Faculty of Engineering
Department of Chemical and Environmental Engineering

www.eng.upm.edu.my

Master of Environmental Engineering
INTRODUCTION

This programme is designed to equip professionals with knowledge on the problems of environmental pollution and its improvement for the good of mankind. It prepares professionals with knowledge and skills in environmental control and management and in the solution of environment-related problems.

PROGRAMME REQUIREMENTS

Credit Requirements for Graduation

Students enrolling under this programme must fulfil 41 credits of course work to graduate. The credit distributions for compulsory courses, elective courses and dissertation are as follows:

<table>
<thead>
<tr>
<th>Course Type</th>
<th>Credits</th>
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</thead>
<tbody>
<tr>
<td>Compulsory Courses</td>
<td>6</td>
</tr>
<tr>
<td>Core Courses</td>
<td>19</td>
</tr>
<tr>
<td>Elective Courses</td>
<td>6</td>
</tr>
<tr>
<td>Dissertation</td>
<td>10</td>
</tr>
</tbody>
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**Compulsory Courses**

Students must take both compulsory courses as below:

- ECH5100 Research Methodology 3 credits
- ECH5513 Environmental Management Principles 3 credits

**Core Courses**

Students must take all the compulsory courses listed below:

- ECH5101 Environmental Health Technology 3 credits
- ECH5102 Principles of Environmental Engineering 3 credits
- ECH5103 Wastewater Treatment Design 3 credits
- ECH5104 Solid Waste Management & Design 3 credits
- ECH5106 Toxic and Hazardous Waste Technology 3 credits
- ECH5404 Environmental Engineering Laboratory 1 credit
- ECH5501 Atmospheric Risk Management 3 credits

**Elective Courses**

Students must take only two elective courses (6 credits) out of the listed below:

- ECH5105 Noise Pollution Engineering 3 credits
- ECH5107 Green Engineering 3 credits
- ECH5109 Advanced Air Pollution Engineering 3 credits
- ECH5502 Hazard Analysis and Risk Assessment 3 credits
- ECH5503 Design for Safe Handling of Industrial Chemicals 3 credits
- ECH5510 Disaster Management and Emergency Plan 3 credits
- ECH5511 Safety, Health and Environmental Protection 3 credits
- ECH5804 Corrosion Engineering 3 credits
- ECH5955 Special Topic 3 credits

Identification on the elective courses for the student will be made by the program coordinator.

Dissertation

Student must take one project course which will be carried out in two consecutive semesters.

ECH5990 Dissertation 10 credits
**Course Synopsis**

- **ECH5100**  
  Research Methodology  
  This course covers best practices in research such as research methodology, design and ethics as well as academic writing and oral presentations  
  **3 credits**

- **ECH5513**  
  Environmental Management Principles  
  This course covers environmental management principle and practice, management standards and monitoring as well as future approaches in handling national and global environmental changes. The role of stakeholders in environmental management are assessed. Development activities are related to the environmental conditions  
  **3 credits**

- **ECH5101**  
  Environmental Health Technology  
  This course covers planning on public health measures and preparedness against emerging environmental, health and safety related issues. Effects of water and air pollutions are related to infectious diseases. Health problems from various sources, disposal and management of solid, toxic and hazardous wastes are identified. The effects to human health, environment and economy are evaluated  
  **3 credits**

- **ECH5102**  
  Principles of Environmental Engineering  
  This course covers description on various physical processes involved in the movement of pollutants through the environment as well as the treatment and pollution control. Level of contamination in the solution, soil and atmospheric systems are analyzed. The solution of mass and energy balance calculations for environmental engineering processes are implemented. Principles of chemical and biological ecosystem for chemical stream fate in the natural and engineered systems are assessed  
  **3 credits**

- **ECH5103**  
  Wastewater Treatment Design  
  This course covers design on physical, chemical and biological treatment systems for wastewater treatments. The importance of design and key components in wastewater treatment plants is explained. Options for sludge handling and disposal at the treatment plants are evaluated. Identification of advanced and emerging treatment processes are implemented  
  **3 credits**

- **ECH5104**  
  Solid Waste Management & Design  
  This course covers assessment on basic principles of existing and emerging technologies for municipal solid waste treatment and product recovery from wastes. Characterization of municipal solid waste in accordance with the integrated solid waste management is examined. Principles of scientific and sustainable solid waste management in solving practical municipal solid waste management challenges are applied  
  **3 credits**

- **ECH5106**  
  Toxic and Hazardous Waste Technology  
  This course covers evaluation on sources and types of hazardous waste and relationship between process principles and waste treatment technologies. Fate of contaminants and toxicological effects to human health and environment are assessed. Selection of suitable treatment methods for various types of toxic and hazardous wastes are implemented. Potential recovery technologies for emerging sustainable wastes are identified  
  **3 credits**

