia. Pengajaran akan menumpu kepada sifat anatomi, kimia, fizikal, dan mekanikal kayu serta perkaitannya dalam pemprosesan dan penghasilan produk berasas kayu. Pelajar akan didedahkan kepada teknik pengecaman pelbagai spesies kayu komersil

This course introduces student on the importance of wood to human life. The teaching will focus on the anatomical, chemical, physical, and mechanical properties of wood in relation to the processing and production of wood-based products. The student is exposed to the identification technique of various commercial wood species

FHH3207 Teknologi Pulpa dan Kertas/ *Pulp and Paper Technology* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi terhadap sejarah dan pertimbangan komersial dan pencirian bahan mentah bagi industri pulpa dan kertas. Teknik mempulpa, proses pelunturan dan penyediaan stok pulpa serta proses pembuatan kertas didedahkan. Perolehan bahan dan pertimbangan alam sekitar dalam industri pulpa dan kertas dibincangkan.

This course encompasses the history, commercial consideration and raw material characteristics of the pulp and paper industry. Technique of pulping, bleaching processes, pulp stock preparation and papermaking are exposed. Procurement of materials and environmental consideration in pulp and paper industry are discussed

FHH3301 Perolehan Bekalan Hasil Hutan/ *Forest Products Procurement* 3 (2+1)

Prasyarat :Tiada

Kursus ini merangkumi konsep dan kaedah perolehan bekalan hasil hutan untuk proses hiliran. Kaedah penentuan harga, penggredan dan kaedah pengukuran isipadu kayu balak dan kayu gergaji ditekankan. Sistem perolehan bekalan hasil hutan secara sah dan mampan didedahkan
This course encompasses the concepts and methods of forest products procurement for downstream processing. Pricing methods, grading and volume measurement methods for logs and sawn timber are emphasized. Legal and sustainable procurement system of forest products are exposed

FHH3302 Pemasaran Hasil Hutan/*Forest Products Marketing* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi konsep asas pemasaran dan pengurusan pemasaran untuk mendapatkan gambaran mengenai proses dan aktiviti dalam memasarkan hasil hutan dan perkhidmatan hutan. Pendekatan pengurusan dalam membuat keputusan pemasaran terutama sekali dalam membangunkan campuran dan strategi pemasaran ditekankan. Beberapa topik lain berkaitan dengan pemasaran keluaran/perkhidmatan seperti pensijilan dibincangkan
This course encompasses the fundamental concepts of marketing and marketing management to obtain a broad overview of the processes and activities that are required in marketing of forest products and services. Managerial approach in making marketing decisions particularly on the development of the marketing mix and strategies are emphasized. Several topics related to the marketing of forest products/services like product certification are discussed

FHH3303 Ekonomi Industri Perkayuan/*Wood Industry Economics* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi prinsip ekonomi mikro seperti pengeluaran, penawaran dan permintaan yang melibatkan industri perkayuan. Teori kos, struktur dan tingkahlaku pasaran, tingkah laku penentuan harga, dan prestasi pasaran ditekankan. Isu semasa berkaitan dengan perdagangan kayu dibincangkan

This course encompasses the micro economics principles such as production, demand and supply related to wood industry. Cost theory, market structure and behavior, price determination behavior, and market performance are emphasized. Current issues on timber trade are discussed

FHH3304 Analisis Operasi Industri Hasil Hutan/ *Operation Analysis in Forest Products Industries* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi konsep dan teknik berkaitan perancangan, reka bentuk, dan pengawalan operasi penghasilan produk hasil hutan. Analisis proses pembuatan produk hasil hutan untuk mengoptimumkan kecekapan pengeluaran ditumpukan. Penyelesaian masalah berdasarkan maklumat yang diperoleh dari lapangan dijalankan

This course encompasses the concept and techniques related to planning, design, and control in forest products manufacturing operations. Analysis of forest products manufacturing process to optimize production efficiency are emphasized. Problem solution based on field information are conducted

FHH3102 Anatomi Kayu / *Wood Anatomy* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi struktur anatomi kayu dan kepentingannya dalam penghasilan produk kayu. Pembentukan dan perkembangan kayu di peringkat bersel dan hubungannya dengan ekologi persekitaran ditekankan. Kepelbagaian sifat anatomi kayu secara makro dan mikro serta aplikasinya dalam pengecaman kayu didedahkan

This course encompasses wood anatomical structures and its importance in production of wood products. Formation and development of wood in cellular level and its relationship with environmental ecology are emphasized. Variety of macro and micro wood anatomical features and its application in wood identification are exposed

FHH3103 Fizik Kayu / *Wood Physics* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi sifat fizik kayu dan gentian sebagai bahan mentah industri. Hubungkait air dengan kayu, ketumpatan, sifat haba, elektrik, akustik kayu, gelagat kayu terhadap api ditumpukan. Pergerakan cecair dalam kayu dan kaitannya terhadap rawatan kayu didedahkan

This course encompasses physical properties of wood as industrial raw material. Wood and water relationship, density, electrical, thermal, acoustic properties, behaviour of wood towards fire are emphasized. Flow of liquid in wood and its relation treatment methods are exposed

FHH3104 Kimia Kayu / *Wood Chemistry* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi proses pembentukan dan taburan komponen kimia dalam kayu dan gentian. Struktur kimia dan tindakbalas kimia terhadap ekstraktif, lignin, selulosa, hemiselulosa dan kulit kayu dibincangkan

This course encompasses wood formation dan distribution of chemical constituents in wood. Chemical structure and chemical reactions on extractives, lignin, cellulose, hemicelluloses and barks are discussed

FHH3105 Mekanik Kayu 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi sifat mekanik kayu pejal dan komposit kayu. Konsep dan ujian mekanik kayu, faktor yang mempengaruhi sifat mekanik, dan kaitannya dengan penggunaan ditekankan. Kriteria rekabentuk elastik untuk struktur kayu, papan komposit dan kombinasi kedua-duanya didedahkan.

This course encompasses the mechanical properties of solid wood and composite woods. Concept and testing in wood mechanics, factors that influences the mechanical properties and its relation to utilization are emphasized. Elastic design criteria for wood and wood composite structures and the combination of both are exposed

FHH3106 Pengenalan Kepada Operasi Hutan 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi berkenaan konsep operasi hutan, teknik pembalakan dan sistem penuaian. Kaedah sukatan, survei, dan operasi pembalakan ditumpukan. Pembinaan pelan operasi hutan, termasuk jalan hutan, pengurusan dan penyelenggaraan jentera didedahkan

This course encompasses the concept of forest operation, logging techniques and harvesting system. Mensuration, survey and logging operation techniques are emphasized. Development of operational plan including forest road, management and maintenance of machinery are exposed

FHH3201 Hasil Hutan Bukan Kayu/ Non-Wood Forest Products 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi kepelbagaian hasil hutan bukan kayu seperti rotan, buluh, fitokimia, tumbuhan ubatan dan palma. Asas penanaman buluh dan rotan serta sifat pelbagai hasil hutan bukan kayu didedahkan. Proses pengumpulan dan pengagihan bahan menggunakan teknologi yang sesuai dalam proses pembuatan produk akhir untuk pembangunan industri SME serta sosio-ekonomi dibincangkan.

This course encompasses the diversity of non-wood forest products such as rattan, bamboo, phytochemicals, medicinal plants and palms. Basic of bamboo and rattan planting as well as non-wood forest products properties are exposed. Process of collection and its distribution using appropriate technology for end product manufacturing towards the development of SME industries and socio-economic are discussed)

FHH3202 Pengilangan Dan Pengeringan Kayu/ *Sawmilling and Wood Drying* **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi teori, konsep dan amalan dalam pengilangan dan pengeringan kayu. Peralatan, langkah-langkah pemprosesan, kaedah dan faktor yang mempengaruhi pulangan dalam pengilangan kayu didedahkan. Prinsip dan kaedah pengeringan kayu serta punca dan kawalan kecacatan kayu akibat pengeringan dibincangkan.

This course encompasses theory, concept and practices of sawmilling and wood drying. Machineries, processing steps, methods and factors that affect sawmilling recovery are exposed. Principle and methods of wood drying as well as causes and preventions of drying defects are discussed

FHH3203 Kemerosotan Kayu dan Rawatan/ *Wood Deterioration and Treatment* **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi aspek kemerosotan kayu dan hasil hutan lain. Punca kemerosotan kayu disebabkan oleh agen biotik dan abiotik dibincangkan. Kaedah melindungi dan mengawet kayu didedahkan

This course encompasses the aspects of deterioration of wood and other forest products. Biotic and abiotic agents that affected deterioration are discussed. Methods of wood protection and preservation are exposed

FHH3204 Perekat dan Teknologi Perekatan Kayu/ *Wood Adhesive and Adhesion Technology* **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi pelbagai jenis perekat kayu serta sifatnya. Teori asas dan sifat fizikal perekat serta mekanisma perekatan ditekankan. Aplikasi dan ujian rekatan pelbagai jenis perekat dalam penghasilan komposit kayu dijalankan

This course encompasses various types of wood adhesives and their properties. Fundamental theory and physical properties of the adhesives and its adhesion mechanism are emphasized. Application and adhesion test of wood composites are conducted

FHH3205 Biokomposit/ *Biocomposites* **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi jenis dan proses pembuatan papan komposit konvensional daripada pelbagai jenis bahan kayu. Pengujian dan penilaian sifat fizikal dan mekanikal papan komposit didedahkan. Faktor yang mempengaruhi prestasi papan komposit dibincangkan

This course encompasses types and manufacturing process of conventional composite boards from various type of wood. Testing and evaluation of physical and mechanical properties of composite boards are exposed. Factors influencing performance of composite boards are discussed

FHH3206 Pemesinan Kayu/ *Wood Machining* **3 (2+1)**

Prasyarat : FHH3202

Kursus ini merangkumi teori, konsep dan kaedah pemesinan kayu. Hubungkait pembolehubah pemesinan dan kualiti pemesinan di dalam proses pengetaman dan pengupasan dibincangkan. Kerja pemesinan kayu dengan membuat perabot dilaksanakan

The course encompasses theory, concept and methods of wood machining. Relationship of machining variables with performance and quality in planing and veneer cutting are discussed. Wood machining activities by making furniture are conducted

FHH3208 Proses Pembuatan Perabot/ *Furniture Manufacturing Process* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi latar belakang industri perabot di Malaysia dan seluruh dunia. Prinsip dan kaedah rekabentuk perabot, proses utama pembuatan perabot, isu alam sekitar dan kesihatan yang terlibat ditumpukan. Teknik penilaian kualiti dan produktiviti pembuatan perabot melalui kajian kes dilaksanakan

This course encompasses the background of Malaysian and global furniture industries. Principles and techniques of furniture design, furniture manufacturing processes, and the related environmental and health issues are emphasized. Assessment techniques on quality and productivity through case studies are conducted

FHH3209 Aplikasi Komputer Dalam Reka Bentuk Produk Kayu/ *Computer Application in Wood Product Design* 3 (1+2)

Prasyarat : Tiada

Kursus ini merangkumi berkenaan konsep rekabentuk dalam merekabentuk produk kayu. Kemahiran dalam penggunaan perisian rekabentuk ditumpukan. Tknik penilaian dan interpretasi hasil model rekabentuk kayu didedahkan.

This course encompasses the concept of design concept and the application of software in designing wood products. Skills of using software for designing are emphasized. Evaluation of the design and the interpretation of the models are exposed

FHH3210 Biojisim Dan Biotenaga/ *Biomass and Bioenergy* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi jenis biojisim sebagai sumber biotenaga. Penghasilan biotenaga dalam bentuk pepejal, cecair dan gas melalui proses biokimia didedahkan. Aspek ekonomi, dasar pembangunan dan penggunaan biotenaga dibincangkan.
This course introduces student to various types of biomass as source of bioenergy. Production of bioenergy in the form of solid, liquid and gas using biochemical processes are exposed. Students Economic aspect, development and utilization policy of bioenergy are discussed

FHH3305 Analisis Kewangan Industri Hasil Hutan/ Financial Analysis of Forest Products Industries 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi konsep dan prinsip asas pengurusan kewangan. Pengajaran menumpu kepada pemahaman serta penggunaan alatan analitikal yang bersesuaian dalam membuat analisis dan keputusan kewangan dalam industri hasil hutan. Pelajar juga diberi peluang menganalisis penyata kewangan sebenar firma industri hasil hutan
This course covers the basic concepts and principles of financial management. Teaching focuses on understanding and use of analytical tools in analysing and making financial decision in the forest products industries. Students are also given the opportunity to analyze actual financial statements of forest products industry firm

FHH3307 Ergonomik Hutan/ *Forest Ergonomics* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi isu berkaitan ergonomik yang dihadapi oleh pekerja di bidang perhutanan dan industri perkayuan. Aplikasi teori dan kaedah ergonomik dalam sektor perhutanan dijalankan. Susun atur tempat kerja, faktor manusia dan aspek kesihatan dan keselamatan pekerja dibincangkan

This course encompasses ergonomic issues faced by workers in forestry and wood industry sectors. Application of ergonomics theory and method in forestry sector are conducted. Workplace layout, human factors and aspects of health and safety of worker are discussed

FHH4201 Teknologi Penglitup dan Kemasiapan Kayu/ *Wood Coating and Finishing Technology* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi pelbagai jenis penglitup dan laminasi permukaan produk kayu. Pemilihan teknik salutan mengikut jenis produk dan peralatan yang digunakan dalam proses kemasiapan ditumpukan. Kecacatan kemasan dan cara pemulihan dibincangkan

