

(*)Escola de Enxeñaría Forestal

Presentation

Welcome to the Forestry Faculty (Campus of Pontevedra - University of Vigo). Detailes information about our faculty can be found in http://www.forestales.uvigo.es

Our faculty offers the Degree in Forest Engineering

The Degree comprises 240 credits ECTS during four years, maaning an annual distribution of 60 ECTS distributed in 30 ECTS per semester.

Address

1. Name: Forestry Technical School
2. Degree: Degree in Forestry
3. Postal address: Campus A Xunqueira, 36005 Pontevedra
4. Telephone: 986-801900
5. FAX: 986-801907
6. And-mail: sdeuetf@uvigo.es
7. Web: http://www.forestales.uvigo.es

Faculty Management

Managerial team:

Director: D. Enrique Valero Gutiérrez del Olmo

Deputy director: Dª. Angeles Cancela Carral

Secretary: D. Juan Picos Martín

Governing bodies:

- Faculty Assembly

- Commissions:

- Permanent
- Economic Affairs
- Academic Affairs
- Credit Validation
- Quality

Departments in the Centre:

(*)Servizo e Infrastructuras do Centro

(*)

1. Administración: o horario de atención ao público de secretaría é de 9:00 a 14:00 horas.
2. Bibliotecas: http://www.uvigo.es/uvigo_gl/Administracion/Biblioteca/directorio/campus_pontevedra.html
3. Conserxaría: A conserxaría do Centro permanece aberta desde a apertura ao peche do Centro, en dúas quendas: 8:00 a 15:00 horas, e 15:00 a 22:00.
4. Reprografía: Este servizo atópase na Facultade de CC. Sociais e cobre as necesidades do Campus.
5. Cafetería
6. Administrador de Centros
7. Área de Servizos á Comunidade
8. Rexistro
9. LERD
10. Bolsas
11. CAP
12. OSIX

Aulas e laboratorios:

Aulas docentes:

AULA	Nº DE POSTOS TOTAIS	Nº DE POSTOS EN DISPOSICIÓN DE EXAME
1	65	35
2	65	35
3	65	35
4	98	53
5	104	56
6	104	56
7	104	56
8	104	56
9	104	56
SUMA	**813**	**438**

Laboratorios e talleres:

ANDAR	LABORATORIO	DOCENTE		INVEST.	
		Superficie	Capacidad Persoas	Superficie	Capac. Persoas
Soto	Lab. Hidráulica e Hidroloxía Forestal	115, 83 m^2	16	35,67 m^2	3
Soto	Lab. Enxeñería Mecánica /Lab. Termotecnia	110, 17 m^2	16	NO	No
Soto	Celulosa Pasta e Papel	72,04 m^2	15	35,67 m^2	3
Soto	Taller Enerxías Xiloxeneneradas	171,51 m^2	25	2º Andar	2º Andar
Soto	Taller de Madeiras	342,11m^2	35	NO	NO
P.Baixa	Aula Informática (1)	108,85 m^2	24	NO	
P.Baixa	Aula Informática (2)	107,34 m^2	24	NO	
P.Baixa	Expresión Gráfica	168,45 m^2	48	NO	
P.Baixa	Proxectos	95,00 m^2		6	
1º	Lab. Física	112,54 m^2	16	35,67 m^2	4
1º	Lab. Ecoloxía	109,41 m^2	30	36,61 m^2	4
1º	Lab. Enxeñería do Medio Ambiente	NO	NO	34,54 m^2	4
1º	Lab. Topografía	117,57 m^2	40	36,75 m^2	2
1º	Lab. Edafoloxía	109,98 m^2	16	27,40 m^2	7
2º	Lab. Silvicultura e Repoboación	109,60 m^2	16		
2º	Lab. Enerxías Xiloxeneneradas	Soto	Soto	36,61 m^2	4
2º	Lab. Incendios Forestais	112,11 m^2	17	34,54 m^2	5
2º	Lab. Producción Vexetal	117,57 m^2	24	36,75 m^2	4
2º	Lab. de Acuicultura	112,54 m^2	pendente	NO	NO

2º	Lab. Enxeñería Eléctrica	110,73 m^2	21	NO	NO
2º	Lab. Enxeñería Química	109,98 m^2	15	27,40 m^2	6

Additional information

STUDENTS OFFICE:

Number tfno.: 986 801913

And-mail: daeuetf@uvigo.es

Main Regulations

Rules of interest for the students; we indicate the links where the student can find information of his interest:

Specific rules of the University of Vigo: www.uvigo.es

http://www.uvigo.es/uvigo_gl/administración/servicioalumnado

http://extension.uvigo.es

http://webs.uvigo.es/vicoap/normativa_oa.gl.htm

http://www.uvigo.es/uvigo_gl/estudiostitulaciones

http://www.uvigo.es/uvigo_gl/vidauniversitaria/calendarioescolar

http://www.uvigo.es/uvigo_gl/vidauniversitaria/universidadvirtual

http://secxeral.uvigo.es/secxeral_gl/normativa/normativauniversidad/estudaintes/regulamento_estudantes.html

http://www.uvigo.es/uvigo_gl/vidauniversitaria/normativa

http://www.forestales.uvigo.es

Other Information

- **Study Plan: http://www.forestales.uvigo.es**
- **Scholarships: http://193.146.32.123:8080/GestorBecas/user/Becas.do?accion=tiposList**
- **Medical assistance: http://www.uvigo.es/uvigo_gl/vidauniversitaria/salud/centromedico/**
- **Employment Office : http://emprego.uvigo.es/**
- **Canteens and accommodation: http://www.uvigo.es/uvigo_gl/vidauniversitaria/comedores_aloxamento/**
- **Other activities:**

  http://www.campuspontevedra.uvigo.es/index.php?*id=14 (Sports in the Campus of Pontevedra)

  http://deportes.uvigo.es/index.asp (Sport Services).

  http://extension.uvigo.es/

(*)Grao en Enxeñaría Forestal

Subjects

Year 1st

Code	Name	Quadmester	Total Cr.
P03G370V01101	Graphic expression: Graphic expression and cartography	1st	9
P03G370V01102	Physics: Physics I	1st	6
P03G370V01103	Mathematics: Mathematics and IT	1st	9
P03G370V01104	Basics of business economics	1st	6
P03G370V01201	Biology: Plant Biology	2nd	6
P03G370V01202	Physics: Physics II	2nd	6
P03G370V01203	Mathematics: Overview of mathematics	2nd	9
P03G370V01204	Chemistry: Chemistry	2nd	9

IDENTIFYING DATA				
Graphic expression: Graphic expression and cartography				
Subject	Graphic expression: Graphic expression and cartography			
Code	P03G370V01101			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	9	Basic education	1st	1st
Teaching language	Spanish Galician			
Department				
Coordinator	Armesto González, Julia			
Lecturers	Armesto González, Julia			
E-mail	julia@uvigo.es			
Web	http://http://cursos.faitic.uvigo.es/tema1415/claroline/course/index.php			
General description	(*)Esta materia ofrece unhas nocions fundamentais sobre os sistemas de representación aplicados ao ámbito da Enxeñería Forestal, con especial atención ao sistema de planos acotados. Asimismo se abordan conceptos fundamentais de cartografía e xeodesia que permitirán ler e interpretar mapas correctamente. Ademais, se amosa a utilización de ferramientas de software que permiten ao alumno xerar os seus propios planos e documentos de expresión gráfica a escala considerando estándares recollidos en normas ISO.			

Competencies	
Code	
B1	Ability to understand the biological, chemical, physical, mathematical and representation systems necessary for the development of professional activity, as well as to identify the different biotic and physical elements of the forest environment and renewable natural resources susceptible to protection, conservation and exploitations in the forest area.
C1	Knowledge of representation techniques. Capacity for spatial vision. Standardization. Topographical drawing. Computer programs of interest in engineering: computer-aided design.
D2	Ability to communicate orally and written in Spanish or in English
D5	Capacity for information management, analysis and synthesis
D7	Skill in the use of IT tools and ICTs.
D8	Ability to solve problems, critical reasoning and decision making

Learning outcomes			
Expected results from this subject	Training and Learning Results		
1R. 2018 Knowledge and understanding of the mathematicians and other inherent basic sciences to the his speciality in engineering, it a level that allow them purchase the rest of the competitions of the qualifications. 5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial. 6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project. 7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering. 9R. 2018 Capacity to consult and apply codes of good practices and security of the his speciality. 11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality. 12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality. 13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality. 19R. 2018 Capacity to communicate of effective way information, ideas, problems and solutions in the field of the engineering and with the society in general.	B1	C1	D2 D5 D7 D8

Contents
Topic

1.- Normalisation	Organisms of normalisation Formats, lines and writings normalised. Folded of planes. Scales. Normalisation in the representation: Representation of seen; section, court, break. Acotation.
2.-System of representation diedric system	Descriptive geometry and systems of representation. diedric System: generalities, the point, the line, and the plane
3.- System of bounded planes	System of bounded planes: generalities, the point, the line and the plane. Intersections. Parallelism and perpendicularity. Distances. Representation and resolution of covers.
4.- Topographical drawing	Representation of the terrain. Forms of the terrain. Equidistances and curves of level. Points and singular lines of the terrain. Traced of longitudinal and transversal profiles. Explanations.
5.- Computer-aided design	Drawing of simple entities. Utilities and help to the drawing. Edition and modification of simple entities. Blocks and external references. Presentation of planes. Preparation of Digital Models of Terrain
(*)6.- Cartografía	(*)Fundamentos básicos de Geodesia. El concepto de geoide y elipsoide. Concepto de Datum. Datums de referencia. Sistemas de Proyección Cartográfica: fundamentos y clasificación. Sistema de Proyección Cartográfica UTM. Principales fuentes cartográficas: IGN, IET. Otras fuentes de cartografía digital: servidor cartográfico catastral, Google Earth.

