Faculty of Engineering
Department of Civil Engineering
www.eng.upm.edu.my
Master Of Remote Sensing And Gis
INTRODUCTION

This programme is designed to deepen the understanding and applications of spatial science and technology. The application of Remote Sensing and GIS have crossed various fields, especially activities involving spatial data base. This programme also involves the identification of land-based geographical data such as forest types and landuse, water-based ones such as identifying the location of fishing grounds and oil spills. Also of importance are land management and legal issues relating to land ownership and use.

PROGRAMME REQUIREMENTS

Credit Requirements for Graduation

Students enrolling under this programme must fulfill 40 credits of coursework to graduate. The credit distributions for compulsory courses, elective courses and project are as follows:

<table>
<thead>
<tr>
<th>Compulsory Courses</th>
<th>13 credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elective Course</td>
<td>21 credits</td>
</tr>
<tr>
<td>Project</td>
<td>6 credits</td>
</tr>
</tbody>
</table>

Compulsory Courses

Students must take all the listed compulsory courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECV5501</td>
<td>Technical Issues in Geographic Information System</td>
<td>3</td>
</tr>
<tr>
<td>ECV5502</td>
<td>Application Issues in Geographic Information System</td>
<td>3</td>
</tr>
<tr>
<td>ECV5503</td>
<td>Quantitative Remote Sensing</td>
<td>3</td>
</tr>
<tr>
<td>ECV5504</td>
<td>Image Processing and Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ECV5989</td>
<td>Project</td>
<td>3</td>
</tr>
<tr>
<td>ECV5977</td>
<td>Independent Study</td>
<td>1</td>
</tr>
</tbody>
</table>

Elective Courses

Students must take seven elective courses out of the listed courses:

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ECV5505</td>
<td>Geo – Statistical Analysis</td>
<td>3</td>
</tr>
<tr>
<td>ECV5506</td>
<td>Programming for Spatial Data</td>
<td>3</td>
</tr>
<tr>
<td>ECV5507</td>
<td>Spatial Information Management</td>
<td>3</td>
</tr>
<tr>
<td>ECV5508</td>
<td>Remote Sensing and Geographic Information System Application</td>
<td>3</td>
</tr>
<tr>
<td>ECV5509</td>
<td>Global Positioning System</td>
<td>3</td>
</tr>
<tr>
<td>ECV5510</td>
<td>Radar Image Processing</td>
<td>3</td>
</tr>
<tr>
<td>ECV5511</td>
<td>Hyperspectral Remote Sensing</td>
<td>3</td>
</tr>
<tr>
<td>ECV5512</td>
<td>Location-Based Services</td>
<td>3</td>
</tr>
<tr>
<td>ECV5555</td>
<td>Special Topics</td>
<td>3</td>
</tr>
</tbody>
</table>

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

Project

Students are required to register ECV5989-Project for 3 credits each in the final two semesters. This course is a project paper on a special topic that is assigned to the students in the second semester. Students will be examined by a panel of examiners based on the submitted report and oral presentation at the end of the final semester.
Course Synopsis

- **ECV5501: Technical Issues in Geographic Information System**  
  This course is concerned with the technical issues of GIS and relationships with implementation and application of GIS. Topics include the coordinate systems, algorithms, data structure of vector and raster data, and representation.  
  3 credits

- **ECV5502: Application Issue in Geographic Information System**  
  This course discusses both the conceptual and practical aspects of developing GIS applications and it will cover issues from planning to project implementation.  
  3 credits

- **ECV5503: Quantitative Remote Sensing**  
  This course focuses on the geometric and quantitative aspects of remote sensing. It will cover physical aspect of remote sensing, remote sensing in visible, near infrared and infrared wavelengths. Optical, microwave and various remote sensing systems will also be discussed.  
  3 credits

- **ECV5504: Image Processing and Analysis**  
  This course is concerned with the advanced techniques for analysis and interpretation of remotely sensed imagery, with emphasis on data acquired from satellite and airborne platforms. This includes methods of enhancement and display, techniques for feature extraction, including clustering and related statistical methods, and interfacing of remote sensing and GIS.  
  3 credits

- **ECV5505: Geo-Statistical Analysis**  
  This course covers the statistics for spatial data analysis, geostatistical data, spatial prediction, and geostatistical data application.  
  3 credits

