

Academic Year: (2024 / 2025)

Review date: 05-09-2024

Department assigned to the subject: Continuum Mechanics and Structural Analysis Department

Coordinating teacher: RODRIGUEZ MARTINEZ, JOSE ANTONIO

Type: Compulsory ECTS Credits : 6.0

Year : 2 Semester : 1

SKILLS AND LEARNING OUTCOMES

K3. To know the fundamentals of basic scientific and technical subjects in the field of biomedical engineering, which enable to learn new methods and technologies, as well as provide great versatility to adapt to new situations.

S3. To analyze and synthesize basic problems related to bioengineering and biomedical sciences, solving them with initiative, appropriate decision making and creativity and communicating solutions efficiently, including social, ethical, health and safety, environmental, economic and industrial implications.

S4. Draw up a scientific-technical project in the field of Bioengineering with the appropriate methodology and in accordance with the regulations in force and with respect for ethical principles.

S5. To analyse scientific and technical information for decision-making in the field of biomedical engineering by keeping abreast of new developments

S7. Solve those problems characteristic of fluid and solid mechanics and the theory of transport of momentum, heat, mass, etc. in continuous media in biomedicine, knowing how to interpret the results obtained and arrive at well-founded conclusions

C3. Be able to transmit knowledge both orally and in writing, to a specialised and non-specialised audience, working in multidisciplinary and international teams.

C4. To develop, organize and plan their work by making the right decisions based on available information, gathering and interpreting relevant data to make judgments within their area of study.

DESCRIPTION OF CONTENTS: PROGRAMME

Introduction to continuum mechanics with application to inert and living solids. Stress, strain and compatibility conditions. Constitutive equations of the continuum media. Properties of common inert and living solids. Derivation of the field equations and the boundary conditions. Applications of the continuum mechanics to study the macroscopic behaviour of inert and living solids. Viscoelastic solids. Biomechanics of elastic solids.

LEARNING ACTIVITIES AND METHODOLOGY

LEARNING ACTIVITIES:

CLASSROOM LECTURES

FACE-TO-FACE CLASSES: REDUCED (WORKSHOPS, SEMINARS, CASE STUDIES)

LABORATORY SESSION

STUDENT INDIVIDUAL WORK

METHODOLOGY:

SEMINARS AND LECTURES SUPPORTED BY COMPUTER AND AUDIOVISUAL AIDS

PRACTICAL LEARNING BASED ON CASES AND PROBLEMS, AND EXERCISE RESOLUTION

INDIVIDUAL AND GROUP OR COOPERATIVE WORK WITH THE OPTION OF ORAL OR WRITTEN PRESENTATION

INDIVIDUAL AND GROUP TUTORIALS TO RESOLVE DOUBTS AND QUERIES ABOUT THE SUBJECT.

ASSESSMENT SYSTEM

% end-of-term-examination:	60
% of continuous assessment (assignments, laboratory, practicals...):	40

FINAL EXAM: 60% Max.

CONTINUOUS EVALUATION: 40% Min.