

BUKU PANDUAN PROGRAM PENGAJIAN PRASISWAZAH

*UNDERGRADUATE STUDY
PROGRAMME HANDBOOK*

FAKULTI
PENGAJIAN
ALAM SEKITAR
FACULTY OF ENVIRONMENTAL STUDIES



SESI AKADEMIK
ACADEMIC SESSION
— 2019/2020 —

FAKULTI PENGAJIAN ALAM SEKITAR

Fakulti Pengajian Alam Sekitar, Universiti Putra Malaysia (UPM), ditubuhkan pada 1 September 2004, hasil daripada penaikan taraf Jabatan Sains Alam, Fakulti Sains dan Pengajian Alam Sekitar. Penubuhan Fakulti ini adalah selari dengan hasrat kerajaan untuk menangani pelbagai isu alam sekitar semasa dan akan datang serta mencapai matlamat pembangunan mampan negara.

Fakulti Pengajian Alam Sekitar mempunyai dua jabatan iaitu Jabatan Sains Alam Sekitar dan Jabatan Pengurusan Alam Sekitar. Ketika ini, fakulti menawarkan dua (2) program pengajian di peringkat pra siswazah iaitu Bachelo Sains dan Teknologi Alam Sekitar (BSTAS) dan Bachelo Pengurusan Alam Sekitar (BPAS). Di peringkat siswazah, fakulti menawarkan program Master Alam Sekitar (MEnv), Master Sains (MS) dan Doktor Falsafah (PhD). Fakulti Pengajian Alam Sekitar merupakan satu-satunya badan akademik di Malaysia yang menawarkan ijazah di peringkat bachelo, master dan doktor falsafah dalam bidang alam sekitar.

Fakulti mempunyai 27 orang pegawai akademik dari pelbagai disiplin termasuk (1) tutor. Peranan utama pegawai akademik adalah dalam Pengajaran dan Pembelajaran. Mereka juga terlibat dalam pelbagai projek penyelidikan sama ada kerjasama dengan fakulti lain di UPM, universiti tempatan dan luar negara, agensi tempatan dan luar negara dan industri. Diantara agensi yang mendapat khidmat perundingan dan nasihat pakar rujuk daripada fakulti adalah Jabatan Alam Sekitar khususnya dan kementerian Sains dan Teknologi Alam Sekitar dan Perubahan Iklim umumnya, Agengsi lain yang terlibat adalah GreenTech, Eimas, Lembaga Air Selangor dan beberapa persatuan penduduk.. Fakulti juga mempunyai unit perkhidmatan profesional dan jaringan industri dan komuniti (JINM) yang berperanan menyediakan khidmat perundingan, penyelidikan dan latihan kepada agensi kerajaan ,pihak swasta, NGO dan persatuan penduduk Di peringkat Antarabangsa Fakulti menjalankan kerjasama dengan NIES (Japan) Searca , Gwangju Institut of Science and Technology, Huazhong University of Science and Technology serta Cukurova University (Adana,Turki). Staf fakulti terlibat secara langsung dalam projek Penilaian Kesan Alam Sekitar (EIA), Penilaian Kesan Sosial, Pelan Pengurusan Alam Sekitar, Forensik Alam Sekitar, Pemuliharaan Alam Sekitar, Pendidikan Alam Sekitar dan aktiviti berkaitan.

Untuk menangani peningkatan isu dan masalah alam sekitar, Fakulti telah menubuhkan Pusat Kecemerlangan Forensik Alam Sekitar (ENFORCE), unit khas untuk bertindak dan melaksanakan penyiasatan forensik alam sekitar terhadap sesuatu isu alam sekitar di Malaysia.

FACULTY OF ENVIRONMENTAL STUDIES

The Faculty of Environmental Studies, Universiti Putra Malaysia (UPM) was established on the 1st September, 2004, when the Department of Environmental Sciences, Faculty of Science and Environmental Studies, was upgraded to the Faculty level. The establishment of this faculty is in line with the government's aim in addressing the current and future environmental issues and in achieving the national sustainable development goals.

The Faculty of Environmental Studies (FPAS) has two departments, namely, the Department of Environmental Sciences and the Department of Environmental Management. Currently, the program offered by the faculty include the Bachelor of Environmental Science and Technology (BEST), Bachelor of Environmental Management (BEM), Master of Environment (MEnv), Master of Science (MS) and Doctor of Philosophy (PhD). The Faculty of Environmental Studies, Universiti Putra Malaysia, is the pioneer academic body in Malaysia which offers Bachelor, Masters and Doctorate degrees in the field of environmental science and management.

The Faculty has a total of 28 academic staff and)one tutors from various disciplines. The major role of the academic staffs is in Teaching and Learning. They are also involved in various research projects, such as, collaborations with other faculties in UPM, local and international universities, local and international

agencies, and industries. Among the agencies that seek for consultation and expert advice from the faculty include Department of Environment specifically and Ministry of Science, Technology, Environment and Climate Change other agencies include GeenTech, Eimas, Lembaga Urusan Air Selangor (LUAS), DBKL, NAHRIM, SYABAS, and Fishery Department. . The faculty has a professional unit in developing industrial and community linkages by providing short courses, research, as well as consultation services to government agencies, private , NGO and Community society . At international level Faculty conduct Collaboration with NIES (Japan), SEARCA, Gwanju Institut of Science (GIST), Huazhong University of Science and Technology and Cukurova University (Adana Turki) The faculty staff is actively involved in Environmental Impact Assessment (EIA), Social Impact Assessment (SIA), Environmental Management Plan (EMP), Environmental Forensic, Environmental Conservation, Environmental Education and related activities.

To meet the increasing environmental issues and problems, the faculty has developed the Centre for Environmental Forensic Excellence (ENFORCE) which is a special unit to execute environmental forensic investigations in dealing with a particular environmental issue in Malaysia.

Pengurusan Fakulti / Faculty Management

Dekan / Dean

Prof. Dr. Ahmad Zaharin Aris

Timbalan Dekan (Akademik dan Hal Ehwal Pelajar)

Deputy Dean (Academic and Student Affairs)

TBC

Timbalan Dekan (Siswazah, Penyelidikan dan Pembangunan)

Deputy Dean (Graduate, Research and Development)

Prof. Madya Dr. Mohammad Firuz Ramli

Ketua Jabatan Sains Alam Sekitar

Head Department of Environmental Sciences

Prof. Madya Dr. Nor Rohaizah Jamil

Ketua Jabatan Pengurusan Alam Sekitar

Head Department of Environmental Management

Prof. Madya Dr. Zelina Zaiton Ibrahim

Penolong Pendaftar Kanan

Assistant Registrar

Puan Juita Md Tahir

Program Prasiswazah yang ditawarkan

Undergraduate Programmes Offered

Bachelor Pengurusan Alam Sekitar / *Bachelor of Environmental Management*
Bachelor Sains dan Teknologi Alam Sekitar / *Bachelor of Environmental Science and Technology*

**SKEMA PENGAJIAN PAKEJ ELE_x UNTUK PROGRAM 4 TAHUN
BERKUATKUASA UNTUK PEGAMBILAN SEPTEMBER 2017 DAN
SETERUSNYA
ELE_x SCHEME FOR 4 YEARS PROGRAMMES FROM SEPTEMBER INTAKE
2017 ONWARDS**

MUET Band	TOEFL/IELTS Score	CIEP Level	Graduation Requirements for 4-year programmes
1 & 2	-	107	3 LPE + 3 CEL + 24 LAX points
3 & 4	TOEFL 500 - 599 IELTS 5.5 - 6.5	108 – 109	2 LPE + 2 CEL + 24 LAX points
5 & 6	TOEFL 600 - 677 IELTS 7.0 – 9.0	-	2 LPE + 1 CEL + 24 mata LAX atau 1 LPE + 1 CEL + 24 mata LAX (+1 bahasa global)

Sem	4 - Years Programme		
	MUET 1 & 2 CIEP 107	MUET 3 & 4 CIEP 108-109 TOEFL 500 - 599 IELTS 5.5 - 6.5	MUET/ UTEIS 5 & 6 TOEFL 600 - 677 IELTS 7.0 – 9.0
1	LPE2401	LAX 6 points	LAX 6 points
2	LAX points	CEL2102	LPE2301
3	LPE2301	LPE2501	CEL2103
4	LPE2301	LPE2501	LPE2501 / LPE2502 / LPE2402 / Global Language
5	LPE2501	LAX 6 points	LAX 6 points
6	LAX 12 points	CEL2103	LPE2501 / LPE2502 / LPE2402 / Global Language
7	CEL2103	Choose ONE : CEL2102/2105/2106/2107	LAX 6 points
8	Choose ONE : CEL2105/2106 /2107	LAX 6 points	LAX 6 points
9	LAX 6 points	LAX 6 points	-

Students must follow the prescribed study scheme based on their MUET results (or equivalent) every semester.

- MUET Band 5 and 6: Students can choose either ONE or TWO LPE courses. If they choose ONE LPE course, they must also enrol in ONE global language.
- Students who are on the Industrial Training program are not required to enrol in any course or LAX activity for that particular semester. However, they can enrol in a course or LAX activity a semester before or after the industrial training (subjected to course pre-requisites).

ELEX Package Information

I. LPE Courses [(2+1) credits]

- LPE2401 (Reading for Academic Purposes)
- LPE2301 (Academic Interaction and Presentation)
- LPE2501 (Academic Writing)
- LPE2502 – for MUET Band 5 & 6 students only
- LPE2402 – for MUET Band 5 & 6 students only

Note: If students fail in any of LPE course, they must repeat and pass the course before they can enrol in a subsequent LPE course.

II. CEL Courses

- CEL2102 (Effective Listening and Speaking)
- CEL2103 (Writing Academic Texts)
- CEL2105 (Spoken Communication for the Workplace)
- CEL2106 (Communication for Professional Development)
- CEL2107 (Written Business Communication)

Note: If students obtain LEVEL 1, they must repeat and pass the course (LEVEL 2 and above).

III. LAX

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

Note: If students obtain TM (*Tidak Memuaskan/Unsatisfactory*), they must enrol in the same or different LAX activity to replace the failed points. Students must ensure that they fulfil the required number of LAX points to be eligible for graduation.