This course encompasses various types of coating and surface lamination of wood products. Selection of coating technique according to types of wood products and equipment used in finishing process are emphasized. Finishing defects and remedial measures are discussed

FHH4202 Penambahbaikan Mutu Kayu/ *Wood Quality Improvement* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi kelemahan kayu sebagai bahan mentah dan faktor yang mempengaruhinya. Prinsip dan kaedah rawatan untuk meningkatkan mutu kayu, serta penilaian prestasi ke atas kayu terawat ditumpukan. Perkembangan terkini dalam peningkatan mutu kayu dibincangkan

This course encompasses the disadvantages of wood as raw material and factors which influences its quality. Principles and methods of treatments to enhance wood quality, and analyse the performance of the treated wood are emphasized. Latest development on wood quality enhancement are discussed

FHH4203 Biokomposit Termaju/ *Advanced Biocomposite* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi teknik dan pemprosesan pelbagai jenis biokomposit termaju berdasarkan aplikasi akhir yang bersesuaian. Kepelbagaian gentian (semulajadi dan sintetik), jenis pengikat (resin dan matrik) dan alat pemprosesan ditekankan. Penilaian sifat fizik dan mekanik, kecacatan pembuatan serta kawalan kualiti dibincangkan

This course encompasses various technique and processes of advanced biocomposites based on suitable end applications. Variabilty of fibers (natural and synthetic), type of binders (resin and matrix) and processing equipment are emphasized. Evaluation of physical and mechanical properties, manufacturing defects as well as quality control are discussed

FHH4301 Pencemaran Dan Kawalan Dalam Industri Hutan/ *Pollution and Control in Forest Industries* **3 (3+0)**

Prasyarat : Tiada

Kursus ini merangkumi jenis pencemaran dalam industri huluan dan hiliran hutan. Kaedah rawatan yang sesuai dalam menangani masalah, kadar pencemaran dan rawatan yang digunakan dalam industri hutan ditekankan. Isu pencemaran dan kepentingan keselamatan dan kesihatan dalam industri berasas kayu dibincangkan

This course encompasses the types of pollution associated with upstream and downstream forest industries. Treatment methods that used in forest industries are emphasized. Pollution issues and importance of safety and health in the wood-based industries are discussed

FHH4302 Sistem Pengawalan Mutu Pemprosesan Kayu/ *Wood Processing Quality Control System* **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi pengurusan kualiti dalam industri produk kayu. Kualiti bahan mentah, proses pembuatan dan produk akhir ditumpukan. Kaedah kualiti pengurusan kualiti secara statistik dan kaedah pengawalan mutu yang digunakan dalam industri produk kayu dipraktikkan

This course encompasses the quality management in the wood products industry. Quality of raw materials, manufacturing process and final products are emphasized. Aspects of statistical quality control and quality control method used in the wood products industry are practiced

FHH4303 Pengurusan Dan Penggunaan Sisa Kayu/ *Wood Waste Management and Utilisation* **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi pengkelasan dan pengumpulan sisa kayu daripada industri perkayuan dan industri lain yang menggunakan bahan kayu. Konsep kitar semula dalam pembuatan pelbagai jenis produk berasaskan kayu ditekankan. Impak industri kitar semula terhadap bekalan kayu dan alam sekitar dibincangkan

This course encompasses the classification and the collection of wood waste material wood industries and other wood using industries. Concept of recycle and fabricating various types of wood-based products are emphasized. Wood recycling industry impact towards wood supply and environment are discussed

FHH4304 Pengurusan Industri Perhutanan/ *Forest Industry Management* **3 (3+0)**

Prasyarat : Tiada

Kursus ini merangkumi prinsip serta aktiviti dalam mengurus sesebuah organisasi. Pengurusan sumber manusia, pengeluaran, pemasaran dan kewangan serta perkaitannya dengan pengurusan sesebuah organisasi dalam industri berasas kayu ditumpukan. Isu yang berkaitan dengan pengurusan industri berasas kayu di Malaysia dibincangkan.

This course encompasses the principles and activities in managing an organization. Management of human resources, production, marketing and finance, and its relation to the management of an organization in the wood-based industry are emphasized. Issues related to the management of the wood-based industry in Malaysia are discussed

FHH4305 Perdagangan Kayu Antarabangsa/ International Timber Trade 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi sumber hutan dunia dan teori serta amalan perdagangan kayu antarabangsa. Permintaan, penawaran dan kaedah menganalisis perdagangan kayu antarabangsa ditekankan. Isu semasa berkaitan dengan perdagangan kayu tropika dibincangkan.

This course encompasses the world forest resources and theory as well as practices in international timber trade. Supply, demand and analysis of international timber trade are emphasized. Current issues on tropical timber trade are discussed.

FHS4903 Latihan Industri/ *Industrial Training* 8 (0+8)

Prasyarat : Tiada

Melalui kursus ini, pelajar didedahkan kepada persekitaran kerja yang sebenar di industri/organisasi. Latihan merangkumi aspek aplikasi teori dan praktikal yang telah dipelajari dengan amalan semasa di tempat kerja. Kemahiran menyelesaikan masalah dan komunikasi turut diberi penekanan.
In this course, students are exposed to real working environment in industries/organizations. Training includes application of the theoretical and practical aspects that have been studied with current practices in the workplace. Problem solving and communication skills are also emphasized

FHS4904 Kem Perhutanan/ *Forestry Camp* 2 (0+2)

Prasyarat : Tiada

Kursus ini meliputi pendedahan awal kepada pelajar berkenaan kepentingan ekosistem hutan kepada masyarakat dan negara. Pelajar juga dilatih dengan pelbagai kemahiran perhutanan di lapangan, di samping membentuk sahsiah dan nilai dalam diri pelajar.
This course covers early exposure to the students on the importance of forest ecosystem towards the society and nation. Students are also trained with various forestry skills in the field, as well as developing students' character and values

FHS4959A/FHS4959B Disertasi Bacelor/ *Bachelor Dissertation* 6 (0+6)

Prasyarat : Tiada

Kursus ini merangkumi penyediaan cadangan, pelaksanaan dan penulisan saintifik untuk sesuatu projek penyelidikan. Pendekatan saintifik bagi menjana data secara sistematik melalui rekabentuk, pengumpulan dan analisis data yang sesuai diberi penekanan

This course covers the preparation of proposal, implementation and scientific writing of research project. Scientific approach to generate data systematically through appropriate design, data collection and analysis are emphasized

Jabatan Taman Alam dan Rekreasi/ *Department of Nature Parks and Recreation*

FHR3101 Pengenalan Kepada Rekreasi Luar/Introduction to Outdoor Recreation **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi konsep asas kesenggangan, rekreasi luar dan ekopelancongan. Hubungkait antara sumber, pengguna dan pengurusan rekreasi dibincangkan. Skop, pembangunan dan profesionalisme industri rekreasi dan ekopelancogan ditekankan.

This course covers the basic concepts of leisure, outdoor recreation and ecotourism. The relationship between recreation resource, consumer and management are discussed. Scope, development and professionalisme in the recreation and ecotourism industry are emphasised.

FHR3102 Ekologi Sumber Rekreasi/Recreation Resource Ecology **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi impak oleh pengguna ke atas sumber dan ekosistem kawasan rekreasi. Kepentingan ukuran impak di dalam pengurusan sumber rekreasi dibincangkan. Kaedah pengurusan impak di kawasan rekreasi juga ditekankan

This course covers the impacts of user towards the resources and ecosystem in recreational areas. The importance of impact measurement in recreational resources management is discussed. Methods on impact management at recreational areas are emphasised.

FHR3201 Kemahiran Rekreasi Luar/Outdoor Recreation Skills **3 (1+2)**

Prasyarat : Tiada

Kursus ini merangkumi teknik asas dalam mengendalikan aktiviti rekreasi luar. Perancangan dan pengurusan pengendalian aktiviti kemahiran rekreasi luar dibincangkan. Pelaksanaan aktiviti kemahiran rekreasi luar ditekankan

This course covers the basic technique in handling outdoor recreation activities. Planning and management of outdoor recreational skills activities handling is discussed. Implementation of outdoor recreational activities are emphasised.

FHR3202 Inventori Sumber Taman Dan Rekreasi/ *Park and Recreation Rescouces Inventory* **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi prinsip dan kaedah inventori sumber semula jadi. Penggunaan peralatan untuk inventori dibincangkan. Penggunaan teknik inventori, pengumpulan data dan menganalisa sumber taman dan rekreasi ditekankan.

This course covers principles and methods of natural resources inventory. Utilisation of equipments for inventory is discussed. Application of inventory techniques, data collection and analysis of parks and recreation resource are emphasised.

FHR3203 Interpretasi Persekitaran/ *Environmental Interpretation* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi teori dalam mengaplikasikan program interpretasi persekitaran. Demonstrasi teknik interpretasi terhadap kumpulan sasaran tertentu dibincangkan. Keberkesanan kaedah penyampaian interpretasi persekitaran melalui kemahiran komunikasi sehala ditekankan

This course covers the theory in the application of environmental interpretation program. Demonstration of interpretational techniques towards specific target groups are discussed. The effectiveness of the delivery methods of environmental interpretation through one-way communication skills are emphasised

FHR3204 Perancangan Rekreasi Luar/*Outdoor Recreation Planning* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi konsep perancangan di dalam pembangunan sumber rekreasi luar. Analisis untuk pembangunan pelan rekreasi luar dibincangkan. Kaedah penganggaran permintaan dan penawaran sumber rekreasi luar ditekankan.

This course covers planning consept in developing outdoor recreation resource. Analysis for outdoor recreation 85mphasized85 plan is discussed. Demand and supply estimation approaches in outdoor recreation resource are 85mphasized.

FHR3205 Operasi dan Senggaraan Taman/*Park Operation and Maintenance* 2 (1+1)

Prasyarat : Tiada

Kursus ini merangkumi prinsip operasi dan teknik senggaraan taman. Kaedah penyelenggaraan taman melalui perancangan dibincangkan. Pendekatan dalam membina pelan operasi dansenggaraan taman ditekankan.

This course covers the principles of park operation and maintenance. Method of park maintenance through planning is discussed. Approaches in developing park operation and maintenance plans are emphasised

FHR3301 Pengurusan Risiko Dalam Rekreasi/Risk Management in Recreation 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi prinsip pengurusan risiko bagi setiap aktiviti rekreasi dalam persekitaran taman. Kewujudan elemen risiko di dalam aktiviti rekreasi dibincangkan. Kepentingan pelan pengurusan risiko dalam pengendalian aktiviti rekreasi ditekankan.

This course covers the principles of risk management for each recreation activity in a park setting. The existence of risk elements in recreational activities are discussed. The importance of risk management plans to control recreational activities are emphasised.

FHR3503 Keusahawanan dalam Taman Dan Rekreasi/Entrepreneurship in Parks and Recreation 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi kepelbagaian peluang perniagaan dalam bidang pengurusan taman dan rekreasi. Penyediaan pelan perniagaan berdasarkan kehendak semasa pengguna taman dan rekreasi dilatih. Projek perniagaan berdasarkan pelan perniagaan yang telah dibangunkan

dilaksanakan.

This course encompasses the diversity of business oppurtunities in parks and recreation management. Preparation of business plan according to the current demands of users in parks and recreation is trained. Business project based on developed business plan is conducted.

FHR3302 Pemprograman Dan Kepemimpinan Rekreasi/Recreation Programming and Leadership **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi konsep dan teknik kepemimpinan dalam merangka program rekreasi. Langkah dan teknik pemprograman aktiviti rekreasi dibincangkan. Pembangunan dan pelaksanaan program rekreasi bagi pelbagai kumpulan pengguna rekreasi ditekankan.

This course covers the concept and technique of leadership in designing recreation program. Programming techniques and approaches of recreation activities are discussed. Development and implementation of recreation programs for various recreational user groups are emphasised.

FHR3501 Perilaku Pengguna Rekreasi/Recreational User Behaviour **3 (3+0)**

Prasyarat : Tiada

Kursus ini merangkumi konsep asas perilaku pengguna dalam rekreasi. Masalah perilaku pengguna di kawasan taman dan rekreasi dibincangkan. Teori perilaku pengguna melalui kajian kes ditekankan.

This course covers the basic concept of consumer behaviour in recreation. Consumer behaviour problems in parks and recreation are discussed. The theory of consumer behaviour through case study is emphasised.

FHR3502 Perancangan dan Rekabentuk Tapak Kawasan Rekreasi/ Recreation Site Planning and Design **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi konsep rekabentuk dan kemudahan rekreasi di dalam persekitaran semula jadi. Langkah pelaksanaan pelan tapak rekreasi dan asas reka bentuk kemudahan rekreasi ditekankan.

This course encompasses the design and recreational facilities concepts in a natural environment. The process of planning a recreation area and fundamental design of recreational are emphasized.

FHR3504 Pengurusan dan Operasi Prasarana Rekreasi/Recreational Facilities Operation and Management **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi konsep pengurusan dan operasi kem berasaskan program rekreasi. Keperluan pelan pengurusan, pentadbiran dan operasi kem dibincangkan. Proses yang terlibat

di dalam pengurusan kem berasaskan rekreasi luar ditekankan.

This course covers concepts of management and operation of recreational based camp. The requirements of camp management, administration and operation are discussed. The processes involved in outdoor recreational camp are emphasised.

