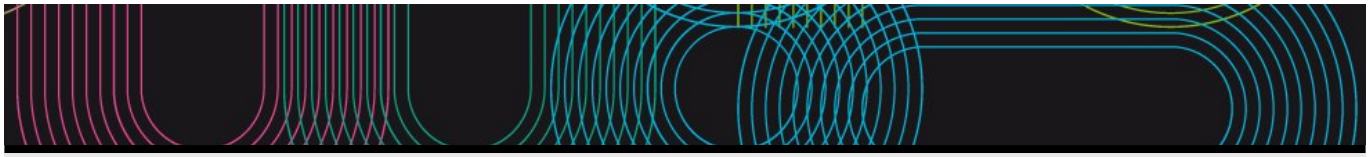

IDENTIFYING DATA				
Physics: Overview of physics				
Subject	Physics: Overview of physics			
Code	O01G281V01202			
Study programme	(*)Grao en Enxeñaría Agraria			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	2nd
Teaching language	Spanish			
Department				
Coordinator	Troncoso Casares, Jacobo Antonio			
Lecturers	González Salgado, Diego Troncoso Casares, Jacobo Antonio			
E-mail	jacobotc@uvigo.es			
Web	http://www.faitic.uvigo.es			
General description	(*)No primeiro ano desta titulación, preséntanse os coñecementos fundamentais de Física necesarios para unha mellor comprensión do resto de materias específicas do Grao. Tendo en conta, a diversidade de persoas que accede a esta titulación, este curso permitirá homoxeneizar o nivel de coñecementos do alumnado. O curso de Física consta de dúas materias, Física Xeral no primeiro cuadrimestre e Ampliación de Física Xeral no segundo. A materia ampliación de Física Xeral é unha materia de Formación Básica que consta de 6 créditos ECTS. Nela, introdúcese ao alumno nos aspectos básicos da Termodinámica e o Electromagnetismo cunha perspectiva enfocada ao campo alimentario/ #ambiental, con carácter tecnolóxico. Por outra banda, neste curso consolídase a formación do alumno no manexo do método científico co obxecto de que adquira as ferramentas básicas para unha análise racional da natureza.			

Competencies	
Code	
A3	(*)Que os estudantes teñan a capacidade de reunir e interpretar datos relevantes (normalmente dentro da súa área de estudo) para emitir xuízos que inclúan unha reflexión sobre temas relevantes de índole social, científica ou ética.
A4	(*)Que os estudantes poidan transmitir información, ideas, problemas e solución a un público tanto especializado coma non especializado.
B1	Que los estudiantes sean capaces de desarrollar habilidades de análisis, síntesis y gestión de la información en el sector agroalimentario y del medio ambiente.
B2	Que los estudiantes sean capaces de adquirir y aplicar habilidades y destrezas de trabajo en equipo.
C5	Comprensión y dominio de los conceptos básicos sobre las leyes generales de la mecánica, termodinámica, campos, y ondas y electromagnetismo y su aplicación para la resolución de problemas propios de la ingeniería
D1	Capacidad de análisis, organización y planificación
D3	Comunicación oral y escrita en la lengua nativa y extranjera
D4	Capacidad de aprendizaje autónomo y gestión de la información
D5	Capacidad de resolución de problemas y toma de decisiones
D8	Trabajo en equipo de carácter interdisciplinar

Learning outcomes				
Expected results from this subject	Training and Learning Results			
Understanding and mastery of the basics of the general laws of Mechanics, Thermodynamics, Fields and Waves, Electromagnetism and its application for solving Engineering problems	A3	B1	C5	
Motivation for independent learning				D4
Acquisition of critical thinking	A3			D1
Ability to synthesize and analyze information		B2		D5
Ability to present work orally and in writing.	A4			D3 D8