IV. Pre-requisites for courses

- LPE2401: MUET Band 1 – 2/equivalent
- LPE2301: CEL 2102 Level 2 or MUET Band 3 – 4/equivalent
- LPE2501: Passed LPE2301
- CEL2103: Passed LPE2501 or MUET Band 5 – 6/equivalent
- CEL2102, 2105, 2106, 2107: None

STRUKTUR KURIKULUM / CURRICULUM STRUCTURE

Nama Program <i>Program Name</i>	:	Bachelor Pengurusan Alam Sekitar <i>Bachelor of Environmental Management</i>
Jumlah Kredit Bergraduat <i>Total Credits to Graduate</i>	:	128 Jam Kredit / Credit Hours
Tempoh Pengajian <i>Period of Study</i>	:	8 Semester / Semesters (4 Tahun / Years)
Matlamat Program	:	<ol style="list-style-type: none"> 1. Menghasilkan graduan yang mempunyai ilmu asas mencukupi untuk membina kerjaya di dalam bidang pengurusan alam sekitar atau bidang berkaitan 2. Menghasilkan graduan yang dapat mempamerkan ciri-ciri kepemimpinan dalam sesebuah organisasi mahupun perniagaan yang diceburi dan mampu menyelesaikan masalah berkaitan alam sekitar melalui pendekatan mampan 3. Mampu menjalankan penyelidikan dalam bidang pengurusan alam sekitar samada di peringkat pasca siswazah atau di dalam organisasi masing-masing serta menerapkan pembelajaran sepanjang hayat

RINGKASAN HASIL PEMBELAJARAN PROGRAM

Program	Pengetahuan	Kemahiran Teknikal/Praktikal/ Psikomotor	Pendekatan Kemahiran Berfikir dan Saintifik	Kemahiran Berkomunikasi	Kemahiran Sosial dan Bertanggungjawab	Professionalisme, Nilai, Sikap dan Etika	Pendidikan Sepanjang Hayat dan Pengurusan Informasi	Kemahiran Pengurusan dan Keusahawanan	Kemahiran Kepimpinan
	P1	P2	P3	P4	P5	P6	P7	P8	P9
Bachelor Pengurusan Alam Sekitar	41	21	19	11	12	13	11	7	4

1. Kursus Universiti/ University Courses (25 jam kredit / credit hours)

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A/T	PRASYARAT/ PREREQUISITE
LPE2301	<i>Academic Interaction and Presentation</i>	3	2	1	BBI 2422 atau CEL2102
LPE2501	<i>Academic Writing</i>	3	2	1	LPE2301
PRT2009	Pertanian dan Kehidupan/ <i>Agriculture and Life</i>	2	1	1	Tiada/ None
SKP2101	Kenegaraan Malaysia/ <i>Malaysian</i>	3	3	0	Tiada/ None

<i>Nationhood</i>					
SKP2203	Tamadun Islam Tamadun Asia/ <i>Islamic Civilization and Asian Civilization</i>	2	2	0	Tiada/ None
SKP2204	Hubungan Etnik/ <i>Ethnic Relations</i>	2	2	0	Tiada/ None
ECN3100	Prinsip Ekonomi/ <i>Principles Of Economics</i>	3	3	0	Tiada/ None
FCE3204	Kemahiran Berfikir/ <i>Thinking Skills</i>	2	2	0	Tiada/ None
MGM 3101	Prinsip Pengurusan/ <i>Principles of Management</i>	3	3	0	Tiada/None
QKSXXXX	Kokurikulum/ <i>Cocurriculum</i>	1	0	1	Tiada/ None
QKSXXXX	Kokurikulum/ <i>Cocurriculum</i>	1	0	1	Tiada/ None

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

KOD KURSUS/ <i>COURSE CODE</i>	NAMA KURSUS/ <i>COURSE NAME</i>	Kr	K	A	PRASYARAT/ <i>PREREQUISITE</i>
ACT2112	Perakaunan Pengenalan/ <i>Introductory Accounting</i>	4	3	1	Tiada/ None
MGM3180	Asas Keusahawanan/ <i>Basic Entrepreneurship</i>	3	2	1	Tiada/ None
EMG3202	Penilaian Kesan Alam Sekitar/ <i>Environmental Impact Assessment</i>	2	2	0	EMG3009/EMG3009
EMG3203	Pengenalan Perancangan Alam Sekitar/ <i>Introduction to Environmental Planning</i>	3	3	0	Tiada/ None
EMG3204	Studio Perancangan Alam Sekitar I/ <i>Environmental Planning Studio I</i>	3	0	3	Tiada/ None
EMG3302	Ekonomi dan Pengurusan Alam Sekitar/ <i>Environmental Economics and Management</i>	3	3	0	ECN3100
EMG3303	Pengurusan dan Operasi Projek/ <i>Project Management and Operation</i>	3	3	0	ECN3100
EMG3501	Prinsip Undang-undang Alam Sekitar/ <i>Principles of Environmental Law</i>	3	3	0	Tiada/ None
EMG4991	Seminar Pengurusan Alam Sekitar/ <i>Environmental Management Seminar</i>	2	1	1	Tiada/ None
EMG4959	Disertasi Bachelo/ <i>Bachelor Dissertation</i>	6	0	6	Tiada/ None
EMP4901	Latihan Industri/ <i>Industrial Training</i>	12	0	12	Tiada/ None
EMG3008	Pengenalan Kepada Sistem	3	3	0	Tiada/ None

	Semulajadi/ <i>Introduction to Natural Systems</i>				
EMG3009	Pengurusan Sumber/ <i>Resource Management</i>	2	2	0	Tiada/ None
EMG3010	Pengurusan Kualiti Alam Sekitar/ <i>Environmental Quality Management</i>	3	3	0	Tiada/ None
EMG4102	Sistem Pengurusan Kualiti Alam Sekitar/ <i>Environmental Quality Management Systems</i>	3	3	0	Tiada/ None
EMG3401	Masyarakat, Etika dan Alam Sekitar/ <i>Society, Ethics and the Environment</i>	3	3	0	EMG3001 / EMG3008
EMG4206	Studio Perancangan Alam Sekitar II/ <i>Environmental Planning Studio II</i>	3	0	3	EMG3203 dan EMG3204
EMG3801	Pengenalan Kepada Kerja Lapangan/ <i>Introduction to Fieldwork</i>	2	0	2	Tiada/ None
EMG4802	Kerja Lapangan Pengurusan Kualiti Alam Sekitar/ <i>Environmental Quality Management Fieldwork</i>	2	0	2	EMG3801
EMG4803	Kerja Lapangan Pengurusan Perancangan Alam Sekitar/ <i>Environmental Management Planning Fieldwork</i>	2	0	2	EMG3801
EMG4902	Kaedah Penyelidikan Untuk Pengurusan Alam Sekitar/ <i>Research Methodologies for Environmental Management</i>	3	2	1	Tiada/ None

3. Kursus Elektif/ *Elective Courses* (33 jam kredit / *credit hours*)

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A/T	PRASYARAT/ PREREQUISITE
EMG4405	Pemikiran Kitar Hayat Dalam Pembangunan Mampan/ <i>Life cycle thinking in sustainable development</i>	3	3	0	Tiada/ None
EMG3011	Kemampuan Dan Kemasyarakatan/ <i>Sustainability and Society</i>	2	2	0	Tiada/ None
EMG3402	Kaedah Penyelidikan Kualitatif untuk Alam Sekitar/ <i>Qualitative Research Methods for the Environment</i>	4	3	1	Tiada/ None
EMG4001	Statistik untuk Perancangan dan Pengurusan Alam Sekitar/ <i>Statistics for Environmental Planning and</i>	3	2	1	EMG3007

<i>Management</i>					
EMG3205	Geografi Fizikal/ <i>Physical Geography</i>	3	3	0	Tiada/ None
EMG4105	Pengurusan Projek Dalam Sekitaran Terkawal/ <i>Management of Projects in Controlled Environments</i>	3	2	1	EMG3204 atau EMG3303
EMG4106	Perubahan Alam Sekitar dan Isu Semasa/ <i>Environmental Change and Current Issues</i>	2	2	0	
EMG4202	Perancangan Pengangkutan/ <i>Transport Planning</i>	3	3	0	Tiada/ None
EMG4203	Perancangan dan Pengurusan Alam Sekitar Gunaan/ <i>Applied Environmental Planning and Management</i>	3	2	1	EMG3204
EMG4205	Perancangan Respons Tumpahan Minyak/ <i>Oil Spill Response Planning</i>	2	2	0	
EMG4401	Geografi Kemanusiaan/ <i>Human Geography</i>	3	3	0	EMG3205
EMG4402	Gender dan Pengurusan Bersepadu Sumber Asli/ <i>Gender and Integrated Natural Resources Management</i>	3	2	1	EMG3009
EMG4501	Polisi dan Pentadbiran Alam Sekitar/ <i>Policy and Environmental Administration</i>	3	3	0	
EMG4502	Undang-undang Alam Sekitar dan Perancangan/ <i>Environmental Law and Planning</i>	3	3	0	EMG3501
EMG3003	Sistem Maklumat Alam Sekitar/ <i>Environmental Information Systems</i>	3	2	1	Tiada/ None
EMG3007	Kaedah Kuantitatif Untuk Pengurusan Alam Sekitar/ <i>Quantitative Methods for Environmental Management</i>	3	1	2	Tiada/ None
EMG3103	Pengurusan Kualiti Air dan Udara/ <i>Air and Water Quality Management</i>	3	3	0	Tiada/ None
EMG3104	Prinsip Pengurusan Sisa Pepejal/ <i>Principles of Solid Waste Management</i>	3	3	0	Tiada/ None
EMG4403	Penyelidikan Dalam Sosiologi Alam Sekitar/ <i>Research in Environmental Sociology</i>	3	2	1	EMG3011
EMG4404	Ekopelancongan Dan Alam Sekitar/ <i>Ecotourism and Environment</i>	3	2	1	Tiada/ None
EMG4504	Undang-Undang Berkaitan Pemuliharaan Kepelbagaian Biologi	3	3	0	Tiada/ None

	Dan Perubahan Iklim/ <i>Laws relating to Biodiversity Conservation and Climate Change</i>				
EMG4992	Pemudahcaraan Dalam Pengurusan Alam Sekitar/ <i>Facilitation in Environmental Management</i>	2	1	1	EMG3991
MGM3113	Gelagat Organisasi/ <i>Organization Behavior</i>	3	3	0	Tiada/ None
BB*24**	Bahasa Asing/	3	3	0	

Nota/ Notes :

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

Nota Penting/ INotes :

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 di bawah :
(Butiran lanjut mengenai CEL dan LAX sila rujuk di muka surat belakang buku panduan ini)
Students need to complete the english package as the table below: For more details on CEL and LAX please refer to the back/last page of this book.

