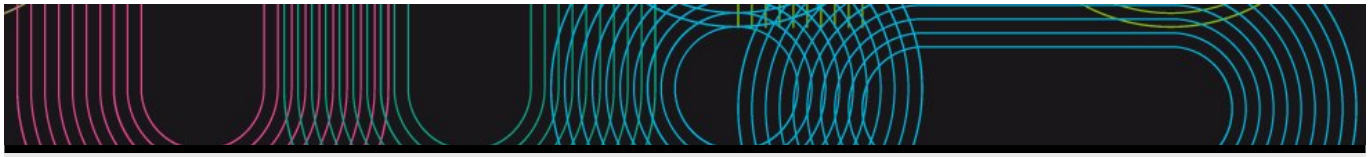

IDENTIFYING DATA

Physics: Physics 2

Subject	Physics: Physics 2			
Code	O07G410V01202			
Study programme	(*)Grao en Enxeñaría Aeroespacial			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	2nd
Teaching language	Spanish			
Department				
Coordinator	Michinel Álvarez, Humberto Javier Tommasini , Daniele			
Lecturers	Michinel Álvarez, Humberto Javier Salgueiro Piñeiro, Jose Ramon Tommasini , Daniele			
E-mail	daniele@uvigo.es hmichinel@uvigo.es			
Web	http://optics.uvigo.es			
General description	The subject of Physical II is guided fundamentally to provide to the student of the training and basic competitions in the areas of *electromagnetismo, covering his main theoretical aspects and practical.			

Competencies

Code	
A1	(*)Que os estudantes demostrasen posuír e comprender coñecementos nunha área de estudo que parte da base da educación secundaria xeral, e adóitase atopar a un nivel que, aínda que se apoia en libros de texto avanzados, inclúe tamén algúns aspectos que implican coñecementos procedentes da vangarda do seu campo de estudo
B2	(*)Planificación, redacción, dirección e xestión de proxectos, cálculo e fabricación no ámbito da enxeñaría aeronáutica que teñan por obxecto, de acordo cos coñecementos adquiridos segundo o establecido no apartado 5 da orde CIN/308/2009, os vehículos aeroespaciais, os sistemas de propulsión aeroespacial, os materiais aeroespaciais, as infraestruturas aeroportuarias, as infraestruturas de aeronavegación e calquera sistema de xestión do espazo, do tráfico e do transporte aéreo.
C2	(*)Comprensión e dominio dos conceptos básicos sobre as leis xerais da mecánica, termodinámica, campos e ondas e electromagnetismo e a súa aplicación para a resolución de problemas propios da enxeñaría.
D1	(*)Capacidade de análise, organización e planificación
D3	(*)Capacidade de comunicación oral e escrita na lingua nativa
D4	(*)Capacidade de aprendizaxe autónoma e xestión da información
D5	(*)Capacidade de resolución de problemas e toma de decisións
D6	(*)Capacidade de comunicación interpersoal
D8	(*)Capacidade de razoamento crítico e autocrítico

Learning outcomes

Expected results from this subject	Training and Learning Results			
Knowledge, understanding, of the basic principles of the Physics and his application to the analysis and to the resolution of problems of engineering	A1	B2	C2	D1 D3 D4 D5 D6 D8
Knowledge, understanding and application of the principles of the *electromagnetismo, including the *electrostática, the *magnetostática and the equations of Maxwell.	A1		C2	D5 D8
News			C2	

Contents

Topic	
Presentation of the course and historical introduction.	Historical introduction.
*Electrostática.	Cargo and density of cargo. Law of *Coulomb. Field *eléctrostático. Flow of the field *eléctrostático. Law of *Gauss. Potential *electrostático. Equations of *Poisson and *Laplace. Energy of the field *electrostático. Development *multipolar of the potential. *Dipolos. *Conductores. *Dieléctricos. *Desplazamento Electric. *Condensadores And capacity.
Electric current.	Current and density of current. Equation of continuity. Law of *Ohm. *Conductividade And *resistividade. Association of resistances. Strength *electromotriz. *Circuito Electric. Power and energy. Laws of *Kirchhoff.
*Magnetostática.	Introduction to the magnetic field. Strength between currents. *Indución Magnetic. Strength of *Lorentz. Law of *Biot and *Savart. Magnetic flow. Law *circuital of *Ampère. Potential *vector. Development *multipolar of the potential *vector. *Dipolos Magnetic. Moment *dipolar magnetic. Magnetism in witnesses of subject. Magnetic answers of the material. Magnetic field. Cycles of *histéresis.
Introduction to the *Electrodinámica.	Law of *indución of *Faraday. *Inductancia. *Xeneradores, motor and *transformadores. Current of *desplazamento of Maxwell. Equations of Maxwell. Electromagnetic energy. Systems of units.
Current alternates.	Current alternates *monofásica. *Reactancias *capacitiva And *inductiva. *Impedancia. Half and effective power. Complex magnitudes. *Circuito RLC series and parallel. Resonance. Factor of quality. Transitory regimes.
Electromagnetic waves.	Equation of waves. Electromagnetic waves. Flat and spherical waves. Electromagnetic spectrum. Transformations of *gauge. Equations of Maxwell stop the potentials. Potentials *retardados. Production, *propagación and detection of electromagnetic waves.
Practices of laboratory.	Determination of @constante *dieléctricas. Law of *Biot and *Savart. Bobbins of *Helmhotz; measure of the terrestrial magnetic field. Magnetic moment. Cycles of *histéresis. *Indución Electromagnetic. *Circuitos Electric.

