<h1 class="pageTitle">EEEN40550 Power System Dynamics and Control</h1>
<h2>Academic Year 2018/2019</h2>

The module presents dynamic models and controll schemes of the most important devices that compose a power system network. These include the synchronous machine, transformers, power electronic devices and induction machines. For each device a detailed description of its dynamic behavior and control strategies are presented. Both theoretical aspects
and simulation?based examples are discussed. The contents of the module is the following.
1. Dynamic model of the synchronous machine. Synchronous machine primary and secondary controls including automatic voltage regulators, turbine and turbine governors, under and over?excitation limiters, and power system stabilizers. Synchronous machine secondary controls including automatic generator controllers and secondary voltage regulators. Tertiary frequency control.
2. Transformer dynamic model and controllers including under-load tap-changers and phase shifters.
3. VSC model and controls. Control of shunt and series FACTS devices.
4. Induction machine dynamic model. Speed control of induction motors.
5. Distributed energy sources control with particular emphasis on models and controllers of wind turbines and photovoltaic panels (MPPT, voltage control, frequency control, etc.).

Curricular information is subject to change

What will I learn?

Learning Outcomes:
Dynamic modelling of power systems. Basic concepts of power system frequency and voltage control. Knowledge of control systems of all principal devices for high voltage transmission systems. Practical examples based on numerical simulations.

How will I learn?

Student Effort Hours:

Student Effort Type	Hours
Lectures	30
Tutorial	6
Laboratories	12
Autonomous Student Learning	70
Total	**118**

Am I eligible to take this module?

Requirements, Exclusions and Recommendations

Not applicable to this module.

Module Requisites and Incompatibles

Pre-Requisite:

EEEN30070 - Power system Engineering, EEEN30090 - Electrical Machines
Co-Requisite:

EEEN40010 - Control Theory
Incompatibles:

Power System Control (EEEN40330)

How will I be assessed?

Description	% of Final Grade	Timing
Examination: < Description >	40	2 hour End of Trimester Exam
Lab Report: Voltage control of synchronous machines	15	Week 8
Lab Report: Wind Turbine control	15	Week 12
Lab Report: Frequency control of synchronous machines	15	Week 6
Lab Report: ULTC and FACTS control	15	Week 10

What happens if I fail?

<u>Compensation</u>
This module is not passable by compensation

<u>Resit Opportunities</u>
In-semester assessment

<u>Remediation</u>
If you fail this module you may repeat, resit or substitute where permissible

Reading List

<nav class="white-box no-left-arrow zero-top-margin">
<h1 class="printOnly"><img src="https://www.ucd.ie/t4cms/ucdcollegesandschools_logo.png"> UCD Course Search
Power System Dynamics and Control (EEEN40550) </h1><h3 class="printOnly">Academic Year 2018/2019</h3> The information contained in this document is, to the best of our knowledge, true and accurate at the time of publication, and is solely for informational purposes. University College Dublin accepts no liability for any loss or damage howsoever arising as a result of use or reliance on this information.
<h4 class="noPrint">Power System Dynamics and Control (EEEN40550)</h4>
<dl>
<dt>Subject:</dt>
<dd>Electronic & Electrical Eng</dd>
<dt>College:</dt>
<dd>Engineering & Architecture</dd>
<dt>School:</dt>
<dd>Electrical & Electronic Eng</dd>
<dt>Level:</dt>
<dd>4 (Masters)</dd>
<dt>Credits:</dt>
<dd>5.0</dd>

<dt>Semester:</dt>
<dd>Semester One</dd>
<dt>Module Coordinator:</dt>
<dd>Professor Federico Milano</dd>
<dt>Mode of Delivery:</dt>
<dd>N/A</dd>

<dt>How will I be graded?</dt>
<dd>40% </dd>

</dl>

<button class="menubutton" onclick="window.print()"><i class="fa fa-print fa-fw"> Print Page</button>
(Google Chrome is recommended when printing this page)

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