MUET Band	TOEFL/IELTS Score	CIEP Level	Graduation Requirements for 4-year programmes
1 & 2	-	107	3 LPE + 3 CEL + 24 LAX points
3 & 4	TOEFL 500 - 599 IELTS 5.5 - 6.5	108 – 109	2 LPE + 2 CEL + 24 LAX points
5 & 6	TOEFL 600 - 677 IELTS 7.0 - 9.0	-	2 LPE + 1 CEL + 24 mata LAX atau 1 LPE + 1 CEL + 24 mata LAX (+1 bahasa global)

SKEMA PENGAJIAN/ STUDY SCHEME**TAHUN 1 / 1st YEAR****SEMESTER 1 / 1st SEMESTER**

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A/T
SKP2101	Kenegaraan Malaysia/ <i>Malaysian Nationhood</i>	3	3	0
SKP2203	Tamadun Islam Tamadun Asia/ <i>Islamic Civilization and Asian Civilization</i>	2	2	0
MGM3101	Prinsip Pengurusan/ <i>Principles Of Management</i>	3	3	0
EMG3008	Pengenalan Kepada Sistem Semulajadi/ <i>Introduction to Natural Systems</i>	3	3	0
QKXXX	Ko-kurikulum/ <i>Co-curriculum</i>	1	0	1
	CEL2102 & LAX			
	JUMLAH/ TOTAL	12	11	1

SEMESTER 2 / 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A/T
LPE2301	<i>Academic Interaction and Presentation</i>	3	2	1
PRT2009	Pertanian dan Kehidupan/ <i>Agriculture and Life</i>	2	1	1
FCE3204	Kemahiran Berfikir/ <i>Thinking Skills</i>	2	2	0
ECN3100	Prinsip Ekonomi/ <i>Principles Of Economics</i>	3	3	0
EMG3009	Pengurusan Sumber/ <i>Resource Management</i>	2	2	0
EMG3203	Pengenalan Perancangan Alam Sekitar/ <i>Introduction to Environmental Planning</i>	3	3	0
EMG3801	Pengenalan Kepada Kerja Lapangan/ <i>Introduction to Fieldwork</i>	2	0	2
QKXXX	Ko-kurikulum/ <i>Co-curriculum</i>	1	1	0
	JUMLAH/ TOTAL	18	15	3

TAHUN 2 / 2ND YEAR**SEMESTER 1 / 1ST SEMESTER**

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A/T
LPE2501	<i>Academic Writing</i>	3	2	1
ACT2112	Perakaunan Pengenalan/ <i>Introductory Accounting</i>	4	3	1
MGM3180	Asas Keusahawanan/ <i>Basic Entrepreneurship</i>	3	2	1
EMG3010	Pengurusan Kualiti Alam Sekitar/ <i>Environmental Quality Management</i>	3	3	0
EMG4802	Kerja Lapangan Pengurusan Kualiti Alam Sekitar/ <i>Environmental Quality Management</i> Fieldwork	2	0	2
EMG3501	Prinsip Undang-undang Alam Sekitar/ <i>Principles of Environmental Law</i>	3	3	0
JUMLAH/ TOTAL		18	13	5

SEMESTER 2 / 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A
SKP2204	Hubungan Etnik/ <i>Ethnic Relations</i>	2	2	0
EMG3303	Pengurusan dan Operasi Projek/ <i>Project Management and Operation</i>	3	3	0
EMG3204	Studio Perancangan Alam Sekitar I/ <i>Environmental Planning Studio I</i>	3	0	3
EMG4991	Seminar Pengurusan Alam Sekitar/ <i>Environmental Management Seminar</i>	2	1	1
EMG3302	Ekonomi dan Pengurusan Alam Sekitar/ <i>Environmental Economics and Management</i>	3	3	0
	Elektif/ <i>Elective</i>	3		
	LAX			
JUMLAH/ TOTAL		16		

TAHUN 3 / 3RD YEAR**SEMESTER 1 / 1ST YEAR**

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A
EMG4206	Studio Perancangan Alam Sekitar II/ <i>Environmental Planning Studio II</i>	3	0	3
EMG4902	Kaedah Penyelidikan Untuk Pengurusan Alam Sekitar/ <i>Research Methodologies for Environmental Management</i>	3	2	1
	Elektif/ <i>Elective</i>	12		
	LAX			
	JUMLAH/ TOTAL	18		

SEMESTER 2 / 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A
EMG4803	Kerja Lapangan Pengurusan Perancangan Alam Sekitar/ <i>Environmental Management Planning Fieldwork</i>	2	0	2
EMG4959A	Disertasi Bachelo/ <i>Bachelor Dissertation</i>	3	0	3
EMG3401	Masyarakat, Etika dan Alam Sekitar/ <i>Society, Ethics and the Environment</i>	3	3	0
	CEL 2105/2106/2107			
	Elektif/ <i>Elective</i>	9		
	JUMLAH/ TOTAL	17		

TAHUN 4 / 4TH YEAR**SEMESTER 1 / 1ST SEMESTER**

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A
EMG4959B	Disertasi Bachelor/ <i>Bachelor Dissertation</i>	3	0	3
EMG3202	Penilaian Kesan Alam Sekitar/ <i>Environmental Impact Assessment</i>	2	2	0
EMG4102	Sistem Pengurusan Kualiti Alam Sekitar/ <i>Environmental Quality Management Systems</i>	3	3	0
	Elektif/ <i>Elective</i>	9	0	0
	LAX			
	JUMLAH/ TOTAL	17		

SEMESTER 2 / 2ND SEMESTER

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

STRUKTUR KURIKULUM / CURRICULUM STRUCTURE

Nama Program : **Bachelor Sains dan Teknologi Alam Sekitar**
Program Name : **Bachelor of Environmental Science and Technology**

Jumlah Kredit Bergraduat : **122 Jam Kredit / Credit Hours**
Total Credits to Graduate

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

Matlamat Program : 1. Menghasilkan profesional sains alam sekitar yang berpengetahuan tinggi dalam pelbagai bidang kerjaya merentas disiplin yang menyumbang ke arah kelestarian hidup. *(To produce professionals in environmental sciences, knowledgeable in various career disciplines and across disciplines that contribute to sustainability in life)*

2. Menghasilkan graduan yang berpotensi untuk mengaplikasikan teknologi alam sekitar dalam penyelesaian masalah dan penawaran perkhidmatan alam sekitar. *(To produce potential graduates who can apply environmental technologies in solving problem and offer environmental services)*

3. Melahirkan penyelidik yang berkemahiran penyelidikan serta berupaya menggunakan kemahiran teknikal dan kaedah alam sekitar bagi tujuan inovasi dan pengajian lanjutan *(To produce highly skilled researchers who are able to use technical skills and environmental practices for innovations and advance studies)*

RINGKASAN HASIL PEMBELAJARAN PROGRAM

Program	Pengetahuan	Kemahiran Teknikal/Praktikal/ Psikomotor	Pendekatan Kemahiran Berfikir dan Sainifik	Kemahiran Berkomunikasi	Kemahiran Sosial dan Bertanggungjawab	Professionalisme, Nilai, Sikap dan Etika	Pendidikan Sepanjang Hayat dan Pengurusan Informasi	Kemahiran Pengurusan dan Keusahawanan	Kemahiran Kepimpinan
	P1	P2	P3	P4	P5	P6	P7	P8	P9
Bachelor Sains Teknologi Alam Sekitar	38	12	28	8	7	9	11	2	2

1. Kursus Universiti/ *University Courses* (25 jam kredit / *credit hours*)

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A	PRASYARAT/ PREREQUISITE
SKP2101	Kenegaraan Malaysia/ <i>Malaysian Nationhood</i>	3	3	0	Tiada/ None
SKP2203	Tamadun Islam Tamadun Asia/ <i>Islamic Civilization and Asian Civilization</i>	2	2	0	Tiada/ None
SKP2204	Hubungan Etnik/ <i>Ethnic Relations</i>	2	2	0	Tiada/ None
KOM3403	Pengucapan Awam/ <i>Public Oration</i>	3	2	1	Tiada/ None
FCE3204	Kemahiran Berfikir/ <i>Thinking Skills</i>	2	2	0	Tiada/ None
MGM3180	Asas Keusahawanan/ <i>Basic Entrepreneurship</i>	3	2	1	Tiada/ None
PRT2009	Pertanian dan Kehidupan/ <i>Agriculture and Life</i>	2	1	1	Tiada/ None
LPE2301	<i>Academic Interaction and Presentation</i>	3	2	1	CEL2102
LPE2501	<i>Academic Writing</i>	3	2	1	LPE2301
	Ko-kurikulum/ <i>Co-curriculum</i>	1	0	1	
	Ko-kurikulum/ <i>Co-curriculum</i>	1	0	1	

2. Kursus Teras/ *Core Courses* (67 jam kredit / *credit hours*)

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A	PRASYARAT/ PREREQUISITE
EMG3001	Manusia dan Alam Sekitar/ <i>Man And Environment</i>	3	3	0	Tiada/ None
EMG3202	Penilaian Kesan Alam Sekitar/ <i>Environmental Impact Assessment</i>	2	2	0	EMG3009
EMG3401	Masyarakat, Etika dan Alam Sekitar/ <i>Society, Ethics and the Environment</i>	3	3	0	EMG3001 / EMG3008
EMG3502	Undang-undang Kawalan Pencemaran Alam Sekitar	3	3	0	Tiada/ None
ESC3009	Analisis dan Instrumentasi Alam Sekitar/ <i>Instrumentation And Environmental Analysis</i>	3	2	1	Tiada/ None
ESC3011	Pengenalan Sains Atmosfera/ <i>Introduction To Atmospheric Sciences</i>	3	2	1	Tiada/ None
ESC3012	Teknologi Rawatan Sisa Pepejal/ <i>Solid Waste Treatment Technology</i>	3	3	0	Tiada/ None
ESC3013	Fizik Alam Sekitar/ <i>Environmental Physics</i>	3	2	1	Tiada/ None
ESC3014	Kimia Alam Sekitar/ <i>Environmental Chemistry</i>	3	2	1	Tiada/ None
ESC3015	Biologi Alam Sekitar/ <i>Environmental</i>	3	2	1	Tiada/ None