Planning			
	Class hours	Hours outside the classroom	Total hours
Problem solving	16	8	24
Laboratory practical	20	36	56
Mentored work	5	15	20
Lecturing	24	36	60
Laboratory practice	15	5	20
Problem and/or exercise solving	5	15	20
Essay	2	15	17
Systematic observation	8	0	8
*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.			

Methodologies	
	Description
Problem solving	(*)Actividade na que se formulan problemas e/ou exercicios relacionados coa materia. O alumno debe desenvolver as solucións adecuadas ou correctas mediante a exercitación de rutinas, a aplicación de fórmulas e procedementos de transformación da información dispoñible e a interpretación dos resultados. Sirve de complemento da lección maxistral. Desenvolvese en aula con dotacions específicas. A docencia poderá impartirse total ou parcialmente en inglés en caso de demanda por parte dos alumnos ou do centro. Se desenvolven as competencias
Laboratory practical	(*)Actividades de aplicación dos coñecementos a situacións concretas e de adquisición de habilidades básicas e procedimentais relacionadas coa expresión gráfica e o dibuxo topográfico mediante software específico. Desenvólvense en aula de informática. A docencia poderá impartirse total ou parcialmente en inglés en caso de demanda por parte dos alumnos ou do centro. Se desenvolven as competencias

Mentored work	(*)O estudante, de maneira individual ou en grupo, elabora un documento sobre a temática da materia. Inclúe a procura e recollida de información, lectura e manexo de bibliografía, redacción, etc. Se desenvolven as competencias
Lecturing	(*)Exposición por parte do profesor dos contidos sobre a materia obxecto de estudo, bases teóricas e/ou directrices de traballos, exercicios ou proxectos a desenvolver polo estudante. Se desenvolven as competencias

Personalized assistance

Methodologies	Description
Lecturing	
Problem solving	
Laboratory practical	
Mentored work	

Assessment

	Description	Qualification	Training and Learning Results
Laboratory practice	(*)Probas para a avaliación que inclúen actividades, problemas ou exercicios prácticos a resolver. Os alumnos deben dar resposta á actividade formulada, aplicando os coñecementos teóricos e prácticos da materia.	10	C1 D7 D8
Problem and/or exercise solving	(*)Proba na que o alumno debe solucionar unha serie de problemas e/ou exercicios nun tempo/condicións establecido/as polo profesor. Desta maneira, o alumno debe aplicar os coñecementos que adquiriu.	60	C1 D8
Essay	(*)O estudante presenta o resultado obtido na elaboración dun documento sobre a temática da materia, na preparación de seminarios, investigacións, memorias, ensaios, resumos de lecturas, conferencias, etc. Pódese levar a cabo de maneira individual ou en grupo, de forma oral e escrita.	20	D2 D5 D7 D8
Systematic observation	(*)Técnicas destinadas a recompilar datos sobre a participación do alumno, baseados nun listado de condutas ou criterios operativos que faciliten a obtención de datos cuantificables.	10	

Other comments on the Evaluation

Pass will be achieved with 5 points over 10.

TIMETABLED EXAMS:

December session: 14th January 2020, 9:00 H; First term: Cartographic Engineering Room, second term: Informatics Room II

July session: 1st July 2020 9:00 H; First term: Cartographic Engineering Room, second term: Informatics Room II

Official dates and any modification will be accesible in the official notice board and in the web page http://forestales.uvigo.es/gl/

Sources of information

Basic Bibliography

Rodríguez de Abajo, F.J.; Álvarez Bengoa, V., **Curso de dibujo geométrico y de croquización**, Editorial Donostiarra, 2005

Rodríguez de Abajo, F. J., **Geometría descriptiva.Tomo II. Sistema de Planos Acotados**, Editorial Donostiarra, 1993

IGN, **http://centrodedescargas.cnig.es/CentroDescargas/index.jsp**,

IET, **http://mapas.xunta.gal/visores/descargas/**,

Complementary Bibliography

Fernando Montaño La Cruz, **Autocad 2017 Guia practica**, Anaya multimedia,

Recommendations

Contingency plan

Description

=== EXCEPTIONAL PLANNING ===

Given the uncertain and unpredictable evolution of the health alert caused by COVID-19, the University of Vigo establishes an extraordinary planning that will be activated when the administrations and the institution itself determine it, considering safety, health and responsibility criteria both in distance and blended learning. These already planned measures guarantee, at the required time, the development of teaching in a more agile and effective way, as it is known in advance (or well in advance) by the students and teachers through the standardized tool.

=== ADAPTATION OF THE METHODOLOGIES ===

* Teaching on line

Use of institutional on-line teaching platform Campus Remoto in a synchronous way for the theoretical classes including basics, foundations, as well as general guidelines for resolution of problems and practical cases. Specific didactic materials adapted for on line teaching will be prepared e.g. Video or presentations, graphic resources, software, etc. All the resources will be available through FAITIC platform.

* Mechanism face-to-face of attention to the students (tutorials)

Personalized attention. Communication by email or another on-line tool. Tutorials via Campus Remoto platform.

=== ADAPTATION OF The EVALUATION ===

On-line tests and tasks via Campus Remoto and Faitic. The weight of the tests will be maintained as they are described in the main guide.

IDENTIFYING DATA				
Physics: Physics I				
Subject	Physics: Physics I			
Code	P03G370V01102			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	1st
Teaching language	Galician			
Department				
Coordinator	González Fernández, Pio Manuel			
Lecturers	Cabaleiro Álvarez, David González Fernández, Pio Manuel Pérez Davila, Sara			
E-mail	pglez@uvigo.es			
Web				
General description	Didactic aims Dominate the concepts and physical laws of the mechanics, fields and waves. Differentiate the physical appearances *involucrados in the resolution of a problem of engineering. Analyse, interpret and explain daily physical situations. Resolve problems of mechanics, fields and waves applied the engineering. Dominate experimental technicians and the handle of instrumentation for the measure of physical magnitudes. Design and schedule an experimental setting in team related with appearances of the physics applied. Dominate the acquisition of experimental data and his statistical treatment Dominate technicians of graphic representation and calculation of parameters of adjust. Present a report or technical memory (oral and writing) with utilisation of the new technologies.			

Competencies	
Code	
B1	Ability to understand the biological, chemical, physical, mathematical and representation systems necessary for the development of professional activity, as well as to identify the different biotic and physical elements of the forest environment and renewable natural resources susceptible to protection, conservation and exploitations in the forest area.
C2	Understanding and mastery of basic concepts about the general laws of mechanics, fields and waves and their application for the resolution of engineering problems.
D8	Ability to solve problems, critical reasoning and decision making

Learning outcomes			
Expected results from this subject	Training and Learning Results		
1R. 2018 Knowledge and understanding of the mathematicians and other inherent basic sciences to the his speciality in engineering, it a level that allow them purchase the rest of the competitions of the qualifications. 5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial. 10R. 2018 Capacity and capacity to project and realize experimental investigations, interpret results and obtain conclusions in the his field of study. 12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality.	B1	C2	D8

Contents	
Topic	
1. KINEMATICS	1.1.KINEMATICS OF THE MATERIAL POINT 1.2.KINEMATICS OF THE RIGID SYSTEMS
2. DYNAMICS	2.1. DYNAMIC OF THE POINT AND THE SYSTEMS 2.2. MOMENTS OF INERTIA 2.3. DYNAMIC OF THE BEEN USED TO RIGID
3. STATIC	3.1. LAWS OF STATIC
4. MECHANICAL SYSTEMS	4.1. FRICTION BETWEEN USED TO 4.2. YOU SCHEME SIMPLE 4.3. ELASTICITY

5. MECHANICAL SWINGS	5.1. FREE SWINGS 5.2. SWINGS CUISHIONED AND FORCED
6. MECHANICS OF FLUIDS	6.1. HYDROSTATIC 6.2. HYDRODINAMICS

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	17	33	50
Problem solving	15	23	38
Laboratory practical	14	28	42
Report of practices, practicum and external practices	1	15	16
Problem and/or exercise solving	1.5	0	1.5
Problem and/or exercise solving	2.5	0	2.5

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

Methodologies

	Description
Lecturing	Exhibition by part of the professor of the contents of the matter, foundations and theoretical bases and guidelines of the exercises to develop by the student.
Problem solving	The professor gives the general guidelines for the resolution of problems or exercises related with the matter. The student has to develop the suitable or correct solutions by means of the application of formulas and the application of procedures.
Laboratory practical	Activities realised in the laboratory of application of the knowledges to concrete situations and of acquisition of basic skills and *procedimentaLEs related with the matter. The *alumnado adopts an active role, developing diverse actions (realisation of an experiment, setting, manipulation of scientific instrumentation and taking of experimental data) to build his knowledge (graphic representation and deduction of the physical law that governs the experiment).

