

**Bachelor Sains dan Teknologi
Alam Sekitar dengan Kepujian**

***Bachelor of Environmental
Science and Technology with
Honours***

STRUKTUR KURIKULUM / CURRICULUM STRUCTURE

Nama Program <i>Program Name</i>	:	Bachelor Sains dan Teknologi Alam Sekitar dengan Kepujian <i>Bachelor of Environmental Science and Technology with Honours</i>
Jumlah Kredit Bergraduat <i>Total Credits to Graduate</i>	:	120 Jam Kredit / Credit Hours
Tempoh Pengajian <i>Period of Study</i>	:	8 Semester / Semesters (4 Tahun / Years)
Matlamat Program <i>Program Outcomes</i>	:	<ol style="list-style-type: none"> 1. Menghasilkan eksekutif atau pegawai yang berpengetahuan tinggi dalam pelbagai bidang berkaitan alam sekitar. <i>(To produce highly knowledgeable executives or officers in various environmental fields.)</i> 2. Menghasilkan pengamal bertauliah atau kompeten dalam penawaran perkhidmatan bagi penyelesaian masalah alam sekitar. <i>(To produce qualified or competent practitioners in offering services for solving environmental problems.)</i> 3. Melahirkan penyelidik atau pelatih yang berupaya mengaplikasikan kemahiran teknikal dan kaedah alam sekitar dalam latihan profesional dan pengajian lanjutan. <i>(To produce researchers or trainees who are able to apply technical skills and environmental methods in professional training and further studies.)</i> 4. Melahirkan pekerja mahir yang kreatif, inovatif dan peka terhadap kepentingan menjaga kelestarian alam sekitar dengan mendidik masyarakat melalui pelbagai aspek kehidupan. <i>(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.)</i>

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
Bachelor Sains dan Teknologi Alam Sekitar dengan Kepujian <i>(Bachelor of Environmental Science and Technology)</i>	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/ <i>Thinking Skills</i>	2	2	0	Tiada/ None
LPE2301	<i>Academic Interaction and Presentation</i>	3	3	0	LPE2401/ MUET Band 3-4
LPE2501	<i>Academic Writing</i>	3	3	0	LPE2301
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
SKP2101*	Kenegaraan Malaysia/ <i>Malaysian Nationhood</i>	3	3	0	Tiada/ None
FEM2401**	Politik Malaysia Dan Masyarakat/ <i>Malaysian Politics And Society</i>	2	2	0	
SKP3112*	Falsafah dan Isu Semasa/ <i>Philosophy and Current Issues</i>	2	2	0	Tiada/ None
SKP3113**	Falsafah dan Isu Semasa Masyarakat Sipil/ <i>Philosophy and Current Issues in Civil Society</i>				
atau/ or	atau/ or	3	3	0	Tiada/ None
SKP3123**	Penghayatan Etika dan Peradaban di Malaysia/ <i>Internalization of Ethics and Civilization in Malaysia</i>				
SKP3122*	Penghayatan Etika dan Peradaban/ <i>Internalization of Ethics and Civilization</i>	2	2	0	Tiada/ None
LPM2100**	Bahasa Melayu Komunikasi	2	2	0	Tiada / None
	Ko-kurikulum/ <i>Co-curriculum</i>	1	0	1	
	Ko-kurikulum/ <i>Co-curriculum</i>	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/ <i>Instrumentation and Environmental Analysis</i>	3	2	1	Tiada/ None
ESC3016	Kemampuan, Etika dan Isu Alam Sekitar/ <i>Sustainability, Ethics and Environmental Issues</i>	3	3	0	Tiada/ None
ESC3017	Ekologi Biosfera/ <i>Biosphere Ecology</i>	3	3	0	Tiada/ None
ESC3018	Pengurusan Sisa/ <i>Waste Management</i>	3	3	0	Tiada/ None
ESC3019	Hidrosfera dan Litosfera/ <i>Hydrosphere and Lithosphere</i>	3	3	0	Tiada/ None
ESC3020	Teknik Lapangan Alam Sekitar/ <i>Environmental Fieldwork Techniques</i>	2	0	2	Tiada/ None

