

Structural Dynamics (CEGE0040)

Description

This course teaches the fundamentals of structural dynamics for civil engineers. It assumes no prior knowledge of the subject but requires a confident background in structural mechanics (statics) and maths. It starts with describing and predicting the dynamic behaviour of single degree of freedom systems with or without damping. Free and forced vibration will be covered. The case of earthquake loading will also be treated: linear and nonlinear time history analysis will be introduced and treated as well as the concept of response spectrum. Single degree of freedom concepts will then be generalised to multi-degree-of-freedom system using matrix and eigenvalues methods. General notions on damping devices and base isolation will be introduced. Aims & Learning Outcomes:

Learning Outcomes

By the end of the course you should be able to: Modelling and predicting the linear response of single degree of freedom systems to free and forced vibration. Free and forced response of multiple degree-of-freedom systems. Use and understanding the concept of modes, mode shapes, modal superposition, Rayleigh quotient. Earthquake excitation of SDoF systems. Linear and nonlinear response. Integration schemes. FE modelling

Key information

Year	2019/20
Credit value	15 (150 study hours)
Delivery	PGT L7, Campus-based
Reading List	View on UCL website
Tutor	Prof Gert Van Der Heijden
Term	Term 1
Timetable	View on UCL website

Assessment

Find out more

For more information about the department, programmes, relevant open days and to browse other modules, visit ucl.ac.uk

Structural Dynamics (CEGE0040)

Description

This course teaches the fundamentals of structural dynamics for civil engineers. It assumes no prior knowledge of the subject but requires a confident background in structural mechanics (statics) and maths. It starts with describing and predicting the dynamic behaviour of single degree of freedom systems with or without damping. Free and forced vibration will be covered. The case of earthquake loading will also be treated: linear and nonlinear time history analysis will be introduced and treated as well as the concept of response spectrum. Single degree of freedom concepts will then be generalised to multi-degree-of-freedom system using matrix and eigenvalues methods. General notions on damping devices and base isolation will be introduced. Aims & Learning Outcomes:

Learning Outcomes

By the end of the course you should be able to: Modelling and predicting the linear response of single degree of freedom systems to free and forced vibration. Free and forced response of multiple degree-of-freedom systems. Use and understanding the concept of modes, mode shapes, modal superposition, Rayleigh quotient. Earthquake excitation of SDoF systems. Linear and nonlinear response. Integration schemes. FE modelling

Key information

Year	2019/20
Credit value	15 (150 study hours)
Delivery	UGM L7, Campus-based
Reading List	View on UCL website
Tutor	Prof Gert Van Der Heijden
Term	Term 1
Timetable	View on UCL website

Assessment

Find out more

For more information about the department, programmes, relevant open days and to browse other modules, visit ucl.ac.uk