<i>Biology</i>					
ESC3101	Prinsip Kesihatan Alam Sekitar/ <i>Principles of Environmental Health</i>	3	2	1	Tiada/ None
ESC3203	Hidrologi Alam Sekitar/ <i>Environmental Hydrology</i>	3	2	1	Tiada/ None
ESC3204	Rawatan Air Sisa/ <i>Wastewater Treatment</i>	3	2	1	Tiada/ None
ESC3401	Geologi Alam Sekitar/ <i>Environmental Geology</i>	3	2	1	Tiada/ None
ESC3508	Matematik Gunaan Untuk Alam Sekitar/ <i>Applied Mathematics for the Environment</i>	3	2	1	Tiada/ None
ESC3509	Pengenalan Kepada Envirometriks/ <i>Introduction to Environmetrics</i>	3	2	1	Tiada/ None
ESC4801	Kajian Lapangan Alam Sekitar Bersepadu/ <i>Integrated Environmental Field Study</i>	2	0	2	Tiada/ None
ESC4901	Latihan Industri/ <i>Industrial Training</i>	12	0	12	Tiada/ None
ESC4959	Disertasi Bacelor/ <i>Bachelor Dissertation</i>	6	0	6	Tiada/ None

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

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

KOD KURSUS/ <i>COURSE CODE</i>	NAMA KURSUS/ <i>COURSE NAME</i>	Kr	K	A	PRASYARAT/ <i>PREREQUISITE</i>
EMG3302	Ekonomi dan Pengurusan Alam Sekitar/ <i>Environmental Economics and Management</i>	3	3	0	ECN3100
EMG4501	Polisi dan Pentadbiran Alam Sekitar/ <i>Policy and Environmental Administration</i>	3	3	0	EMG3009
ESC3010	Sains Tanah dan Air/ <i>Soil And Water Sciences</i>	3	2	1	Tiada/ None
ESC4002	Hidrokimia Dan Geokimia Alam Sekitar/ <i>Environmental Hydrochemistry and Geochemistry</i>	3	2	1	Tiada/ None
ESC4101	Penilaian Risiko dan Kesihatan Alam Sekitar/ <i>Environmental Health Risk Assessment</i>	3	3	0	ESC3101
ESC4103	Mikrobiologi Alam Sekitar/ <i>Environmental Microbiology</i>	3	3	0	Tiada/ None
ESC4201	Pengurusan Kualiti Air Sungai/ <i>River Water Quality Management</i>	3	3	0	Tiada/ None
ESC4202	Hidrogeologi/ <i>Hydrogeology</i>	3	2	1	Tiada/ None
ESC4204	Analisis Lembangan/ <i>Watershed Analysis</i>	3	3	0	ESC3203
ESC4205	Kimia Marin/ <i>Marine Chemistry</i>	3	2	1	atau ESC3014

ESC4406	Geofizik Alam Sekitar/ <i>Environmental Geophysics</i>	3	2	1	\ atau ESC3013
ESC4502	Respons Kecemasan Alam Sekitar/ <i>Environmental Emergency Response</i>	3	3	0	\ atau ESC3014
ESC4503	Biologi Pencemaran/ <i>Pollution Biology</i>	3	2	1	Tiada/ None
ESC4505	Ekologi Industri/ <i>Industrial Ecology</i>	3	3	0	EMG3001
ESC4507	Forensik Alam Sekitar/ <i>Environmental Forensics</i>	3	2	1	Tiada/ None
ESC4508	Biodiversiti dan Pemuliharaan/ <i>Biodiversity And Conservation</i>	3	3	0	\ atau ESC3015
ESC4509	Ekologi Sumber Asli/ <i>Ecology Of Natural Resources</i>	3	.3	0	atau ESC3015
ESC4510	Biofizik Alam Sekitar/ <i>Environmental Biophysics</i>	3	2	1	atau ESC3013
ESC4512	Kimia Alam Sekitar Lanjutan/ <i>Advance Environmental Chemistry</i>	3	2	1	atau ESC3014

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	PRASYARAT/ PREREQUISITE
EMG4102	Sistem Pengurusan Kualiti Alam Sekitar/ <i>Environmental Quality Management Systems</i>	3	3	0	Tiada/ None
ESC3205	Rawatan Air Minum/ <i>Drinking Water Treatment</i>	3	3	0	Tiada/ None
ESC3501	Sistem Maklumat Geografi Alam Sekitar/ <i>Environmental Geographic Information Systems</i>	3	2	1	Tiada/ None
ESC3507	Envirometriks/ <i>Envirometrics</i>	3	2	1	Tiada/ None
ESC4102	Penilaian Pendedahan Pencemaran/ <i>Pollution Exposure Assessment</i>	3	2	1	ESC3101
ESC4301	Pemencilan Karbon dan Perubahan Iklim <i>Carbon Sequestration And Climate Changes</i>	3	2	1	ESC3015
ESC4303	Teknologi Pengawalan Pencemaran Udara/ <i>Air Pollution Control Technology</i>	3	3	0	\ ESC3013
ESC4401	Teknik Penyiasatan Subpermukaan/ <i>Subsurface Investigation Technique</i>	3	2	1	\ ESC3013
ESC4404	Teknologi Rawatan Sisa Berbahaya/ <i>Hazardous Waste Treatment Technology</i>	3	3	0	ESC3014
ESC4504	Pemodelan Sistem Alam Sekitar/ <i>Environmental Modeling</i>	3	2	1	\ ESC3508
ESC4506	Teknologi Pintar untuk Alam Sekitar/ <i>Intelligent Technology For Environment</i>	3	3	0	Tiada/ None
ESC4511	Penderiaan Jauh Alam Sekitar/ <i>Environmental Remote Sensing</i>	3	2	1	Tiada/ None
ESC4513	Bioremediasi Alam Sekitar/ <i>Environmental Bioremediation</i>	3	2	1	Tiada/ None

ESC4515	Sistem Kesihatan Dan Keselamatan Industri/ <i>Industrial Health And Safety System</i>	2	2	0	Tiada/ None
ESC4516	Aplikasi Pemodelan Komputer Alam / <i>Application of Environmental Computer Modeling</i>	3	2	1	ESC3508
ESC4603	Sistem Tenaga dan Alam Sekitar/ <i>Energy System And Environment</i>	3	3	0	ESC3013

iii. Elektif bebas / *Free Electives* (6 jam kredit / *credit 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 di bawah :
(Butiran lanjut mengenai CEL dan LAX sila rujuk di muka surat belakang buku panduan ini)
Students need to complete the english package as the table below : For more details on CEL and LAX please refer to the back/last page of this book.

MUET Band	TOEFL/IELTS Score	CIEP Level	Graduation Requirements for 4-year programmes
1 & 2	-	107	3 LPE + 3 CEL + 24 LAX points
3 & 4	TOEFL 500 - 599 IELTS 5.5 - 6.5	108 – 109	2 LPE + 2 CEL + 24 LAX points
5 & 6	TOEFL 600 - 677 IELTS 7.0 - 9.0	-	2 LPE + 1 CEL + 24 mata LAX atau 1 LPE + 1 CEL + 24 mata LAX (+1 bahasa global)

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

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A
SKP2203	Tamadun Islam Tamadun Asia/ <i>Islamic Civilization and Asian Civilization</i>	2	2	0
PRT2009	Pertanian dan Kehidupan/ <i>Agriculture and Life</i>	2	1	1
EMG3001	Manusia dan Alam Sekitar/ <i>Man And Environment</i>	3	3	0
ESC3013	Fizik Alam Sekitar/ <i>Environmental Physics</i>	3	2	1
ESC3014	Kimia Alam Sekitar/ <i>Environmental Chemistry</i>	3	2	1
ESC3015	Biologi Alam Sekitar/ <i>Environmental Biology</i>	3	2	1
	Ko-kurikulum/ <i>Co-curriculum</i>	1	0	1
	JUMLAH/ TOTAL	17	13	4

SEMESTER 2 / 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A
LPE2301	<i>Academic Interaction and Presentation</i>	3	2	1
FCE3204	Kemahiran Berfikir/ <i>Thinking Skills</i>	2	2	0
ESC3009	Analisis dan Instrumentasi Alam Sekitar/ <i>Instrumentation and Environmental Analysis</i>	3	2	1
ESC3508	Matematik Gunaan Untuk Alam Sekitar/ <i>Applied Mathematics for the Environment</i>	3	2	1
ESC3509	Pengenalan Kepada Envirometriks/ <i>Introduction to Environmetrics</i>	3	2	1
ESC3101	Prinsip Kesihatan Alam Sekitar/ <i>Principles of Environmental Health</i>	3	2	1
	Ko-kurikulum/ <i>Co-curriculum</i>	1	0	1
	JUMLAH/ TOTAL	18	12	6

TAHUN 2 / 2ND YEARSEMESTER 1 / 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A
SKP2101	Kenegaraan Malaysia/ <i>Malaysian Nationhood</i>	3	3	0
SKP2204	Hubungan Etnik/ <i>Ethnic Relations</i>	2	2	0
LPE2501	<i>Academic Writing</i>	3	2	1
ESC3401	Geologi Alam Sekitar/ <i>Environmental Geology</i>	3	2	1
ESC3011	Pengenalan Sains Atmosfera/ <i>Introduction To Atmospheric Sciences</i>	3	2	1
ESC3203	Hidrologi Alam Sekitar/ <i>Environmental Hydrology</i>	3	2	1
JUMLAH/ TOTAL		17	13	4

SEMESTER 2 / 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A
KOM3403	Pengucapan Awam/ <i>Public Oratation</i>	3	2	1
MGM3180	Asas Keusahawanan/ <i>Basic Entrepreneurship</i>	3	2	1
ESC3012	Teknologi Rawatan Sisa Pepejal/ <i>Solid Waste Treatment Technology</i>	3	3	0
	Elektif/ <i>Elective</i>	9	6	3
JUMLAH/ TOTAL		18	13	5

TAHUN 3 / 3RD YEAR

SEMESTER 1 / 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A
ESC4801	Kajian Lapangan Alam Sekitar Bersepadu/ Integrated Environmental Field Study	2	0	2
ESC3204	Rawatan Air Sisa/ <i>Wastewater Treatment</i>	3	2	1
	Elektif/ <i>Elective</i>	9	7	2
	JUMLAH/ TOTAL	14	9	5

SEMESTER 2 / 2ND SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A
ESC4959A	Disertasi Bacelor/ <i>Bachelor Dissertation</i>	2	0	2
	Elektif/ <i>Elective</i>	12	9	3
	JUMLAH/ TOTAL	14	9	5

TAHUN 4 / 4TH YEAR

SEMESTER 1 / 1ST SEMESTER

KOD KURSUS/ COURSE CODE	NAMA KURSUS/COURSE NAME	Kr	K	A
ESC4959B	Disertasi Bachelo/ <i>Bachelor Dissertation</i>	4	0	4
EMG3401	Masyarakat, Etika dan Alam Sekitar/ <i>Society, Ethics and the Environment</i>	3	3	0
EMG3202	Penilaian Kesan Alam Sekitar/ <i>Environmental Impact Assessment</i>	2	2	0
EMG3502	Undang-undang Kawalan Pencemaran Alam Sekitar/ <i>Law Of Environmental Pollution Contro</i>	3	3	0
JUMLAH/ TOTAL		12	8	4

SEMESTER 2 / 2ND SEMESTER

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

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

Prasyarat : Tiada

Kursus ini merangkumi elemen fungsian dalam sistem pengurusan sisa pepejal dan mengaitkan dengan amalannya di Malaysia.