Personalized assistance

Methodologies	Description
Lecturing	Resolution of doubts and customized help in tutorial schedule.
Laboratory practical	Resolution of doubts and customized help in tutorial schedule.
Problem solving	Resolution of doubts and customized help in tutorial schedule.

Assessment

	Description	Qualification	Training and Learning Results
Report of practices, practicum and external practices	Formative evaluation, made of a continuous way, carried out fundamentally in the classes of laboratory that allows a continuous follow-up and a *realimentación constructive. It will value the presence and active participation in classes and in works *grupales, by means of checklists and by direct observation, and the quality of the works and individual reports and of group.	20	B1 C2 D8
Problem and/or exercise solving	They will evaluate the theoretical and practical knowledges of the matter using like objective instrument the answer written of several questions of theoretical application-practical.	35	B1 C2 D8
Problem and/or exercise solving	They will evaluate the theoretical and practical knowledges of the matter (35%) and the purchased in the classes of laboratory (10%) using like objective instrument the resolution written of problems and/or exercises.	45	B1 C2 D8

Other comments on the Evaluation

In each methodology (Memories of practices, Proof of short answer and Resolution of problems) requires show a basic and minimum competition, that establishes in Apt=30.

Numerical final qualification on scale of 10 points, according to the valid legislation.
Exam datesFirst date : 14 January 2021 10:00 hoursSecond date: 25 June 2021, 10:00 hours

Sources of information

Basic Bibliography

Complementary Bibliography

Tipler P.A, **Física**, Barcelona, 1992,
González P., Lusquiños F, **Fundamentos Físicos para Forestais**, Vigo, 2010,
Sears F.W., Zemansky M.W., Young H.D., Freedman R.A, **Física**, México, 1999,
Gettys W.E., Keller F.J., Skove M.J, **Física clásica y moderna**, Madrid, 1992,
González P., Lusquiños F, **Física en imaxes**, Vigo, 2007,

Recommendations

Subjects that continue the syllabus

Physics: Physics II/P03G370V01202

Subjects that are recommended to be taken simultaneously

Mathematics: Mathematics and IT/P03G370V01103

Contingency plan

Description

=== EXCEPTIONAL PLANNING ===
Given the uncertain and unpredictable evolution of the health alert caused by COVID-19, the University of Vigo establishes an extraordinary planning that will be activated when the administrations and the institution itself determine it, considering safety, health and responsibility criteria both in distance and blended learning. These already planned measures guarantee, at the required time, the development of teaching in a more agile and effective way, as it is known in advance (or well in advance) by the students and teachers through the standardized tool.

=== ADAPTATION OF THE METHODOLOGIES ===

* Teaching on line
We will use the tools of Remote Campus in synchronous way for the exhibition of contents, foundations, theoretical bases, general guidelines for resolution of problems and practical cases. They will prepare specific didactic materials for the teaching on line that consist in presentations ppt recorded with voice, utilisation of graphic resources, simulators of physical situations. All the didactic material and resources are available in the platform Faitic.

Virtual laboratory
To make the practices of laboratory we will implant a Virtual Laboratory using simulators that allow the taking of data in experimental conditions. It will use the methodology Flipped Classroom where provides to the students a video with indications on the practice and the URL of a simulator to make experimental setting and taking of data. Later it makes the corresponding session in Remote Campus in synchronous way for discussion of results, put in common, explanation of doubts and preparation of technical reports.

* Mechanism face-to-face of attention to the students (titorías)

Personalised attention. Communication by email or another telematic tool. Attention in In virtual Dispatch (Remote Campus).

=== ADAPTATION OF The EVALUATION ===

We will make test on-line (Remote Campus and Faitic) by means of questionnaire of multiple choice that will consist in
a) 10-20 theoretical questions
b) 5-10 short problems or practical cases
We keep the marks distinguished in the educational guide of the matter.

IDENTIFYING DATA				
Mathematics: Mathematics and IT				
Subject	Mathematics: Mathematics and IT			
Code	P03G370V01103			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	9	Basic education	1st	1st
Teaching language	Spanish Galician			
Department				
Coordinator	Casas Mirás, José Manuel			
Lecturers	Casas Mirás, José Manuel			
E-mail	jmcasas@uvigo.es			
Web	http://http://faitic.uvigo.es/			
General description	The subject is programmed so that the student purchase the necessary competitions to resolve problems of mathematical nature that can present in the Forest Engineering, so that it purchase skill in the handle of programs of calculation, basic knowledges of Computing and management of the information, as well as in the handle of TIC.			

Competencies	
Code	
B1	Ability to understand the biological, chemical, physical, mathematical and representation systems necessary for the development of professional activity, as well as to identify the different biotic and physical elements of the forest environment and renewable natural resources susceptible to protection, conservation and exploitations in the forest area.
C3	Ability to solve mathematical problems that may arise in engineering. Ability to apply knowledge about: linear algebra; geometry; differential and integral calculation. Basic knowledge about computers, operating systems, databases, programming and calculation programs for use in engineering.
D2	Ability to communicate orally and written in Spanish or in English
D5	Capacity for information management, analysis and synthesis
D7	Skill in the use of IT tools and ICTs.
D8	Ability to solve problems, critical reasoning and decision making
D10	Autonomous Learning

Learning outcomes			
Expected results from this subject	Training and Learning Results		
1R. 2018 Knowledge and understanding of the mathematicians and other inherent basic sciences to the his speciality in engineering, it a level that allow them purchase the rest of the competitions of the qualifications. 3R. 2018 Be conscious of the multidisciplinary context of the engineering. 4R. 2018 Capacity to #analyze products, processes and complex systems in the his field of study; choose and apply analytical methods, of calculation and experimental *relevantes of form *relevante and interpret correctly the results of these analyses. 5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial. 8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality. 10R. 2018 Capacity and capacity to project and realize experimental investigations, interpret results and obtain conclusions in the his field of study. 12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality. 19R. 2018 Capacity to communicate of effective way information, ideas, problems and solutions in the field of the engineering and with the society in general. 20R. 2018 Capacity to work effectively in national and international contexts, individually and in team, and cooperate with the engineers and people of other disciplines. 21R. 2018 Capacity to recognize the need of a continuous training and realize this activity of independent way during his professional life. 22R. 2018 Capacity to be to the day of the scientific and technological news.	B1	C3	D2 D5 D7 D8 D10

Contents	
Topic	
Subjet 1. The fields of real and complex numbers	Numerical sets. The real numbers. Intervals in R. Absolute value. Extended real line. The field of complex numbers. Representation of complex numbers. Module and argument. Euler's Formula. Operations with complex numbers in polar form: powers (De Moivre's formula), roots, exponentials, logarithms.
Subject 2. Vector spaces	The vector space Rn. Vector Subspaces. Linear combination. Linear dependency and independence. Finite-dimensional vector spaces. Basis and dimension. Rank.
Subject 3. Linear applications	Linear applications. Properties. Kernel and image of a linear application. Characterization of injectives and surjectives linear applications. Rank of a linear application. Associated matrix to a linear application.
Subject 4. Matrices	Definition and types of matrices. Vector space of matrices mxn. Product of matrices. Regular matrix. Rank of a matrix. Calculation of the rank of a matrix and of the inverse matrix by means of elementary operations.
Subject 5. Determinants	Determinants of a square matrix of order 2 and of order 3. Properties. Cofators expansion. Calculation of the inverse matrix. Calculation of the rank of a matrix.
Subject 6. Systems of linear equations	Systems of linear equations: matrix form. Equivalent systems. Existence of solutions: Rouché-Frobenius' theorem. Homogeneous systems. Resolution of systems of linear equations: resolution by means of Gauss and Gauss-Jordan elimination methods. Resolution of a Cramer's system. Resolution of a general system using the Cramer's rule.
Subject 7. Euclidean vector space	Scalar product. Norm. Distance. Orthogonality. Scalar product with respect to a basis. Orthogonal and orthonormal systems. Vector product. Mixed product. Areas and volumes.
Subject 8. Geometry	Three-dimensional affine space. The straight lines in the affine space. Equations of the straight line. The plane in the affine space. Equations of the plane. Relations of incidence between straight lines and planes. Angles: of two straight lines, of two planes and of a straight line and a plane. Distances: of a point to a plane, of a straight line to a plane and of two croseed straight lines. Metric study of the conic sections.
Subject 9. Diagonalization of endomorphisms and matrices	Eigenvectors and eigenvalues. Eigensubspaces. Characteristic polynomial. Diagonalization: Conditions. Annulator polynomial. Cayley-Hamilton's theorem. Applications.
Subject 10. Convergence in R.	Convergent sequences in R. Operations with limits. Calculation of limits: indeterminations, Stolz's rule.
Subject 11. Limit and continuity of functions of a real variable	Limit of a function in a point. Sequential limit. Properties of limits. Calculation of limits. Continuity of real functions. Discontinuity: Types. Operations with continuous functions. Theorems relative to the global continuity: continuous image of a closed interval, Bolzano-Weierstrass' theorem, Bolzano's theorem: consequences. Continuity of the reverse function and of the composition of functions.
Subject 12. Differential calculus of a variable	Derivative of a function in a point. Geometric interpretation of the concept of derivative. The differential. Derived function. Successive derivatives. Relationship between continuity and derivability. Calculation of derivatives: derivative of the composition of functions and of the inverse function. Theorems relative to derivable functions: Rolle's theorem, consequences; the mean value theorem, consequences; the rule of L'Hôpital, calculation of indeterminate limits. Taylor polynomials of a function. Taylor's theorem. Maximum and minimum Problems. Study of concavity and convexity. Inflection points. Graphical representation of functions
Subject 13. Integration of functions of a variable	The Riemann integral: partitions, upper and lower sums, upper and lower integral, integral functions, the integral as sum limit. Properties. Theorem of the mean value. The fundamental theorem of integral calculus. Barrow's rule. Primitives. General methods for the calculation of primitives. Improper integrals. Geometric applications of the integral.
Subject 14. Informatics	Operating systems: classification, components, examples. Programming fundamentals. Organization of archives. Methods of sorting and searching. Concept and types of databases.
LABORATORY PRACTICE AGENDA	
Practice 1. Introduction to the syntax of a computer algebra system.	Basic commands of a computer algebra system.
Practice 2. Complex Numbers	Complex arithmetic in cartesian form. Polar form. Arithmetic in polar form

