

Academic Year: (2019 / 2020)

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Department assigned to the subject: Bioengineering and Aerospace Engineering Department

Coordinating teacher: ABELLA GARCIA, MONICA

Type: Compulsory ECTS Credits : 9.0

Year : 2 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

The student should have completed the following courses:

Analytical and monitoring systems
 Diagnosis and therapy systems
 Medical imaging technologies

OBJECTIVES**COMPETENCES THAT THE STUDENT ACQUIRES WITH THIS MATTER**

- Possess and understand knowledge that provides a basis or opportunity to be original in the development and / or application of ideas
- That students know how to apply the knowledge acquired and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of study
- That students are able to integrate knowledge and face the complexity of making judgments based on information that, being incomplete or limited, includes reflections on social and ethical responsibilities linked to the application of their knowledge and judgments
- That students have the learning skills that allow them to continue studying in a way that will be largely autonomous.
- Ability to design and carry out technological projects in the field of the application of engineering to medicine, as well as to analyze and interpret its results.
- Ability to evaluate medical equipment and instrumentation in complex multidisciplinary environments, assessing the needs of different clinical users and offering objective measures for decision making.
- Ability to understand and use advanced statistical methods for conducting scientific studies, evaluation of equipment from the point of view of effectiveness, accreditation for medical use or study of comparative effects in patients.
- Ability to apply advanced techniques of health technology management, both in technical and economic aspects, and including the acquisition and maintenance thereof.
- Ability to apply the appropriate innovation management tools and assess the consequences of decisions on aspects of protection of intellectual and industrial property.
- Ability to plan, manage and supervise the installation and maintenance of non-implantable active medical devices in electromedicine systems and their associated facilities, under quality criteria, in safety conditions and complying with current regulations.
- Ability to plan, manage and supervise hospital infrastructures under quality criteria, in safety conditions and complying with current regulations.

In overcoming this subject, students should be able to:

- Locate the clinical services within the hospital organization, as well as the active non-implantable medical devices in each of them, describing the structure of the Spanish health system.
- Characterize the clinical electromedical service of a hospital / health institution and its relationship with technical assistance services, recognizing the importance and impact of its proper management.
- Comply with the rules of prevention of occupational risks and environmental protection, identifying the associated risks, measures and equipment to prevent them.
- Plan and manage the waste treatment generated, identifying the pollutants and describing their effects on the environment.
- Apply quality plans in all the processes carried out and supervised, describing the assurance and quality management regulations.

- Evaluate the risks derived from their activity, analyzing the working conditions and the risk factors present in their work environment.
- Participate in the development of a risk prevention plan in a small company, identifying the responsibilities of all the agents involved.
- Apply prevention and protection measures, analyzing the situations of risk in the work environment of the superior technician of Clinical Electromedicine.
- Plan and manage the waste treatment generated, identifying the pollutants and describing their effects on the environment.
- Apply quality plans in all the processes carried out and supervised, describing the assurance and quality management regulations.
- Evaluate the risks derived from their activity, analyzing the working conditions and the risk factors present in their work environment.
- Participate in the development of a risk prevention plan in a small company, identifying the responsibilities of all the agents involved.
- Apply prevention and protection measures, analyzing the situations of risk in the work environment of the superior technician of Clinical Electromedicine.
- Comply with the rules of prevention of occupational risks and environmental protection, identifying the associated risks, measures and equipment to prevent them.
- Recognize the main risks of the patient's environment in a health center, describing their characteristics and the repercussions of them.
- Prepare a plan for the renewal and acquisition of new systems and equipment for clinical electromedicine, analyzing the needs

DESCRIPTION OF CONTENTS: PROGRAMME

Supervision and design of electromedical installations

This subject covers the study of the electromedical equipment of a health center from the point of view of the planning and management of the same. The equipment to be treated will be: monitoring and registration, critical care, laboratory, medical image, radiodiagnosis and radiotherapy, rehabilitation, functional tests, hemodialysis and water treatment and sterilization

Once the subject is completed, the student will be able to define the supervision plan of the assembly, start-up and maintenance, create and update an inventory plan; process and file documentation; project information actions aimed at clinical and technical staff as well as the redefinition of electromedicine facilities.

LEARNING ACTIVITIES AND METHODOLOGY

TRAINING ACTIVITIES OF THE STUDY PLAN REFERRED TO MATTERS

AF1 Theoretical class

AF2 Practical classes

AF3 Theoretical practical classes

TEACHING METHODOLOGIES THAT WILL BE USED IN THIS MATTER

MD1 Exhibitions in the teacher's class with support of computer and audiovisual media, in which the main concepts of the subject are developed and the bibliography is provided to complement the students' learning.

MD2 Critical reading of texts recommended by the teacher of the subject:

Press articles, reports, manuals and / or academic articles, either for further discussion in class, or to expand and consolidate the knowledge of the subject.

MD3 Resolution of practical cases, problems, etc. raised by the teacher individually or in groups.

MD4 Exhibition and discussion in class, under the teacher's moderation of topics related to the content of the subject, as well as practical cases.

MD5 Preparation of papers and reports individually or in groups.

ASSESSMENT SYSTEM

% end-of-term-examination/test:	50
% of continuous assessment (assignments, laboratory, practicals...):	50

ASSESSMENT SYSTEMS OF THE STUDY PLAN REFERRED TO SUBJECTS

SE1 Participation in class 5%

SE2 Individual or group work carried out during the course 45%

SE3 Final exam 50%

BASIC BIBLIOGRAPHY

- UNE 20901 Seguridad de aparatos electromédicos para su utilización por personal administrativo, médico y de enfermería., UNE, 1995
- UNE-EN 13306 Mantenimiento. Terminología del mantenimiento., UNE, 2011
- UNE-EN 62353:2009 Equipos electromédicos. Ensayos recurrentes y ensayos después de reparación del equipo electromédico., UNE, 2009