- **ECH5404**  
  Environmental Engineering Laboratory  
  This course covers analysis on practical data in group. Measurement of pollutants are implemented by following the proper safety measures during the practical work carried out. The standard methods of environmental analysis are used to determine level of pollutants and water, wastewater, soil, air, noise and corrosion pollution analysis. Reports based on practical results with the needs of appropriate environmental law are assessed  
  **1 credits**

- **ECH5501**  
  Atmospheric Risk Management  
  This course covers relationships between atmospheric risk characteristics with the sources and air risk effects. Explanation on the importance of air pollution policies and laws are implemented. Atmospheric toxic with the indoor air quality concept are related. Appropriate risk management techniques are developed  
  **3 credits**

- **ECH5105**  
  Noise Pollution Engineering  
  The course covers appropriate assessment on noise propagation models to the environment outside and inside. Noise pollution management plans are developed. Suitable methods and isolators are related to noise and vibration pollution control  
  **3 credits**

- **ECH5804**  
  Corrosion Engineering  
  This course covers measurement on rate and types of corrosion with testing methods. The applicability of the metal or alloy in the environment is described. Material selection and appropriate environment for corrosion control are implemented. Suitability of control methods and corrosion prevention are assessed  
  **3 credits**

- **ECH5511**  
  Safety, Health and Environmental Protection  
  This course covers assessment on the risks to health, safety and environment and prevention techniques. Regulations and standards relating to health, safety and the environment are identified. Determination of prevention level and utilization of appropriate personal protective equipment are implemented. Health, safety and environmental audit in the workplace are developed  
  **3 credits**

- **ECH5990**  
  Dissertation  
  This course involves a research or study by a student on a specific topic. It is carried out in two semesters and covers literature review, methodology, data collection and analysis. The scope of research or study will be determined by the supervisor in consultation with the student. At the end of the first semester, the student needs to submit a preliminary report and at the end of the second semester, the student needs to submit a final report. The student is also required to present the findings of the research or study to a panel of assessors  
  **10 credits**

**For further information**

Please contact:

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ADMISSION REQUIREMENTS
The minimum requirement to enrol in this program are as follow:

a) Bachelor in the field of Engineering or Engineering Technology with a CGPA of 2.750/Second Class Lower; or

b) Bachelor in the field of Engineering or Engineering Technology with a CGPA of 2.500/Second Class Lower with at least three (3) years of working experience in the field of study that is being applied for; or

c) Bachelor in any related field of Science or Technology with a CGPA of 3.000/Second Class Upper; or

d) Bachelor in any related field of Science or Technology with a CGPA of 2.750/Second Class Lower with at least three (3) years of working experience in the field of study that is being applied for; or

e) A qualification equivalent to a Bachelor's degree recognized by the professional bodies and MQA

Note:
* When candidates with Bachelor of Science or Technology degrees or their equivalents are admitted, prerequisite modules in Engineering, i.e Remedial Course must be offered to adequately prepare them for their advanced study.

FEES

<table>
<thead>
<tr>
<th>Fees</th>
<th>Master without thesis</th>
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<tbody>
<tr>
<td>Basic Fees (1\textsuperscript{st} semester)</td>
<td>RM1250</td>
</tr>
<tr>
<td>Basic Fees (2\textsuperscript{nd} and subsequent semester)</td>
<td>RM1000</td>
</tr>
<tr>
<td>Credit Fees\footnote{subject to change}</td>
<td>RM250/Credit Hour</td>
</tr>
</tbody>
</table>

Language Requirement

• A Malaysian candidate must have obtained at least a credit in English at Sijil Pelajaran Malaysia level or have passed English courses conducted at the Diploma or Bachelor’s Level.

• All international candidates from countries where English is not a medium of instruction must have obtained a minimum score of 550 for TOEFL Paper-based Test (Academic Version); or Band 6.0 for IELTS (Academic Training); or 79-80 for TOEFL Internet-based Test (Academic Version).

• A candidate without the requisite minimum score for TOEFL or IELTS may be granted a provisional admission. Such candidate will be required to pass an English Placement Test conducted by the University.

• A candidate who has failed the English Placement Test will be required in the first semester to pass a prescribed English course. Should the candidate fail to obtain the prescribed minimum grade, the University may allow him to repeat the prescribed English course in the second semester.

• A candidate who fails after the second attempt will have his candidature suspended until he passes the English course before being allowed to continue with his Masters programme.

Application For Admission

Please apply online via http://sgsportal.upm.edu.my:8080/sgsportal/
Tel. : (603) 9769 4218/4223/4228
Website : http://www.sgs.upm.edu.my/prospective_students-2964