Practice 3. Vector Spaces	Operations with vectors. Linear independence of vectors and calculation of bases. Generator systems. Range of a vector system.
Practice 4. Linear Applications	Calculation of the associated matrix. Calculation of the kernel, image and rank
Practice 5. Matrices and determinants	Operations with matrices. Calculation of the determinant of a square matrix. Calculation of the rank of a matrix and the inverse matrix
Practice 6. Systems of linear equations	Resolution of linear systems. Cramer's Rule and Gauss and Gauss-Jordan Elimination Methods. Applications.
Practice 7. Euclidean Vector Space and Geometry	Calculation of the scalar product, vector product and mixed product. Calculation of areas, volumes, angles and distances.
Practice 8. Diagonalization	Calculation of the eigenvalues and eigenvectors of a square matrix. Diagonalization of matrices. Applications
Practice 9. Convergence	Limit of numerical sequences.
Practice 10. Functions	Calculation of the limit of a function at a point. Graphical representation of functions. Study of continuity.
Practice 11. Derivatives.	Derivative of functions. Calculation of tangent and normal lines. Problems of relative extremes. Developments in Taylor series. Local study of functions.
Practice 12. Integration	Calculation of primitives. Applications: calculation of areas, volumes, arc lengths, etc.
Subject 13. Informatics	Programming Fundamentals. Development and management of databases

Planning

	Class hours	Hours outside the classroom	Total hours
Introductory activities	1	0	1
Lecturing	23	34.5	57.5
Problem solving	24	36	60
Laboratory practical	27	15	42
ICT suppoted practices (Repeated, Dont Use)	0	10	10
Autonomous problem solving	0	14	14
Mentored work	0	14	14
Essay questions exam	4	0	4
Objective questions exam	0	7	7
Problem and/or exercise solving	0	8	8
Essay	0	7.5	7.5

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

Methodologies

	Description
Introductory activities	Activities aimed at taking contact, gathering information about the students and presenting the subject.
Lecturing	Exhibition of contents of the subject. The blackboard exhibition will be used with the support of audiovisual systems and symbolic package programs.
Problem solving	Formulation, analysis, resolution and discussion of problems or exercises related to the topic of the subject. The blackboard exhibition will be used with the support of audiovisual media and symbolic package programs.
Laboratory practical	Resolution of problems related to the theoretical contents through the use of a symbolic package program, a database management program and a text editing program.
ICT suppoted practices (Repeated, Dont Use)	Available resources will be used online, such as databases, and the TEMA institutional platform will be used for the development and execution of various tasks.
Autonomous problem solving	Formulation, analysis, resolution and discussion of problems or exercises related to the theme of the subject, by the students. Problems bulletins corresponding to the scheduled topics will be provided, which the student must solve by himself.
Mentored work	Autonomous tasks related to the programmed topics, which will be delivered using the TEMA platform to be evaluated.

Personalized assistance

Methodologies	Description
Problem solving	Tutoring schedules will be used to guide and advise students individually in the resolution of questions or queries. Students will also be tutored electronically (email, videoconference or others) under the arrangement of prior appointment.

Laboratory practical	Tutoring schedules will be used to guide and advise students individually in the resolution of questions or queries. Students will also be tutored electronically (email, videoconference or others) under the arrangement of prior appointment.
Mentored work	Tutoring schedules will be used to guide and advise students individually in the resolution of questions or queries. Students will also be tutored electronically (email, videoconference or others) under the arrangement of prior appointment.
ICT suppoted practices (Repeated, Dont Use)	Tutoring schedules will be used to guide and advise students individually in the resolution of questions or queries. Students will also be tutored electronically (email, videoconference or others) under the arrangement of prior appointment.
Autonomous problem solving	Tutoring schedules will be used to guide and advise students individually in the resolution of questions or queries. Students will also be tutored electronically (email, videoconference or others) under the arrangement of prior appointment.
Tests	**Description**
Objective questions exam	Tutoring schedules will be used to guide and advise students individually in the resolution of questions or queries. Students will also be tutored electronically (email, videoconference or others) under the arrangement of prior appointment.
Problem and/or exercise solving	Tutoring schedules will be used to guide and advise students individually in the resolution of questions or queries. Students will also be tutored electronically (email, videoconference or others) under the arrangement of prior appointment.
Essay	Tutoring schedules will be used to guide and advise students individually in the resolution of questions or queries. Students will also be tutored electronically (email, videoconference or others) under the arrangement of prior appointment.

Assessment

	Description	Qualification	Training and Learning Results		
Essay questions exam	It has two parts: 1. Final exam of theoretical contents. 2. Final exam of laboratory practices.	70	B1	C3	D2 D5 D7 D8 D10
Objective questions exam	Resolution of closed tests consisting of exercises with several alternative answers of which the student must indicate the true one. Resolution of problems in which, using a computer algebra system, they must provide the response of the program to the corresponding exercise.	10	B1	C3	D7 D8 D10
Problem and/or exercise solving	Resolution of problem bulletins and laboratory practices.	10	B1	C3	D2 D5 D7 D8 D10
Essay	Realization of open projects in which it is necessary to use different knowledge acquired throughout the course.	10	B1	C3	D2 D5 D7 D8 D10

Other comments on the Evaluation

The assessment will be carried out in two sections: assessment of theoretical contents and evaluation of laboratory practices.

The assessment of the theoretical contents: will be the sum of the final exam mark of the theoretical contents (that will have a weight of 35% in the overall assessment), continuous assessment evaluation (which will have a 15% weight in the overall evaluation).

The final exam of the theory supposes 70% of the evaluation of the theoretical contents. The continuous assessment will consist of examinations of objective questions (supposes 10% of the mark of the evaluation of the theoretical contents), proposed exercises resolution works (supposes 10% of the note of the evaluation of the theoretical contents) and the works of projects (it supposes 10% of the mark of the evaluation of the theoretical contents).

The evaluation of the laboratory practices (which will have a 50% weight in the overall assessment) will be constituted by the final exam of laboratory practices (will represent 70% of the practical note), the performance during the practical sessions carried out (will represent 10 % of the practical note), the practices delivered (they will represent 10% of the mark

of practices) and the complementary works (they will represent 10% of the mark of practices).

The final grade will be the arithmetic mean of the evaluation of the theoretical contents and the evaluation of the laboratory practices. Only the average of both notes will be made if at least 4.0 are obtained in each of them. The subject was considered approved if the final average grade is at least 5.

For the July evaluation, the student will be required to repeat the procedures not obtained during the evaluation of the first call, while maintaining the assessment of the procedures already passed.

Students who duly justify the impossibility of doing to the continuous evaluation or expressly renounce it will be evaluated through the final examinations of theoretical contents and the final exam of laboratory practices.

