[GFK007] Nanotechnology

GENERAL INFORMATION

Studies	DEGREE IN ENGINEERING PHYSICS APPLIED TO INDUSTRY			**Subject**	Key Technologies
Semester	1	**Course**	4	**Mention / Field of specialisation**	???
Character	COMPULSORY				
Plan	2022	**Modality**	Face-to-face	**Language**	ENGLISH
Credits	3	**Hours/week**	0	**Total hours**	29 class hours + 46 non-class hours = **75 total hours**

2030 AGENDA GOALS

PROFESSORS

LASA ALONSO, JON
AZPI-ESCOBAR FERNANDEZ, ANE
AZPI-PELLICER GURIDI, RUBEN
AZPI-JIMENEZ DE ABERASTURI, DORLETA

REQUIRED PREVIOUS KNOWLEDGE

Subjects	Knowledge
Quantum Physics I	*(No previous knowledge required)*
CHEMISTRY	
Materials Science and Engineering	

LEARNING RESULTS

LEARNING RESULTS	KC	SK	AB	ECTS
GFR303 - Understanding the characteristic properties of nanostructured materials, as well as their potential technological impact on different branches of engineering	*x*			3
			Total:	3

KC: Knowledge or Content / SK: Skills / AB: Abilities

SECONDARY LEARNING RESULTS

RGF406 **[!]** ***Conoce el estado del arte de algunas de las aplicaciones nanotecnológicas más relevantes y es capaz de entender su eventual impacto futuro en diferentes sectores tecnológicos e industriales, valorando oportunidades y riesgos***

LEARNING ACTIVITIES	CH	NCH	TH
Development and writing of records, reports, presentations, audiovisual material, etc. on projects/work experience/challenges/case studies/experimental investigations carried out individually and/or in teams	3 h.	5 h.	8 h.
Personal study and flexible development of concepts and subjects using active dynamics, to foster more meaningful learning	5,5 h.	8 h.	13,5 h.
Carrying out exercises and solving problems individually and/or in teams	3 h.	5 h.	8 h.
Reading and personal and/or shared analysis of relevant and current publications (books, articles, catalogues, etc.) related to the speciality	3 h.	5 h.	8 h.

EVALUATION SYSTEM	W
Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems	70%
Individual written and/or oral tests or individual coding/programming tests	30%

MAKE-UP MECHANISMS

Reports on the completion of exercises, case studies, computer exercises, simulation exercises, laboratory exercises, term projects, challenges and problems

CH - Class hours: 14,5 h.
NCH - Non-class hours: 23 h.
TH - Total hours: 37,5 h.

RGF405 **[!]** ***Entiende las propiedades de los materiales nanoestructurados, así como los procesos y técnicas fundamentales de***

la nanotecnología

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CONTENTS

1- Introduction to nanoscience

2- Spectroscopy and microscopy

2.1 Fundamental spectroscopic techniques

2.2 Optical microscopy

2.3 Electron microscopy

2.4 Scanning-probe microscopy

3- Nanofabrication

3.1 Top-down

3.2 Bottom-up

4- Applications

LEARNING RESOURCES AND BIBLIOGRAPHY

Learning resources	Bibliography
Slides of the subject	https://labur.eus/CmLIN
Technical articles	
Presentations by external Lecturers	
Topic related web quires	
Moodle Platform	