- **ECV5506: Programming for Spatial Data Analysis**  
  This course covers the fundamentals aspect of writing and developing routines for input and processes of spatially related data. Students will learn how to develop graphical user interfaces and customization of GIS software to suit users applications.  
  3 credits

- **ECV5507: Spatial Information Management**  
  This course discusses about the management of spatial information. It includes recovery, concept of national spatial data infrastructure, spatial information as a sources of legal evidence, personal data protection law, protection under Malaysian Law for parties that experience losses due to the use of spatial data.  
  3 credits

- **ECV5508: Remote Sensing and Geographic Information System Application**  
  This course covers the content that spreads on several disciplines such as resource management, disaster management, precision agriculture, urban and regional planning, oceanography, utilities and road safety. Students will be exposed to several aspects on the planning, implementation, technical issues, application issues and management.  
  3 credits

- **ECV5509: Global Positioning System**  
  This course will cover theory and principles of positioning using GPS satellite, including the processing, and application of GPS for various types of applications  
  3 credits

- **ECV5510: Radar Image Processing**  
  This course is concerned with the techniques for processing and analysis specifically to radar imagery. It covers Synthetics Aperture Radar (SAR) principles, processing, image correction and enhancement. SAR image analysis, interpretation and applications will also be discussed.  
  3 credits

- **ECV5511: Hyperspectral Remote Sensing**  
  This course covers hyperspectral remote sensing technology in terms of data collection and information processing techniques as well as operations and applications of hyperspectral data for various disciplines.  
  3 credits

- **ECV5512: Location-Based Services**  
  This course covers the concept of Location-based Services (LBS) including the components, techniques and applications of LBS as well as LBS system development for various applications.  
  3 credits

- **ECV5955: Special Topics**  
  The contents of the course depends on the topics selected by the lecturer/s who teach/es the course. It covers the theoretical, application and latest development in related fields.  
  3 credits

For more information  
Please contact:

Deputy Dean (Research)  
Faculty of Engineering  
Universiti Putra Malaysia  
43400 UPM, Serdang  
Selangor Darul Ehsan  
Malaysia  
Tel : 603-89466266/6253  
Fax : 603-86567103  
Email : tdp@eng.upm.edu.my  
Website : http://www.eng.upm.edu.my

Programme Coordinator:  
Helmi Zulhaidi Mohd Shafri  
(Associate Prof. Dr.)  
Department of Civil Engineering  
Faculty of Engineering  
Universiti Putra Malaysia  
43400 UPM, Serdang  
Selangor Darul Ehsan  
Malaysia  
Tel : 603-89466459  
Fax : 603-86567129  
Email : helmi@eng.upm.edu.my  
Website : http://www.eng.upm.edu.my
ADMISSION REQUIREMENTS

An applicant with a bachelor degree in engineering with CGPA 2.500/55%/Second Class Lower and at least three (3) years working experience experiences in relevant field; or
An applicant with a bachelor degree in engineering with CGPA 2.750/60%/Second Class Lower
An applicant with a bachelor degree in science with CGPA 3.000/65%/Second Class Upper OR CGPA 2.750/60%/ Second Class Lower and at least three (3) years working experience experiences in relevant field

* Please refer to programme coordinator for more information on admission requirements

FEES

<table>
<thead>
<tr>
<th>Fees</th>
<th>Master without thesis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Malaysian Student</td>
</tr>
<tr>
<td>Basic Fees (1st semester)</td>
<td>1,200.00</td>
</tr>
<tr>
<td>Basic Fees (2nd and subsequent semester)</td>
<td>950.00</td>
</tr>
<tr>
<td>Credit Fees</td>
<td>250.00 / credit hour</td>
</tr>
</tbody>
</table>

* subject to change

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 or Band 6 for IELTS. This requirement is not applicable to candidates applying for admission into the Malay Language Studies.

• 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://www.sgs.upm.edu.my and send your application supporting documents to the address below:

Dean
School of Graduate Studies
Universiti Putra Malaysia
Zon 4, Off Jalan Stadium
43400 UPM Serdang
Selangor Darul Ehsan
Malaysia

Tel. : (603) 8946 4218/4223/4228
Fax. : (603) 8943 2509/8946 4232
Email : admission@putra.upm.edu.my
Website : http://www.sgs.upm.edu.my