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:

Compulsory Courses 22 credits
Elective Course 12 credits
Project 6 credits

Compulsory Courses

Students must take all the listed compulsory courses:

ECV5201 Advanced Structural Analysis 3
ECV5202 Advanced Solid Mechanics 3
ECV5203 Finite Element Method 3
ECV5204 Structural Dynamics 3
ECV5221 Reinforced Concrete Structures 3
ECV5701 Advanced Concrete Technology 3
ECV5702 Project Management 3
ECV5977 Independent Study 1
ECV5989 Project 6

Note: ECV5989 - Project is carried out over two semesters.

Elective Courses

Students must take at least 12 credits (4 courses) out of the listed courses:

ECV4203 Design of Tall Buildings 3
ECV4701 Structure Assessment And Rehabilitation 3
ECV5222 Prestressed Concrete Structures 3
ECV5223 Steel Structures 3
ECV5224 Bridge Design And Analysis 3
ECV5225 Earthquake Resistance Structures 3
ECV5305 Deep Foundation 3
ECV5408 Hydraulic Structure 3
ECV5703 Construction Business Management 3

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

- **ECV5201**  Advanced Structural Analysis  3 credits
  The course covers indeterminate structures, displacement method, non-linear Analysis, non-linear problems and plasticity, stability and computer software application.

- **ECV5202**  Advanced Solid Mechanics  3 credits
  The course covers analysis of stress and strain, theories of failure, bending and torsion, theory of plates and theory of shells.

- **ECV5203**  Finite Element Method  3 credits
  The course covers basic principles, formulation of the finite element method, element properties, isoparametric elements, plate bending elements, shell elements, finite element in dynamic analysis, nonlinear mechanics.

- **ECV5204**  Structural Dynamics  3 credits
  The course covers single degree of freedom system, damped single degree of freedom system, response to harmonic and periodic excitations, general dynamic loading, multi-degree of freedom systems and non-linear response of multi-degree of freedom systems.

- **ECV5221**  Reinforced Concrete Structures  3 credits
  The course covers design of continuous beam, slab, yield line method for slab, design foundation, retaining wall, water tank and design project.

- **ECV5701**  Advanced Concrete Technology  3 credits
  The course covers concrete constituents, cement, concrete characteristics, durability of concrete, testing of concrete, special concrete and precast concrete.

- **ECV5702**  Project Management  3 credits
  This course covers the characteristics of project management, system thinking and project life cycle. Construction planning and scheduling as well as contract dispute are also discussed.

- **ECV5977**  Independent Study  1 credit
  The student is required to carry out an independent study on a selected topic that is relevant to his/her field of study and prepare a report at the end of the semester. He/she will be supervised by one or more lecturers.

- **ECV4203**  Design Of Tall Building  3 credits
  The course covers tall building systems, stability and design loadings, construction methods, consideration of design, structural modeling, analysis of tall building and design of tall building.

- **ECV4701**  Structures Assessment And Rehabilitation  3 credits
  The course covers the construction and repair materials, types and causes of distresses, inspection techniques, distress analysis, repair techniques, strengthening techniques and case study.

- **ECV5222**  Prestressed Concrete Structures  3 credits
  This course covers principles and methods of prestress, materials and stress limits, analysis and design of flexural members, composite beam, loss of prestress, ultimate limit state, deflection and a design project for prestressed structures.

- **ECV5223**  Steel Structures  3 credits
  This course covers limit state design method, connection design, elasti and plastic beam design, portal frame design, multi-storey frame design, space steel structures and fire engineering design.

- **ECV5224**  Bridge Design and Analysis  3 credits
  The course covers types of bridges, bridge design concept, planning and construction method, design consideration, bridge analysis, bridge substructure and design of bridges.

- **ECV5225**  Earthquake Resistance Structures  3 credits
  This course covers detailed review of the basics in structural dynamics and earthquake engineering with a basic overview of single-degree and multi-degree of freedom structural dynamics.

- **ECV5305**  Deep Foundation  3 credits
  This course covers soil mechanics, general consideration, geotechnic parameters, soil investigation foundation design considerations, spread footing, raft foundation, piles, soil improvement techniques and use of geosynthetics in soil improvement.

- **ECV5408**  Hydraulic Structure  3 credits
  This course covers hydraulic structures such as dams, spillways, stilling basins, instream structures and culverts. Protection of bridge piers from scour is also discussed.

- **ECV5703**  Construction Business Management  3 credits
  This course covers business aspects in construction, financial transaction, management of cost and profit control as well as financing sources and cash flow management.

- **ECV5989**  Project  6 credits
  This course involves a research or study that will be carried by a student on a specific topic. It is carried out over a period of two semesters, and covers literature review, data collection and analysis. The scope of research or study will be determined by the supervisor after discussion with the student. At the end of the first semester, the student is required to submit a preliminary report, and at the end of the second semester, he/she is required to submit the final report. The student is also required to present the findings to a panel of reviewers.

For more information

Please contact:

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Programme Coordinator:

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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>
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</thead>
<tbody>
<tr>
<td></td>
<td>Malaysian Student</td>
</tr>
<tr>
<td>Basic Fees (1st semester)</td>
<td>1,200.00</td>
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<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>
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</tbody>
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* 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
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