This course covers functional elements in solid waste management systems in relation to its practices in Malaysia.

EMG3202 Penilaian Kesan Alam Sekitar/ *Environmental Impact Assessment* 2(2+0)

Prasyarat : EMG3009

Kursus ini merangkumi penggunaan Penilaian Kesan Alam Sekitar (EIA) dalam perancangan sesuatu projek pembangunan. Kaedah EIA yang sering digunakan dalam sesuatu penilaian juga dibincangkan.

This course covers the use of the Environmental Impact Assessment (EIA) method in planning of developmental projects. EIA methodologies that are commonly used are discussed.

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, pemeliharaan alam sekitar dan Sistem Maklumat Geografi turut diberi perhatian.

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 will be emphasized.

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 jauh dan perisian pemetaan turut digunakan untuk menganalisis isu perancangan serta pembentukan penyelesaiannya.

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 will be used to analyse planning and development issues as well as forming their solutions.

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

Prasyarat : Tiada

Kursus ini merangkumi isu asas dalam geografi fizikal dan menganalisis implikasi penyelidikan terkini. Interaksi global yang melibatkan sistem atmosfera, lautan, ekosistem, dan geologi diberi tumpuan. Pengaruh proses global dan perubahan alam sekitar ke atas keadaan bentuk muka bumi dan bentuk landskap juga dibincangkan.

This course covers the fundamental issues in physical geography and analyses the implications of recent research. Global interactions involving the atmosphere, oceans, ecosystems, and geologic and earth surface processes will be emphasised. The influence of global processes and environmental changes on the nature of landforms and landscapes will be discussed.

EMG3302 Ekonomi dan Pengurusan Alam Sekitar/ *Environmental Economics and Management* 3 (3+0)

Prasyarat : ECN3100

Kursus ini merangkumi pendekatan ekonomi dalam mentafsir masalah alam sekitar dan menilai penyelesaian dasar. Tumpuan diberikan kepada kegagalan pasaran dan kesan luaran, penyelesaian lazim dan ekonomi untuk masalah alam sekitar. Pendekatan analisis risiko, analisis kos-faedah, kajian kes masalah alam sekitar, serta pendekatan untuk mencapai pembangunan mapan diterapkan.

This course covers the economic approach in assessing environmental problems and evaluating policy solutions. Emphasis will be given to market failure and externalities, conventional and economic solutions to environmental problems. Risk analysis approaches, benefit-cost analysis, case studies in environmental problems, and approaches to achieve sustainable development are covered.

EMG3303 Pengurusan dan Operasi Projek/ *Project Management and Operation* 3 (3+0)

Prasyarat : ECN3100

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 turut dibincangkan.

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

EMG3401 Masyarakat, Etika dan Alam Sekitar/ *Society, Ethics and the Environment* 3(3+0)

Prasyarat : EMG3001 / EMG3008

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

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

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.

EMG3501 Prinsip Undang-undang Alam Sekitar/ *Principles of Environmental Law* 3 (3 + 0)

Prasyarat : Tiada

Kursus ini merangkumi pengenalan kepada system perundangan di Malaysia termasuk pendekatan undang-undang lazim dan statutori dalam usaha meningkatkan kualiti alam sekitar. Tumpuan juga diberikan kepada perjanjian, konvensyen, dan isu-isu alam sekitar di peringkat antarabangsa serta implikasi perundangannya. Kes undang-undang berkaitan isu-isu alam sekitar turut dibincangkan.

This course covers introduction to the legal system in Malaysia including common law and statutory approaches in efforts to improve environmental quality. Agreements, conventions, and issues pertaining to environment at the international level and their legal implications are emphasised. Case laws on environmental issues are discussed.

EMG3801 Pengenalan Kepada Kerja Lapangan/ *Introduction to Fieldwork* 2 (0 + 2)

Prasyarat : Tiada

Kursus ini merangkumi pengenalan kepada langkah keselamatan, penggunaan alat, kaedah dan teknik penyelidikan berkaitan pemantauan ke atas alam sekitar. Data berkaitan alam sekitar akan dianalisis dengan kaedah yang betul dan dirumuskan dalam laporan

This course covers the introduction to research instruments, methods and techniques used in monitoring the environment. Environmental data will be analyzed with the right technique and summarized in a report

EMG4901 Latihan Industri/ *Industrial Training* 12 (0+12)

Prasyarat : Pelajar program Bachelo Pengurusan Alam Sekitar tahun akhir

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.

EMG4959 Disertasi Bachelo/ *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.)

EMG4001 Statistik untuk Perancangan dan Pengurusan Alam Sekitar/ *Statistics for Environmental Planning and Management* 3 (2+1)

Prasyarat :

Kursus ini merangkumi penggunaan kaedah statistik untuk menganalisis dan interpretasi maklumat dalam perancangan dan pengurusan alam sekitar. Konsep dan aplikasi kaedah statistik akan dibincangkan. Aktiviti makmal ditumpukan kepada teknik memproses data, penyelesaian masalah dan interpretasi maklumat yang berkaitan dengan alam sekitar.

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 discussed. Laboratory activities emphasize data processing techniques, problem solving and interpretation of information related to environment.

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 dan impak piawaian antarabangsa seperti siri ISO 14000 berkaitan pengurusan alam sekitar akan diperkenalkan.

This course covers the issues related to trade, environment and development and the roles of consumer, community, industry and government in enhancing the environment 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.

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

Prasyarat : EMG3204 atau EMG3303

Kursus ini merangkumi penggunaan dan aplikasi amalan terbaik dan pendekatan berasaskan proses untuk pengurusan pelbagai projek berkaitan alam sekitar. Tumpuan turut diberikan kepada kajian kes perniagaan, kumpulan pengurusan projek, kawalan, risiko dan kualiti.

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. The emphasis is on business case studies, project management team, controls, risk and quality.

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

Prasyarat

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 turut

dibincangkan.

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 also discussed.

EMG4202 Perancangan Pengangkutan/ *Transport 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 akan diberi tumpuan. Pengumpulan data, teknik penilaian dan teknik penentuan projek serta perancangan pengangkutan disamping 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 emphasised. 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 akan dibangunkan melalui perbincangan kajian kes.

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 will be developed through discussion of case studies.

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

Prasyarat

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

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

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

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

ekopelancongan diuruskan secara professional dan berjaya mencapai matlamat kewujudannya.

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

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. Penekanan kursus ini diberikan kepada aspek kaedah menjalankan kajian-kajian kitar hayat produk dari perspektif kemampuan tersebut. Implementasi kepada pendekatan kitar hayat yang komprehensif mampu memberikan impak yang positif kepada kemampuan sesuatu produk yang dikaji.

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. This course emphasises on the methods of conducting studies related to the product's life cycle through the perspective of sustainability. Implementation of a comprehensive life cycle approach could provide a positive impact on the sustainability of a product under review

EMG4501 Polisi dan Pentadbiran Alam Sekitar/ *Policy and Environmental Administration* 3(3+0)

Prasyarat : EMG3009

Kursus ini merangkumi proses pembentukan polisi yang berkaitan dengan alam sekitar. Tumpuan diberikan kepada pentadbiran dan perundangan persekitaran termasuk peranan 'Common Law' di Malaysia. Sistem pentadbiran alam sekitar yang diamalkan oleh beberapa negara lain turut dibincangkan.

This course covers the process of formulating policies related to environmental matters. Administration and laws including 'Common Law' in Malaysia are emphasised. Systems of environmental administration as practiced by other countries are also discussed.

EMG4502 Undang-undang Alam Sekitar dan Perancangan/ *Environmental Law and Planning* 3 (3 + 0)

Prasyarat : EMG3501

Kursus ini merangkumi undang-undang berkaitan pengurusan, kawalan pencemaran dan perancangan alam sekitar. Tumpuan juga diberikan kepada penguatkuasaan, perundangan Tort, rejim perundangan alam sekitar peringkat tempatan dan antarabangsa.

This course covers law related to the management, pollution control and planning of the environment. Enforcement, law of Torts, local and international legal regime are also emphasized.

EMG4504 Undang-Undang Berkaitan Pemuliharaan Kepelbagaian Biologi Dan Perubahan Iklim/ *Laws relating to Biodiversity Conservation and Climate Change* 3 (3 + 0)

Prasyarat : Tiada

Kursus ini merangkumi undang-undang dan polisi serta isu berkaitan pemuliharaan kepelbagaian biologi dan perubahan iklim di peringkat nasional dan antarabangsa. Kursus ini juga membincangkan

hubungkait antara pemuliharaan kepelbagaian biologi dan perubahan iklim dari sudut perundangan termasuk peranan dan kes mahkamah.

This course covers law and policy as well as issues on biodiversity conservation and climate change at national and international level. The course also considers the interrelationship between biodiversity conservation and climate change from legal perspective including the court's roles and cases

EMG4802 Kerja Lapangan Pengurusan Kualiti Alam Sekitar/ *Environmental Quality Management Fieldwork* 2 (0+2)

Prasyarat : EMG3801

Kursus ini merangkumi kaedah penyelidikan berkaitan impak pembangunan ke atas alam sekitar melalui kerja lapangan di lokasi yang dipilih. Hasil kerja lapangan ini akan dirumuskan dalam bentuk laporan dan pembentangan.

This course covers research methods related to the impact of development on the environment through fieldwork in selected locations. The result of this fieldwork will be summarized in the form of a report and presentation

EMG4803 Kerja Lapangan Pengurusan Perancangan Alam Sekitar/ *Environmental Management Planning Fieldwork* 2 (0+2)

Prasyarat : EMG3801

Kursus ini merangkumi kaedah penyelidikan berkaitan impak pembangunan ke atas alam sekitar melalui kerja lapangan. Kajian lapangan akan dilaksanakan di lokasi terpilih. Hasil kajian lapangan akan dirumuskan dalam laporan penilaian kesan alam sekitar

This course covers research methods on the impact of development on the environment through field studies. Field studies will be carried out in selected locations. The result of field studies will be summarized in the environmental impact assessment report

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. Penerangan terperinci kaedah menyiapkan masalah dan objektif kajian serta sorotan literatur akan diberikan. Tumpuan juga diberikan kepada aplikasi teori penyelidikan seperti pembentukan objektif penyelidikan, pembinaan instrumen kajian, mengumpul dan menganalisis data dan melaporkan hasil penyelidikan.

