UNIVERSITY of BRADFORD

Module Descriptor

Structural Dynamics & Earthquake Engineering

Module Code:	CSE7010-B
Academic Year:	2018-19
Credit Rating:	20
School:	Department of Civil and Structural Engineering
Subject Area:	Civil and Structural Engineering
FHEQ Level:	FHEQ Level 7 (Masters)

Pre-requisites:

Co-requisites:

Contact Hours

Type	Hours
Lectures	48
Tutorials	14
Laboratory	8
Directed Study	130

Availability Periods

Occurrence	Location/Period
BDA	University of Bradford / Semester 2 (Feb - May)

Module Aims

To study the concepts of structural dynamics and earthquake engineering and thereafter impart the key knowledge and skills required to design buildings to resist earthquakes. To develop the ability and skills to use laboratory equipment to measure the behaviour of simple and complex systems.

Outline Syllabus

Civil engineers are most accustomed to static loads. One of the most important lessons learned from earthquake damage surveys is the difference in structure failure patterns due to static loads and those due to cyclic (dynamic) loading. An important aspect of this

module is to study the behavior of structures under cycling loading and understand how to avoid common mechanisms of failure. Seismic waves and how to read seismographs. Single and multiple degree of freedom. Damping and vibration isolation. Response of structures to earthquake excitation. Soil structure interaction measurements using shake tables and liquefaction tank. Design of structures to resist earthquakes according to Eurocode 8. Critically evaluating the behavior of structures under earthquake loads using Sap2000.

Module Learning Outcomes

On successful completion of this module, students will be able to...

1 Critically evaluate structure failure patterns due to static loads and those due to cyclic (dynamic) loading.

2 Show mastery of reading seismographs.

3 Apply knowledge of soil properties in designing structures to resist earthquake loads.

4 Design structures according to Eurocode 8.

Learning, Teaching and Assessment Strategy

Concepts are introduced using formal lectures. Deeper understanding is developed during problems classes, and further enhanced using the laboratory class. Oral feedback is given during the laboratory sessions and problems classes.
Technical report will assess the application of practical skills to the knowledge base of the module (2, 3, 4) and the formal examination will assess the wider learning outcomes expressed in the descriptor (1-4). The formative exam will provide students with feedback in order to improve their learning and understanding of the subjects.

Mode of Assessment

Type	Method	Description	Length	Weighting	Final Assess'
Summative	Examination - closed book	Examination - closed book	2 hours	70%	No
Summative	Coursework	A technical report on the laboratory practicals	-2000 words	30%	Yes

Legacy Code (if applicable)

ENG4306D

Reading List

To view Reading List, please go to **rebus:list**.