Planning			
	Class hours	Hours outside the classroom	Total hours
Master Session	20	40	60
Laboratory practises	12	18	30
Troubleshooting and / or exercises	7	10.5	17.5
Introductory activities	1	0	1
Seminars	10	15	25
Long answer tests and development	2.5	0	2.5
Reports / memories of practice	0	14	14
*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	Kinds of an hour of length in the that the professor exposes of tidy way the main theoretical concepts around the that structures the subject.
Laboratory practises	Development of experiments in laboratory that illustrate the main theoretical concepts developed previously in the sessions *maxistrais.
Troubleshooting and / or exercises	The professor will resolve similar selected exercises to the that the student will face more forward of autonomous way.
Introductory activities	Presentation of the *asignatura and of the teaching staff *involucrado in her. Presentation of the laboratory.
Seminars	Resolution of problems by part of the professor, in relation with the theoretical concepts developed previously in the sessions *maxistrais.

Personalized attention	
Methodologies	**Description**
Laboratory practises	The professor explains of way *individualizada the development of the practices to realize in the laboratory.
Master Session	The professor supervises of way *individualizada the correct assimilation of the theoretical concepts developed in the sessions *maxistrais.

Seminars	The professor supervises of way *individualizada the correct resolution of the problems proposed in the kinds of seminars.
Introductory activities	Joint presentation of the *asignaturas to the *comenzo of the course.
Troubleshooting and / or exercises	The professor resolves problems type of similar difficulty to the that will be boarded more forward pole student of autonomous way.

Assessment

	Description	Qualification	Training and Learning Results		
Long answer tests and development	Final examination of between 3 and 10 exercises and developmental questions and two partial examinations developmental of problems.	80	A1	C2	D1 D3 D8
Reports / memories of practice	Presentation and oral exhibition if it was necessary of the reports to present once realized the practices of laboratory.	20	B2	C2	D1 D3 D4 D5 D6 D8

Other comments on the Evaluation

Sources of information

Basic Bibliography

Complementary Bibliography

Griffiths, D.J, **Introduction to electrodynamics**, 3ª edición, Prentice Hall,

Cheng, D.K., **Fundamentos de electromagnetismo para ingeniería**, Addison Wesley Iberoamericana,

Feynman, R.P. Leighton R.B., **Lectures on Physics, Vol II**, Addison Wesley Publishing,

Tipler, P.A., **Física para la ciencia y la tecnología, volumen 2 (electricidad y magnetismo)**, Reverté,

Edminister, J.A., **Electromagnetismo**, McGraw-Hill,

Jackson J.D., **Classical electrodynamics.**, Elsevier, Amsterdam,

Serrano, V, **Electricidad y Magnetismo: Estrategias para la resolución de problemas y aplicaciones**, Prentice Hall,

Alexeiev, A.I., **Problemas de electrodinámica clásica.**, MIR, Moscu,

Edminister, J.A., **Circuitos Eléctricos**, McGraw-Hill,

Feynman, R.P. Leighton R.B., Sands M., **Exercises for the Feynman Lectures on Physics**, Addison Wesley Publishing,

Batygin, V.V., **Problems in lectrodynamics.**, Academic Press, Londres,

Cheng, D.K., **Field and wave electromagnetics**, Addison Wesley Publishing,

Kong J.A., **Electromagnetic Wave Theory.**, John Wiley and Sons,

Varios, **http://wikipedia.org**,

Recommendations

Subjects that are recommended to be taken simultaneously

Mathematics: Calculus 2/O07G410V01201

Subjects that it is recommended to have taken before

Physics: Physics 1/O07G410V01103

Mathematics: Calculus 1/O07G410V01101