This course covers the basic methods of qualitative and quantitative research for environmental management. Approaches in developing the problem statement, research objectives and proper literature reviews are explained. Emphasis will also be given towards to the application of research theory such as the establishment of the research objectives, the construction of the research instrument, collect and analyze data, and report the results

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

Prasyarat : Pelajar tahun dua Program Bachelo Pengurusan Alam Sekitar

Kursus ini akan melatih pelajar untuk mengguna teknik pembentangan seminar termasuk

persembahan, isi, persiapan, alat pandang dengar dan perisian persembahan. Pelajar akan dinilai melalui pembentangan seminar ilmiah dan teknikal.

This course trains students towards the proper use of seminar presentation techniques including presentation, content, preparation, audio visual equipment and seminar presentation software. Student will be evaluated through academic and technical seminars presentation.

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

Prasyarat :

Kursus ini akan melatih pelajar untuk mengadaptasi teknik memudahcara untuk kumpulan kecil dan besar. Pelajar akan mereka bentuk proses memudah cara secara berkesan dan bertindak aktif dalam perbincangan kumpulan.

This course will train students to adapt facilitation techniques for small and large groups. Students will design effective facilitation process and involve actively in group discussions

Jabatan Sains Alam Sekitar/ Department of Environmental Sciences

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

Prasyarat : Tiada

Kursus ini merangkumi analisis kimia dalam alam sekitar. Tajuk termasuk analisis pencemar organik, pencemar tak organik dan reaktiviti bahan pencemar dengan partikel. Penyediaan bahan kimia piawai dan kolum akan diperincikan. Instrumentasi terkini yang digunakan dalam kajian alam sekitar akan diterangkan dan diikuti dengan kajian amali serta pembentangan secara berkumpulan.

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

ESC3010 Sains Tanah dan Air/ *Soil and Water Sciences* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi prinsip asas sains dan teknologi kajian tanah dan air. Tajuk termasuk aspek utama geosains, kitaran hidrologi, pengaliran melalui media telus, peranan air dalam kontinum tanah-tumbuhan-atmosfera, kualiti air dan hidraulik.

This course covers the basic scientific and technological principles of soil and water studies which include the main aspects of geoscience, hydrologic cycle, flow through porous media, the role of water in soil-plant-atmosphere continuum, water quality and hydraulic.

ESC3011 Pengenalan Sains Atmosfera/ *Introduction to Atmospheric Sciences* 3(2+1)

Prasyarat : Tiada

Kursus ini merangkumi komposisi dan struktur atmosfera, pembentukan awan dan fenomena cuaca, proses termodinamik, sinaran suria dan daratan, pergerakan udara dan ramalan cuaca. Tajuk perubahan cuaca termasuk perubahan meteorologi dan pemanasan global akan dibincangkan.

This course covers composition and structure of atmosphere, cloud formation and weather phenomena, thermodynamic processes, solar and terrestrial radiation, air motions, and weather forecasts. Climate change including meteorological changes and global warming are also discussed.

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

Prasyarat : Tiada

Kursus ini merangkumi elemen sistem pengurusan sisa pepejal termasuk penjanaan, pengendalian dan pemrosesan di punca, pengumpulan, pengangkutan, pengurangan sisa dan kitar semula, teknologi penukaran dan pelupusan akhir. Hubungkait antara ekonomi, teknologi, kesihatan, alam sekitar, perundangan dan perancangan dalam sistem pengurusan dan pelupusan sisa pepejal akan ditekankan.

This course covers elements of solid waste management system which include generation, on-site handling and processing, collection, transportation, waste minimization and recycling, conversion technologies and final disposal. The relationship between economics, technologies, health, environment, law and planning in solid waste management and disposal are emphasized.

ESC3013 Fizik Alam Sekitar/ *Environmental Physics* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi fenomena fizikal dan hukum yang mengawalinya. Topik yang dibincangkan termasuk proses *earth's heat engine*, tenaga hijau, keelektrikan, pergerakan gelombang dan hidraulik serta radiasi. Aplikasi hukum fizik dalam penyelesaian masalah alam sekitar diperkenalkan.

This course covers physical phenomena and the laws that govern them. Topics discussed include the earth's heat engine process, green energy, electricity, wave motion and hydraulics, and radiation. The application of physical laws in solving environmental problems are introduced

ESC3014 Kimia Alam Sekitar/ *Environmental Chemistry* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumikan konsep kimia dan aplikasinya dalam alam sekitar. Topik yang dibincangkan termasuklah sifat kimia air, proses fiziko-kimia dalam alam sekitar, elektrokimia, geokimia dan biogeokimia, serta kimia organik. Kaedah persampelan, pengawetan dan penyimpanan sampel bagi matriks alam sekitar juga dibincangkan. Topik khas seperti kimia pencemaran, kimia perubahan iklim dan bahan pencemar semasa juga ditekankan.

The course covers basic concepts of chemistry and its application in the environment. Topics discussed include water chemistry, physical chemistry processes in the environment, electrochemistry, geochemistry and biogeochemistry as well as organic chemistry. Sampling, preservation and storage of samples from environmental matrices are also discussed. Special topics on pollution chemistry, climate change chemistry and emerging pollutants are also emphasized

ESC3015 Biologi Alam Sekitar/ *Environmental Biology* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi topik asas ekologi, seperti struktur dan fungsi ekosistem, autekologi, dinamik populasi dan interaksi komuniti dengan ekosistem. Taburan biogeografi, pemuliharaan biologi, perkhidmatan ekosistem serta pengurusan biosfera turut ditekankan. Impak komponen biologi terhadap alam sekitar juga akan dibincangkan.

This course covers basic principles of ecology such as ecosystem structure and function, autecology, population dynamics and communities interaction with the ecosystem. Biogeographic distribution, conservation biology, ecosystem services and biosphere management are also emphasized. Impacts of biological components on the environment will also be discussed

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

Prasyarat : Tiada

Kursus ini merangkumi perbincangan pelbagai isu dan masalah persekitaran yang memberi kesan ke atas kesihatan manusia berdasarkan kaedah toksikologi, epidemiologi, mikrobiologi dan kajian kes. Kursus ini meneliti pencemaran di dalam beberapa media alam sekitar, bahan kimia dan racun perosak, pencetusan wabak dan penyakit bawaan air dan makanan, impak perubahan cuaca keatas kesihatan manusia, dan penilaian risiko kesihatan persekitaran.

This course covers various environmental issues and problems that affect human health based on toxicology methods, epidemiology, microbiology and case studies. Pollution in different environmental media, chemicals and pesticides, epidemics, food and water borne diseases, the impact of climate on human health, and environmental health risk assessment are discussed.

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

Prasyarat : Tiada

Kursus ini merangkumi peranan hidrologi dalam perancangan dan pengurusan alam sekitar. Impak eko-hidrologi ke atas pengurusan alam sekitar akan dibincang. Topik perbincangan termasuk masalah banjir, tanah runtuh, hakisan dan pemendapan, pencemaran tidak bertitik dan pencemaran air tanah. Pemodelan hidrologi dan pencemaran air juga dibentangkan.

This course covers the role of hydrology in environmental planning and management as well as the eco-hydrological impacts on environmental management. Also discussed are problems of flood, landslide, erosion and sedimentation, non-point source of pollution, groundwater pollution and hydrologic modelling.

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 operator loji rawatan. Parameter asas kawalan operasi loji dan pengawasan proses ditekankan. Prinsip rawatan enapcemar anaerobik, penggunaan semula efluen dan enapcemar, dan isu kesihatan serta keselamatan juga dibincangkan.

This course discusses several different objectives of wastewater treatment, local regulatory requirements for wastewater discharges, wastewater sources and characteristics and the role of the wastewater treatment plant operator. Basic plant operational control parameters and process monitoring is emphasized. Principles of anaerobic sludge treatment, effluent and sludge reuse and health and safety issues are also explained.

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

Prasyarat : Tiada

Kursus ini merangkumi isu berkaitan 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 turut dibincangkan.

This course covers issues on sources of water supply, impacts of water pollution and drinking water treatment processes. Important drinking water quality parameters and disinfection techniques as well as the impact of water quality on human health are also discussed.

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

Prasyarat : Tiada

Kursus ini merangkumi prinsip asas geologi alam sekitar, proses dalaman dan permukaan bumi. Topik sumber mineral dan tenaga, pelupusan sisa dan jenis pencemaran berkaitan geologi alam sekitar juga dibincangkan. Isu terkini seperti bencana geologi di dalam dan luar negara dan langkah pencegahannya turut dibincangkan.

This course covers the basic environmental geology principles, earth internal and surface processes. Topics on mineral and energy resources, waste disposal and types of pollution related to environmental geology are also discussed. The current issues such as local and international geological adversities and mitigation measures will also be discussed

ESC3501 Sistem Maklumat Geografi Alam Sekitar/ *Environmental Geographic Information Systems* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi konsep Sistem Maklumat Geografi (GIS) termasuk takrifan GIS, data geografi, kartografi dan struktur data dalam GIS, input dan output serta aplikasi GIS dalam bidang alam sekitar.

This course covers the definition of GIS, geographic data, cartographic and data structure, input and output data as well as application of GIS in the field of environment.

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

Prasyarat : Tiada

Kursus ini merangkumi kaedah analisis dan interpretasi data alam sekitar dalam langkah tebatan sumber pencemaran. Kajian kes digunakan untuk mengesahkan model ramalan berdasarkan analisis masa sebenar. Kaedah analisis multivariat dan pemodelan untuk menilai kualiti alam sekitar juga dibincangkan.

This course covers methods in analysis and interpretation of environmental data in mitigating pollution sources. Case studies are used to validate prediction models based on real time analysis. Multivariate analysis and modelling methods to evaluate environmental quality are 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 penyelesaian isu alam sekitar. Arah aliran alam sekitar diterang dengan menggunakan persamaan matematik. Topik khas dalam model matematik akan dibincangkan juga.

This course covers the basic mathematics used in solving environmental issues. Environmental trends will be explained by using mathematical equations. Special topics in mathematical modeling will also be discussed

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

Prasyarat : Tiada

Kursus ini merangkumi topik asas statistik untuk data alam sekitar. Rumusan keadaan alam sekitar melalui analisis eksplorasi data dan statistik deskriptif dan inferans diperkenalkan. Pengaruh kebarangkalian atas persampelan dan penganggaran serta kesesuaian kegunaan ujian parametrik dan bukan-parametrik dibincangkan. Aplikasi metrik alam sekitar akan diberikan.

