Basic Teaching Unit:1.1	*Coefficient :4*	*Credits:4*	**VH:52h30**			
			L	*T*	*TW*	*Other*
Titled	**Spectroscopic techniques**		**15h 00**	**15h 00**	**22h 30**	**55h**
Objectifs	At the end of this module, the student must know how to choose and implement the spectroscopic technique best suited to the measurement carried out.					
Focusedabilities						
						Level requirement
Content (blocks of skill)	**The subject's content :** **Courses and Tutorials** Study of different spectroscopic methods: optical, magnetic and mass **Practical work** - Spectroscopy: UV, Visible (atomic and molecular), IR, Raman - Mass spectroscopy - NMR - Fluorimetry					
Type of control and monitoring	**Continuous monitoring: 60%; Exam: 40%**					

Basic Teaching Unit:1.1	*Coefficient :4*	*Credits:4*	**VH:52h30**			
			L	*T*	*TW*	*Other*
Titled	**Nuclear techniques**		**15h 00**	**15h 00**	**22h 30**	**55h**
Objectifs	At the end of this module, the student must know the precautions to take to protect themselves against radiation.					
Focusedabilities						
						Level requirement
Content (blocks of skill)	**The subject's content :** **Courses and Tutorials** 1. Radiation-matter interaction 2. Radiation detection 3. Dosimetry concepts 4. Radiation Protection **Practical work** Dosemetry Radiation detection					
Type of control and monitoring	**Continuous monitoring: 60%; Exam: 40%**					

Basic Teaching Unit:1.1	*Coefficient :3*	*Credits:3*	**VH:52h30**			
			L	*T*	*TW*	*Other*
Titled	**Thin Films 1**		**15h 00**	**15h 00**	**22h 30**	**55h**
Objectifs	At the end of this module, the student must understand the importance of thin film materials for specific uses.					
Focusedabilities						
						Level requirement
Content (blocks of skill)	**The subject's content :** **Courses and Tutorials** 1) The properties of bulk materials and thin layer materials • Two-dimensionality effect • Vacuum preparation • Preparation by chemical means (sol-gel process) • Densification and phase change • Characterization techniques • Layer properties 2) Areas of use of thin layers **Practical work** Fabrication of thin layers by sol-gel method and characterization,					
Type of control and monitoring	**Continuous monitoring: 60%; Exam: 40%**					

Basic Teaching Unit:1.1	*Coefficient :3*	*Credits:3*	**VH:52h30**			
			L	*T*	*TW*	*Other*
Titled	**Thin Films 2**		**15h 00**	**15h 00**	**22h 30**	**55h**
Objectifs	At the end of this module, the student must understand the physical mechanisms giving their properties to thin layers.					
Focusedabilities						
						Level requirement
Content (blocks of skill)	**The subject's content :** **Courses and Tutorials** 1. Properties of thin film materials • Optical properties • Sol-gel process • Doping technique 2. Application of thin layers • Photocatalysis • Photovoltaic transformation • Waveguide **Practical work** Fabrication of thin layers by sol-gel method and characterization,					
Type of control and monitoring	**Continuous monitoring: 60%; Exam: 40%**					

Basic Teaching Unit:1.1	*Coefficient :2*	*Credits:2*	**VH:52h30**			
			L	*T*	*TW*	*Other*
Titled	**Photonics**		**15h 00**	**15h 00**	**22h 30**	**55h**
Objectifs	At the end of this module, the student must know how to use the techniques studied on an instrumental level.					
Focusedabilities						
						Level requirement
Content (blocks of skill)	**The subject's content :** Resonator Optics .Physics of semiconductor nanostructures Nonlinear optics and hybrid integrated photonics					
Type of control and monitoring	**Continuous monitoring: 60%; Exam: 40%**					

Basic Teaching Unit:1.1	*Coefficient :3*	*Credits:3*	**VH:52h30**			
			L	*T*	*TW*	*Other*
Titled	**Modification of material properties**		**15h 00**	**15h 00**	**22h 30**	**55h**
Objectifs	Know the main factors leading to changes in material properties.					
Focusedabilities						
						Level requirement
Content (blocks of skill)	**The subject's content :** Illustration of the importance of mastering materials Definition of a material: States of matter, transformation temperatures Evolution of materials: By origin, chronological appearance (ages) functions (adaptive multifunctional materials, etc.) Classification of materials: Periodic classification, atomic and molecular composition nature of bonds, classes of materials Normative and regulatory framework Designation of industrial materials Material properties: Economic, mechanical, thermal, optical… Shaping processes: Primary, secondary, tertiary, and finishing. Process selection criteria					
Type of control and monitoring	**Continuous monitoring: 60%; Exam: 40%**					

Basic Teaching Unit:1.1	*Coefficient : 3*	*Credits:3*	**VH:52h30**			
			L	*T*	*TW*	*Other*
Titled	**Expertise and control of industrial products**		**15h 00**	**15h 00**	**22h 30**	**55h**
Objectifs	Acquired modules: - Spectroscopic techniques - Electrochemical and separative analyzes (An Elect Sep)					
Focusedabilities						
						Level requirement
Content (blocks of skill)	**The subject's content :** **Courses and Tutorials** Choice of the method for controlling industrial products among different analysis and characterization techniques studied (spectroscopic techniques, chromatographic methods.). Implementation of the different techniques chosen for the expertise of the industrial product. **Practical work** Practical work can be done in the form of industrial case studies.					
Type of control and monitoring	**Continuous monitoring: 60%; Exam: 40%**					

Basic Teaching Unit:1.1		***Coefficient :2***	***Credits:2***	**VH:52h30**		
				L	***T***	***TW***	***Other***
Titled	**Languages, Culture and Communication 5**			**15h 00**	**15h 00**	**22h 30**	**55h**
Objectifs	At the end of this module, the student should have some ideas on labor law issues and human resources management.						
Focusedabilities							
							Level requirement
Content (blocks of skill)	**The subject's content :** **Courses and Tutorials** 1) Consolidation of expression in languages. 2) Professional communication: Writing procedures and user training, Writing internship reports and defenses. ….						
Type of control and monitoring	**Continuous monitoring: 60%; Exam: 40%**						