FHR3505 Pengurusan Hidupan Liar dalam Rekreasi/Wildlife Management in Recreation **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi konsep dan pengkelasan hidupan liar. Pengurusan dan pemuliharaan hidupan liar dalam konteks rekreasi dibincangkan. Penggunaan kaedah konservasi hidupan liar di dalam mengorganisasi program rekreasi ditekankan.

This course covers the concept and classification of wildlife. Management and conservation of wildlife in the context of recreation are discussed. The utilisation of wildlife conservational methods in organising recreational programme is emphasised.

FHR3506 Rekreasi Terapeutik bagi Golongan Istimewa/*Therapeutic Recreation for Special People* **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi prinsip terapeutik dalam pemprograman rekreasi bagi golongan istimewa. Keperluan kemahiran khusus mengendali program rekreasi terapeutik dibincangkan. Aplikasi bagi rekreasi terapeutik yang bersesuaian dengan golongan istimewa ditekankan.

This course covers therapeutic principles in recreation programming for special group. The need for special skills in conducting therapeutic recreation programme is discussed. Applications of appropriate therapeutic recreation with special groups are emphasised.

FHR3507 Hospitaliti Dalam Taman dan Rekreasi/Hospitality in Parks and Recreation) **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi konsep hospitaliti di dalam persekitaran rekreasi. Kualiti perkhidmatan kepada pelbagai kumpulan pengguna rekreasi dibincangkan. Pelbagai prosedur dan aktiviti perkhidmatan hospitaliti ditekankan.

This course covers the concept of hospitality in recreational setting. Service quality towards various recreational user is discussed. Various hospitality service procedures and activities are emphasised.

FHR4301 Penilaian Sumber Rekreasi/*Recreation Rescource Valuation* **4 (4+0)**

Prasyarat : Tiada

Kursus ini merangkumi teori dan konsep asas ekonomi di dalam penilaian faedah dan kos daripada rekreasi dan ekopelancongan. Kesejahteraan individu dan masyarakat serta kemampanan alam semulajadi dibincangkan. Pembuatan keputusan penggunaan sumber rekreasi dengan mengaplikasi teknik penilaian sumber rekreasi dan ekopelancongan ditekankan.

This course covers the fundamental theory and concepts of economics in the valuation of the benefits and cost from recreation and ecotourism. Individual and community well-being along with environmental sustainability are discussed. Decision making towards recreational resource consumption by applying recreational and ecotourism valuation techniques is emphasised.

FHR4302 Kaedah Penyelidikan Dalam Rekreasi Dan Ekopelancongan/ *Research Method in Recreation and Ecotourism* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi kaedah penyelidikan dalam menyelesaikan masalah di dalam bidang rekreasi dan ekopelancongan. Pengajaran menekankan teknik-teknik persampelan, pengukuran dan prosedur statistik yang sesuai di dalam menyelesaikan masalah. Penentuan pendekatan rekabentuk penyelidikan yang sesuai di dalam sektor rekreasi dan ekopelancongan dibincangkan.

This course covers research methods in solving problems in recreation and ecotourism field. The teaching emphasises on sampling techniques, measurements and suitable statistical procedure in problem solving. Determination of suitable approaches of research design in recreation and ecotourism is discussed.

FHR4401 Pengurusan Taman Dan Rekreasi/Parks and Recreation Management 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi prinsip dan amalan pentadbiran dan organisasi yang efektif di dalam bidang taman dan rekreasi. Hubungkait pentadbiran dan organisasi di dalam institusi awam dan swasta dibincangkan. Kajian kes mengenai dasar dan amalan organisasi taman dan rekreasi ditekankan

This course covers the principles and practices of effective administration and organization in the field of parks and recreation. The relationships of administrative and organizational concepts in the public and private institutions are discussed. Case studies on policies and practices of parks and recreation organisations are emphasised.

FHR4402 Pengurusan Pelancongan Warisan dan Komuniti/Heritage and Community Tourism Management 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi hubungkait aspek warisan dan komuniti dalam konteks industri pelancongan. Pembangunan produk pelancongan warisan berasaskan komuniti dibincangkan. Kepentingan memelihara sumber warisan untuk tujuan industri pelancongan ditekankan.

This course covers the relationship of heritage and community aspects within the context of tourism industry. Development of community-based heritage tourism products is discussed. The importance of preserving heritage resources for tourism purposes are emphasised.

FHR4501 Pendidikan Alam Semulajadi/Environmental Education 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi perkaitan pendidikan alam semulajadi dengan masalah persekitaran yang dihadapi oleh masyarakat. Program pendidikan alam semulajadi dirancang dan dilaksanakan. Kesedaran masyarakat terhadap pendidikan alam semulajadi ditekankan.

This course covers the relationship between environmental educational and environmental problems faced by society. Environmental educational programs are planned and implemented. Community awareness towards environmental educational is emphasised.

FHR4503 Pengurusan Ekopelancongan/Ecotourism Management 3 (2+1)

Prasyarat :Tiada

Kursus ini merangkumi maksud dan konsep pengurusan ekopelancongan. Pengajaran menumpukan kepada perkhidmatan ekopelancongan berasaskan komuniti tempatan. Amalan pengurusan perkhidmatan ekopelancongan terbaik ditekankan

This course covers the meaning and concept of ecotourism management. Teaching focuses on ecotourism services based on local communities. The best management practices in ecotourism services are emphasised.

FHR4504 Pembangunan Produk Rekreasi/Development of Recreation Products 3 (2+1)

Prasyarat :Tiada

Kursus ini merangkumi konsep gelagat pengguna, dalam pembangunan produk rekreasi dan pengkomersialan produk. Pengurusan kewangan dalam industri rekreasi ditekankan

This course covers concept of consumer behaviour in the development of recreational products and product commercialization. Financial management in the recreation industry is emphasised.

FHR4502 Pemasaran Rekreasi/Recreation/Marketing 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi konsep dan teknik pemasaran produk rekreasi. Strategi pemasaran untuk produk rekreasi dan ekopelancongan dibincangkan. Kaedah promosi untuk produk rekreasi dan ekopelancongan ditekankan

This course covers the concepts and techniques of marketing recreation products. The marketing strategy for recreation and ecotourism products are discussed. Promotional methods for recreation and ecotourism products are emphasised.

FHR4903 Latihan Industri/Industrial Training 8 (0+8)

Prasyarat : Tiada

Melalui kursus ini, pelajar didedahkan kepada persekitaran kerja yang sebenar di industry/organisasi. Latihan merangkumi aspek aplikasi teori dan praktikal yang telah dipelajari dengan amalan semasa di tempat kerja. Kemahiran menyelesaikan masalah dan komunikasi turut diberi penekanan.

Students are exposed to real working environment in industry/organizations. Training includes application of the theoretical and practical aspects that have been studied with current practices in the workplace. Problem solving and communication skills are also emphasized.

FHR4608 Pengurusan Kawasan Perlindungan/Protected Areas Management 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi konsep dan prinsip pengurusan kawasan perlindungan. Proses penubuhan, perundangan dan penglibatan komuniti dalam pengurusan kawasan perlindungan dibincangkan. Menghasilkan pelan pengurusan dan pemantauan kawasan perlindungan tertentu

This course covers concept and principles of protected area management. Establishment process, legislation and community engagement in protected areas is discussed. Development of a protected area management and monitoring plan for a specific area.

FHM3102 Pengenalan kepada Sains Perhutanan 3 (3+0)

Prasyarat : Tiada

Kursus ini memperkenalkan pelajar kepada prinsip asas sains perhutanan dan kepentingannya. Pengajaran menumpu kepada jenis, ekosistem dan pengurusan hutan, serta industry perhutanan. Pelajar juga akan didedahkan kepada isu perhutanan semasa di peringkat tempatan dan global.

This course introduces student to the basic principles of forest science and its importance. The teaching focuses on forest types, ecosystem, and management, as well as forest industries. Students will also be exposed to forestry issues at the local and global levels.

FHM3209 Arborikultur/Arboriculture 3 (2+1)

Prasyarat : Tiada

Kursus ini mendedahkan kepada teori dan konsep arborikultur terutamanya pengurusan dan penyelenggaraan pokok di Kawasan bandar. Konsep asas biologi dan fisiologi pokok, pemilihan tapak dan spesis, penanaman dan pemangkasan, kesihatan dan penyakit pokok dibincangkan. Aspek profesionalisme dalam pengurusan pokok bandaran melalui amalan terbaik dan pensijilan arboris ditekankan.

This course covers the theory and concept of arboriculture especially on the management and maintenance of trees in urban areas. Basic conncept of tree biology and physiology, site and species selection, tree planting and pruning, tree health and diseases are discussed. Professionalisme aspect in urban tree management through best management practices and arborist certification are emphasized.

FHM3103 Botani Hutan/ Forest Botany 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi dendrologi dalam perhutanan dan taksonomi tumbuhan. Morfologi untuk pengecaman tumbuhan Gimnosperma dan Angiosperma ditumpukan. Nilai kepelbagaian tumbuhan dan habitatnya dibincangkan.

This course encompasses dendrology in forestry and plant taxonomy. Morphological characters for identification of Gymnosperm and Angiosperm are emphasized. Value of diversities of plants and its habitats are discussed

FHM3112 Kaedah Kuantitatif dalam Perhutanan/Quantitative Method in Forestry 4 (3+1)

Prasyarat : Tiada

Kursus ini merangkumi pemerihalan dan analisis data parametrik dan bukan parametrik dalam perhutanan. Penekanan diberikan kepada pola pembolehubah rawak dan taburan umum parametrik. Teknik persampelan, rekabentuk ujikaji, ralat ujikaji, korelasi dan regresi linear dibincangkan.

This course covers parametrics and non-parametrics of data description and analysis in forestry. The pattern of random variables and some common distributions of parameters are emphasized. Sampling techniques, experimental designs, experimental errors, correlations and linear regressions are discussed.

FHM3102 Botani Hutan/ Forest Botany 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi dendrologi dalam perhutanan dan taksonomi tumbuhan. Morfologi untuk pengecaman tumbuhan Gimnosperma dan Angiosperma ditumpukan. Nilai kepelbagaian tumbuhan dan habitatnya dibincangkan.

This course encompasses dendrology in forestry and plant taxonomy. Morphological characters for identification of Gymnosperm and Angiosperm are emphasized. Value of diversities of plants and its habitats are discussed

FHM3301 Pengurusan Hutan/*Forest Management* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi fungsi dan kepentingan pengurusan hutan secara berkekalan di Malaysia. Amalan dan piawaian pengurusan hutan antarabangsa berkaitan dengan hasil berkekalan, giliran dan pusingan tebangan, pengendalian stok, hasil dan kawalan tebangan berkaitan sistem pengurusan hutan di Malaysia dibincangkan. Penekanan diberi kepada keperluan pensijilan hutan dan pengesahan produk kayu dari sumber yang berkekalan.

This course covers the functions and importance of sustainable 220 forest management in Malaysia. The principles and standard of international forest management related to the sustainable yield, rotation and cutting cycle, the manipulation of growing stock, yield, and regulation of fellings related to forest management system in Malaysia are discussed. Forest certification and verification of forest products from sustainable forest are emphasized.

FHS4904 Kem Perhutanan/ *Forestry Camp* 2 (0+2)

Prasyarat : Tiada

Kursus ini meliputi pendedahan awal kepada pelajar berkenaan kepentingan ekosistem hutan kepada masyarakat dan negara. Pelajar juga dilatih dengan pelbagai kemahiran perhutanan di lapangan, di samping membentuk sahsiah dan nilai dalam diri pelajar.

This course covers early exposure to the students on the importance of forest ecosystem towards the society and nation. Students are also trained with various forestry skills in the field, as well as developing students' character and values

Jabatan Alam Sekitar/ *Department of Environment*

EMG3008 Pengenalan Kepada Sistem Semulajadi/ *Introduction To Natural Systems* 3(3+0)

Prasyarat : Tiada

Kursus ini merangkumi konsep dan prinsip asas sains alam sekitar dan sistem semulajadi. Pendekatan biologi dan geografi termasuk kitaran biogeokimia sebagai komponen asas ekosistem yang menyumbang kepada kepelbagaian biologi ditekankan. Proses fizikal bumi yang mempengaruhi fungsi sumber asli persekitaran bumi dititikberatkan.

This course covers the concept and basic principles of environmental science and natural system. The biological and geographical approaches in biogeochemical cycles, which form the basic components of ecosystems and contribute towards biological diversity are emphasize. The earth's physical processes influencing the functions of natural resources are stressed.

EMG3010 Pengurusan Kualiti Alam Sekitar/ *Environmental Quality Management* 3 (3+0)

Prasyarat: Tiada

Kursus ini merangkumi aspek pengurusan kualiti alam sekitar dan kawalan pencemaran. Elemen kesihatan dan risiko alam sekitar ditumpukan. Pemantauan dan teknologi kawalan serta perawatan bahan cemar, termasuk kesan perubahan iklim ditekankan.

This course covers the management aspect of environmental quality and pollution control. Environmental health and risk elements are highlighted. Pollutant monitoring as well as control and treatment technology including global warming effects are emphasized.

EMG3105 Pengurusan Sumber Alam/ Natural Resource Management 2 (2+0)

Prasyarat : Tiada

Kursus ini merangkumi pengenalan kepada bidang pengurusan sumber alam. Sumber alam termasuk sumber yang boleh diperbaharui dan tidak boleh diperbaharui seperti tanah, hutan, air, perikanan dan hidupan liar, tenaga dan mineral diterangkan. Pendekatan dan kaedah pengurusan sumber asli juga diperkenalkan. Isu semasa yang berkaitan dengan pemuliharaan dan pengurusan sumber asli ditekankan.