ESC3021	Sains Atmosfera dan Perubahan Iklim/ <i>Atmospheric Science and Climate Change</i>	3	3	0	Tiada/ None
ESC3101	Prinsip Kesihatan Alam Sekitar/ <i>Principles of Environmental Health</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
ESC3510	Sistem Maklumat Geografi dan Penderiaan Jarak Jauh Alam Sekitar/ <i>Environmental Geographic Information System and Remote Sensing</i>	3	2	1	Tiada/ None
ESC3511	Pengurusan dan Sistem Pelaporan Projek Alam Sekitar/ <i>Environmental Project Management and Reporting System</i>	3	3	0	Tiada/ None
ESC4507	Forensik Alam Sekitar/ <i>Environmental Forensics</i>	3	2	1	Tiada/ None
ESC4801	Kajian Lapangan Alam Sekitar Bersepadu/ <i>Integrated Environmental Field Study</i>	2	0	2	Tiada/ None
ESC4803	Komunikasi Sainifik dalam Alam Sekitar/ <i>Scientific Communication in Environment</i>	1	0	1	Tiada/ None
EMG3206	Penilaian Kesan Alam Sekitar dan Pelan Pengurusan Alam Sekitar/ <i>Environmental Impact Assessment and Environmental Management Plan</i>	3	3	0	EMG3503 / EMG3203
EMG3503	Pengenalan Kepada Undang-Undang Alam Sekitar/ <i>Introduction to Environmental Law</i>	3	3	0	Tiada/ None
EMG4301	Penilaian Sumber Asli dan Perkhidmatan Ekosistem/ <i>Ecosystem Services and Natural Resource Valuation</i>	3	3	0	Tiada/ None
ESC4901	Latihan Industri/ <i>Industrial Training</i>	12	0	12	Tiada/ None
ESC4959	Disertasi Bachelor/ <i>Bachelor Dissertation</i>	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/ <i>Environmental Hydrology</i>	3	2	1	Tiada/ None
ESC3401	Geologi Alam Sekitar/ <i>Environmental Geology</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 Kesihatan Alam Sekitar/ <i>Environmental Health Risk Assessment</i>	3	3	0	ESC3101 atau setara
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	Tiada/ None
ESC4205	Kimia Marin/ <i>Marine Chemistry</i>	3	2	1	Tiada/ None
ESC4406	Geofizik Alam Sekitar/ <i>Environmental Geophysics</i>	3	2	1	Tiada/ None
ESC4502	Respons Kecemasan Alam Sekitar/ <i>Environmental Emergency Response</i>	3	3	0	Tiada/ None
ESC4503	Biologi Pencemaran/ <i>Pollution Biology</i>	3	2	1	Tiada/ None
ESC4505	Ekologi Industri/ <i>Industrial Ecology</i>	3	3	0	Tiada/ None
ESC4508	Pemuliharaan dan Pengurusan Biodiversiti/ <i>Biodiversity Conservation and Management</i>	3	3	0	Tiada/ None
ESC4509	Ekologi Sumber Asli/ <i>Ecology Of Natural Resources</i>	3	3	0	Tiada/ None
ESC4512	Kimia Alam Sekitar Lanjutan/ <i>Advance Environmental Chemistry</i>	3	2	1	Tiada/ None
ESC4701	Interaksi Tumbuhan dan Alam Sekitar/ <i>Plant and Environment Interactions</i>	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/ <i>Solid Waste Treatment Technology</i>	3	3	0	Tiada/ None
ESC3204	Rawatan Air Sisa/ <i>Wastewater Treatment</i>	3	2	1	Tiada/ None
ESC3205	Rawatan Air Minum/ <i>Drinking Water Treatment</i>	3	3	0	Tiada/ None
ESC3507	Envirometriks/ <i>Environmetrics</i>	3	2	1	Tiada/ None
ESC4102	Penilaian Pendedahan Pencemaran/ <i>Pollution Exposure Assessment</i>	3	2	1	ESC3101 atau setara
ESC4301	Pemencilan Karbon dan Perubahan Iklim/ <i>Carbon Sequestration And Climate Change</i>	3	2	1	ESC3021 atau setara
ESC4303	Teknologi Pengawalan Pencemaran Udara/ <i>Air Pollution Control Technology</i>	3	3	0	Tiada/ None
ESC4401	Kaedah Penyiasatan Subpermukaan/ <i>Subsurface Investigation Technique</i>	3	2	1	ESC3019 atau setara
ESC4404	Teknologi Rawatan Sisa Berbahaya/ <i>Hazardous Waste Treatment Technology</i>	3	3	0	Tiada/ None
ESC4405	Pengurusan Kawalan Hakisan Tanah, Sedimen dan Air Larian Permukaan/ <i>Soil Erosion, Sediment and Stormwater Management Control</i>	3	2	1	Tiada/ None
ESC4504	Pemodelan Sistem Alam Sekitar/ <i>Environmental Modeling</i>	3	2	1	ESC3508 atau setara
ESC4506	Teknologi Pintar untuk Alam Sekitar/ <i>Intelligent Technology For Environment</i>	3	3	0	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>	3	3	0	Tiada/ None
ESC4517	Sistem Maklumat Geografi dan Penderiaan Jarak Jauh Alam Sekitar Lanjutan/ <i>Advanced Environmental Geographic Information System and Remote Sensing</i>	3	2	1	ESC3510 atau setara
ESC4518	Inovasi Alam Sekitar dan Teknologi Hijau/ <i>Environmental Innovation and Green Technology</i>	3	1	2	Tiada/ None
ESC4603	Sistem Tenaga dan Alam Sekitar/ <i>Energy System And Environment</i>	3	3	0	Tiada/ None
ESC4802	Dokumentari Alam Sekitar/ <i>Environmental Documentaries</i>	3	1	2	Tiada/ None

