Application of Perturbation Methods to Structural Dynamics

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General Information:

This course introduces perturbation methods with applications to weakly nonlinear problems in the field of mechanics of solids and structures. Paradigmatic problems, including the nonlinear dynamics of discrete and continuous, conservative and non-conservative systems are presented and solved analytically in the spirit of the perturbation methods presented.

The course (in English) will be held: online (link will be provided).

Schedule:

Date:

Date	Topic
23/05/2025 (15:00-18:00):	A general introduction to Perturbation Methods
26/05/2025 (10:00-13:00):	Primary and Secondary (sub-harmonic / super-harmonic) Resonances of a 1-DOF non-linear dynamical system
15/09/2025 (10:30-12:30):	Stability and Bifurcation of a 2-DOF non-linear dynamical system subject to follower loads
17/09/2025 (10:30-12:30):	Stability and Bifurcation of a continuous one-dimensional non-linear dynamical system subject to conservative and non-conservative loads (part I)
19/09/2025 (10:30-12:30):	Stability and Bifurcation of a continuous one-dimensional non-linear dynamical system subject to conservative and non-conservative loads (part II)

Total: 12 hours (2 credits)