

# SARJANA KEJURUTERAAN SEKITARAN

## MASTER OF ENVIRONMENTAL ENGINEERING

### Pengenalan Program / *Introduction*

Program Sarjana Kejuruteraan Sekitaran ditawarkan oleh Jabatan Kejuruteraan Kimia dan Proses dalam bentuk program kerja kursus. Ia menawarkan kursus-kursus teras bidang kejuruteraan sekitararan seperti Pengurusan Sisa Industri, Kimia dan Alat Kawalan Pencemaran Udara, Pengurusan Sisa Pepejal Perbandaran, Pengurusan Alam Sekitar: Ekologi, Audit dan Taksiran Kesan serta Proses Rawatan Air Sisa Lanjutan untuk aplikasi kejuruteraan sekitararan. Pelajar diberi pilihan memilih 4 kursus elektif dari pelbagai aspek kejuruteraan sekitararan iaitu yang berkaitan dengan bidang Analisis Risiko Sekitaran, Teknologi Karbon Rendah, Hidrologi Air Permukaan, Eko-Komuniti Simbiosis, Permodelan Sistem Air Bandaran, Penukaran Biojisim dan Biorefineri, Pemulihan Tenaga dari Bahan Bakar Sisa dan Biojisim dan Amalan Kesihatan Industri serta Pelan Rekabentuk bagi Mengendalikan Bahan Kimia dalam Industri. Selain itu, pelajar berpeluang mengembangkan kemahiran penyelidikan melalui kursus projek penyelidikan. Di akhir program ini, pelajar dijangka dapat memperoleh ilmu kejuruteraan sekitararan yang terkini dan berupaya memenuhi kehendak industri dan pihak berkepentingan di dalam dan juga di luar negara.

*The Master of Environmental Engineering program is offered by the Department of Chemical and Process Engineering as a course work program. It offers core courses in the field of Industrial Waste Management, Air Pollution Chemistry and Control, Municipal Solid Waste Management, Environmental Management: Ecology, Audit and Impact Assessment, as well as Advanced Wastewater Treatment Process for environmental applications. Students are given the option to choose 4 elective courses from various aspects of environmental engineering that are related to Environmental Risk Analysis, Low Carbon Technologies, Surface Water Hydrology, Symbiotic Eco-Community, Urban Water System Modelling, Conversion of Biomass and Biorefinery, Energy Recovery from Waste and Biomass Fuels, Industrial Hygiene, as well as Design for Safe Handling of Industrial Chemical. In addition, students have the opportunity to develop research skills through research project courses. At the end of the program, students are expected to acquire the latest knowledge of environmental engineering, and be able to meet the needs of industry and other stakeholders, both locally and internationally.*

### Mod & Tempoh Program / *Mode of Study & Programme Duration*

Mod Pengajian : Kerja Kursus / *Mode of Study : Course Work*

Sepenuh Masa : 1 ½ – 2 tahun/ *Full Time : 1 ½ – 2 years*

Separuh Masa : 2 – 4 tahun/ *Part Time : 2 – 4 years*

\*Kuliah bermula 6:00 pm – 9:00 pm, Isnin – Khamis / *Lectures start at 6:00-9:00pm, Monday – Thursday*

## Hasil Pembelajaran Kursus / Course Learning Outcome

- Program ini dibangunkan selaras dengan perkembangan ilmu kejuruteraan sekitaran semasa dan memenuhi kehendak industri dan pihak berkepentingan di dalam dan juga di luar negara.

*This programme was developed to be in line with current environmental engineering knowledge and to meet the needs of industry and other stakeholders, both locally and internationally.*

- Program ini menawarkan kursus elektif dari pelbagai aspek kejuruteraan sekitaran, antaranya berkaitan pengurusan sisa, kualiti udara dan kawalan pencemaran, pengurusan alam sekitar, rawatan air sisa, risiko alam sekitar dan kelestarian, pengurusan sumber air, biojisim dan biotenaga, keselamatan industri, kemahiran penyelidikan dan pembangunan projek

*This program offers elective courses from various aspects of environmental engineering, including those related to air quality and pollution control, environmental management, advanced wastewater treatment, environmental risk and sustainability, water resources management, biomass and bioenergy, industrial safety and research skills and project development*

- Program ini merupakan program multidisiplin yang menggabungkan tiga program kejuruteraan iaitu kejuruteraan sekitaran, kejuruteraan awam dan kejuruteraan mekanikal.