This course covers elementary statistical topics for environmental data. Summary of the environmental conditions through exploratory data analysis and descriptive and inferential statistics are also introduced. Probability and estimation influence on sampling and the suitability of parametric and non-parametric test used are also discussed. Environmental metric applications will be given

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

Prasyarat : Tiada

Kursus ini merangkumi prinsip saintifik asas hidrokimia dan geokimia air dan tanah. Tajuk adalah meliputi kelarutan mineral, pembentukan kompleks, asid dan bes, kimia karbonat, luluhawa batuan dan pembentukan tanah liat, penjerapan dan pertukaran ion, tindak balas redoks, energetika mikrob dan redoks penzonan untuk menggambarkan sifat kimia tanah, air permukaan, air bawah tanah yang bersih dan tercemar.

This course covers the basic scientific principles to the hydrochemistry and geochemistry of water and soil. Topics covered include mineral solubility, complexation, acids and bases, carbonate chemistry, rock weathering and clay formation, adsorption and ion exchange, redox reactions, microbial energetics and redox zonation as to describe the chemistry of pristine and polluted soil, surface, and ground water environments

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

Prasyarat : ESC3101

Kursus ini merangkumi proses penilaian risiko yang digunakan untuk mengukur potensi kesan dan impak buruk ke atas kesihatan manusia dan populasi disebabkan oleh pencemaran di tempat kerja atau alam sekitar. Beberapa contoh sebenar (melalui kajian kes) untuk menaksir impak kesihatan akan digunakan.

This course covers the health risk assessment process to measure the potential adverse effects and impacts on individual and population due to occupational and environmental pollutions.

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

Prasyarat : ESC3101

Kursus ini merangkumi anatomi dan fisiologi manusia, toksikologi industri, prinsip penilaian persekitaran tempat kerja, kaedah persampelan, pendedahan kebisingan dan kawalan, dan penggunaan garis panduan dan piawaian. Penekanan akan diberikan kepada mengenalpasti, menilai dan mengawal hazard di tempat kerja dan ancaman kepada manusia dan persekitaran.

This course covers anatomy and physiology of the human body, industrial toxicology, principles of evaluating the work environment, sampling methodology, noise exposure and control, and application of guidelines and standards. Emphasizes are given to the identification, evaluation and control of potential workplace hazards and the potential health threats to humans and the environment.

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

Prasyarat : Tiada

Kursus ini merangkumi prinsip asas dan kaedah yang digunakan di dalam bidang mikrobiologi alam sekitar. Pelajar akan mempelajari kepelbagaian mikrob, fungsi mikrob dalam persekitaran berbeza dan hubungan dinamik antara komuniti mikrob, organisma dan persekitaran.

This course covers the basic principles and methods used in environmental microbiology field. Students will also learn about microbial diversity, roles of microbes in different environments and their dynamic interactions within microbial communities, higher organisms and surroundings

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. Masalah dan penyelesaian kawasan lembangan air setempat dan serantau berkaitan dengan pengurusan kualiti air sungai dibincangkan.

This course covers water pollution sources, planning and management of water quality, water quality index determination and river classification for water resource management. Localized and regional watershed problems and solutions in relation to river water quality management are discussed.

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

Prasyarat : Tiada

Kursus ini merangkumi isu kepentingan sumber air tanah serta proses-proses yang digunakan di dalam mengurus sumber air tanah. Selain dari itu, topik berkaitan pembangunan air tanah, aliran melalui keliangan, perjalanan dan taburan air ke perigi, saluran, prosedur penubusgunaan, pencemaran air tanah dan pemodelan air tanah akan dibincangkan.

This course covers importance issue of groundwater and the processes that were used to manage it. In addition topics related to groundwater development, flow through porous media, water movement and distribution towards groundwater wells, drainage, reclamation procedures, groundwater pollution and ground water modeling will also be discussed.

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

Prasyarat : ESC3203

Kursus ini merangkumi masalah pengurusan alam sekitar dari sudut hidrologi dan geomorfologi yang melibatkan lembangan saluran. Teknik dan kaedah penilaian lembangan saluran menggunakan Sistem Maklumat Geografi (GIS) dan pemodelan lembangan untuk menilai tahap kesihatan lembangan saluran yang meliputi diagnosis penyebab, cadangan pilihan dan polisi untuk memperbaiki sistem lembangan saluran. Kajian kes yang merangkumi aspek hidrologi dan impak pencemaran air dari pelbagai guna tanah akan dibentangkan.

This course covers hydrologic and geomorphic basis of environmental management problems concerning drainage basins. Essential tools and techniques to conduct watershed evaluation using Geographic Information Systems (GIS) and watershed modelling to evaluate the health status of a watershed that will include diagnosing the causes, suggestion on options, and policies on how to improve the watershed system.

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

Prasyarat : ESC3014

Kursus ini merangkumi proses kimia persekitaran marin termasuk asas biogeokimia oksigen, komposisi garam, spesis kimia terlarut, radioisotop, elemen utama dan surih, logam berat di persisiran pantai dan laut dalam. Satu kerja lapangan diadakan sepanjang kursus ini bagi mendedahkan para pelajar cara yang betul melakukan persampelan air laut, sedimen dan jumlah pepejal terampai, disamping kaedah terkini penyediaan sampel. Kaedah analisis terkini sampel juga turut dibincang.

This course covers the chemical processes of marine environments which include basic biogeochemistry of oxygen, salt composition, dissolved chemical species, radioisotopes, trace and major elements, heavy metals in the coastal and deepocean. One fieldwork activity is held during this course to expose students to the correct seawater, sediments and total suspended solid sampling, include current method on samples treatment. An advance analysis on the samples is also discussed.

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

Prasyarat : ESC3015

Kursus ini merangkumi sumber, perubahan dan impak gas rumah hijau, prinsip Konvensyen Rangkakerja Perubahan Iklim Bangsa-bangsa Bersatu (United Nations Framework Convention on Climate Change). Penumpuan adalah terhadap perubahan suhu, peningkatan paras laut, perubahan kerpasan, kesan perubahan iklim ke atas biodiversiti dan kelestarian sistem sokongan hidup. Konsep pemencilan karbon dalam ekosistem dan perdagangan karbon dibincangkan.

This course covers sources, changes and impacts of greenhouse gases, principles and United Nations Framework Convention on Climate Change. The focus is on temperature change, sea level rise, change in precipitation, and impact of climate change on biodiversity and sustainability of life support systems. Concept of carbon sequestration in ecosystem and carbon trading are discussed.

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

Prasyarat : ESC3013

Kursus ini merangkumi pelbagai aspek teknologi kawalan pencemaran udara termasuk pengukuran dan pemantauan, meteorologi, peraturan dan kawalan kejuruteraan pencemaran udara.

This course covers various aspects of air pollution control technologies including measurement and monitoring, meteorology, regulatory and engineering control of air pollution.

ESC4401 Teknik Penyiasatan Subpermukaan/ *Subsurface Investigation Technique* 3 (2+1)

Prasyarat : ESC3013

Kursus ini merangkumi kaedah penyiasatan dan pengenalpastian struktur, parameter fizikal dan bahan kandungan subpermukaan bumi. Topik termasuk kaedah geofizik untuk peninjauan dan carigali. Aplikasi pelbagai kaedah penilaian akuifer dan program komputer juga digunakan.

This course covers methods to investigate and identify structures, physical parameters and the constituents of the earth subsurface including geophysical methods for surveying and exploration purposes. Application of various aquifer evaluation methods and computer programs are also adopted.

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

Prasyarat : ESC3014

Kursus ini merangkumi ciri fizikal, kimia dan ketoksikan sisa berbahaya yang membentuk asas untuk pengelasan hazad dan penentuan pergerakan, taburan dan juga impak ke atas kesihatan manusia dan alam sekitar. Strategi pengurusan termasuk kaedah pengendalian, penyimpanan dan pengangkutan sisa berbahaya mengikut Akta Kualiti Alam Sekeliling 1974, dan peraturan antarabangsa akan dibincangkan. Teknologi rawatan dan pelupusan ke atas sisa berbahaya akan 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.

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

Prasyarat : ESC3013

Kursus ini merangkumi struktur dalaman bumi serta kandungannya. Beberapa kaedah geofizik digunakan untuk tujuan peninjauan, carigali dan penilaian tahap pencemaran. Aktiviti antropogenik dan proses semulajadi yang menyumbang kepada pencemaran alam sekitar akan dibincangkan.

This course covers the study of earth's internal structures and content through geophysical methods such as surveying, exploration and pollution assessment. Anthropogenic activities and natural processes contributing to environmental pollution are also discussed.

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

Prasyarat : ESC3014

Kursus ini merangkumi pengurusan air, makanan, sisa cecair, sisa pepejal, sisa perubatan, perumahan, pusat penjagaan dan perlindungan, vektor, bahan berbahaya dan toksik, dan radiasi selepas bencana. Dokumen Keselamatan Data Bahan (MSDS), Dokumen Keselamatan Bahan Kimia (CSDS) dan prosedur arahan insiden akan juga dibincangkan. Senario respons kecemasan di lapangan akan diperkenalkan.

This course covers management of water, food, liquid waste, solid waste, medical waste, housing and mass care shelters, disease vectors, hazardous and toxic materials, radiation, and biological infection wastes after a disaster including nature of emergencies and disasters and emergency response. Material Safety Data Sheet (MSDS), Chemical Safety Data Sheet (CSDS) documents and incident command procedures are discussed.

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

Prasyarat : Tiada

Kursus ini membincangkan tentang alam semulajadi dan punca-punca pencemaran udara, air dan tanah. Gerakbalas fisiologi dan biokimia dan tumbuhan, haiwan dan organisma lain; mekanisma pertahanan; pengelakan dan ketahanan serta kesan ke atas kesihatan dan kesejahteraan manusia; pengukuran dan pengawasan; petunjuk biologi dan penggunaannya; evolusi; pencemaran; dan sifat ketahanan serta toleransi akan juga disentuh.

This course covers discussion on the natural environment and sources of air, water and soil pollution. The physiological and biochemical responses of plants and animals and other organisms including defense mechanisms, avoidance and resistance, monitoring, biological indicators and their applications, evolution, pollution, practical uses of tolerance and resistance will also be discussed.