This course covers basic introduction to the field of natural resources management. Natural resources include both renewable and non-renewable resources such as soil, forests, water, fisheries and wildlife, energy and minerals. Natural resource methods and management are also introduced. Current issues dealing with the conservation and management of natural resources are emphasized.

EMG3203 Pengenalan Perancangan Alam Sekitar/ *Introduction To Environmental Planning* **3 (3+0)**

Prasyarat: Tiada

Kursus ini merangkumi prinsip asas dan teori asas perancangan serta pelbagai kaedah perancangan terkini. Aspek perancangan fizikal seperti kajian pelan induk, pelan tempatan, pelan strategik dan penggunaan piawaian perancangan diperkenalkan. Hubungkait antara perancangan, pengurusan, pemuliharaan alam sekitar dan Sistem Maklumat Geografi ditekankan.

This course covers the basic principles and theories of planning as well as various recent planning methods and techniques. Physical planning aspects such as structure plans, local plans, strategic plans and planning standards are introduced. The relationships between planning, management, environmental conservation, rehabilitation and Geographic Information Systems are emphasised.)

EMG3204 Studio Perancangan Alam Sekitar I/ *Environmental Planning Studio I* **3 (0+3)**

Prasyarat: Tiada

Kursus ini merangkumi konsep asas perancangan alam sekitar dan penggunaan kerja studio untuk menghasilkan pelan perancangan projek yang boleh digunapakai. Kaedah penderiaan jarak jauh dan perisian pemetaan untuk menganalisis isu perancangan serta pembentukan penyelesaiannya ditekankan.

This course covers the basic concept of environmental planning and the use of studio work in developing practical planning projects. Remote sensing methods and mapping software to analyse planning and development issues as well as forming their solutions are emphasized.

EMG3206 **Penilaian Kesan Alam Sekitar Dan Pelan Pengurusan Alam Sekitar/ *Environmental Impact Assessment And Environmental Management Plan*** **3 (3+0)**

Prasyarat : EMG3503 atau EMG3203

Kursus ini merangkumi pelaksanaan kaedah Penilaian Kesan Alam Sekitar (EIA) di dalam perancangan sesuatu projek atau tindakan. Penggunaan garis panduan pelaksanaan EIA bagi mengenal pasti, menganalisis serta melaporkan kekuatan dan kelemahan sesuatu projek didedahkan. Kaedah pelaporan berkaitan dengan tindakan mitigasi dan keperluan lain dalam mengurangkan impak kepada alam sekitar melalui laporan Pelan Pengurusan Alam Sekitar (EMP) ditekankan.

This course covers the implementation of the Environmental Impact Assessment (EIA) method in the planning of projects or actions. The adaptation of EIA implementation guidelines to identify, analyze and report the strengths and weaknesses of a project is exposed. Reporting methods related to mitigation actions and other requirements in reducing environmental impact through the Environmental Management Plan (EMP) report are emphasized.

EMG3302 **Ekonomi Dan Pengurusan Alam Sekitar/ *Environmental Economics And Management*** **3 (3+0)**

Prasyarat: ECN3010

Kursus ini merangkumi pendekatan ekonomi dalam mentafsir masalah alam sekitar dan menilai penyelesaian dasar. Kegagalan pasaran dan eksternaliti, serta penyelesaian lazim dan ekonomi untuk masalah alam sekitar ditumpukan. Pendekatan analisis risiko, analisis kos-faedah, kajian kes masalah alam sekitar, serta pendekatan untuk mencapai pembangunan mampan turut diterapkan.

This course covers the economic approach in assessing environmental problems and evaluating policy solutions. Market failure and externalities, as well as conventional and economic solutions to environmental problems are hghlighted. Risk analysis approaches, benefit-cost analysis, case studies in environmental problems, and approaches to achieve sustainable development are also covered.

EMG3303 **Pengurusan Dan Operasi Projek/ *Project Management And Operation*** **3 (3+0)**

Prasyarat: Tiada

Kursus ini merangkumi teori, teknik dan proses perancangan dan pengurusan projek di peringkat makro dan mikro, elemen pengurusan dan pengawalan kualiti projek. Analisis projek, teknik penilaian projek dan isu kontemporari dalam perancangan dan pembangunan projek ditekankan.

This course covers the theories, techniques and process of project planning and management both at the macro and micro levels, elements of management and the quality control of projects. Project analysis, techniques of project evaluation and contemporary issues on planning and project development are emphasized.

EMG3401 **Masyarakat, Etika Dan Alam Sekitar/ *Society, Ethics And The Environment*** **3 (3+0)**

Prasyarat: Tiada

Kursus ini merangkumi pertalian antara masyarakat dan isu alam sekitar masa kini. Peranan ekonomi, etika, undang-undang dan kerajaan dalam menyelesaikan masalah alam sekitar serta penglibatan masyarakat dalam pengurusan sumber dan pengawalan pencemaran ditekankan.

This course covers the relationship between society and current environmental issues. The roles of economy, ethics, law and government in solving environmental problems as well as the involvement of society in resource management and pollution control are emphasised.

EMG3503 **Pengenalan Kepada Undang-Undang Alam Sekitar/ *Introduction To Environmental Law*** **3 (3+0)**

Prasyarat: Tiada

Kursus ini merangkumi pengenalan kepada sistem perundangan di Malaysia mengikut Perlembagaan Persekutuan. Pelbagai prinsip dan undang-undang berkaitan kawalan pencemaran alam sekitar termasuk statut dan undang-undang lazim serta penguatkuasaan ditekankan. Perjanjian pelbagai-hala dan isu-isu alam sekitar di peringkat antarabangsa serta implikasi perundangannya dihuraikan.

This course comprises an introduction to the legal system in Malaysia according to the Federal Constitution. Various legal principles and laws related to environmental pollution control including statutes and Common Law as well as enforcement are emphasized. Multilateral agreements and issues pertaining to environment at the international level and their legal implications are elaborated.

EMG3802 **Pengenalan Kepada Kerja Lapangan Pengurusan Alam Sekitar/ *Introduction To Environmental Management Fieldwork*** **3 (1+2)**

Prasyarat: Tiada

Kursus ini merangkumi kaedah dan teknik penyelidikan berkaitan sains dan sains sosial alam sekitar di lapangan. Prosedur pengendalian dan penggunaan peralatan lapangan dan makmal bagi tujuan pengumpulan data alam sekitar didedahkan. Penyelesaian kepada isu alam sekitar berdasarkan data yang dikumpul ditekankan.

This course covers research methods and techniques related to environmental science and social science in the field. Operating procedure and use of field and laboratory equipment for environmental data collection are exposed. Solutions to environmental issues based on the collected data are emphasized.

EMG4102 **Sistem Pengurusan Kualiti Alam Sekitar/ *Environmental Quality Management Systems*** **3 (3+0)**

Prasyarat: Tiada

Kursus ini merangkumi isu berkaitan dengan perdagangan, pembangunan dan alam sekitar serta peranan pengguna, masyarakat, sektor industri dan pihak kerajaan dalam peningkatan kualiti alam sekitar. Piawaian sistem pengurusan alam sekitar, penggunaan an impak piawaian antarabangsa seperti siri ISO 14000 berkaitan pengurusan alam sekitar akan diperkenalkan.

This course covers issues related to trade, environment and development and the roles of consumers, communities, industries and governments in enhancing environmental quality. The environmental management system standards, their application and impacts of international standards such as ISO 14000 series related to environmental management will be introduced.

EMG4206 **Studio Perancangan Alam Sekitar Ii/ *Environmental Planning Studio II*)** **3 (3+0)**

Prasyarat: EMG3203 dan EMG3204

Kursus ini merangkumi aspek strategik dan kepelbagaian disiplin yang diperlukan dalam perancangan alam sekitar yang luas termasuk Rancangan Pembangunan Negara (RPN) bagi pembentukan pembangunan bandar dan desa secara komprehensif atau sebagai kajian pengurusan sumber. Input saintifik, teknik penyelidikan, interaksi ekologi, sosial, ekonomi serta aspek budaya ditumpukan. Penggunaan kaedah penderiaan jauh dan perisian pemetaan ditekankan.

This course covers the strategic and multi-disciplinary nature of broad scale environmental planning including National Physical Plan (NPP) for shaping comprehensive urban and rural development or as a resource management study. Scientific inputs and research techniques, interaction of ecological, social, economic and cultural aspects are highlighted. Remote sensing methods and mapping software techniques are emphasized.

EMG4301 **Penilaian Sumber Asli Dan Perkhidmatan Ekosistem/ *Ecosystem Services And Natural Resource Valuation*** **3 (3+0)**

Prasyarat : Tiada

Kursus ini merangkumi pendekatan ekonomi dalam penilaian sumber asli dan perkhidmatan ekosistem. Pelbagai kaedah, teknik dan pengggunaan perisian ekonomi untuk menilai sumber asli dan perkhidmatan ekosistem ditekankan. Pengukuran kebajikan, kajian kes yang berkaitan dengan masalah pengurusan sumber asli, dan juga pendekatan untuk mencapai kemampanan alam sekitar dibincangkan.

This course covers the economic approach in the valuation of the ecosystem services and natural resources. Various methods, techniques and the use of economic software to value the ecosystem services and natural resources are emphasized. Welfare measurements, case studies related to natural resources management problems, and approaches to achieve environmental sustainability are discussed.

EMG4804 **Kerja Lapangan Bersepadu Pengurusan Perancangan Alam Sekitar/ *Integrated Environmental Management Planning Fieldwork*** **3 (0+3)**

Prasyarat : Tiada

Kursus ini merangkumi kaedah penyelidikan melalui kerja lapangan dengan penglibatan daripada komuniti setempat bagi menyelesaikan isu alam sekitar yang dihadapi. Kaedah perlaksanaan kajian dan pelaporan penilaian kesan alam sekitar ditekankan.

This course covers research methods through fieldwork with the involvement of the local community to solve the encountered environmental issue. Methods of conducting the research and reporting the environmental impact assessment are emphasized.

EMG4902 **Kaedah Penyelidikan Untuk Pengurusan Alam Sekitar/ *Research Methodologies For Environmental Management*** **3 (2+1)**

Prasyarat: Tiada

Kursus ini merangkumi kaedah asas penyelidikan secara kualitatif dan kuantitatif untuk pengurusan alam sekitar. Permasalahan kajian, hipotesis, dan objektif kajian serta sorotan kajian berdasarkan isu alam sekitar diperincikan. Aplikasi teori penyelidikan untuk pembentukan kertas cadangan penyelidikan pengurusan alam sekitar ditekankan.

This course covers basic methods of qualitative and quantitative research for environmental management. Research problem, hypotheses, research objectives and the literature review based on identified environmental problem are detailed out. Applications of research theory in developing environmental management research proposal are emphasized.

EMG4991 **Teknik Seminar Pengurusan Alam Sekitar/ *Environmental Management Seminar Techniques*** **2 (1+1)**

Prasyarat: Tiada

Kursus ini merangkumi teknik pembentangan seminar termasuk persembahan, isi, persiapan, alat pandang dengar dan perisian persembahan. Pemilihan isu semasa alam sekitar yang bersesuaian ditumpukan. Pengurusan seminar isu semasa alam sekitar yang berkesan ditekankan.

This course provides training for students in the proper use of seminar presentation techniques including presentation, content, preparation, audio visual equipment and seminar presentation software. Selection of relevant current environmental issues are highlighted. Effective seminar management on current environmental issues is emphasized.

EMG4959 **Disertasi Bacelor / *Bachelor Disertation*** **6 (0+6)**

Prasyarat: Tiada

Kursus lni merangkumi penyediaan cadangan, pelaksanaan dan penulisan saintifik untuk sesuatu projek penyelidikan. Pendekatan saintifik bagi menjana data secara sistematik melalui rekabentuk, pengumpulan dan analisis data yang sesuai diberi penekanan.

This course covers the preparation of proposal, implementation and scientific writing of research project. Scientific approach to generate data systematically through appropriate design, data collection and analysis are emphasized.)

EMP4901 **Latihan Industri/ *Industrial Training*** **12 (0+12)**

Prasyarat: Tiada

Kursus ini merangkumi keperluan untuk pelajar menjalani latihan amali di agensi awam atau syarikat swasta selama 24 minggu. Semasa menjalani latihan ini, pelajar dapat menimba pengetahuan bagaimana agensi awam atau swasta menguruskan isu yang berkaitan dengan alam sekitar dari berbagai aspek.

This course covers the need for students to undergo practical training at public agencies or private companies for a period of 24 weeks. During the training period, the students will develop knowledge and practical experience on how public agencies or private companies deal with issues related to the environment from different aspects.

ECN3010 **Prinsip Ekonomi/ *Principles Of Economics*** **3 (3+0)**

Prasyarat: Tiada

Kursus ini merangkumi teori asas mikroekonomi dan makroekonomi. Hubungan di antara teori dan isu ekonomi ditekankan.

This course covers the fundamental theories of microeconomics and macroeconomics. The relationship between theories and economic issues are emphasized.)

