SUBJECT TEACHING GUIDE

G884 - Introduction to Nuclear Engineering

Degree in Electrical Engineering

Academic year 2023-2024

1. IDENTIFYING DATA					
Degree	Degree in Electrical Engineering			Type and Year	Optional. Year 4
Faculty	School of Industrial Engineering and Telecommunications				
Discipline	Subject Area: Planning and Energy Management Optional Module: Electrical Engineering				
Course unit title and code	G884 - Introduction to Nuclear Engineering				
Number of ECTS credits allocated	6	Term		Semester based (2)	
Web					
Language of instruction	Spanish	English Friendly	No	Mode of delivery	Face-to-face

Department	DPTO. INGENIERIA ELECTRICA Y ENERGETICA
Name of lecturer	FERNANDO DELGADO SAN ROMAN
E-mail	fernando.delgado@unican.es
Office	E.T.S. de Ingenieros Industriales y de Telecomunicación. Planta: - 2. DESPACHO PROFESOR (S2030)
Other lecturers	CRISTIAN OLMO SALAS

3.1 LEARNING OUTCOMES

- - Basic knowledge of nuclear physics principles.
  - Critical thinking skills.
  - Independent learning ability.

4. OBJECTIVES

- To provide students a basic/medium knowledge about a current energy source, the nuclear power.
- To train students for professional practice in a sector with demand of technicians graduated or postgraduated .

6. COURSE ORGANIZATION	
CONTENTS	
1	SECTION I. Introduction to Nuclear Engineering
1.1	Types of reactor
1.2	Nuclear fuels
1.3	Nuclear waste
2	SECTION II. Atomic and Nuclear Physics
3	SECTION III. Reactor Theory
3.1	Neutron properties
3.2	Nuclear parameters
3.3	Reactor operation
4	SECTION IV. Nuclear Safety and Radiation Protection
5	SECTION V. Medical and Industrial Applications of Radionuclides and Ionizing Radiation.

7. ASSESSMENT METHODS AND CRITERIA				
Description	Type	Final Eval.	Reassessn	%
Simulation practices	Activity evaluation with Virtual Media	No	Yes	35,00
Final exam	Written exam	Yes	Yes	55,00
Complementary activities	Others	No	No	10,00
TOTAL				100,00

Observations

The student will be assessed as follows:
• Two partial tests:
The value of each partial test is 25% of the total grade.
It is necessary to attend to the 80% of the class hours to carry out these partial tests.
The student won't need to carry out the final exam if he passes these partial tests.
• Simulation practices
The value of these practices is 25% of the total grade.
It is necessary to attend to 80% of the simulation practices to pass them.
• Resolution of questions in group
The value of these questions is 15% of the total grade.
• Final exam
The failed partial tests can be passed in this final exam.
• Complementary activities
The value of these activities is 10% of the total grade.
These activities will include visits to nuclear power plants or to industries related with this sector, the attendance to seminars taught by nuclear experts, etc.

Observations for part-time students

The assessment of the part-time students will be carried out according the Assessment Regulation of the UC

8. BIBLIOGRAPHY AND TEACHING MATERIALS

BASIC

- Nuclear physics and reactor theory. DOE fundamentals hanbook. Vol. 1 y 2. U.S. Department of Energy. 2009
- Introduction to Nuclear Engineering. John R. Lamarsh, Anthony J. Baratta. Editorial: Prentice Hall, 3ª Ed. 2001