*This programme is a multidiscipline programme that integrates three engineering programmes namely environmental engineering, civil engineering and mechanical engineering.*

## Yuran / Fees

### Warganegara / Citizens

| Yuran / Fees   | Full-Time   | Part-Time   |
|--|-------------|-------------|
| Semester pertama /<br><i>1<sup>st</sup> semester</i> | RM 6,500.00 | RM 5,000.00 |
| Semester seterusnya /<br><i>Subsequent semester</i>  | RM 4,250.00 | RM 3,500.00 |

## Struktur Kursus / *Course Structure*

| Semester          | Kod Kursus / <i>Course Code</i>  | Nama Kursus / <i>Course Name</i>   | Taraf Kursus / <i>Category</i> | Unit / <i>Units</i> |
|-------------------|--|--|--------------------------------|---------------------|
| <b>Semester I</b> | KKKF6013   | Kaedah Penyelidikan untuk Sains dan Teknologi<br><i>Research Methodology for Science &amp; Technology</i>  | W                              | 3                   |
|                   | KKKS6243   | Kimia Dan Alat Kawalan Pencemaran Udara<br><i>Air Pollution Chemistry and Control</i>  | W                              | 3                   |
|                   | CMIE6013/ CMIE6213   | Keusahawanan Sosial<br><i>Social Entrepreneurship</i><br>ATAU/OR<br>Inovasi Produk dan Keusahawanan<br><i>Product Innovation and Entrepreneurship</i>  | W                              | 3                   |
|                   | LMCM1083/<br>LMCM1093  | Bahasa Melayu Komunikasi Antarabangsa<br><i>Compulsory for international candidates</i><br>ATAU/OR<br>Bahasa Melayu untuk Pelajar Nusantara<br><i>Compulsory for Indonesia and Brunei candidates</i> | AU                             | -                   |
|                   | <b>Elektif Program (Pilih 2 sahaja) / <i>Electives Programme (Select 2 only)</i></b> |  |                                |                     |
|                   | KKKS6233   | Analisis Risiko Sekitaran  | P                              | 3                   |

|                    |   |   |           |   |
|--------------------|---|---|-----------|---|
|                    |   | <i>Environmental Risk Analysis</i>  |           |   |
|                    | KKKK6363  | Eko-Komuniti Simbiosis<br><i>Symbiotic Eco-Community</i>  | P         | 3 |
|                    | KKKS6263  | Teknologi Karbon Rendah<br><i>Low Carbon Technologies</i>   | P         | 3 |
|                    | KKKA6303  | Hidrologi Air Permukaan<br><i>Surface Water Hydrology</i>   | P         | 3 |
|                    | <b>Jumlah Unit / Total Units</b>  |   | <b>15</b> |   |
| <b>Semester II</b> | KKKS6433  | Pengurusan Sisa Industri<br><i>Industrial Waste Management</i>  | W         | 3 |
|                    | KKKS6143  | Pengurusan Sisa Pepejal Perbandaran<br><i>Municipal Solid Waste Management</i>  | W         | 3 |
|                    | KKKF6016  | Projek Penyelidikan I<br><i>Research Project I</i>  | W         | 6 |
|                    | <b>Elektif Program (Pilih 2 sahaja) / Electives Programme (Select 2 only)</b> |   |           |   |
|                    | KKKK6473  | Pemulihan Tenaga dari Bahan Bakar Sisa dan Biojisim<br><i>Energy Recovery from Waste and Biomass Fuels</i>  | P         | 3 |
|                    | KKKA6933  | Permodelan Sistem Air Bandaran<br><i>Urban Water System Modelling</i>   | P         | 3 |
|                    | KKKK6543  | Amalan Kesihatan Industri dan Pelan Rekabentuk bagi Mengendalikan Bahan Kimia dalam Industri<br><i>Industrial Hygiene and Design for Safe Handling of Industrial Chemical</i> | P         | 3 |

|   |                                  |   |           |   |
|---|----------------------------------|---|-----------|---|
|   | KKKK6383                         | Penukaran Biojisim dan Biorefineri<br><i>Conversion of Biomass and Biorefinery</i>  | P         | 3 |
|   | <b>Jumlah Unit / Total Units</b> |   | <b>18</b> |   |
| <b>Semester III</b>                     | KKKS6033                         | Pengurusan Alam Sekitar: Ekologi, Audit dan Taksiran Kesan<br><i>Environmental Management: Ecology, Audit and Impact Assessment</i> | W         | 3 |
|   | KKKS6353                         | Proses Rawatan Air Sisa Lanjutan<br><i>Advanced Wastewater Treatment Process</i>  | W         | 3 |
|   | KKKF6026                         | Projek Penyelidikan II<br><i>Research Project II</i>  | W         | 6 |
|   | <b>Jumlah Unit / Total Units</b> |   | <b>12</b> |   |
| <b>Jumlah Keseluruhan / Grand Total</b> | <b>45</b>                        |   |           |   |

