Electrotechnical systems for clinical engineering

Academic Year: (2019 / 2020) **Review date: 22/05/2018 11:45:01**

Department assigned to the subject: Electrical Engineering Department

Coordinating teacher: USAOLA GARCIA, JULIO

Type: Compulsory ECTS Credits : 3.0

Year : 1 Semester : 1

REQUIREMENTS (SUBJECTS THAT ARE ASSUMED TO BE KNOWN)

None

OBJECTIVES

CB6 Possess and understand knowledge that provides a base or opportunity to be original in the development and / or application of ideas
CB7 The students must know how to apply the acquired knowledge and their ability to solve problems in new or unfamiliar environments within broader (or multidisciplinary) contexts related to their area of ¿¿study
CB9 The students must know how to communicate their conclusions and the knowledge and ultimate reasons that sustain them to specialized and non-specialized audiences in a clear and unambiguous way
CG1 Ability to learn new methods and technologies, based on the mastery of scientific subjects and specialized techniques of Clinical Engineering, as well as to adapt to new situations.

LEARNING RESULTS THAT THE STUDENT ACQUIRES
In overcoming this subject, students should be able to:
- Describe electrical installations and analysis of electrical machines, with special emphasis on aspects related to the design and maintenance of facilities in a clinical setting.
- Describe the processes of energy conversion that occur in electric circuits and machines.
- Describe the bases of maintenance and repair of electrical equipment in the hospital environment.
- Obtain information from the technical documentation of the electrical installation, interpreting the symbols and rules of representation on which it is based.
- Calculate characteristic parameters of single-phase and three-phase alternating current lines, identifying typical values.
- Characterize the operation of electric motors and transformers, identifying their field of application in the sanitary environment.
- Measure parameters in electrical installations, identifying the risks inherent in their operation and the associated protection systems.
- Mount electrical installations, verifying their operation.

DESCRIPTION OF CONTENTS: PROGRAMME

UNIT 0: Basic concepts of electrical engineering and electrical installations.
UNIT 1: Introduction to the electrical machines. Transformers, asynchronous machines and synchronous machines.
UNIT 2: Introduction to electrical installations in clinical settings. Application regulations.
UNIT 3: Verifications and operation of electrical installations in hospital environment.

LEARNING ACTIVITIES AND METHODOLOGY

TRAINING ACTIVITIES OF THE STUDY PLAN REFERRED TO MATTERS
AF1 Theoretical class
AF2 Practical classes
AF3 Theoretical practical classes

AF4 Laboratory practices
AF5 Tutorials
AF6 Group work
AF7 Individual student work
AF9 Face-to-face evaluation tests

AF1	15		15			100%		
AF3	7		7			100%		
AF5	3		0			0%		
AF7	65			0			0	
AF9	2			2			100%	
TOTAL MATERIA		90			24			26.66%

ASSESSMENT SYSTEM

% end-of-term-examination/test: 0

% of continuous assessment (assigments, laboratory, practicals…): 100

Approved by course: 50% short evaluation exams per module + 50% of work directed during the course.

Approved in ordinary and extraordinary call: 100% exam (test + development cases)

BASIC BIBLIOGRAPHY

- A.J. Conejo Instalaciones eléctricas., McGraw Hill.

- AA.VV Guía del SACYL sobre electrificación de Hospitales (Criterios generales y Bloque Técnico), SACYL.

- AA.VV. Guías del Insalud para desarrollo de instalaciones en Hospitales., VV.EE..

- AA.VV. Guía American Institute of Architects para diseño de hospitales, American Institute of Architects .

- Técnicas y procesos en las instalaciones de media y baja tensión Jose Luis Sanz Serrano, Paraninfo.