EMG3003 **Sistem Maklumat Alam Sekitar/ *Environmental Information Systems*** **3 (2+1)**

Prasyarat: Tiada

Kursus ini merangkumi pengenalpastian sumber maklumat alam sekitar, kaedah pengumpulan dan pengurusan pangkalan data, mencari dan membentangkan maklumat. Pengurusan pangkalan data melalui penggunaan program komputer diperkenalkan.

This course covers identification of sources of environmental information, methods of collecting, abstracting and presenting information, and database management. Database management using computers programs are also introduced.

EMG3007 **Kaedah Kuantitatif Untuk Pengurusan Alam Sekitar/ *Quantitative Methods For Environmental Management*** **3 (1+2)**

Prasyarat: Tiada

Kursus ini merangkumi kaedah kuantitatif untuk menganalisis data pengurusan alam sekitar dengan memberi tumpuan kepada teori dan amali asas matematik dan statistik. Pengumpulan data kajian kuantitatif dalam isu pengurusan alam sekitar ditekankan. Pengiraan data kuantitatif dalam projek penyelidikan pengurusan alam sekitar dititikberatkan.

This course covers the quantitative methods used for data analysis in environmental management, with emphasis on the theories and practical of basic mathematics and statistics. Quantitative data collection for environmental management issues is emphasized. Quantitative data computation in environmental management research project is highlighted

EMG3011 **Kemampanan Dan Kemasyarakatan/ *Sustainability And Society*** **2 (2+0)**

Prasyarat: Tiada

Kursus ini merangkumi konsep dan prinsip pembangunan secara mampan. Perkaitan antara perancangan pembangunan fizikal dan manusia dihurai daripada perspektif sosio-budaya, politik dan ekonomi. Peranan tadbir urus dan pendidikan dihuraikan.

This course covers the concept and principles of sustainable development. Relationship between human and physical planning development are discussed from the socio-cultural, political and economic perspectives. The role of governance and education are elaborated.

EMG3012 **Lukisan Pelan Dan Isometrik Dalam Pengurusan Alam Sekitar/ *Plan And Isometric Drawing In Environmental Management*** **3 (1+2)**

Prasyarat : Tiada

Kursus ini merangkumi konsep asas yang boleh diaplikasi dalam menguruskan alam sekitar. Teknik lakaran berkonsepkan 2D dan 3D dalam menggambarkan keadaan sesuatu persekitaran didedahkan. Pembangunan pelan berkenaan gambaran keadaan semasa persekitaran serta jangkaan perubahan keadaan persekitaran di masa hadapan ditekankan.

This course covers the basic concept that can be applied in managing the environment. Drawing techniques in the concept of 2D and 3D in describing the environment situation is exposed. The development of a plan that reflects the current situation of the environment and the expectation of future environmental changes is emphasized.)

EMG3103 **Pengurusan Kualiti Air Dan Udara / *Air and Water Quality Management*** **3 (3+0)**

Prasyarat: Tiada

Kursus ini merangkumi konsep asas mengenai pencemaran air dan udara. Teknologi dan sistem pengurusan yang digunakan untuk mengawal pencemaran air dan udara ditumpukan. Pelan tindakan strategik bagi pengurusan pencemaran air dan udara ditekankan.

This course covers the basic concepts of water and air pollution. Technologies and management systems used to control water and air pollution are highlighted.Strategic action plan for water and air pollution management is emphasized.

EMG3104 **Prinsip Pengurusan Sisa Pepejal / *Principles Of Solid Waste Management)*** **3 (3+0)**

Prasyarat: Tiada

Kursus ini merangkumi elemen fungsian dan analisis yang terlibat dalam sistem pengurusan sisa pepejal yang berkait dengan amalan semasa di Malaysia. Amalan terbaik melalui pengurusan sisa pepejal bersepadu bagi memperoleh sistem pengurusan yang lebih efisien dan mampan ditekankan.

This course covers functional elements and analysis that involved in solid waste management systems which related to the current practices in Malaysia. Best practices through integrated solid waste management to achieve a more efficient and sustainable management system are emphasized.

EMG3205 **Geografi Fizikal/ *Physical Geography*** **3 (3+0)**

Prasyarat: Tiada

Kursus ini merangkumi isu asas dalam geografi fizikal dan menganalisis implikasi perubahan fizikal bumi terhadap kemampanan. Interaksi global yang melibatkan sistem atmosfera, lautan, ekosistem dan geologi ditumpukan. Pengaruh proses global dan perubahan alam sekitar ke atas keadaan bentuk muka bumi, iklim dan bentuk landskap ditekankan.

This course covers the fundamental issues in physical geography and analyses the implications of physical features on sustainability. Global interactions involving the atmosphere, oceans, ecosystems, geologic and earth surface processes are highlighted. The influence of global processes and environmental changes on the nature of landforms, climate and landscapes are emphasized.

EMG3402 **Kaedah Penyelidikan Kualitatif untuk Alam Sekitar/ *Qualitative Research Methods for the Environment*** **4 (3+1)**

Prasyarat : Tiada

Kursus ini merangkumi pendekatan dan kaedah asas penyelidikan kualitatif alam sekitar termasuk kerangka teori dalam penyelidikan kualitatif alam sekitar. Tumpuan juga akan diberikan kepada latihan dalam kaedah umum pengumpulan data seperti temubual, pemerhatian dan analisis dokumen.

This course covers qualitative research methods in the field of the environment including theoretical framework in qualitative research. Emphasis will be given towards training in common data collection methods such as interviewing, observations and document analysis.

EMG4001 **Statistik Untuk Perancangan Dan Pengurusan Alam Sekitar/ *Statistics For Environmental Planning And Management*** **3 (2+1)**

Prasyarat: EMG3007

Kursus ini merangkumi penggunaan kaedah statistik untuk menganalisis dan interpretasi maklumat dalam perancangan dan pengurusan alam sekitar. Konsep dan aplikasi kaedah statistik didedahkan. Teknik memproses data, penyelesaian masalah dan interpretasi maklumat yang berkaitan dengan alam sekitar ditumpukan.

This course covers the application of statistical methods to the analysis and interpretation of information in environmental planning and management. Concepts and application of statistical methods are exposed. Data processing techniques, problem solving and interpretation of information related to the environment are emphasized.

EMG4105 Pengurusan Projek Dalam Sekitaran Terkawal/ *Management Of Projects In Controlled Environments* **3 (2+1)**

Prasyarat: EMG3303

Kursus ini merangkumi penggunaan dan aplikasi amalan terbaik dan pendekatan berasaskan proses untuk pengurusan pelbagai projek berkaitan alam sekitar. Kajian kes perniagaan, kumpulan pengurusan projek, kawalan, risiko dan kualiti ditumpukan.

This course covers the use and application of the best practice and process-based approaches for the management of all types of projects related to the environment. Business case studies, project management team, controls, risk and quality are emphasized.

EMG4106 Perubahan Alam Sekitar Dan Isu Semasa/ *Environmental Change And Current Issues* **2 (2+0)**

Prasyarat: Tiada

Kursus ini merangkumi sejarah perubahan alam sekitar dan isu semasa berkaitan kesan perubahan alam sekitar kepada manusia dengan menggunakan pendekatan sistem tadbir urus. Kesan aktiviti manusia ke atas bumi dan keadaan dinamik sistem alam sekitar ditekankan.

This course covers the historical changes of the environment and current issues relating to environmental changes affecting mankind using the governance approach. The impact of mankind on the earth and the dynamic nature of the environmental system are emphasized.

EMG4107 Pengurusan Pinggir Laut Dan Marin/ *Coastal And Marine Management* **3 (3+0)**

Prasyarat: Tiada

Kursus ini merangkumi pengurusan kawasan pinggir laut dan marin serta kesan pembangunan ke atas kawasan tersebut. Proses semulajadi dan antropogenik yang mempengaruhi kawasan dan kesannya dibincangkan. Amalan terbaik pengurusan dan kajian kes mengenai permasalahan kawasan pinggir laut dan marin ditekankan. Projek pengurusan pinggir laut dan marin yang berkaitan dilaksanakan.

This course covers coastal and marine area management and the impact of development on these areas. Natural and anthropogenic processes affecting the areas are discussed. Best management practices and case studies on the issues of coastal and marine areas are emphasized. Related coastal and marine management project is conducted.

EMG4202 Perancangan Pengangkutan/ *Transportation Planning* **3 (3+0)**

Prasyarat: Tiada

Kursus ini merangkumi sistem pengangkutan dan hubungannya dengan guna tanah di kawasan bandar dan desa. Teori aliran trafik dan implikasi pembangunan dan kegunaan tanah bagi kemudahan pengangkutan ditumpukan. Pengumpulan data, teknik penilaian dan teknik penentuan projek serta perancangan pengangkutan di samping kesannya dibincangkan.

This course covers transport systems and its relationship to land use in urban and rural areas. Traffic flow theory and the implications of development and various land use activities on transport facilities are highlighted. Data collection, evaluation and project appraisal techniques for transport planning and its effects are discussed.

EMG4203 **Perancangan Dan Pengurusan Alam Sekitar Gunaan/ *Applied Environmental Planning And Management*** **3 (2+1)**

Prasyarat: EMG3204

Kursus ini merangkumi konsep dan kaedah yang diamalkan dalam perancangan dan pengurusan alam sekitar. Kemahiran analisis untuk memilih pelan alternatif yang sesuai dan langkah-langkah penebatan untuk mengurangkan impak persekitaran ditekankan.

This course covers the concepts and methods practiced in environmental planning and management. Analytical skills in selecting appropriate alternative plans and mitigation measures to reduce environmental impacts are emphasized.

EMG4205 **Perancangan Respons Tumpahan Minyak/ *Oil Spill Response Planning*** **2 (2+0)**

Prasyarat: Tiada

Kursus ini merangkumi strategi dan isu yang terlibat dalam respons kepada insiden tumpahan minyak di laut. Fakta yang mempengaruhi perlakuan dan pergerakan minyak, serta impak terhadap jenis pantai dan ekosistem dihuraikan. Komponen pelan kontingensi dan langkah yang terlibat dalam pengurusan respons tumpahan minyak dibincangkan.

This course covers the strategies and issues involved in response to oil spills at sea. The factors which influence the behavior and movement of oil, including the impact on different types of shores and ecosystems are explained. The components of an oil spill contingency plan and steps involved in the management of oil spill responses are discussed.

EMG4401 **Geografi Manusia/ *Human Geography*** **3 (0+3)**

Prasyarat: Tiada

Kursus ini merangkumi pelbagai pendekatan dari aspek budaya, sosial, politik dan ekonomi terhadap geografi manusia. Cabaran yang dihadapi oleh masyarakat bagi menangani masalah alam sekitar turut dibincangkan.

The course covers multiple approaches towards human geography from cultural, social, political and economic aspects. Challenges facing society in dealing with environmental problems are discussed.

EMG4402 **Gender Dan Pengurusan Sumber Asli Bersepadu/ *Gender And Integrated Natural Resources Management*** **3 (2+1)**

Prasyarat: Tiada

Kursus ini merangkumi isu gender dalam pengurusan sumber asli bersepadu. Pertimbangan aspek gender dalam projek bersepadu pengurusan sumber asli dan kelemahan projek yang tidak peka kepada aspek gender dibincangkan melalui kajian kes. Kaedah petunjuk kesan tindakan juga dibincangkan.

This course covers the issue of gender in integrated natural resource management.
Consideration of gender aspects in integrated natural resource management and weaknesses in projects which are insensitive to gender aspects are discussed through case studies. Indicators of impact methods are also discussed.

EMG4403 **Penyelidikan Dalam Sosiologi Alam Sekitar Bersepadu/ *Research In Environmental Sociology*** **3 (2+1)**

Prasyarat: Tiada

Kursus ini merangkumi perhubungan antara alam sekitar dan masyarakat, dan mengaitkan teori sosial kepada penyelidikan alam sekitar. Kajian sosiologi yang memberi fokus kepada alam sekitar sebagai satu pendekatan kepada kemampanan ditumpukan.

This course covers the study of relations between environment and society, and relate social theories to environmental research. Sociological research focusing on environmental matters as an approach to sustainability are highlighted.

EMG4404 **Ekopelancongan Dan Alam Sekitar/ *Ecotourism And Environment*** **3 (2+1)**

Prasyarat: Tiada

Kursus ini merangkumi pembangunan inisiatif alam sekitar dan sosial berasaskan industri pelancongan. Perancangan strategik kemampanan di dalam memastikan entiti perniagaan ekopelancongan yang diusahakan diurus secara profesional dan berjaya mencapai matlamat kewujudannya ditekankan.

This course encompasses development of environmental and social initiatives in the tourism industry. Planning of sustainable strategies in ensuring the ecotourism business entity is managed professionally and successfully achieves the objectives of its existence are emphasized.

EMG4405 **Pemikiran Kitar Hayat Dalam Pembangunan Mampan/ *Life Cycle Thinking In Sustainable Development*** **3 (3+0)**

Prasyarat: Tiada

Kursus ini merangkumi pendekatan dalam kitar hayat bagi menganalisis sesuatu produk yang mencakupi tiga tunggak utama pembangunan mampan iaitu alam sekitar, sosial dan ekonomi. Aspek kaedah menjalankan kajian kitar hayat produk dari perspektif kemampanan tersebut dititikberatkan. Pendekatan kitar hayat komprehensif yang mampu memberikan impak positif kepada kemampanan sesuatu produk ditekankan.

This course covers the life cycle approach, used to analyze a product. It consists of the three main pillars of sustainable development which are environment, social and economy. Product's life cycle through the perspective of sustainability is stressed. A comprehensive life cycle approach that could provide a positive impact on the sustainability of a product is emphasized.

