<div class="printBefore">
<h1 class="pageTitle">EEEN40340 Power System Stability Analysis</h1>
<h2>Academic Year 2018/2019</h2>

The module explains the mathematical background of the phenomena that lead to power system instability, studying numerical methods to tackle such phenomena. The module is divided into four parts.

Part I: long term voltage stability. Bifurcation theory (saddle-node, limit-induced and singularity-induced bifurcations) and the voltage collapse phenomenon. Continuation power flow analysis. Direct methods. Voltage stability constrained OPF. Voltage stability indexes. Cascade line tripping phenomenon.
Part II: large perturbation angle stability (transient stability). Lyapunov theory. Direct methods. Time domain analysis methods. Hybrid methods (e.g. SIME). Transient stability constrained OPF. Multi-swing phenomenon.
Part III: small-signal angle stability analysis. Hopf bifurcations and limit cycles. Monodromy matrix. Routes to chaos, Poincaré maps and Lyapunov exponents. Small-signal stability constrained OPF. Effect of delays and analytical methods to assess the stability of delayed DAEs.
Part IV: frequency stability. Load shedding problem. Frequency stability with renewable energy sources. Effect of thermostatically controlled loads.

Each part is completed by real-world examples (large scale blackouts), practical remedial actions and several computer-based simulation examples to support theoretical aspects.

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<div style="text-align:center;"><p>Curricular information is subject to change</p></div>

What will I learn?

Not recorded

Not yet recorded.

Am I eligible to take this module?

<div class="subHeadCB">Requirements, Exclusions and Recommendations</div>

<p>Not applicable to this module.</p>

<div class="subHeadCB">Module Requisites and Incompatibles</div>

Not recorded

What happens if I fail?

<p><u>Compensation</u></p>
<p>This module is passable by compensation</p>

Reading List