Exam calendar:

First call: January 26, 2021, 16:30

Second call: June 28, 2021, 16:30

The official dates and possible modifications are set out in the official bulletin board of E. E. Forestal and posted at http://forestales.uvigo.es/gl/docencia/exames

Sources of information

Basic Bibliography

Complementary Bibliography

Grossman, S. I., **Álgebra Lineal con aplicaciones**, 1991,

Rojo, J., **Álgebra Lineal**, 2007,

Burgos, J. de, **Curso de Álgebra y Geometría**, 1980,

Luzarraga, A., **Problemas resueltos de Álgebra Lineal**,

Rojo, J. y Martín, I., **Ejercicios y problemas de Álgebra Lineal**, 2005,

Burgos, J. de, **Cálculo infinitesimal de una variable**, 1994,

Larson, R. E.; Hostetler, R. P. y Edwards, B. H., **Calculo Volumen I**, 2006,

Ayres, F. Jr., **Cálculo**, 2001,

Bradley, G. L. Y Smith, K. J.,, **Cálculo de una variable**, 1998,

Checa, E. y otros, **Álgebra, cálculo y mecánica para Ingenieros**, 1997,

Martínez Salas, J., **Elementos de matemáticas**, 1992,

Franco Brañas, J. R., **Introducción al cálculo: problemas y ejercicios resueltos**, 2003,

García, A.; Gracía, F.; López, A.; Rodríguez, G. y de la Villa, A., **Cálculo I: teoría y problemas de análisis matemático de una variable**, 2007,

Granero, F., **Cálculo integral y aplicaciones**, 2001,

Rodríguez Riotorto, M., **Primeros pasos en Maxima**, 2008,

Cerrada Somolinos, J. A., **Fundamentos de programación con Modula-2**, 2000,

Prieto, A.; Lloris, A. y Torres, J. C., **Introducción a la Informática**, 2006,

Plasencia López, Z., **Introducción a la Informática**, 2006,

Rodríguez Riotorto, M, **Manual de Maxima**, 2005,

Alaminos Prats, J. , Aparicio del Prado, C., Extremera Lizana, J. , Muñoz Rivas, P. y Villena Muñoz, **Prácticas de ordenador con wxMaxima**, 2008,

Recommendations

Subjects that continue the syllabus

Mathematics: Overview of mathematics/P03G370V01203

Subjects that are recommended to be taken simultaneously

Physics: Physics I/P03G370V01102

Other comments

It is recommended to have studied the mathematics subjects in the Secondary School, although many concepts will be reviewed.

Contingency plan

Description

=== EXCEPTIONAL PLANNING ===
Given the uncertain and unpredictable evolution of the health alert caused by COVID-19, the University of Vigo establishes

an extraordinary planning that will be activated when the administrations and the institution itself determine it, considering safety, health and responsibility criteria both in distance and blended learning. These already planned measures guarantee, at the required time, the development of teaching in a more agile and effective way, as it is known in advance (or well in advance) by the students and teachers through the standardized tool.

=== ADAPTATION OF THE METHODOLOGIES ===
* Teaching methodologies maintained
All methodologies are maintained, they will simply be taught telematically through the Remote Campus of the University of Vigo and the FAITIC remote teaching platform, without prejudice to other measures that may be adopted.

* Teaching methodologies modified
All face-to-face teaching methodologies begin to be developed electronically.

* Non-attendance mechanisms for student attention (tutoring)
The tutoring hours will be used to guide and advise students individually in the resolution of doubts or queries electronically. Students will also be tutored electronically (email, videoconference or others) under the arrangement of prior appointment.

* Modifications (if applicable) of the contents
The contents will be maintained to the extent that the situation allows.

* Additional bibliography to facilitate self-learning
No new bibliographic sources are needed.

* Other modifications

=== ADAPTATION OF THE TESTS ===
* Tests already carried out
Continuous evaluation works:: [Previous Weight 30%] [Proposed Weight 30%]

* Pending tests that are maintained
Continuous evaluation works:: [Previous Weight 30%] [Proposed Weight 30%]
Final Theory Exam: [Previous weight 70%] [Proposed Weight 40%]
Final Practice Exam: [Previous weight 70%] [Proposed Weight 40%]

* Tests that are modified
There are no modifications in the test.

* New tests
Continuous Assessment Tests of Theory [Proposed Weight 30%]
Continuous Assessment Tests of Practices [Proposed Weight 30%]

* Additional Information

IDENTIFYING DATA				
Basics of business economics				
Subject	Basics of business economics			
Code	P03G370V01104			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	1st	1st
Teaching language	#EnglishFriendly Spanish Galician			
Department				
Coordinator	García-Pintos Escuder, Adela			
Lecturers	Figueroa Dorrego, Pedro García-Pintos Escuder, Adela			
E-mail	adelagpe@uvigo.es			
Web				
General description	The aim of this subject is that the students know with a practical and participatory approach, the components and operation of the company. Also it pretends interrelate it with other matters and provide the knowledges, attitudes and necessary skills to develop with efficiency and efficiency, his future professional activity in the world of the companies, and the organisations in general, especially in the forest industry. International students may request from the teachers: a) materials and bibliographic references in English, b) tutoring sessions in English, c) exams and assessments in English.			

Competencies	
Code	
B12	Capacity for organization and planning of companies and other institutions, with knowledge of the legislative provisions that affect them and the fundamentals of marketing and marketing of forest products.
C4	Adequate knowledge of the concept of company and the institutional and legal framework of the company. Organization and management of companies.
D2	Ability to communicate orally and written in Spanish or in English
D5	Capacity for information management, analysis and synthesis
D6	Organization and planning capacity
D8	Ability to solve problems, critical reasoning and decision making
D10	Autonomous Learning

Learning outcomes	
Expected results from this subject	Training and Learning Results

2R. 2018 Knowledge and understanding of the disciplines of engineering of the his speciality, to the necessary level to purchase the rest of the competitions of the qualifications, including notions of the last advances.	B12	C4	D2 D5 D6
3R. 2018 Be conscious of the multidisciplinary context of the engineering.			D8
5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial.			D10
6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project.			
8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality.			
11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality.			
12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality.			
13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality.			
15R. 2018 Knowledge of the social implications, of health and security, environmental, economic and @industrial of the practice in engineering.			
16R. 2018 general Ideas on economic questions, organisational and of management (how management of projects, management of risks and change) in the industrial and entrepreneurial context.			
17R. 2018 Capacity to collect and interpret data and handle complex concepts inside the his speciality, to issue judgements that involve a reflection on ethical and social questions			
18R. 2018 Capacity to manage activities or technical projects or complex professionals of the his speciality, assuming the responsibility of the takes of decisions.			
19R. 2018 Capacity to communicate of effective way information, ideas, problems and solutions in the field of the engineering and with the society in general.			
21R. 2018 Capacity to recognize the need of a continuous training and realize this activity of independent way during his professional life.			

Contents

Topic	
1.- COMPANY LIKE A COMPLEX SYSTEM	1.1. The system company: components. 1.2. Aims and functions of each component
2.- THE SURROUNDINGS OF THE COMPANY.	2.1. The general surroundings 2.2. The specific surroundings 2.3. Study of the forest-wood surrounding
3.- DIAGNOSTIC And BUSINESS STRATEGY.	3.1 Business strategy 3.2. Diagnostic: global, functional and SWOT 3.3. Strategic design
4.- THE HUMAN FACTOR IN THE COMPANY.	4.1. Business culture 4.2. Leadership 4.3. The power in the organisations 4.4. Human resource management
5.- ORGANISATIONAL STRUCTURE IN THE COMPANY	5.1. Organisational structure 5.2. Parameters of design of the structure 5.3. The organisation chart 5.4. Typology of structural groups 5.5. New structural forms
6.- INTRODUCTION TO MARKETING	6.1. Marketing: basic concepts and decisions of marketing. 6.2. Markets investigation. 6.3. Segmentation and product positioning 6.4. Marketing decisions
7.- ECONOMIC APPEARANCES-FINANCIAL OF THE COMPANY	7.1. The investment concepts and types 7.2. The finance: concepts and types 7.3. The countable reflection of the economic facts: the balance and the account of losses and gains 7.4. Economic indicators-financial: the tree of profitability and the deadlock
8.- INTRODUCTION PRODUCTION AND LOGISTIC	8.1. Basic concepts of the system of production and logistical. 8.2. Objective of the function of production 8.3. Types of productive systems 8.4. Production plan

Planning			
	Class hours	Hours outside the classroom	Total hours
Introductory activities	1	0	1
Lecturing	32	52	84
Case studies	10	20	30
Problem solving	5	10	15
Objective questions exam	2	8	10
Problem and/or exercise solving	0	10	10

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

Methodologies	
	Description
Introductory activities	Activities aimed at making contact and gathering information about the students, as well as presenting the subject.
Lecturing	Presentation, in person or through the remote campus, of the contents of the subject matter under study, as well as the theoretical bases.
Case studies	The student will develop exercises in the classroom (face-to-face, remote campus and / or through faitic) under the guidance and supervision of the professors. It also includes those activities that the students must carry out independently
Problem solving	The student will carry out exercises in the classroom (remote campus and / or through the teledoaching platform) under the guidance and supervision of the professors. It also includes those activities that the students must carry out independently

Personalized assistance	
Methodologies	**Description**
Lecturing	Personalized attention will be made preferably by telematic means (email, campus remoto, forums of doubts in FaiTIC). If a student wants, as possible, it can be presencially. They will be indicated at the beginning of course the concrete forms of communication as well as the schedules.
Problem solving	Personalized attention will be made preferably by telematic means (email, campus remoto, forums of doubts in FaiTIC). If a student wants, as possible, it can be presencially. They will be indicated at the beginning of course the concrete forms of communication as well as the schedules.
Case studies	Personalized attention will be made preferably by telematic means (email, campus remoto, forums of doubts in FaiTIC). If a student wants, as possible, it can be presencially. They will be indicated at the beginning of course the concrete forms of communication as well as the schedules.