EMG4501 **Polisi Dan Pentadbiran Alam Sekitar/ *Environmental Policy And Administration*** **3 (3+0)**

Prasyarat: EMG3503

Kursus ini merangkumi proses pembentukan dan implementasi polisi yang berkaitan dengan alam sekitar. Pentadbiranalam sekitar dan isu berkaitan di Malaysiaditumpukan. Sistem pentadbiran alam sekitar yang diamalkan oleh beberapa negara lain dan polisi alam sekitar di peringkat antarabangsa ditekankan.

This course covers the process of formulation and implementation of policies related to environmental matters. Environmental administration and issues in Malaysia are highlighted. Systems of environmental administration as practiced by other countries and international environmental policies are emphasized.

EMG4502 **Undang - Undang Alam Sekitar Dan Perancangan/ *Environmental Law And Planning*** **3 (3+0)**

Prasyarat: EMG3503

Kursus ini merangkumi undang-undang berkaitan kawalan pencemaran alam sekitar serta perancangan bandar dan desa di Malaysia. Pelaksanaan dan penguatkuasaan undang-undang alam sekitar peringkat tempatan dan antarabangsa ditekankan.

This course covers laws relating to pollution control as well as town and country planning laws in Malaysia. Implementation and enforcement of local and international environmental laws are emphasized.)

EMG4504 **Undang - Undang Berkaitan Pemuliharaan Kepelbagaian Biologi Dan Perubahan Iklim/ *Laws Relating To Biodiversity Conservation And Climate Change*** **3 (3+0)**

Prasyarat: EMG3503

Kursus ini merangkumi undang-undang dan polisi serta isu berkaitan pemuliharaan kepelbagaian biologi dan perubahan iklim di peringkat nasional dan antarabangsa. Hubungkait antara pemuliharaan kepelbagaian biologi dan perubahan iklim dari sudut perundangan termasuk peranan dan kes mahkamah serta konsep keadilan alam sekitar dititikberatkan.

This course covers law and policy as well as issues on biodiversity conservation and climate change at national and international level. Interrelationship between biodiversity conservation and climate change from legal perspective including the court's roles and cases as well as the environmental justice concept are stressed.

EMG4992 **Pemudahcaraan Dalam Pengurusan Alam Sekitar/ *Facilitation In Environmental Management*** **2 (1+1)**

Prasyarat: Tiada

Kursus ini merangkumi adaptasi teknik memudahcara untuk kumpulan kecil dan besar. Proses memudah cara secara berkesan dan bertindak aktif dalam perbincangan kumpulan ditekankan.

This course covers adaptation of facilitation techniques for small and large groups. Effective facilitation process and active group discussion are emphasized.)

ESC3009 **Analisis dan Instrumentasi Alam Sekitar/ *Instrumentation and Environmental Analysis*** **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi analisis kimia dalam alam sekitar termasuk analisis pencemar organik, pencemar tak organik dan reaktiviti bahan pencemar dengan partikel. Penyediaan sampel, bahan kimia piawai dan peralatan diperincikan. Instrumentasi terkini yang digunapakai dalam kajian alam sekitar dibincangkan.

This course covers chemical analysis in the environment that includes analysis of organic and inorganic pollutants and particle reactivity with pollutants. Preparation of samples, chemical standards and equipment are detailed out. The most recent instrumentations employed in environmental studies are discussed.

ESC3012 Teknologi Rawatan Sisa Pepejal/ *Solid Waste Treatment Technology* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi elemen sistem pengurusan sisa pepejal bermula daripada penjanaan sehingga ke pelupusan akhir. Hubungkait antara ekonomi, teknologi, kesihatan, alam sekitar, perundangan dan perancangan dalam sistem pengurusan sisa pepejal ditekankan.

This course covers elements of solid waste management starting from generation until final disposal. The relationship between economics, technologies, health, environment, law and planning in solid waste management and disposal are emphasized.

ESC3016 Kemampanan, Etika dan Isu Alam Sekitar/ *Sustainability, Ethics and Environmental Issues* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi prinsip dan matlamat berlandaskan Matlamat Pembangunan Mampan (SDG) yang mencorak asas pengenalan dan perbincangan mengenai isu alam sekitar di peringkat nasional dan antarabangsa. Aspek etika alam sekitar dalam membincangkan isu alam sekitar dan dalam membuat keputusan berkaitan pembangunan mampan turut ditekankan.

This course covers the principles and goals based on the Sustainable Development Goals (SDGs) that form the basis of introducing and discussing on environmental issues at the national and international levels. Environmental ethics in discussing environmental issues and in making sustainable development decisions are also discussed.

ESC3017 Ekologi Biosfera/ *Biosphere Ecology* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi pengenalan kepada komponen biosfera dan interaksi biotik-abiotik dalam alam sekitar. Kesan impak aktiviti manusia terhadap komponen biosfera dan peranan setiap komponen dalam mendepani perubahan alam sekitar dibincangkan. Hierarki kerumitan dalam ekologi biosfera dari peringkat spesies, populasi, komuniti, ekosistem sehingga pengurusannya di peringkat biosfera turut ditekankan.

This course covers the introduction to global ecological system and biotic-abiotic interactions in the environment. The impact of human activity on the biosphere component dan each component's role in facing environmental change is discussed.The hierarchy of complexity in biosphere ecology from species, population, community, ecosystem to management at the biosphere level is emphasized.

ESC3018 Pengurusan Sisa/ *Waste Management* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi pengenalan kepada isu pengurusan sisa termasuk sisa pepejal, sisa berbahaya, sisa klinikal, air sisa dan sisa pertanian. Penilaian sistem pengurusan mengikut jenis sisa juga dibincangkan. Klasifikasi, penyimpanan, pengutipan, pelupusan dan potensi kitar semula juga disentuh dengan mengambilkira polisi dan perundangan berkaitan. Impak sisa dan peranan penjana juga turut ditekankan.

This course covers the introduction to waste management issues including solid waste, hazardous waste, clinical waste, waste water and agricultural waste. Evaluation on the waste management system according to their types are also discussed. Classification, storage, collection, disposal recycling potential will also be touched taking into consideration the policies and legislation involved. The impact of waste and the role of waste generators are also emphasized.

ESC3019 Hidrosfera dan Litosfera/ *Hydrosphere and Lithosphere* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi pengenalan kepada struktur dalaman bumi dan kitaran semulajadi air. Interaksi di antara hidrosfera dan litosfera dibincangkan menerusi identifikasi batuan, mineral, dan daya yang memacu perubahan pembentukan tanah dan kitaran air. Kepentingan hidrosfera dan litosfera di dalam konteks pengurusan alam sekitar turut ditekankan.

This course covers the introduction to Earth's internal structure and natural water cycle. The interactions between hydrosphere and lithosphere are discussed through identification of rocks, minerals, and forces that drive the landform changes. The importance of hydrosphere and lithosphere within the environmental management context is emphasized.

ESC3020 Teknik Lapangan Alam Sekitar/ *Environmental Fieldwork Techniques* 2 (0+2)

Prasyarat : Tiada

Kursus ini memperkenalkan prinsip asas dan kaedah pengukuran parameter alam sekitar merangkumi aspek air, tanah, biota, kesihatan, sisa dan kajian sosial. Teknik pengukuran, persampelan, analisis dan interpretasi data turut ditekankan.

This course introduces the basic principles and methods of measuring environmental parameters which include aspects of water, soil, biota, health and waste. The techniques of measurement, sampling, analysis and interpretation of data are also emphasized.

ESC3021 Sains Atmosfera dan Perubahan Iklim/ *Atmospheric Science and Climate Change* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi pengenalan kepada konsep asas berkenaan komposisi dan struktur atmosfera serta proses fizikal dan proses dinamik yang menyebabkan perubahan cuaca dan iklim. Ramalan cuaca, senario perubahan iklim semasa dan impak perubahan iklim kepada aktiviti manusia turut dibincangkan.

This course covers introduction to the fundamental concepts of atmospheric compositions and structures as well as physical and dynamical processes leading to weather and climate change. Weather forecasts, current climate change scenarios as well as the impact of climate change towards human activities are also discussed.

ESC3101 Prinsip Kesihatan Alam Sekitar/ *Principles of Environmental Health* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi pengenalan kepada hubungan kompleks di antara kesihatan umum dan persekitaran. Isu dan masalah persekitaran yang memberi kesan ke atas kesihatan manusia berdasarkan kaedah toksikologi serta penilaian risiko juga dibincangkan. Penilaian prinsip kesihatan persekitaran dan kesihatan di tempat kerja turut ditekankan.

This course covers the introduction to the complex relationship between public health and the environment. Issues and environmental problems affecting human health based on toxicology and risk assessment methods are also discussed. Evaluation of environmental health principles and workplace health are also emphasized.

ESC3203 Hidrologi Alam Sekitar/ *Environmental Hydrology* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi kaedah hidrologi dalam perancangan dan pengurusan alam sekitar. Kaedah organisasi data hidrologi bagi pengurusan lembangan secara mampan serta kesan aktiviti manusia terhadap persekitaran hidrologi turut dibincangkan.

This course covers the hydrological methods in environmental planning and management. Organization of hydrological data for sustainable watershed management and human impacts on environmental hydrology are also discussed.

ESC3204 Rawatan Air Sisa/ Wastewater Treatment 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi proses rawatan air sisa berasaskan kepada keperluan perundangan tempatan, sumber dan ciri air sisa dan peranan loji rawatan. Parameter asas dalam menguji keberkesanan operasi loji, pengawasan proses serta isu kesihatan dan keselamatan loji ditekankan. Proses rawatan air sisa terbaik mengikut ciri air sisa turut dibincangkan.

This course covers wastewater treatment processes based on local legal requirements, sources and characteristics of wastewater and the role of treatment plants. The basic parameters of testing the effectiveness of plant operations, process monitoring as well as plant health and safety issues are emphasized. The process best wastewater treatment based on the characteristics of wastewater is also discussed.

ESC3205 Rawatan Air Minum/ *Drinking Water Treatment* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi isu berkaitan kepentingan sumber bekalan air, kesan pencemaran air dan kaedah rawatan air minum. Parameter penting penentuan kualiti air dan kaedah nyahjangkitan air termasuk kesan kualiti air terhadap kesihatan manusia dibincangkan. Penilaian dalam keberkesanan alat rawatan air yang sesuai turut ditekankan.

This course covers issues related to the importance of water supply, the effects of water pollution and drinking water treatment methods. Important parameters for determining water quality and methods of water disinfection including the effects of water quality on human health are discussed. Evaluation of the effectiveness of appropriate water treatment tools is also emphasized.

ESC3401 Geologi Alam Sekitar/ *Environmental Geology* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi prinsip asas geologi alam sekitar, proses dalaman dan permukaan bumi. Sumber mineral dan tenaga, pelupusan sisa, jenis pencemaran serta pengukuran parameter geologi ditekankan. Isu terkini geologi alam sekitar dan langkah pencegahannya turut dibincangkan.

This course covers the basic environmental geology principles, earth internal and surface processes. Mineral and energy resources, waste disposal, types of pollution, as well as geological parameters are discussed. The current issues in environmental geology and mitigation measures are also discussed.

ESC3507 Envirometriks/ *Environmetrics* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi kaedah analisis dan interpretasi data alam sekitar menggunakan kaedah envirometriks yang bersesuaian dalam langkah tebatan sumber pencemaran. Pendedahan kepada adaptasi kaedah envirometriks dalam membantu proses pembuatan keputusan menggunakan model ramalan masa sebenar dibincangkan. Pentaksiran data alam sekitar menggunakan kaedah analisis multivariat dan pemodelan untuk menilai kualiti alam sekitar juga dibincangkan.

This course covers methods in analysis and interpretation of environmental data using environmetrics techniques in mitigating pollution sources. Exposures to the adaptation of environmetrics methods to assist decision-making using real-time forecasting models are discussed. The assessment of environmental data using multivariate analysis and modeling methods to evaluate environmental quality is also discussed.

ESC3508 Matematik Gunaan Untuk Alam Sekitar/ *Applied Mathematics for the Environment* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi prinsip asas matematik yang digunakan dalam menganalisis masalah berkaitan alam sekitar. Aplikasi persamaan dan rumus matematik dalam penyelesaian terhadap masalah alam sekitar juga dibincangkan.

This course covers the basic principles of mathematics used in analyzing environmental problems. The applications of mathematical equations and formulas in solving environmental problems are also discussed.

ESC3509 Pengenalan Kepada Envirometriks/ *Introduction to Environmetrics* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi topik asas statistik untuk menganalisa data alam sekitar. Kaedah memanipulasi data statistik alam sekitar turut diperkenalkan. Aplikasi envirometriks dalam penyelesaian masalah alam sekitar juga dibincangkan.

This course covers basic topics of statistics to analyze environmental data. Methods of manipulating environmental statistics data are also introduced. The applications of environmetrics in environmental problem solving are also discussed.

ESC3510 Sistem Maklumat Geografi dan Penderiaan Jarak Jauh Alam Sekitar/ *Environmental Geographic Information System and Remote Sensing* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi pemahaman asas dalam konsep Sistem Maklumat Geografi (GIS) dan penderiaan jarak jauh alam sekitar. Asas geoinfomatik dan struktur asas data geospatial turut ditekankan. Prinsip penderiaan jarak jauh dan kaedah asas pemprosesan digital penderiaan jarak jauh seperti pembetulan imej serta pengklasifikasi spektral untuk klasifikasi tematik juga dibincangkan.