- 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 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	Kemampuan, Etika dan Isu Alam Sekitar/ <i>Sustainability, Ethics and Environmental Issues</i>	3	3	0
ESC3017	Ekologi Biosfera/ <i>Biosphere Ecology</i>	3	3	0
ESC3019	Hidrosfera dan Litosfera/ <i>Hydrosphere and Lithosphere</i>	3	3	0
ESC3509	Pengenalan kepada Envirometriks/ <i>Introduction to Environmetrics</i>	3	2	1
SKP3112*	Falsafah dan Isu Semasa/ <i>Philosophy and Current Issues</i>	2	2	0
SKP3113**	Falsafah dan Isu Semasa Masyarakat Sivil/ <i>Philosophy and Current Issues in Civil Society</i>			
atau/ or	atau/ or	3	3	0
SKP3123**	Penghayatan Etika dan Peradaban di Malaysia/ <i>Internalization of Ethics and Civilization in Malaysia</i>			
	Ko-kurikulum/ <i>Co-curriculum</i>	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/ <i>Waste Management</i>	3	3	0
ESC3020	Teknik Lapangan Alam Sekitar/ <i>Environmental Fieldwork Techniques</i>	2	0	2
ESC3101	Prinsip Kesihatan Alam Sekitar/ <i>Principles of Environmental Health</i>	3	2	1
ESC3508	Matematik Gunaan untuk Alam Sekitar/ <i>Applied Mathematics for the Environment</i>	3	2	1
LPE2301	<i>Academic Interaction and Presentation</i>	3	3	0
SKP3122*	Penghayatan Etika dan Peradaban/ <i>Internalization of Ethics and Civilization</i>	2	2	0
LPM2100**	Bahasa Melayu Komunikasi	2	2	0
	Ko-kurikulum/ <i>Co-curriculum</i>	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/ <i>Instrumentation and Environmental Analysis</i>	3	2	1
ESC3021	Sains Atmosfera dan Perubahan Iklim/ <i>Atmospheric Science and Climate Change</i>	3	3	0
FCE3204	Kemahiran Berfikir/ <i>Thinking Skills</i>	2	2	0
PRT2009	Pertanian dan Kehidupan/ <i>Agriculture and Life</i>	2	1	1
SKP2101*	Kenegaraan Malaysia/ <i>Malaysian Nationhood</i>	3	3	0
FEM2401**	Politik Malaysia Dan Masyarakat/ <i>Malaysian Politics And Society</i>	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/ <i>Introduction to Environmental Law</i>	3	3	0
ESC3510	Sistem Maklumat Geografi dan Penderiaan Jarak Jauh Alam Sekitar/ <i>Environmental Geographic Information System and Remote Sensing</i>	3	2	1
MGM3180	Asas Keusahawanan/ <i>Basic Entrepreneurship</i>	3	2	1
	Elektif/ <i>Electives</i>	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/ <i>Ecosystem Services and Natural Resource Valuation</i>	3	3	0
ESC3511	Pengurusan dan Sistem Pelaporan Projek Alam Sekitar/ <i>Environmental Project Management and Reporting System</i>	3	3	0
ESC4801	Kajian Lapangan Alam Sekitar Bersepadu/ <i>Integrated Environmental Field Study</i>	2	0	2
	Elektif/ <i>Electives</i>	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/ <i>Environmental Impact Assessment and Environmental Management Plan</i>	3	3	0
ESC4507	Forensik Alam Sekitar/ <i>Environmental Forensics</i>	3	2	1
ESC4803	Komunikasi Saintifik dalam Alam Sekitar/ <i>Scientific Communication in Environment</i>	1	0	1
ESC4959A	Disertasi Bachelo/ <i>Bachelor Dissertation</i>	3	0	3
	Elektif/ <i>Electives</i>	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/ <i>Bachelor Dissertation</i>	3	0	3
	Elektif/ <i>Electives</i>	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/ <i>Industrial Training</i>	12	0	12
	JUMLAH/ TOTAL	12	0	12