Assessment					
	Description	Qualification	Training and Learning Results		
Case studies	The student will develop exercises or case studies in the classroom under the guidelines and supervision of the teacher. It also includes those activities that the student must previously carry out independently and its resolution will be debated in the classroom.	30	B12	C4	D2 D5 D6 D10
Objective questions exam	A final proof at the end of the courseoriented to the application of the concepts developed in the subject	40	B12	C4	D2 D6 D8
Problem and/or exercise solving	In order to encourage the regular and continuous work of the students in the development of the subject, different activities (exercises, test-type tests) will be valuated. They will be carried out and delivered through the Teaching platform (Faitic). Any delivery after the deadline or sent in any other means than through the FAITIC platform will not be accepted.	30	B12	C4	D8 D10

Other comments on the Evaluation

The subject evaluation system is based on two elements:

a) Overcoming the practical part, with carrying out the programmed activities. (6 points).

b) Successful completion of the theoretical part, through a proof that will be carried out on the date indicated by the center, in person or, where appropriate, through the remote campus and the teleteaching platform. (4 points)

It is an essential requirement to add the practical part (case study and exercises solving) at least have obtained a 4 out of 10 points in the theoretical exam.

JULY / EXTRAORDINARY CALL

1. The form of evaluation in the July and extraordinary call is the same as in January.

a) There is no possibility of improving the mark of the practical part for the July call, since these are activities scheduled throughout the course.

b) If the subject is not passed in this call, the student must take it again adapting to the teaching guide that is in force in the academic year in question and, therefore, will not retain any of the grades obtained in this course .

EXAM DATES AND PUBLICATION OF NOTES:

The dates of the exams, according to the official calendar approved by the center, are as follows:

First call: January 11, 2021, 10:00 am.

Second call: June 30, 2021. 12:00 am.

The publication of provisional notes will be made in the Virtual Secretariat and/on the Teaching Platform, and if possible on the center bulletin board.

Sources of information

Basic Bibliography

GONZÁLEZ DOMÍNGUEZ, F. J. y GANAZA VARGAS, J. D., **Fundamentos de economía de la empresa**, Pirámide, 2017

Navas López, José Emilio, **Fundamentals of strategic managemen**, Civitas, 2018

GARCÍA-TENORIO RONDA, J.; GARCÍA MERINO, M. T.; PÉREZ RODRÍGUEZ, M. J.; SÁNCHEZ QUIRÓS, I. y SANTOS, **Organización y dirección de empresas**, Thomson, 2006

Complementary Bibliography

KOTLER, P.; KELLER, K.L., **Dirección de marketing**, Pearson, 2015

PIÑEIRO, P. et al, **Introducción a la economía de la empresa : una visión teórico-práctica.**, Delta, 2010

BUENO CAMPOS, E., **Curso básico de economía de la empresa: un enfoque de organización**, Pirámide, 2005

Rothaermel, Frank T., **Strategic management**, Mcgraw Hill Higher Education, 2019

Castillo Clavero, Ana María, **Dirección de empresas**, Pirámide, 2018

Recommendations

Other comments

It is not indispensable to have studied economy , since it will realise a more detailed introduction to the matter.

Later, in fourth course of the Degree recommends to study the following matters that deepen in some appearances:

Industrial organisation and processes in the industry of the wood

Innovation and development of products in the industry of the wood.

It is recommended that the students keep upadte the telematic platform of support to the teaching (FAITIC). They will have to request the high to the start of the course to access to the on-line contents, available in the web: http://faitic.uvigo.es

Contingency plan

Description

=== EXCEPTIONAL PLANNING ===
Given the uncertain and unpredictable evolution of the health alert caused by COVID-19, the University of Vigo establishes an extraordinary planning that will be activated when the administrations and the institution itself determine it, considering safety, health and responsibility criteria both in distance and blended learning. These already planned measures guarantee, at the required time, the development of teaching in a more agile and effective way, as it is known in advance (or well in advance) by the students and teachers through the standardized tool.

=== ADAPTATION OF THE METHODOLOGIES ===
* Teaching methodologies maintained

All

* Teaching methodologies modified
None

* Non-attendance mechanisms for student attention (tutoring)
Remote campus, email and forums on the Teledocencia platform

* Modifications (if applicable) of the contents
None

* Additional bibliography to facilitate self-learning
Students have all the material on the platform, part of it made by the professor, to be able to track the subject.

* Other modifications
None

=== ADAPTATION OF THE TESTS ===
* Tests already carried out
Weight is maintained as all activities are adapted to any circumstance

* Pending tests that are maintained
Weight is maintained as all activities are adapted to any circumstance.

* Tests that are modified
None

* New tests
None

* Additional Information
Not necessary

IDENTIFYING DATA				
Biology: Plant Biology				
Subject	Biology: Plant Biology			
Code	P03G370V01201			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	2nd
Teaching language				
Department				
Coordinator	Souto Otero, José Carlos			
Lecturers	López de Silanes Vázquez, María Eugenia Souto Otero, José Carlos			
E-mail	csouto@uvigo.es			
Web	http://webs.uvigo.es/csouto/			
General description	Knowledge of the basic principles of the Vegetal Biology: anatomy, physiology and ecology of the plants.			

Competencies	
Code	
B1	Ability to understand the biological, chemical, physical, mathematical and representation systems necessary for the development of professional activity, as well as to identify the different biotic and physical elements of the forest environment and renewable natural resources susceptible to protection, conservation and exploitations in the forest area.
B5	Knowledge of the foundations of forest improvement and capacity for its practical application to plant production and biotechnology.
C8	Knowledge of the bases and biological foundations of the plant field in engineering.
D2	Ability to communicate orally and written in Spanish or in English
D8	Ability to solve problems, critical reasoning and decision making
D10	Autonomous Learning

Learning outcomes	
Expected results from this subject	Training and Learning Results

1R. 2018 Knowledge and understanding of the mathematicians and other inherent basic sciences to the his speciality in engineering, it a level that allow them purchase the rest of the competitions of the qualifications.	B1 B5	C8	D2 D8 D10
4R. 2018 Capacity to #analyze products, processes and complex systems in the his field of study; choose and apply analytical methods, of calculation and experimental *relevantes of form *relevante and interpret correctly the results of these analyses.			
5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial.			
6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project.			
8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality.			
10R. 2018 Capacity and capacity to project and realize experimental investigations, interpret results and obtain conclusions in the his field of study.			
11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality.			
12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality.			
17R. 2018 Capacity to collect and interpret data and handle complex concepts inside the his speciality, to issue judgements that involve a reflection on ethical and social questions			
19R. 2018 Capacity to communicate of effective way information, ideas, problems and solutions in the field of the engineering and with the society in general.			
20R. 2018 Capacity to work effectively in national and international contexts, individually and in team, and cooperate with the engineers and people of other disciplines.			
21R. 2018 Capacity to recognize the need of a continuous training and realize this activity of independent way during his professional life.			
22R. 2018 Capacity to be to the day of the scientific and technological news.			

Contents

Topic
1.- Introduction to the vegetal Biology.
2.- General structure of the vegetal cells.
3.- The cellular division.
4.- Introduction to the vegetal anatomy.
Meristems.
5.- Parenchyma, collenchyma and sclerenchyma.
6.- Conductive fabrics. The xylem. The phloem.
7.- Epidermis. The peridermis.
8.- General structure of the vascular plants.
9.- The leaf.
10.- The flower.
11.- Alternation of generations in haplodiplontes.
12.- Fecundation.
13.- The plants and the water.
14.- Absorption of nutrients.
15.- The photosynthesis.
16.- The breath.
17.- Growth and development.
18.- Physiology of the seed.

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	20	40	60
Case studies	2	4	6
Autonomous problem solving	1	3	4
Presentation	1	5	6
Laboratory practical	25	25	50
Studies excursion	10	14	24
*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.			

Methodologies

	Description
Lecturing	Exhibition of the contents of the *asignatura. They treat the competitions To2, To8, To25 and To61.
Case studies	Formulation, analysis, resolution and debate of a problem or exercise related with the thematic of the *asignatura.They treat the competitions To2 and *B6.
Autonomous problem solving	Formulation, analysis, resolution and debate of a problem or exercise related with the thematic of the *asignatura, by part of the *alumnado. They treat the competitions To2 and *B6.
Presentation	Oral exhibition by part of the *alumnado of a concrete subject or of a work (previous presentation written). They treat the competitions To2, To8, To25 and To61.
Laboratory practical	Application to practical level of the theory of Vegetal Biology in the laboratory. They treat the competitions To2, To8, To25 and To61.
Studies excursion	Realisation of visits-exits to the field for the observation and study of the plants in his natural surroundings. They treat the competitions To2, To8, To25 and To61.