This course offers insights into the basic concepts of environmental geographic information system and remote sensing. The basic of geoinformatics concept and structure of geospatial data is also discussed. Remote sensing principles and basic method of digital image processing such as image correction and spectral classification for thematic classification are discussed.

ESC3511 **Pengurusan dan Sistem Pelaporan Projek Alam Sekitar/ *Environmental Project Management and Reporting System*** **3 (3+0)**

Prasyarat : Tiada

Kursus ini merangkumi perancangan dalam pengurusan projek alam sekitar secara sistematik iaitu pada tahap pra-projek, semasa dan selepas projek selesai. Kemahiran dalam menyediakan sistem pelaporan projek alam sekitar yang holistik serta mengikut garis panduan dan piawaian berkaitan juga ditekankan.

This course covers systematic planning in environmental project management, from pre-, during and post-project stages. The skills in holistic and effective environmental project reporting system according to the guideline and related standards are also emphasized.

ESC4002 **Hidrokimia Dan Geokimia Alam Sekitar/ *Environmental Hydrochemistry and Geochemistry*** **3 (2+1)**

Prasyarat : Tiada

Kursus ini merangkumi pengenalan kepada asas hidrokimia dan geokimia air dan tanah. Interaksi tanah dan air dalam sistem hidrosfera dan geosfera, serta penentu ukuran, penilaian tindakbalas, dan interaksi hidrogeokimia persekitaran turut dibincangkan.

This course covers the basic scientific principles to the hydrochemistry and geochemistry of water and soil. Interaction between soil and water in the hydrosphere and geosphere systems, as well as measurement, response evaluation, and interaction in environmental hydro-geochemistry are also discussed.

ESC4101 **Penilaian Risiko Kesihatan Alam Sekitar/ *Environmental Health Risk Assessment*** **3 (3+0)**

Prasyarat : ESC3101 atau setara

Kursus ini merangkumi huraian dalam proses penilaian risiko kesihatan alam sekitar. Peluang Penilaian Impak Kesihatan Alam Sekitar (EHIA) dalam perundingan EIA turut dibincangkan. Pengukuran potensi kesan dan impak buruk ke atas kesihatan individu dan populasi disebabkan pencemaran berkaitan pekerjaan dan alam sekitar turut ditekankan.

This course covers descriptions of the environmental health risk assessment process. Opportunities for Environmental Health Impact Assessment (EHIA) in the EIA consultation are also discussed. Measurement of potential impacts and adverse impacts on the health of individuals and populations due to occupational and environmental pollution is also emphasized.

ESC4102 **Penilaian Pendedahan Pencemaran/ *Pollution Exposure Assessment*** **3 (2+1)**

Prasyarat : ESC3101 atau setara

Kursus ini merangkumi laluan agen toksik berdasarkan anatomi dan fisiologi manusia. Pengiraan bagi pendedahan pencemaran mengikut kategori, toksikologi industri, prinsip penilaian persekitaran tempat kerja, kaedah persampelan, pendedahan kebisingan dan kawalan, penggunaan garis panduan dan piawaian dibincangkan. Penilaian bagi mengawal potensi hazad di tempat kerja dan potensi ancaman kepada manusia dan persekitaran turut dibincangkan.

This course covers the route of toxic agents based on human anatomy and physiology. Calculations for exposure to pollutants by category, industry toxicology, principles of workplace environment assessment, sampling methods, noise exposure and control, use of guidelines and standards are discussed. Assessments for controlling potential hazards in the workplace and potential threats to humans and the environment are also discussed.

ESC4103 Mikrobiologi Alam Sekitar/ *Environmental Microbiology* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi prinsip asas, kaedah dan teknologi yang digunakan di dalam bidang mikrobiologi alam sekitar. Teknik dan teknologi dalam mikrobiologi bagi penyelesaian permasalahan alam sekitar alternatif juga turut dibincangkan secara saintifik.

This course covers the basic principles, methods and technologies used in environmental microbiology. Techniques and technologies in microbiology as alternatives to solve environmental problems are also discussed scientifically.

ESC4201 Pengurusan Kualiti Air Sungai/ *River Water Quality Management* 3 (3+0)

Prasyarat : Tiada

Kursus ini meliputi sumber pencemaran air, perancangan dan pengurusan kualiti air sungai, penentuan indeks kualiti air dan pengkelasan sungai untuk pengurusan sumber air. Pendekatan Pengurusan Lembangan Sungai Bersepadu (IRBM) dan Pengurusan Sumber Air Bersepadu (IWRM) turut ditekankan. Masalah dan penyelesaian kawasan lembangan air setempat dan serantau berkaitan dengan pengurusan kualiti air sungai adalah dibincangkan.

This course covers water pollution sources, river water quality planning and management, water quality indexing and river management for water resource management. Integrated River Basin Management (IRBM) and Integrated Water Resources Management (IWRM) are also emphasized. Problems and solutions of local and regional water basins related to river water quality management are discussed.

ESC4202 Hidrogeologi/ *Hydrogeology* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi cara menganalisis data lapangan berkaitan hidrogeologi dan kaedah hidrogeologi untuk mengenalpasti sumper air tanah. Aplikasi pemodelan air tanah dalam penyelesaian masalah pengurusan air tanah juga turut ditekankan.

This course covers how to analyze field data related to hydrogeology and hydrogeological methods to identify groundwater wells. The application of soil water modeling in solving groundwater management problems is also emphasized.

ESC4204 Analisis Lembangan/ *Watershed Analysis* 3 (3+0)

Prasyarat : Tiada

Kursus ini meliputi penghuraian data berkaitan lembangan melalui simulasi model lembangan. Pelan tindakan dan pembetulan untuk pengurusan lembangan turut diulas. Masalah dalam pembangunan dan pengurusan lembangan turut dibincangkan.

This course covers the description of basin-related data through simulation of basin model. Plans for action and corrections for basin management are also reviewed. Problems in the development and management of the basin are also discussed.

ESC4205 Kimia Marin/ *Marine Chemistry* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi proses penaksiran tahap pencemaran dan pengenalpastian proses kimia di persekitaran marin. Teknik pengukuran parameter kimia air larut turut dibincangkan.

This course covers the process of assessing pollution levels and identifying chemical processes in the marine environment. The technique of measuring the water-soluble chemical parameters is also discussed.

ESC4301 Pemencilan Karbon dan Perubahan Iklim/ *Carbon Sequestration And Climate Change* 3 (2+1)

Prasyarat : ESC3021 atau setara

Kursus ini merangkumi simulasi perubahan iklim dan pemencilan karbon, sebab dan kesan, penebatan dan penyesuaian, penggunaan alat dan teknologi, dan komunikasi bersesuaian dalam pengurusan alam sekitar. Analisis keseimbangan karbon, karbon bajet dalam sistem aliran karbon bagi memahami konsep pemencilan karbon dalam ekosistem dan perdagangan karbon dibincangkan. Penilaian impak perubahan iklim terhadap komuniti dan tindakan penyesuaian turut ditekankan.

This course covers climate change simulation and carbon sequestration, causes and effects, insulation and adaptation, use of tools and technologies, and appropriate communication in environmental management. The analysis of carbon balance, carbon budgets in the carbon flow system to understand the cost of carbon abatement in the ecosystem and carbon trade is discussed. Evaluation of the impact of climate change on communities and adaptive actions is also emphasized.

ESC4303 Teknologi Pengawalan Pencemaran Udara/ *Air Pollution Control Technology* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi pelbagai aspek sumber pencemar udara, pengukuran dan teknologi kawalan pencemaran udara. Tumpuan kepada teknologi kawalan efektif merangkumi latarbelakang, konsep kekunci utama, reka bentuk dan kajian kes, serta aspek persepsi masyarakat, dasar dan perundangan turut dibincangkan.

This course covers various aspects of air pollution source, measurement and technology of air pollution control. Focuses on effective control technologies including backgrounds, key concepts, case design and studies, as well as aspects of public perception, policy and legislation are also discussed.

ESC4401 Kaedah Penyiasatan Subpermukaan/ *Subsurface Investigation Methods* 3 (2+1)

Prasyarat : ESC3019 atau setara

Kursus ini merangkumi kaedah penyiasatan dan pengenalpastian struktur, parameter fizikal dan bahan kandungan subpermukaan bumi untuk peninjauan dan carigali. Aplikasi pelbagai kaedah penilaian akuifer dan program komputer didedahkan. Penilaian pelbagai kaedah geofizik dalam peninjauan carigali turut ditekankan.

This course covers methods to investigate and identify structures, physical parameters and the constituents of the earth subsurface for surveying and exploration purposes. Application of various aquifer evaluation methods and computer programs are exposed. Multiple geophysics evaluations in surveying and exploration are also discussed.

ESC4404 Teknologi Rawatan Sisa Berbahaya/ *Hazardous Waste Treatment Technology* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi ciri fizikal, kimia dan ketoksikan sisa berbahaya yang membentuk asas untuk pengkelasan hazad dan penentuan pergerakan, taburan dan juga impak ke atas kesihatan manusia dan alam sekitar. Teknologi rawatan dan pelupusan sisa berbahaya termasuk kaedah pengendalian, penyimpanan dan pengangkutan sisa berbahaya mengikut Akta Kualiti Alam Sekeliling 1974, dan peraturan antarabangsa dibincangkan. Pelaksanaan penyaringan dan kitar semula dalam kehidupan harian turut ditekankan.

This course covers the physical, chemical and toxic properties of hazardous wastes that form the basis for hazard classification and determination of their movement, distribution as well as their impacts on human health and the environment. Treatment and disposal technologies including handling, storage and transportation based on the Environmental Quality Act 1974 and international regulations are discussed. The implementation of filtering and recycling in daily life is also emphasized.

ESC4405 Pengurusan Kawalan Hakisan Tanah, Sedimen dan Air Larian Permukaan/ *Soil Erosion, Sediment and Stormwater Management Control* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi perancangan dan pengurusan risiko hakisan tanah dan pengurusan sedimen dalam air larian permukaan bagi mengawal impaknya kepada alam sekitar. Sistem organisasi maklumat dalam perancangan kawalan hakisan tanah juga dibincangkan. Kaedah kawalan dan amalan mitigasi terbaik dalam projek pembangunan dan perubahan guna tanah yang berisiko dalam kawasan tropika turut ditekankan.

This course covers planning and management of soil erosion risk and management of sediment-laden runoff to control its impact on the environment. The organisation system of information on erosion control planning is discussed. Best mitigation controls and practices in risky land development and landuse change projects in the tropics are also emphasized.

ESC4406 Geofizik Alam Sekitar/ *Environmental Geophysics* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi kajian struktur dalaman bumi serta kandungannya melalui kaedah geofizik. Hubungkait antara pencemaran akibat aktiviti manusia dan semulajadi serta langkah kawalan turut dibincangkan.

This course covers the study of the internal structure of the earth and its contents through geophysical methods. The relationship between pollution caused by human and natural activities and control measures is also discussed.

ESC4502 Respons Kecemasan Alam Sekitar/ *Environmental Emergency Response* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi aliran dan impak bahan pencemar, serta langkah-langkah keselamatan ketika kemalangan. Respons bagi pelbagai senario kecemasan alam sekitar dibincangkan.

This course covers the flow and impact of pollutants, as well as safety measures in the event of an accident. Respons for various environmental emergency scenarios are discussed.

ESC4503 Biologi Pencemaran/ *Pollution Biology* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi konsep biologi pencemaran dan ekotoksikologi. Teknik dan kaedah penilaian untuk proses pemantauan dan kawalan pencemaran, serta kaedah membeza punca dan menilai kesan pencemaran air, udara dan tanih dibincangkan.

This course covers the concepts of pollution biology and ecotoxicology. The techniques and methods of assessment for the process of monitoring and control of pollution, as well as methods of determining the causes and assessing the effects of water, air and soil pollution are discussed.

ESC4504 Pemodelan Sistem Alam Sekitar/ *Environmental System Modeling* 3 (2+1)

Prasyarat: ESC3508 atau setara

Kursus ini merangkumi sistem analisis untuk kajian fenomena alam sekitar yang berubah mengikut masa. Pembentukan dan ujian model sistem untuk penganalisaan dan pengurusan sistem alam sekitar ditekankan. Hasil model bagi penilaian bagi membantu proses pembuatan keputusan berkaitan pengurusan alam sekitar turut dibincangkan.

This course covers analysis systems to study the environmental phenomena that change over time. Development and testing system models for environmental system analysis and management are emphasized. The results of the model for evaluation to aid decision making in environmental management are also discussed.

ESC4505 Ekologi Industri/ *Industrial Ecology* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi konsep ekologi industri serta isu pembangunan mampan menggunakan kerangka ekologi industri. Pendekatan ekologi industri dan ekonomi kitaran dalam pengurusan sumber bagi mengurangkan impak alam sekitar dibincangkan.

This course covers the concepts of industrial ecology as well as issues in sustainable development using industrial ecological frameworks. The industrial ecological approach and circular economy in resource management to reduce environmental impact are discussed.

ESC4506 Teknologi Pintar untuk Alam Sekitar/ *Intelligent Technology for Environment* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi konsep dan kaedah pembinaan sistem kepintaran buatan dan peranan dalam pengurusan alam sekitar. Faedah dan kekangan kepintaran buatan berbanding sistem konvensional dalam menangani masalah alam sekitar. Hubungkait kaedah kepintaran buatan melalui pembangunan prototaip turut didedahkan kepada pelajar.

