

Academic Year: ( 2022 / 2023 )

Review date: 20-06-2022

Department assigned to the subject: Department of Bioengineering and Aerospace Engineering

Coordinating teacher: VELASCO BAYON, DIEGO

Type: Compulsory ECTS Credits : 6.0

Year : 4 Semester : 1

**DESCRIPTION OF CONTENTS: PROGRAMME**

1. Biomaterials: Principles, types and properties
2. Biomaterials biocompatibility: cell-material interaction
3. Biomaterials Implantation and interaction with the human body
4. Biomaterials for tissular engineering and regenerative medicine
5. micro  
ano biomaterials design: microfabrication, modification and functionalization
6. Biomaterials design for 3D printing
7. Biosensors
8. Nanotechnology and system for controlled delivery of drugs, proteins and genes
9. Biomaterials for devices "lab-on-a-chip" and  $\zeta$ tissue/organ/body-on-a-chip

**LEARNING ACTIVITIES AND METHODOLOGY**

AF1. THEORETICAL-PRACTICAL CLASSES. Knowledge and concepts students must acquire. Receive course notes and will have basic reference texts. Students partake in exercises to resolve practical problems

AF2. TUTORING SESSIONS. Individualized attendance (individual tutoring) or in-group (group tutoring) for students with a teacher. Subjects with 6 credits have 4 hours of tutoring/ 100% on- site attendance.

AF3. STUDENT INDIVIDUAL WORK OR GROUP WORK. Subjects with 6 credits have 98 hours/0% on-site.

AF8. WORKSHOPS AND LABORATORY SESSIONS. Subjects with 3 credits have 4 hours with 100% on-site instruction. Subjects with 6 credits have 8 hours/100% on-site instruction.

AF9. FINAL EXAM. Global assessment of knowledge, skills and capacities acquired throughout the course. It entails 4 hours/100% on-site

AF8. WORKSHOPS AND LABORATORY SESSIONS. Subjects with 3 credits have 4 hours with 100% on-site instruction. Subjects with 6 credits have 8 hours/100% on-site instruction.

MD1. THEORY CLASS. Classroom presentations by the teacher with IT and audiovisual support in which the subject's main concepts are developed, while providing material and bibliography to complement student learning

MD2. PRACTICAL CLASS. Resolution of practical cases and problem, posed by the teacher, and carried out individually or in a group

MD3. TUTORING SESSIONS. Individualized attendance (individual tutoring sessions) or in-group (group tutoring sessions) for students with teacher as tutor. Subjects with 6 credits have 4 hours of tutoring/100% on-site.

MD6. LABORATORY PRACTICAL SESSIONS. Applied/experimental learning/teaching in workshops and laboratories under the tutor's supervision.

**ASSESSMENT SYSTEM**

Grading will be based on continuous evaluation and a final exam covering the whole subject, including invited lectures and seminars. Help sessions and tutorial classes will be held prior to the final exam upon students' request.

Attendance to lectures and seminars is not compulsory. However, failure to attend any test or submit the exercises before the deadline will result in a mark of 0 in the corresponding continuous evaluation block (see below).

Grading will be based on continuous evaluation and a final exam covering the whole subject, including invited lectures and seminars. Help sessions and tutorial classes will be held prior to the final exam upon students' request.

The attendance to 80 % of practical sessions is mandatory.

**GRADING:**

Total score: 10 points

Continuous evaluation: 7.5 points out of 10

Final exam: 2.5 points out of 10

**CONTINUOUS EVALUATION:** It accounts for up to 75% of the final score of the subject (7.5 points of the TOTAL SCORE), and includes two components:

1) Two tests: 5 points of THE TOTAL SCORE (2.5 points each). These tests will take place mostly during lectures and will be announced at least one week in advance. These tests will be not included in the final exam

2) Practical sessions in the laboratory. 2 points of THE TOTAL SCORE. The final exam will include some questions regarding the laboratory sessions.

**FINAL EXAM:** it will account for the 25 % of the final score (2.5 points of the TOTAL SCORE). The minimum score in the final exam to pass the subject is 4 over 10, notwithstanding the mark obtained in continuous evaluation

**EXTRAORDINARY EXAM:** there are two possibilities:

a) Examination of all the topics of the course (100% extraordinary exam mark)

b) Evaluation will follow the same criteria as the continuous evaluation (75% continuous evaluation, 25% final exam)

**ACADEMIC CONDUCT:** Unless specified, all exams will be closed-book, closed-notes, no PC or mobile phone, or anything else other than a writing implement and the exam itself. Plagiarism, cheating or other acts of academic dishonesty will not be tolerated. Any infractions whatever will result in a failing grade.

<b>% end-of-term-examination:</b>	25
<b>% of continuous assessment (assignments, laboratory, practicals...):</b>	75