Contents	
Topic	
SUBJECT 1. TEMPERATURE	1.1. Scale of temperature Celsius and Fahrenheit 1.2. Thermometers of gas and scale of absolute temperatures 1.3. Thermal dilatation 1.4. Law of the ideal gases 1.5. Equation of Van der Waals and liquid-vapor isotherm 1.6. Phase Diagrams.
SUBJECT 2. HEAT And FIRST PRINCIPLE OF THE THERMODYNAMICS	2.1. Thermal capacity and specific heat 2.2. Changes of phase and latent heat 2.3. Transfer of thermal energy 2.4. The first principle of Thermodynamics 2.5. Internal energy of an ideal gas 2.6. Work and the p-V diagram for a gas 2.7. Adiabatic quasistatic expansion of a gas
SUBJECT 3. SECOND PRINCIPLE OF THE THERMODYNAMICS	3.1. Machines and thermal engines and the Second Principle of the Thermodynamics 3.2. Refrigerators and the second principle of Thermodynamics 3.3. Equivalence between the thermal machine and the refrigerator statements 3.4. The Carnot machine 3.5. The heat pump 3.6. Entropy and disorder 3.7. Entropy and probability
SUBJECT 4. FIELD And ELECTROSTATIC POTENTIAL IN THE VACUUM	4.1. Forces between charges: Coulomb Law. 4.2. Electrostatic field. 4.3. Gauss Law. 4.4. Electrostatic potential. 4.5. Electric dipole: field and potential.
SUBJECT 5 ELECTROSTATIC FIELD IN THE MATTER	5.1. Field and potential in charged conductors. 5.2. Capacity of a conductor. Capacitors. Dielectric constant 5.3. Polarisation and electric displacement. 5.4. Electrostatic energy
SUBJECT 6 DIRECT CURRENT	6.1. Intensity and density of a current. Equation of continuity. 6.2. Ohm Law. Resistance and conductivity. 6.3. Electromotive force. Generalised Ohm Law. 6.4. Joule Law. 6.5. Kirchoff Laws.
SUBJECT 7 FORCES And MAGNETIC FIELDS. ELECTROMAGNETIC INDUCTION	7.1. Forces between currents. 7.2. Magnetic induction: Law of Biot and Savart. 7.3. Forces over charges in movement. 7.4. Moment on a spire. 7.5. Fundamental equations of the Field. Theorem of Ampère. 7.6. Laws of Faraday and Lenz. 7.7. Mutual induction and autoinduction. 7.8. Magnetic energy.

Planning	Class hours	Hours outside the classroom	Total hours
Master Session	28	62	90
Seminars	14	14	28

*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.

Methodologies	Description
Master Session	Explanation of the theoretical foundations. Presentation of the theory of the matter by the lecturer. The classes of theory will give mainly using the expositive method combined with the dialectic one to be able to develop the program in his whole.
Seminars	Before giving the seminar classes, the students have a list of exercises and questions in FAITIC for each subject, with the aim of they can think about the exercises before they will carry out them in the seminar hours. This is done in order to get an active participation of each student, and boost his/her rational spirit.

Personalized attention	
Methodologies	**Description**
Master Session	In the master classes as well as in the seminar, the needs and queries of the students related with the subject will be responded, giving them orientation, support and motivation for the learning process. This will be done in the classroom as well as in the tutoring hours at the lecturer's office.
Seminars	In the master classes as well as in the seminar, the needs and queries of the students related with the subject will be responded, giving them orientation, support and motivation for the learning process. This will be done in the classroom as well as in the tutoring hours at the lecturer's office.

Assessment			
	Description	Qualification	Training and Learning Results

Master Session	An exam, which is a testing set, will be done. Learning outcomes: -Motivation for autonomous learning -Ability to synthesize and analyze information -Knowledge about foundations of Thermodynamics and Electromagnetism	70	A3 A4	B1	C5	D3 D4 D8
Seminars	Continuous assessment for students who regularly make all proposed activities in class like exercises and questions. Solution of the bulletins, its theoretical questions and exercises in order to the students show their argumentative skills. Learning outcomes -Acquisition of critical thinking -Ability for presenting the work orally and in writing.	30	A3	B2		D1 D5

Other comments on the Evaluation

If any student cannot attend to lectures with a good reason, he/she must do the exercises of the bulletins and send them to the lecturer.

Exam dates:

Final year: October 2, 16:00 h.

1st Edition: May 27, 10:00 h.

2nd Edition: July 15, 10:00 h.

Sources of information

P. A. Tipler, **Física para la Ciencias y laTecnología vol.1**,

P. A. Tipler, **Física para la Ciencias y laTecnología vol.2**,

Recommendations

Subjects that it is recommended to have taken before

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