### Kelebihan Program / *Advantages of Program*

- Program ini memenuhi keperluan MQA  
*This programme fulfils MQA requirement*
- Program ini dibangunkan selaras dengan perkembangan ilmu kejuruteraan sekitaran semasa dan memenuhi kehendak industri dan pihak berkepentingan di dalam dan juga di luar negara  
*This programme was developed to be in line with current environmental engineering knowledge and to meet the needs of industry and other stakeholders, both locally and internationally*
- Program ini menawarkan kursus elektif dari pelbagai aspek kejuruteraan sekitaran, antaranya berkaitan bidang kejuruteraan biokimia, kelestarian teknologi proses, tenaga, keselamatan proses dan pengurusan sisa.  
*This program offers elective courses from various aspects of environmental engineering, including those related to biochemical engineering, process technology sustainability, energy, process safety and waste management*

- Program ini mempunyai elemen penyelidikan dan inovasi sejajar dengan status UKM sebagai sebuah universiti penyelidikan, agar graduan mampu berfikir secara kreatif dan inovatif, bersifat global dan menjadi pemangkin kepada ekonomi negara.

*The programme has the elements of research and innovation in line with UKM's status as a Research University, to ensure that graduates are able to think creatively and innovatively, be global and become catalyst for the nation's economy.*

## Syarat Kemasukan / Entry Requirements

1. PNGK 2.50 ke atas : Ijazah Sarjana Sarjana Muda Kejuruteraan dengan Kepujian atau Sarjana Muda Teknologi Kejuruteraan/ setaraf  
*CGPA 2.50 and above : A Bachelor of Engineering degree with honours or Bachelor of Engineering Technology/ its equivalent*

**ATAU / OR;**

2. PNGK 2.0 – 2.49 : Sarjana Muda Kejuruteraan atau dalam bidang berkaitan atau yang setara dengan penilaian dalaman yang rapi  
*CGPA 2.0 – 2.49 : Bachelor of Engineering degree or related field or its equivalent with thorough internal assessment*

**ATAU / OR;**

3. PNGK 3.00 ke atas : Ijazah Sarjana Muda Sains dengan kepujian (selain bidang kejuruteraan) atau Ijazah Sarjana Muda Teknologi (selain bidang kejuruteraan) / setaraf  
*CGPA 3.00 and above : A Bachelor of Science degree with honours (other than engineering) or Bachelor of Science Technology (other than engineering) / its equivalent*

**ATAU / OR;**

4. PNGK 2.99 ke bawah : Sarjana Muda Sains dengan Kepujian (selain bidang kejuruteraan) atau Ijazah Sarjana Muda Teknologi (selain bidang kejuruteraan)/ setara dengan penilaian dalaman yang rapi  
*CGPA 2.99 and below : A Bachelor of Science degree with honours (other than engineering) or Bachelor of Science Technology (other than engineering) / its equivalent with thorough internal assessment*

**ATAU / OR;**

5. Memenuhi Accreditation of Prior Experiential Learning (APEL A) untuk calon warganegara sahaja:  
*Meet Accreditation of Prior Experiential Learning (APEL A) for Malaysian candidates only:*
  - a) Berumur sekurang-kurangnya 30 tahun pada tarikh permohonan
  - b) Lulus diploma dalam bidang berkaitan atau kelulusan lain yang diiktiraf setaraf dengannya oleh Kerajaan Malaysia dan diluluskan Senat Universiti;
  - c) Kelayakan lain yang setara;
  - d) Memiliki Sijil Perakuan APEL MQA dengan Tahap 7 MQF
  - a) *Minimum age of 30 years old at the date of the application*
  - b) *Pass Diploma in related field or other equivalent qualification recognised by the Malaysian Government and approved by the University's Senate;*

- c) *Other equivalent qualification;*
- d) *Certificate of MQA APEL with MQF Level 7*

## Mod Program / *Mode of Program*

- Kerja Kursus / *Coursework*

## Cara Memohon / *How to Apply*

Pendaftaran secara online melalui <https://join.ukm.my/> setahun dua pengambilan (pengambilan Mac dan September). Yuran permohonan sebanyak RM50.00 (untuk pemohon tempatan) dan USD30.00 atau RM100.00 (untuk permohonan antarabangsa) dibuat ke akaun CIMB Bank Berhad atas nama Pusat Kembangan Pendidikan (8002233817).

*Online registration via <https://join.ukm.my/> (Mac and September Intake). Application fee of RM50.00 (for Malaysian application), USD30.00, or MYR100.00 (for International applicants) has been paid to Pusat Kembangan Pendidikan, CIMB account number (8002233817).*

## Hubungi / *Contact*

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