Faculty of Engineering
Department of Civil Engineering
www.eng.upm.edu.my
Master of Structural Engineering and Construction
INTRODUCTION

This programme is designed to provide exposure and in-depth theoretical knowledge in structural engineering and construction management. Courses encompasses the cores and electives, which mainly on structural design and analysis and two interesting courses on construction management.

PROGRAMME DETAILS

**Credit Requirements For Graduation**

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

<table>
<thead>
<tr>
<th>Category</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Compulsory Courses</td>
<td>21 credits</td>
</tr>
<tr>
<td>Elective Course</td>
<td>9 credits</td>
</tr>
<tr>
<td>Dissertation</td>
<td>10 credits</td>
</tr>
</tbody>
</table>

**Compulsory Courses**

Students must take all the listed compulsory courses:

- ECV5100 Research Methodology 3 credits
- ECV5201 Advanced Structural Analysis 3 credits
- ECV5202 Advanced Solid Mechanics 3 credits
- ECV5204 Structural Dynamics 3 credits
- ECV5221 Reinforced Concrete Structures 3 credits
- ECV5701 Advanced Concrete Technology 3 credits
- ECV5703 Construction Business Management 3 credits
- ECV5990 Dissertation 10 credits

Note: ECV5990 - Dissertation is carried out over two semesters.

**Elective Courses**

Students must take at least 9 credits (3 courses) out of the listed courses:

- ECV5203 Finite Element Method 3 credits
- ECV5222 Prestressed Concrete Structures 3 credits
- ECV5223 Steel Design and Construction 3 credits
- ECV5224 Analysis and Design of Bridges 3 credits
- ECV5225 Earthquake Resistance Structures 3 credits
- ECV5226 Design of Tall Buildings 3 credits
- ECV5227 Assessment and Strengthening of Structures 3 credits
- ECV5702 Project Management 3 credits

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

ECV5100  Research Methodology  3 credits
This course covers best practices in research such as research methodology, design and ethics as well as academic writing and oral presentations.

ECV5201  Advanced Method in Structural Analysis  3 credits
This course covers the formulation of basic equations for predicting response matrices and different types of structures under various load conditions manually and computer-aided. The course emphasises knowledge to analyse various structures using matrix method for non-linear material and geometry.

ECV5202  Advanced Solid Mechanics  3 credits
This course covers the formulation of bending and torsional equation behavior for various types of structural members. The course emphasises knowledge to the various theories of failure in the structure and analysis of 2D and 3D stress-strain problems.

ECV5203  Finite Element Method  3 credits
This course covers the formulation of finite element equation for plane stress structure, plane strain, isoparametric, plate and shell. The course emphasises knowledge of finite element model analysis suitable for surface, thin layer, 2D and 3D.

ECV5204  Structural Dynamics  3 credits
This course covers the analysis of response for structures under dynamic loads and equation formulation for various dynamic excitation. The course emphasises knowledge to analyse single degree of freedom and multi-degree of freedom systems.

ECV5207  Reinforced Concrete Structures  3 credits
This course covers the design of continuous beams, slabs, foundations, retaining walls and water tanks. The course emphasises knowledge to analyse and design reinforced concrete structures manually and computer-aided.

ECV5222  Prestressed Concrete Structures  3 credits
This course covers the design of prestressed concrete structures with selected materials strength and stress limitations. The course emphasises knowledge to analyse ultimate limit state conditions, losses of prestress and composite beams to design selected prestressed concrete structures.

ECV5233  Steel Design and Construction  3 credits
This course covers the analysis and design of steel structures. The course emphasises knowledge of the materials principle and limit state design method using members reaction in steel structures.

ECV5244  Analysis and Design of Bridge  3 credits
This course covers the analysis and basic grillage analysis methods for designing bridges. The course emphasises knowledge on planning, design and construction of bridges based on the requirements of the selected type of bridge.

ECV5255  Earthquake Resistant Structures  3 credits
This course covers the analysis and design of various types of structure such as rigid frame structure, steel structure, reinforced concrete structures and masonry building against earthquake loading. The course emphasises knowledge to analyse frame structures against seismic and dynamic loading using computer software.

ECV5226  Design of Tall Buildings  3 credits
This course covers the design of tall buildings system, stability, and design load. The course emphasises knowledge to the load application and design considerations that are suitable for various system of tall buildings.

ECV5227  Assessment and Strengthening Of Structures  3 credits
This course covers the analysis, causes and types of structural problems. The course emphasises knowledge to determine methods of testing, repair and improvement of the strength suitable for the rehabilitation of structural problems.

ECV5701  Advanced Concrete Technology  3 credits
This course covers various types of cement ratio and its effect on the strength and durability of concrete. The course emphasises knowledge to the production of concrete and quality control on site, destructive and non-destructive testing of concrete, special concrete and precast concrete.

ECV5702  Project Management  3 credits
This course covers the discussion on advanced project management framework with the inclusion of the elements of risk management, quality management, life cycle method and systems thinking. The use of Building Information Modelling (BIM) in project planning and monitoring will also be addressed.

ECV5703  Construction Business Management  3 credits
This course covers defining the minimum profit requirement of the construction project and finance liquidity requirements analysis for projects and construction companies. The course emphasises knowledge to prepare cost control management at the project level and the construction company.

ECV5990  Dissertation  10 credits
This course involves a research or study by a student on a specific topic. It covers literature review, methodology, data collection and analysis under a supervision of a lecturer. A proposal report needs to be prepared at the beginning of the study. At the end of the project, the student will submit a complete dissertation and research output for evaluation. The student is also required to present the findings of the study to a panel of assessors.

For further information
Please contact:

Deputy Dean (Postgraduate Studies)
Faculty of Engineering
Universiti Putra Malaysia
43400 UPM, Serdang
Selangor Darul Ehsan
Malaysia
Tel : 603-9769 6266/6253
Email : eng_tds@upm.edu.my
Website : http://www.eng.upm.edu.my

Programme Coordinator:
Assoc. Prof. Ir. Dr. Raizal Saifulnizam Muhammad Rashid
Department of Civil Engineering
Faculty of Engineering
Universiti Putra Malaysia
43400 UPM, Serdang
Selangor Darul Ehsan
Malaysia
Tel : 603-97694451
Fax : 603-86567129
Email : raizal@upm.edu.my
Website : http://www.eng.upm.edu.my/akademik/siswa familiar kerja kursus-22947?L=en
FEES

* 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 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
Websites : http://www.sgs.upm.edu.my/prospective_students-2964