Personalized assistance

Methodologies	Description
Presentation	

Assessment

	Description	Qualification	Training and Learning Results	
Lecturing	Examination: proof with questions of short answer and others of long answer. The students have to answer to the questions to show the knowledges purchased on the matter. They evaluate the competitions To2, To8, To25, To61 and *B6.	60	B1	C8
Presentation	It evaluates the preparation of the work and his oral exhibition. They evaluate the competitions To2, To8, To25 and To61.	20	B1	C8
Laboratory practical	Continuous evaluation of the activities realised in the practices, as well as of the memory that the students have to deliver when finalising the course. They evaluate the competitions To2, To8, To25 and To61.	20	B1	C8

Other comments on the Evaluation

The avaliation of the second announcement will be the same as for the first one

Calendar of examinations:

Announcement end of career: 16-09-2020 10*h

1st announcement: 01-06-2020 10*h

2nd announcement: 06-07-2020 10*h

Sources of information

Basic Bibliography

Complementary Bibliography

Raven PH, Evert RF & Eichhorn SE, **Biology of plants**, WH Freeman and CP,

Nabors M.W., **Introducción a la Botánica**, Pearson-Addison Wesley,

Azcón-Bieto J & Talón M, **Fundamentos de Fisiología Vegetal**, Mc Graw Hill,

Paniagua R, **Citología e Histología vegetal y animal**, Mc Graw Hill,

Stern KR, Bidlack JE & Jansky SH, **Introductory plant biology**, Mc Graw Hill,

Taiz L & Zeiger T, **Plant physiology**, 5ª ed.; Sunderland, MA : Sinauer Associates,

Recommendations

Contingency plan

Description

=== EXCEPTIONAL PLANNING ===
Given the uncertain and unpredictable evolution of the health alert caused by COVID-19, the University of Vigo establishes

an extraordinary planning that will be activated when the administrations and the institution itself determine it, considering safety, health and responsibility criteria both in distance and blended learning. These already planned measures guarantee, at the required time, the development of teaching in a more agile and effective way, as it is known in advance (or well in advance) by the students and teachers through the standardized tool.

=== ADAPTATION OF THE METHODOLOGIES ===
* Teaching methodologies maintained

* Teaching methodologies modified

* Non-attendance mechanisms for student attention (tutoring)

* Modifications (if applicable) of the contents

* Additional bibliography to facilitate self-learning

* Other modifications

=== ADAPTATION OF THE TESTS ===
* Tests already carried out
Test XX: [Previous Weight 00%] [Proposed Weight 00%]
...

* Pending tests that are maintained
Test XX: [Previous Weight 00%] [Proposed Weight 00%]
...

* Tests that are modified
[Previous test] => [New test]

* New tests

* Additional Information

IDENTIFYING DATA				
Physics: Physics II				
Subject	Physics: Physics II			
Code	P03G370V01202			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Basic education	1st	2nd
Teaching language	Galician			
Department				
Coordinator	González Fernández, Pio Manuel			
Lecturers	González Fernández, Pio Manuel Méndez Morales, Trinidad Souto Torres, Carlos Alberto			
E-mail	pglez@uvigo.es			
Web				
General description	Didactic aims Dominate the concepts and physical laws of the thermodynamics and electromagnetism. Differentiate the physical appearances *involucrados in the resolution of a problem of engineering. Analyse, interpret and explain physical situations **cotias. Resolve problems of thermodynamics and electromagnetism applied the engineering. Dominate experimental technicians and handle it of instrumentation for the measure of physical magnitudes. *Design and schedule an experimental setting in team related with appearances of the physics applied. Dominate the acquisition of experimental data and his statistical treatment Dominate technicians of graphic representation and calculation of parameters of adjust. Present a report or technical memory (oral and writing) with utilisation of the new technologies.			

Competencies	
Code	
B1	Ability to understand the biological, chemical, physical, mathematical and representation systems necessary for the development of professional activity, as well as to identify the different biotic and physical elements of the forest environment and renewable natural resources susceptible to protection, conservation and exploitations in the forest area.
C6	Understanding and mastery of the basic concepts about the general laws of thermodynamics and electromagnetism and its application for the resolution of engineering problems.
D8	Ability to solve problems, critical reasoning and decision making

Learning outcomes			
Expected results from this subject	Training and Learning Results		
1R. 2018 Knowledge and understanding of the mathematicians and other inherent basic sciences to the his speciality in engineering, it a level that allow them purchase the rest of the competitions of the qualifications. 5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial. 10R. 2018 Capacity and capacity to project and realize experimental investigations, interpret results and obtain conclusions in the his field of study. 12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality.	B1	C6	D8

Contents	
Topic	
1.THERMODYNAMICS	1.1. INTRODUCTION TO THE THERMODINAMICS 1.2. THERMODYNAMIC PRINCIPLES 1.3. IDEAL GASES
2.ELECTROSTATICS	2.1. PRINCIPLES OF THE ELECTROSTATICS 2.2. CONDENSERS AND DIELECTRIC 2.3. CONTINUOUS CURRENT
3.ELECTROMAGNETISM	3.1. MAGNETOSTATIC 3.2. ELECTROMAGNETIC INDUCTION 3.3. ALTERNATING CURRENT

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	17	33	50
Problem solving	15	23	38
Laboratory practical	14	28	42
Report of practices, practicum and external practices	1	15	16
Problem and/or exercise solving	1.5	0	1.5
Problem and/or exercise solving	2.5	0	2.5

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

Methodologies

	Description
Lecturing	Exhibition by part of the professor of the contents of the matter, foundations and theoretical bases and guidelines of the exercises to develop by the student.
Problem solving	The professor gives the general guidelines for the resolution of problems or exercises related with the matter. The student has to develop the suitable or correct solutions by means of the application of formulas and the application of procedures.
Laboratory practical	Activities realised in the laboratory of application of the knowledges to concrete situations and of acquisition of basic skills and *procedimentaLEs related with the matter. The student adopts an active role, developing diverse actions (realisation of an experiment, setting, manipulation of scientific instrumentation and taking of experimental data) to build his knowledge (graphic representation and deduction of the physical law that governs the experiment).

Personalized assistance

Methodologies	Description
Lecturing	Resolution of doubts and customized help in tutorial schedule.
Laboratory practical	Resolution of doubts and customized help in tutorial schedule.
Problem solving	Resolution of doubts and customized help in tutorial schedule.

Assessment

	Description	Qualification	Training and Learning Results
Report of practices, practicum and external practices	Formative evaluation, made of a continuous way, carried out fundamentally in the classes of laboratory that allows a continuous follow-up and a *realimentación constructive. It will value the presence and active participation in classes and in works *grupales, by means of checklists and by direct observation, and the quality of the works and individual reports and of group.	20	B1 C6 D8
Problem and/or exercise solving	It will evaluate the theoretical and practical knowledges of the matter using like objective instrument the answer written of several questions of theoretical application-practical.	35	B1 C6 D8
Problem and/or exercise solving	It will evaluate the theoretical and practical knowledges of the matter (35%) and the purchased in the classes of laboratory (10%) using like objective instrument the resolution written of problems and/or exercises.	45	B1 C6 D8

Other comments on the Evaluation

In each methodology (Memory of practices, Proof of short answer and Resolution of problems) requires show a basic and minimum competition, that establishes in Apt=30%.

Numerical final qualification on scale of 10 points, according to the valid legislation.
Exam datesFirst date: 18 May 2020, 10:00 hoursSecond date: 8 Xuly of 2020, 10:00 hours.
The official dates: http://forestales.uvigo.es/*gl/&*lt;&*gt;

Sources of information

Basic Bibliography

Complementary Bibliography

Tipler P.A, **Física**, Barcelona, 1992,

González P., Lusquiños F, **Fundamentos Físicos para Forestais**, Vigo, 2010,

Sears F.W., Zemansky M.W., Young H.D., Freedman R.A, **Física**, México, 1999,

Gettys W.E., Keller F.J., Skove M.J, **Física clásica y moderna**, Madrid, 1992,

González P., Lusquiños F, **Física en imaxes**, Vigo, 2007,

Recommendations

Subjects that are recommended to be taken simultaneously

Mathematics: Overview of mathematics/P03G370V01203

Subjects that it is recommended to have taken before

Physics: Physics I/P03G370V01102
Mathematics: Mathematics and IT/P03G370V01103

Contingency plan

Description

=== EXCEPTIONAL PLANNING ===
Given the uncertain and unpredictable evolution of the health alert caused by COVID-19, the University of Vigo establishes an extraordinary planning that will be activated when the administrations and the institution itself determine it, considering safety, health and responsibility criteria both in distance and blended learning. These already planned measures guarantee, at the required time, the development of teaching in a more agile and effective way, as it is known in advance (or well in advance) by the students and teachers through the standardized tool.

=== ADAPTATION OF THE METHODOLOGIES ===

* Teaching on line
We will use the tools of Remote Campus in synchronous way for the exhibition of contents, foundations, theoretical bases, general guidelines for resolution of problems and practical cases. They will prepare specific didactic materials for the teaching on line that consist in presentations ppt recorded with voice, utilisation of graphic resources, simulators of physical situations. All the didactic material and resources are available in the platform Faitic.

Virtual laboratory
To make the practices of laboratory we will implant a Virtual Laboratory using simulators that allow the taking of data in experimental conditions. It will use the methodology Flipped Classroom where provides to the students a video with indications on the practice and the URL of a simulator to make experimental setting and taking of data. Later it makes the corresponding session in Remote Campus in synchronous way for discussion of results, put in common, explanation of doubts and preparation of technical reports.

* Mechanism face-to-face of attention to the students (titorías)

Personalised attention. Communication by email or another telematic tool. Attention in In virtual Dispatch (Remote Campus).

=== ADAPTATION OF The EVALUATION ===

We will make test on-line (Remote Campus and Faitic) by means of questionnaire of multiple choice that will consist in
a) 10-20 theoretical questions
b) 5-10 short problems or practical cases
We keep the marks distinguished in the educational guide of the matter.