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

Prasyarat: ESC3508

Kursus ini merangkumi sistem analisis untuk kajian fenomena alam sekitar yang berubah mengikut masa. Kursus ini menekankan pembentukan dan ujian model sistem untuk penganalisaan dan pengurusan sistem alam sekitar. Topik dalam kursus termasuklah konsep pemodelan, pembentukan model, pelaksanaan model menggunakan perisian pemodelan dan strategi penganalisaan dan penggunaan model sistem alam sekitar.

This course covers the basic principles and methods used in physical and social parameter measurements in environmental studies. Techniques of environmental measurement, sampling, data

analysis and interpretation will be discussed and implemented in the field.

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

Prasyarat : EMG3001

Kursus ini merangkumi kerangka fizik, biologi, kimia dan kemasyarakatan dalam penggunaan konsep ekologi untuk mengurus sumber di dalam sesebuah kawasan terbangun menggunakan kaedah seperti rekabentuk dan pembangunan, penilaian kitaran hayat, penilaian impak dan interpretasi akan dibincangkan.

This course covers the significance of physical, biological, chemical and societal frameworks in the use of ecological concepts to manage resource in a built up area using tools such as design and development, process design, life cycle assessment, impact assessment and interpretation.

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

Prasyarat : Tiada

Kursus ini merangkumi konsep dan kaedah dalam pembinaan sistem kepintaran buatan. Faedah dan sekatan kepada kepintaran buatan berbanding sistem konvensional dalam menangani masalah alam sekitar turut ditekankan. Topik-topik merangkumi arkitektur kepintaran buatan, kejuruteraan ilmu, proses perolehan ilmu, proses perwakilan ilmu dan pilihan alatan pembinaan. Beberapa prototaip kepintaran buatan yang telah dibangunkan turut dibincangkan.

This course covers concepts and methods in the development of an artificial intelligence system. Benefits and limitations of artificial intelligence versus conventional methods in solving environmental problems are emphasized through discussions of artificial intelligence architecture, knowledge acquisition process, knowledge engineering, knowledge representation and development tools.

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

Prasyarat : Tiada

Kursus ini merangkumi taburan, sumber dan laluan angkutan bahan pencemar dalam alam sekitar dan kaedah forensik alam sekitar. Kesan luluhawa terhadap taburan penanda molekul, sebatian penanda molekul unggul, indeks diagnostik, laluan angkutan, biodegradasi dan aplikasi penanda molekul untuk mengenalpasti sumber tumpahan kimia dan larut lesap akan dibincangkan.

This course covers distribution, sources and transport pathways of pollutants in the environment and their application in environmental forensics. Unique molecular marker compounds, weathering effects on molecular marker distribution, diagnostic indices, biodegradation and application of molecular markers for leachate and chemical spill source identification are discussed.

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

Prasyarat : ESC3015

Kursus ini merangkumi konsep penting biodiversiti dan pemuliharaan. Penekanan diberikan kepada aspek etika, perundangan dan ekonomi yang mempengaruhi sikap kita terhadap pengurusan biodiversiti melalui perbincangan terhadap pemacu utama yang menyebabkan kehilangan biodiversiti serta strategi pemuliharaan yang penting bagi menjamin kelestarian biodiversiti. Kaedah melindungi ekosistem, strategi membaikpulih sebagai alat pemuliharaan.

This course covers concepts in biodiversity and conservation. Emphasis is placed on ethics, laws and economics that influence attitudes towards management of biodiversity through discussions on drivers of biodiversity loss and strategies in conservation to guarantee biodiversity sustainability, methods to

protect ecosystem and restoration strategies as conservation tools.

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

Prasyarat : ESC3015

Kursus ini merangkumi konsep biofizikal dan sosio-ekonomi sumber asli alam sekitar dan juga prinsip ekologi untuk pengekalan, pemeliharaan dan pemuliharaan sumber asli. Ekologi dan sejarah semulajadi pelbagai sumber asli meliputi organisma individu hingga lanskap, dari ekosistem semulajadi hingga ekosistem terurus, dari rimba hingga pertanian dan sistem bandar, dan dari alam sekitar tempatan hingga antarabangsa. Pemeliharaan semasa, pemuliharaan dan isu pengurusan akan dibincangkan.

This course covers biophysical and socioeconomic concepts of managing natural resources and ecological principles in the preservation, conservation and restoration of resources. The ecology and natural history of diverse natural resources ranging from individual organisms to landscapes, natural to managed ecosystems, wilderness to agricultural and urban systems, and local to international environment are discussed.

ESC4510 Biofizik Alam Sekitar/ *Environmental Biophysics* 3 (2+1)

Prasyarat : ESC3013

Kursus ini merangkumi prinsip asas bagi menganalisis pertukaran tenaga dan jisim antara organisma hidup dan alam sekitarnya. Perbincangan termasuk parameter iklim mikro dan interaksi dengan tumbuhan serta kesan keatas alam sekitar. Penggunaan model matematik bagi mengira kadar pemindahan tenaga dan jisim, dan impak perubahan iklim mikro ke atas hasil pertanian.

This course covers principles for analyzing energy and mass changes between living organisms and their environment. Discussions include microclimate parameters and its interaction with vegetation as well as impacts on environment. Application of models to calculate energy and mass transfer rates, and impact of micro climatic changes on agriculture yield are also discussed.

ESC4511 Penderiaan Jauh Alam Sekitar/ *Environmental Remote Sensing* 3 (2+1)

Prasyarat : Tiada

Kursus ini merangkumi konsep penderiaan jauh dan aplikasinya dalam alam sekitar. Tajuk yang dibincangkan termasuklah prinsip penderiaan jauh, teori radiasi, sistem sensor, pencerapan, pembetulan, penyimpanan dan analisis data, penanda spektral bahan semulajadi dan buatan manusia, dan aplikasi prinsip penderiaan jauh dalam alam sekitar.

This course covers concepts of remote sensing and its application in environmental management including the principles of remote sensing, radiation theory, sensor systems, data acquisition, correction and storage, data analysis, and spectral signatures of natural and man-made materials.

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

Prasyarat : ESC3014

Kursus ini merangkumi proses kimia lanjutan dalam alam sekitar termasuk tabiat partikel, tabiat pemisahan bahan pepejal dan koloid, kimia air bersih dan tercemar, kimia tanah dan pencemaran udara. Pengangkutan mendatar dan menegak bahan pencemar organik akan diperincikan. Biopemonitoran bahan kimia organik dan tak organik seperti logam berat, nutrien, racun perosak dan hidrokarbon akan dibincangkan.

This course covers concepts of chemistry concerning the behavior of particles in the environment, partitioning of solids and colloids, and chemistry of natural and polluted water, soil and air. Lateral and

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

Prasyarat : Tiada

Kursus ini merangkumi projek penyelidikan bersepadu dengan menggunakan pelbagai teknik pengukuran, kaedah pengumpulan di lapangan dan analisa data. Penekanan diberikan kepada kajian penyiasatan secara berkumpulan berkaitan isu alam sekitar bagi kepentingan industri dan masyarakat.

This course covers integrated research projects by applying various measurement techniques, field data collection and analysis method. Emphasis is given to investigative studies in groups on environmental issues for the benefit of industries and communities

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

Prasyarat : Telah lulus 7 semester pengajian dalam program Bachelo Sains dan Teknologi Alam Sekitar

Kursus ini meliputi latihan industri selama 24 minggu di agensi kerajaan atau swasta dalam bidang sains dan teknologi alam sekitar. Pelajar bertanggungjawab menyiapkan projek mini yang akan dikendalikan di bawah seliaan penyelia industri termasuk menyediakan laporan bertulis dan pembentangan lisan.

This course covers industrial training for a period of 24 weeks at a government or private agency in the field of environmental science and technology. The student is responsible in conducting a mini project which will be carried out under the supervision of the industrial supervisor, including preparing a written report and oral presentation.

ESC4959 Disertasi Bachelo/ 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

KURSUS TAWARAN FAKULTI LAIN / COURSES OFFERED BY OTHER FACULTIES

(Sila rujuk sinopsis pada fakulti berkenaan / For the course synopsis please refer to the relevant faculty)

1. FAKULTI PUSAT PEMAJUAN KOMPETENSI BAHASA/ Centre for the Advancement of Language Competence (CALC)
 - 1.1 LPE2301 *Academic Interaction and Presentation* 3 (2+1)
 - 1.2 LPE2501 *Academic Writing* 3 (2+1)
2. FAKULTI PERTANIAN/ Faculty of Agriculture
 - 2.1 PRT2009 *Pertanian dan Kehidupan/Agriculture and Life* 2 (1+1)
3. FAKULTI EKONOMI DAN PENGURUSAN/ Faculty of Economics and Management
 - 3.1 ECN3100 *Prinsip Ekonomi/ Principles Of Economics* 3 (3+0)
 - 3.2 MGM2111 *Pengurusan Organisasi dan Perniagaan/ Organisation and Business Management* 3 (3+0)
 - 3.3 ACT2112 *Perakaunan Pengenalan/ Introductory Accounting* 4 (3+1)
 - 3.4 MGM3211 *Prinsip Pemasaran/ Principles of Marketing* 3 (3+0)
 - 3.5 ACT3211 *Pengurusan Kewangan/ Financial Management* 3 (3+0)
 - 3.6 ECN3101 *Mikroekonomi I/ Microeconomics I* 3 (3+0)
 - 3.7 ECN3311 *Ekonomi Sumber Asli/Natural Resource Economics* 3 (3+0)
 - 3.8 MGM3113 *Gelagat Organisasi/ Organizational Behavior* 3 (3+0)
 - 3.9 MGM3123 *Pengurusan Sumber Manusia/ Human Resource Management* 3 (3+0)
 - 3.10 MGM4183 *Keusahawanan/ Entrepreneurship* 3 (3+0)
4. FAKULTI EKOLOGI MANUSIA/ Faculty of Human Ecology
 - 4.1 SKP2101 *Kenegaraan Malaysia/ Malaysian Nationhood* 3 (3+0)
 - 4.2 SKP2203 *Tamadun Islam Tamadun Asia/ Islamic Civilization and Asian Civilization* 2 (2+0)
 - 4.3 SKP2204 *Hubungan Etnik/ Ethnic Relations* 2 (2+0)
5. FAKULTI PENGAJIAN PENDIDIKAN
 - 5.1 FCE3204 *Kemahiran Berfikir / Thinking Skills* 2 (2+0)
6. FAKULTI BAHASA MODEN DAN KOMUNIKASI / Faculty of Modern Languages and Communications
 - 6.1 KOM3403 *Pengucapan Awam / Public Oration* 3 (3+0)



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