

Course guide

250706 - 250706 - Structural Analysis Seminars

Last modified: 28/03/2024

Unit in charge:	Barcelona School of Civil Engineering	
Teaching unit:	751 - DECA - Department of Civil and Environmental Engineering.	
Degree:	MASTER'S DEGREE IN STRUCTURAL AND CONSTRUCTION ENGINEERING (Syllabus 2015). (Optional subject).	
Academic year: 2023	ECTS Credits: 2.5	Languages: English

LECTURER

Coordinating lecturer:	LUIS MIGUEL CERVERA RUIZ
Others:	LUIS MIGUEL CERVERA RUIZ, NARGES DIALAMI SHABANKAREH

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES

Generical:

13360. To conceive, design, analyze and manage structures or structural elements of civil engineering or building, encouraging innovation and the advance of knowledge.
13361. To develop, improve and use conventional materials and new construction techniques to ensure the safety requirements, functionality, durability and sustainability.

TEACHING METHODOLOGY

The course consists of 0,8 hours per week of classroom activity (large size group).

The 0,8 hours in the large size groups are devoted to theoretical lectures, in which the teacher presents the basic concepts and topics of the subject, shows examples and solves exercises.

Support material in the form of a detailed teaching plan is provided using the virtual campus ATENEA: content, program of learning and assessment activities conducted and literature.

Although most of the sessions will be given in the language indicated, sessions supported by other occasional guest experts may be held in other languages.

LEARNING OBJECTIVES OF THE SUBJECT

Subject to acquire knowledge on trends in research related to structural analysis

Capability to acquire the latest knowledge on research issues related to structural analysis

Recent advances in research topics related to structural analysis

This course aims to give an overview about the possibilities offered by numerical simulation in the structural analysis. The student will be able to exercise in different aspects of the structural calculation. All the necessary knowledge will be reviewed and appropriate calculation tools (software, interfaces, etc.) will be provided.



STUDY LOAD

Type	Hours	Percentage
Hours large group	12,8	20.45
Hours medium group	4,9	7.83
Self study	40,0	63.90
Hours small group	4,9	7.83

Total learning time: 62.6 h

CONTENTS

Introduction

Description:

Introduction: course objectives, the format of the lessons, tasks

Full-or-part-time: 4h 48m

Theory classes: 2h

Self study : 2h 48m

Geometric modeling and meshing

Description:

Software Introduction

Tutorial geometric modeling

Tutorial discretization

Full-or-part-time: 13h 12m

Laboratory classes: 5h 30m

Self study : 7h 42m

Solid Mechanics

Description:

Stresses and strains

Elasticity and elastic problem

Full-or-part-time: 12h

Laboratory classes: 5h

Self study : 7h

Structural analysis

Description:

Static analysis 2D and 3D

Full-or-part-time: 12h

Laboratory classes: 5h

Self study : 7h



Dynamic Analysis

Description:

Dynamic analysis of structures in bars and continue on.

Full-or-part-time: 12h

Laboratory classes: 5h

Self study : 7h

GRADING SYSTEM

Continuous assessment consists of different activities, both individual and group formative in nature, made during the course (in the classroom and outside it). Assessment tests consist of a set of application exercises according to the themes developed in the course. The rating is calculated as an average of the work done throughout the course.

EXAMINATION RULES.

Failure to perform a laboratory or continuous assessment activity in the scheduled period will result in a mark of zero in that activity.

BIBLIOGRAPHY

Basic:

- Bathe, Klaus-Jürgen. Finite element procedures. [S. l.]: l'autor, cop. 2006. ISBN 9780979004902.
- Zienkiewicz, O. C; Taylor, Richard Lawrence; Fox, D. D. The Finite element method : for solid & structural mechanics. 7th ed. Amsterdam [etc.]: Elsevier Butterworth-Heinemann, 2014. ISBN 9781856176347.