Bachelor Thesis

Academic Year: (2023 / 2024) **Review date: 20/12/2023 13:47:31**

Department assigned to the subject: Signal and Communications Theory Department

Coordinating teacher: LÓPEZ SANTIAGO, JAVIER

Type: Bachelor Thesis ECTS Credits : 12.0

Year : 4 Semester :

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

Those required by the University in relation to the conditions to start and present the Bachelor Thesis.
http://www.uc3m.es/ss/Satellite/SecretariaVirtual/es/TextoMixta/1371210936260/

LEARNING OUTCOMES

RA1: Acquire knowledge and understanding of the basic general fundamentals of engineering and biomedical sciences.
RA2: Be able to solve basic engineering and biomedical science problems through a process of analysis, identifying the problem, establishing different methods of resolution, selecting the most appropriate one and its correct implementation.
RA3: Be able to carry out conceptual designs for bioengineering applications according to their level of knowledge and understanding, working in a team. Design encompasses devices, processes, protocols, strategies, objects and specifications broader than strictly technical, including social awareness, health and safety, environmental and commercial considerations.
RA4: Be able to use appropriate methods to carry out studies and solve problems in the biomedical field, commensurate with their level of knowledge. Research involves conducting literature searches, designing and carrying out experimental practices, interpreting data, selecting the best approach and communicating knowledge, ideas and solutions within their field of study. May require consultation of databases, safety standards and procedures.
RA5: Acquire intermediate/advanced knowledge of engineering and biomedical sciences and demonstrate an understanding of the theoretical and practical aspects and methodology of work in their field of study.
RA6: Transversal Skills: To have the necessary skills for the practice of biomedical engineering in today's society.
CB1: Students have demonstrated possession and understanding of knowledge in an area of study that builds on the foundation of general secondary education, and is usually at a level that, while relying on advanced textbooks, also includes some aspects that involve knowledge from the cutting edge of their field of study.
CB2: Students are able to apply their knowledge to their work or vocation in a professional manner and possess the competences usually demonstrated through the development and defence of arguments and problem solving within their field of study.
CB3: Students have the ability to gather and interpret relevant data (usually within their field of study) in order to make judgements which include reflection on relevant social, scientific or ethical issues.
CB4: Students should be able to communicate information, ideas, problems and solutions to both specialist and non-specialist audiences.
CB5: Students will have developed the learning skills necessary to undertake further study with a high degree of autonomy.
CB6: That the student has developed sensitivity to the social and economic impact of the development of his/her profession in accordance with professional ethics.
CG1: Adequate knowledge and skills to analyse and synthesise basic problems related to engineering and biomedical sciences, solve them and communicate them efficiently.
CG2: Ability to design, draft and develop scientific-technical projects in the field of biomedical engineering.
CG4: Ability to solve problems with initiative, decision-making, creativity, and to communicate and transmit knowledge, skills and abilities, understanding the ethical, social and professional responsibility of the biomedical engineer's activity. Capacity for leadership, innovation and entrepreneurial spirit.
CG6: Knowledge of current standards, regulations and legislation and ability to apply them to

bioengineering projects. Bioethics applied to biomedical engineering.
CG7: Drafting, representing and interpreting scientific-technical documentation.
ECRT7: To strengthen the student's communication skills, both oral and written. In addition, the aim is for students to appreciate the importance of communication skills in the performance of any professional activity.
ECRT23: Acquisition of basic knowledge of humanistic training. Awareness of different areas of social problems. Understanding of the concepts of Business Ethics and Bioethics. Capacity for business entrepreneurship.
ECRT-TFG: Original exercise to be carried out individually and presented and defended before a university examining board, consisting of a project in the field of specific biomedical engineering technologies of a professional nature in which the competences acquired in the course are synthesised and integrated.
CT1: Ability to communicate knowledge orally and in writing to both specialised and non-specialised audiences.
CT2: Ability to establish good interpersonal communication and to work in multidisciplinary and international teams.
CT3: Ability to organise and plan their work, making the right decisions based on the information available, gathering and interpreting relevant data in order to make judgements within their area of study.
CT4: Motivation and ability to engage in lifelong autonomous learning, enabling them to adapt to new situations.

OBJECTIVES

By the end of this subject, students will be prepared to have:
1. A systematic understanding of the key aspects and concepts of their branch of engineering;
2. The ability to apply their knowledge and understanding to identify, formulate and solve engineering problems using established methods;
3. An understanding of design methodologies, and an ability to use them.
4. The ability to conduct searches of literature, and to use data bases and other sources of information;
5. The ability to select and use appropriate equipment, tools and methods;
6. An understanding of applicable techniques and methods, and of their limitations;
7. An awareness of the non-technical implications of engineering practice.
8. Use diverse methods to communicate effectively with the engineering community and with society at large
9. Demonstrate awareness of the health, safety and legal issues and responsibilities of engineering practice, the impact of engineering solutions in a societal and environmental context, and commit to professional ethics, responsibilities and norms of engineering practice;
10. Recognize the need for, and have the ability to engage in independent, life-long learning.

DESCRIPTION OF CONTENTS: PROGRAMME

Original exercise to be presented and defended in front of an academic committee. The work will be an integral project in the field of the Bachelor degree that will be professionally oriented where the different competences acquired during the degree courses should be demonstrated or an innovative work developing an idea, prototype or a model of systems or equipments within the field developed during the Bachelor degree.

LEARNING ACTIVITIES AND METHODOLOGY

The learning activities and methodology for the End of Degree Work are specified in the corresponding university regulation: http://www.uc3m.es/ss/Satellite/SecretariaVirtual/es/TextoMixta/1371210936260/

Students apply competences and knowledge acquired during their studies in a Project from an area of he degree program, concluding with a written report. The foregoing reflects the corresponding project`s analysis, resolution of issues and conclusions. The Project represents 299 hours/0% on-site.
The student defends their Project before a tribunal, clearly presenting the corresponding points with resolution of any problems arising in the Project. 1 hour/100% on-site.

The tutor for the Bachelor´s Degree Final Project helps and guides the student in all aspects necessary to carry out a solid final Project, and to write a corresponding clear and professional report. The tutoring sessions can be on-site or on line.

ASSESSMENT SYSTEM

This is done through an oral Bachelor's Degree Final Project defense before a tribunal selected to assess the student's work, the learning outcomes, and the presentation of the same, according to an evaluation model.
Prior to the defense, the student must have duly presented their written report to the tribunal members.
In addition, the originality of the Bachelor Thesis is evaluated. The University uses the Turnitin Feedback Studio program within the Aula Global for the delivery of student work. This program compares the originality of the work delivered by each student with millions of electronic resources and detects those parts of the text that are copied and pasted.
This defense represents 100% of the evaluation.

BASIC BIBLIOGRAPHY

- Antonio Sánchez Asín Trabajos fin de grado y de postgrado: guía práctica para su elaboración, Aljibe, 2016

- Iria Da Cunha El trabajo de fin de grado y de máster: redacción, defensa y publicación, Editorial UOC, S.L., 2016

- Juana Mª González García Cómo escribir un trabajo de fin de grado, Sintesis, 2014

BASIC ELECTRONIC RESOURCES

- Biblioteca . TFG: http://uc3m.libguides.com/TFG/EN/Home

- Biblioteca . Turnitin: https://uc3m.libguides.com/EN/Turnitin

- Secretaría virtual . TFG: https://www.uc3m.es/ss/Satellite/SecretariaVirtual/es/TextoMixta/1371210936260/Trabajo_de_Fin_de_Grado