COURSE NAME

Name: **THEORY OF STRUCTURES**
Code: 101194
Curriculum: **DEGREE IN ENERGY ENGINEERING AND MINERAL RESOURCES** Year: 2
Name of the module to which it belongs: COMMON MODULE FOR THE MINING BRANCH
Subject: THEORY OF STRUCTURES
Nature: OBRIGATORY Duration: FIRST SEMESTER
ECTS Credits: 6 Classroom hours: 60
Face-to-face classroom percentage: 40% Non-contact hours: 90

FACULTY DETAILS

Name: FERNÁNDEZ LEDESMA, ENRIQUE (Coordinator)
Department: MECHANICS
Area: CONTINUOUS MEDIA MECHANICS AND THEORY OF STRUCTURES
Location of the office: Main building (Top floor)
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SKILLS

CB1	Have and understand specific knowledge of the field of study of mining engineering.
CB2	Have and understand current and cutting-edge knowledge of the field of mining engineering.
CB3	Be able to apply the knowledge acquired in professional contexts and to elaborate and defend arguments in the field of knowledge of mining engineering.
CB4	Solve problems within the study area of Mining Engineering.
CU2	Know and refine the user level of ITs.
CEC7	Knowledge of resistance of materials and theory of structures.

OBJECTIVES

- Calculate stresses and strains
- Calculate stresses in slices due to different forces
- Calculate the forces in isostatic structures (axial, shear and moments)
- Calculate the forces in hyperstatic structures (axial, shear and moments)
- Ability to analyze and understand how the characteristics of structures influence their behavior

CONTENTS:

1. Theoretical contents

. BASIC OF STRENGTH OF MATERIALS

Topic 1. INTRODUCTION. STRESS.

Topic 2. STRAIN

Topic 3. STRESS-STRAIN RELATIONSHIPS.

Topic 4. FUNDAMENTAL CONCEPTS IN STRENGTH OF MATERIALS.

Topic 5. STUDY OF AXIAL STRESS

Topic 6. STUDY OF BENDING MOMENT

Topic 7. STUDY OF SHEAR STRESS

Topic 8. DISPLACEMENT CALCULATION

II. ANALYSIS OF STRUCTURES

Topic 9. BASIC CONCEPTS

Topic 10. STATICALLY DETERMINATE STRUCTURES

Topic 11. STATICALLY INDETERMINATE STRUCTURES

2. Practical contents.

Practical exercises on the aforementioned topics.