This course covers concepts and methods in the development of an artificial intelligence system and its role in environmental management. Benefits and limitations of artificial intelligence versus conventional methods in solving environmental problems are emphasized. The linkages of artificial intelligence through prototype development are also exposed to the student.

ESC4507 Forensik Alam Sekitar/ *Environmental Forensics* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi penilaian pengangkutan, persinggahan dan kitar hayat bahan pencemar dalam persekitaran. Pengukuran bahan pencemar dalam penyiasatan alam sekitar turut dibincangkan. Aplikasi forensik alam sekitar dalam penyelesaian masalah berkaitan pencemaran alam sekitar turut ditekankan.

This course covers the assessment of transport, transit and life cycle of pollutants in the environment. Measurements of pollutants in environmental investigations are also discussed. The applications of environmental forensics in solving environmental pollution problems are also emphasized.

ESC4508 Pemuliharaan dan Pengurusan Biodiversiti/ *Biodiversity Conservation and Management* 3 (3+0)

Prasyarat : Tiada

Kursus ini meliputi kepentingan biodiversiti dan pemuliharaan terhadap kestabilan ekosistem semulajadi. Pengenalpastian konflik dan ancaman, serta strategi pemuliharaan dan pembaikpulih biodiversiti turut dibincangkan.

This course covers the importance of biodiversity and conservation to the stability of the natural ecosystem. Identification of conflicts and threats, as well as conservation and rehabilitation strategies for biodiversity are also discussed.

ESC4509 Ekologi Sumber Asli/ *Ecology of Natural Resources* 3 (3+0)

Prasyarat : Tiada

Kursus ini merangkumi konsep ekologi berkaitan dengan sumber asli. Kepentingan jenis sumber asli kepada manusia dan alam sekitar serta kaedah pemeliharaan dan pemuliharaan sumber asli untuk pengurusan mampan dibincangkan.

This course covers ecological concepts related to natural resources. The importance of natural resources to humans and the environment as well as the preservation and conservation of natural resources for sustainable management are discussed.

ESC4512 Kimia Alam Sekitar Lanjutan/ *Advance Environmental Chemistry* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi proses penilaian tahap pencemaran disebabkan dari kesan penggunaan bahan kimia. Analisis bahan tercemar berdasarkan instrument penentukur serta proses membuat kesimpulan dari kajian bahan tercemar ditekankan.

This course covers the process of assessing pollution levels as a result of the use of chemicals. The analysis of contaminated materials based on the calibration instrument as well as the process of drawing conclusions from the study of contaminated materials are emphasized.

ESC4513 Bioremediasi Alam Sekitar/ *Environmental Bioremediation* 3 (2+1)

Prasyarat : Tiada

Kursus ini meliputi pelbagai aspek remediasi tanah menggunakan konsortia mikrob berpotensi untuk penguraian sebatian toksik. Proses bioremediasi, tindakbalas biokimia dan lintasan metabolik ditekankan. Kaedah rawatan in situ dan rawatan reaktor serta aplikasi penggunaan mikrob untuk remediasi tanah dibincangkan.

This course covers various aspects of soil remediation using potential microbial consortia for the decomposition of toxic compounds. The processes of bioremediation, biochemical reactions and metabolic pathways are emphasized. In situ treatment methods and reactor treatment as well as application of microbial applications for soil remediation are discussed.

ESC4515 Sistem Kesihatan dan Keselamatan Industri/ *Industrial Health and Safety System* 3 (3+0)

Prasyarat : Tiada

Kursus ini membincangkan konsep dan pendekatan dalam pengurusan sistem kesihatan dan keselamatan industri. Penekanan kepada perancangan, pemantauan dan tindakan untuk menangani hazad, risiko, kemalangan dan kecemasan industri dalam pelaporan maklumat turut dibincangkan. Peranan dasar, undang-undang, piawaian, Teknologi Sedia ada Terbaik (BAT) dan Amalan Pengurusan Terbaik (BMP) dalam pengurusan kecemasan industri dan bencana alam sekitar juga ditekankan.

This course discusses the concepts and approaches in industrial, health and safety management systems. Emphasis on planning, monitoring and actions to manage industrial hazards, risks, accidents and emergencies is discussed. The role of policies, laws, standards, Best Available Technology (BAT), and Best Management Practices (BMP) in industrial emergency and environmental disaster management are also emphasized.

ESC4517 Sistem Maklumat Geografi dan Penderiaan Jarak Jauh Alam Sekitar Lanjutan/ *Advanced Environmental Geographic Information System and Remote Sensing* 3 (2+1)

Prasyarat : ESC3510 atau setara

Kursus ini merangkumi prinsip dan kaedah lanjutan Sistem Maklumat Geografi (GIS) dan penderiaan jarak jauh (RS) alam sekitar. Kaedah manipulasi GIS dan RS lanjutan dalam pengurusan alam sekitar dibincangkan. Aplikasi GIS dan RS dalam penyelesaian permasalahan alam sekitar turut ditekankan.

This course covers the principles and advanced techniques in environmental Geography Information System (GIS) and Remote Sensing (RS). Manipulation on advanced GIS and RS in environmental management is discussed. Application of GIS and Remote Sensing in the solving the environmental problems are discussed.

ESC4518 Inovasi Alam Sekitar dan Teknologi Hijau/ Environmental Innovation and Green Technology 3 (1+2)

Prasyarat : Tiada

Kursus ini merangkumi projek penghasilan inovasi atau produk mesra alam berasaskan teknologi hijau melalui pendekatan kajian kes dan analisis perbandingan silang. Proses penilaian evolusi teknologi hijau, pembangunan dan pameran inovasi atau produk yang bersifat mesra alam sekitar/kos efektif turut dibincangkan.

This course covers the production of innovation projects or environmentally friendly products based on green technology through case study approach and cross-comparative analysis. The process of assessing the evolution of green technologies, development and innovation exhibition or environmental friendly/cost-effective products is also discussed.

ESC4603 Sistem Tenaga dan Alam Sekitar/ *Energy Systems and Environment* **3 (3+0)**

Prasyarat : Tiada

Kursus ini merangkumi kepelbagaian sumber tenaga, penjanaan tenaga, dan impak penjanaan dan penggunaan tenaga terhadap alam sekitar dan sosio-ekonomi. Teknologi penjanaan tenaga bersih dan hijau, polisi kerajaan dan isu-isu semasa berkaitan tenaga dibincangkan. Kesedaran dalam isu berkaitan pengurusan tenaga dan sumber alam sekitar turut ditekankan.

This course covers the diversity of energy sources, energy generation, and the impact of energy generation and use on the environment and socio-economy. Clean and green energy generation technologies, government policies and current issues related to energy are discussed. Awareness on issues related to energy management and environmental resources is also emphasized.

ESC4701 Interaksi Tumbuhan dan Alam Sekitar/ *Plant and Environment Interactions* **3 (3+0)**

Prasyarat : Tiada

Kursus ini merangkumi prinsip interaksi antara tumbuhan dan organisma hidup dengan alam sekitarnya. Kepentingan tumbuhan terhadap alam sekitar, perubahan iklim dan pengaruh tumbuhan terhadap organisma lain serta peranannya dalam keseimbangan alam sekitar turut dibincangkan.

This course covers the interaction principle between plant and living organisms with the environment. The importance of plant towards environment, climate change and the influence of plants on other organisms and its role in environmental balance are also discussed.

ESC4801 Kajian Lapangan Alam Sekitar Bersepadu/ *Integrated Environmental Field Study* **2 (0+2)**

Prasyarat : Tiada

Kursus ini merangkumi proses pengumpulan dan pengukuran data serta perbincangan hasil dapatan kajian lapangan yang dijalankan bersama masyarakat. Kaedah mengorganisasi dan pelaporan hasil kajian lapangan ditekankan bagi penyelesaian masalah alam sekitar.

This course covers the process of collecting and measuring data as well as discussing the outcome of field research conducted with the community. Methods of organizing and reporting field research output are emphasized for solving environmental problems.

ESC4802 Dokumentari Alam Sekitar/ *Environmental Documentaries* **3 (1+2)**

Prasyarat : Tiada

Kursus ini merangkumi pengenalan kepada asas penggunaan media dalam pengulasan isu-isu semasa alam sekitar. Kaedah penghasilan dokumentari alam sekitar dan hubungkait dengan persekitaran, undang-undang dan budaya dibincangkan. Pembentangan dan kritikan terhadap isu-isu alam sekitar secara bertanggungjawab turut ditekankan.

This course covers the basics of media use in reviewing current environmental issues. Methods of producing environmental documentaries and their relationship to environment, law and culture are discussed. The presentation and critique of environmental issues responsibly also emphasized.

ESC4803 Komunikasi Saintifik dalam Alam Sekitar/ *Scientific Communication in Environment* **1 (0+1)**

Prasyarat : Tiada

Kursus ini membincangkan peranan pihak berkepentingan dalam penyelesaian isu alam sekitar. Perdebatan isu alam sekitar dan proses pembuatan keputusan berkaitan isu alam sekitar di peringkat komuniti, nasional dan antarabangsa melalui aktiviti permainan peranan pihak berkuasa, pemegang taruh, pihak berkepentingan dan orang awam turut ditekankan.

This course discusses the role of stakeholders in solving environmental issues. Debates on environmental issues and decision-making processes at the local, national, and international levels through role playing activities of authorities, stakeholders and the public are also emphasized.

ESC4901 Latihan Industri/ *Industrial Training* **12 (0+12)**

Prasyarat : Tiada

Kursus ini meliputi latihan industri selama 24 minggu bagi pendedahan kepada persekitaran dunia pekerjaan sebenar. Pelajar didedahkan dengan cara mengorganisasi data semasa pelaporan projek khas latihan industri. Penghayatan nilai dan etika profesionalisme turut ditekankan.

The course covers 24 weeks of industry training for exposure to the real working world. Students are exposed by organizing data during the reporting of special industrial training projects. The value and ethics of professionalism are also emphasized.

ESC4959 Disertasi Bacelor/ Bachelor Dissertation **6 (0+6)**

Prasyarat : Tiada

Kursus ini merangkumi penstrukturan cadangan dalam projek ilmiah dan penyelidikan. Projek dibangunkan secara individu bagi mengasah kebolehan pelajar dalam membuat kajian. Penyampaian hasil kajian termasuk penyediaan laporan ilmiah turut dijalankan.

This course covers structuring suggestions in scientific and research projects. Projects are individually developed to hone students' ability to do research. The presentation of research findings including the preparation of scientific reports was also carried out.

KURSUS TAWARAN FAKULTI LAIN

(Sila rujuk sinopsis pada fakulti berkenaan)

1. FAKULTI BAHASA MODEN DAN KOMUNIKASI

1.1	KOM3403	Pengucapan Awam/ *Public Oration*	3 (3+0)

2. FAKULTI PERTANIAN

2.1	PRT2009	Pertanian dan Kehidupan/*Agriculture and Life*	2 (1+1)

3. FAKULTI PENGAJIAN PENDIDIKAN

3.1	FCE3204	Kemahiran Berfikir/*Thinking Skills*	2 (2+0)

4. FAKULTI EKONOMI DAN PENGURUSAN

4.1	MGM3180	Asas Keusahawanan/*Basic Entrepreneurship*	3 (2+1)
4.2	MGM3101	Prinsip Pengurusan/ *Principles of Management*	3 (3+0)
4.3	MGM3113	Gelagat Organisasi/ *Organizational Behavior*	3 (3+0)
4.4	ECN3010	Prinsip Ekonomi/ *Principles Of Economics*	3 (3+0)
4.5	MGM2111	Pengurusan Organisasi dan Perniagaan/ *Organisation and Business Management*	3 (3+0)
4.6	ACT2112	Perakaunan Pengenalan/ *Introductory Accounting*	4 (3+1)
4.7	MGM3211	Prinsip Pemasaran/ *Principles of Marketing*	3 (3+0)
4.8	ACT3211	Pengurusan Kewangan/ *Financial Management*	3 (3+0)
4.9	ECN3101	Mikroekonomi I/ *Microeconomics I*	3 (3+0)
4.10	ECN3311	Ekonomi Sumber Asli/*Natural Resource Economics*	3 (3+0)
4.11	MGM3123	Pengurusan Sumber Manusia/ *Human Resource Management*	3 (3+0)
4.12	MGM4183	Keusahawanan/ *Entrepreneurship*	3 (3+0)

5. FAKULTI EKOLOGI MANUSIA

5.1	SKP2101	Kenegaraan Malaysia/ *Malaysian Nationhood*	3 (3+0)
5.2	SKP3112	Falsafah dan Isu Semasa/ *Philosophy and Current Issues*	2 (2+0)
5.3	SKP3122	Penghayatan Etika dan Peradaban / *Internalization of Ethics and Civilization*	2 (2+0)

6. FAKULTI SAINS

6.1	MTH3003	Statistik Bagi Sains Gunaan/ *Statistics for Applied Sciences*	4 (3+1)
6.2	BGY3201	Struktur Dan Fungsi Tumbuhan/ *Plant Structure And Function*	3 (2+1)

7. PUSAT PEMAJUAN KOPETENSI BAHASA (CALC)

7.1	LPE2301	*Academic Interaction and Presentation*	3 (2+1)
7.2	LPE2501	*Academic Writing*	3 (2+1)
7.3	BB_ _ _ _	Elektif Bahasa Global	3