IDENTIFYING DATA				
Mathematics: Overview of mathematics				
Subject	Mathematics: Overview of mathematics			
Code	P03G370V01203			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	9	Basic education	1st	2nd
Teaching language	Spanish			
Department				
Coordinator	Casas Mirás, José Manuel			
Lecturers	Casas Mirás, José Manuel			
E-mail	jmcasas@uvigo.es			
Web	http://webs.uvigo.es/fbotana/			
General description				

Competencies	
Code	
B1	Ability to understand the biological, chemical, physical, mathematical and representation systems necessary for the development of professional activity, as well as to identify the different biotic and physical elements of the forest environment and renewable natural resources susceptible to protection, conservation and exploitations in the forest area.
C3	Ability to solve mathematical problems that may arise in engineering. Ability to apply knowledge about: linear algebra; geometry; differential and integral calculation. Basic knowledge about computers, operating systems, databases, programming and calculation programs for use in engineering.
C5	Ability to solve mathematical problems that may arise in engineering. Ability to apply knowledge about: differential equations and partial derivatives; numerical methods, numerical algorithm, differential geometry; differential and integral calculation.
D1	Ability to understand the meaning and application of the gender perspective in the different fields of knowledge and in professional practice with the aim of achieving a more just and egalitarian society
D6	Organization and planning capacity
D7	Skill in the use of IT tools and ICTs.
D8	Ability to solve problems, critical reasoning and decision making

Learning outcomes			
Expected results from this subject	Training and Learning Results		
1R. 2018 Knowledge and understanding of the mathematicians and other inherent basic sciences to the his speciality in engineering, it a level that allow them purchase the rest of the competitions of the qualifications. 3R. 2018 Be conscious of the multidisciplinary context of the engineering. 4R. 2018 Capacity to #analyze products, processes and complex systems in the his field of study; choose and apply analytical methods, of calculation and experimental *relevantes of form *relevante and interpret correctly the results of these analyses. 5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial. 6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project. 7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering. 8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality. 11R. 2018 Understanding of the techniques and methods of analysis, project and applicable investigation and his limitations within the scope of the his speciality. 12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality.	B1	C3 C5	D1 D6 D7 D8

Contents	
Topic	
Differential geometry	Functions of several real variables Curves and surfaces
Infinitesimal calculation	Concept of limit in *R^*n Limit and continuity of vectorial functions of several real variables Jacobian Matrix multiple Integration Integrals of line
Differential equations	Resolution of ordinary differential equations Resolution of equations in partial derivatives
Numerical methods	Interpolation approximate Resolution of equations numerical Integration

Planning			
	Class hours	Hours outside the classroom	Total hours
Lecturing	30	46	76
Problem solving	14	25	39
Presentation	10	16	26
Laboratory practical	15	50	65
Problem and/or exercise solving	5	5	10
Essay questions exam	4	5	9
*The information in the planning table is for guidance only and does not take into account the heterogeneity of the students.			

Methodologies	
	Description
Lecturing	(*)Clase estándar usando pizarra e medios informáticos por tódolo/as participantes
Problem solving	(*)Problemas complementarios dos contidos puramente teóricos
Presentation	(*)Voluntarias, en función do nivel e disposición do alumnado
Laboratory practical	(*)Resolución de problemas mediante sistemas de cálculo matemático

Personalized assistance	
Methodologies	**Description**
Problem solving	Tutoring schedules will be used to guide and advise students individually in the resolution of questions or queries. Students will also be tutored electronically (email, videoconference or others) under the arrangement of prior appointment.
Lecturing	Tutoring schedules will be used to guide and advise students individually in the resolution of questions or queries. Students will also be tutored electronically (email, videoconference or others) under the arrangement of prior appointment.
Laboratory practical	Tutoring schedules will be used to guide and advise students individually in the resolution of questions or queries. Students will also be tutored electronically (email, videoconference or others) under the arrangement of prior appointment.
Tests	**Description**
Problem and/or exercise solving	Tutoring schedules will be used to guide and advise students individually in the resolution of questions or queries. Students will also be tutored electronically (email, videoconference or others) under the arrangement of prior appointment.

Assessment				
	Description	Qualification	Training and Learning Results	
Lecturing	(*)Comprensión específica e global dos contidos	20	C5	D1
Problem solving	(*)Uso de técnicas estándar, ideas orixinais	5	C5	D6
Presentation	(*)Claridade, verbalización, uso de recursos externos	15	C5	D1
Laboratory practical	(*)Destreza, capacidade atopar recursos,	40	C5	D6
Problem and/or exercise solving	(*) Uso de técnicas estándar, ideas orixinais	5	C5	D6
Essay questions exam	(*)Capacidades de expresión e comprensión	15	C5	D1

Other comments on the Evaluation

The acquisition of the previous competences will be evaluated with 50% of weight in the continuous evaluation

(presentations and laboratory practices) and 50% of weight in the completion of the final exam.

Scheduled exam dates:

First Call: May 24, 2021, 10:00 Hours

Second Call: July 5, 2021, 10:00 Hours

The official dates and the possible modifications are exposed on the official board of the EE Forestal and on the web http://forestales.uvigo.es/gl/docencia/exames/

Sources of information

Basic Bibliography

Complementary Bibliography

Arthur Mattuck, **Differential Equations**, http://ocw.mit.edu/OcwWeb/Mathematics/18-03Spring-2006/VideoLectures/index.htm,

Paul Dawkins, **Differential Equations**, http://tutorial.math.lamar.edu/classes/de/de.aspx,

William Stein, **Sage**, http://sagemath.org,

Michael Corral, **Vector Calculus**, http://www.mecmath.net/calc3book.pdf,

Dale Hoffman, William Stein, David Joyner, **Integral Calculus and Sage**, http://sage.math.washington.edu/home/wdj/teaching/calc2-sage/calc2-sage.pdf,

Recommendations

Subjects that it is recommended to have taken before

Mathematics: Mathematics and IT/P03G370V01103

Contingency plan

Description

=== EXCEPTIONAL PLANNING ===
Given the uncertain and unpredictable evolution of the health alert caused by COVID-19, the University of Vigo establishes an extraordinary planning that will be activated when the administrations and the institution itself determine it, considering safety, health and responsibility criteria both in distance and blended learning. These already planned measures guarantee, at the required time, the development of teaching in a more agile and effective way, as it is known in advance (or well in advance) by the students and teachers through the standardized tool.

=== ADAPTATION OF THE METHODOLOGIES ===
* Teaching methodologies maintained

The sub-item "Laboratory practices: Problem solving using mathematical calculation systems" is maintained, with the only exception that the practices will be carried out online.
The sub-item "Voluntary Presentation: Presentations depending on the level of student disposition" is maintained, with the only exception that the presentations will be made online.

* Teaching methodologies modified

The sub-item "Master class: Standard class using blackboard and computer media by all the participants." It will be replaced by "Virtual Master Lesson: Standard class using virtual classrooms and/or explanatory videos made by the teacher (FAITIC)".

The sub-item "Problem solving: Complementary problems of purely theoretical content" will be replaced by "Problem solving: Complementary problems of purely theoretical content solved directly in the virtual classroom and/or in explanatory videos prepared by the teacher (FAITIC) "

* Non-attendance mechanisms for student attention (tutoring)

Preferably through the UVIGO virtual dispatch system or UVIGO email under the arrangement of an appointment. If a student were unable to use these methods, the use of other non-institutional channels will be considered: Skype, Google Meet, telephone, ...

* Modifications (if applicable) of the contents

No modifications are contemplated.

* Additional bibliography to facilitate self-learning

The use of additional bibliography to the ordinary is not contemplated. However, the teacher will try to make the most of the resources used available in the FAITIC, with the aim of facilitating student access to content.

* Other modifications

Not contemplate

=== ADAPTATION OF THE TESTS ===
* Tests already carried out

Continuous evaluation: [Previous weight 50%] [Proposed weight 50%]

Since the activities of the face-to-face continuous evaluation can be transferred to the virtual continuous evaluation (laboratory practices, exercise exhibitions, ...), the weight proposed for the continuous evaluation is maintained.

* Pending tests that are maintained

Continuous evaluation: [Previous weight 50%] [Proposed weight 50%]

Since the activities of the continuous face-to-face assessment can be transferred to the virtual continuous assessment (laboratory practices, exercise exhibitions, ...), the weight proposed for the continuous assessment is maintained.

* Evidence that is modified

[Final exam face-to-face] => [Virtual final exam]

If the final face-to-face exam cannot be taken, it will be replaced by a virtual final test at FAITIC, maintaining its weight. The test may include both the virtual delivery of handwritten exercises by students and their response to self-correcting test questions (within a wide battery of questions). In order to verify that the author of the exam is really the student, the teacher can organize a virtual defense session for the exam, where the student must justify their answers in the test. This virtual session will not have an impact on the exam grade, unless a fraud is detected in the performance of the exam, in which case the qualification obtained will be zero points.

* New tests

They are not contemplated.

* Additional Information

If there are any students under exceptional circumstances (such as lack of technological resources) that may limit their participation in the subject on equal terms with their peers, the teacher will try to adapt the assessment to these special needs.

IDENTIFYING DATA				
Chemistry: Chemistry				
Subject	Chemistry: Chemistry			
Code	P03G370V01204			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	9	Basic education	1st	2nd
Teaching language				
Department				
Coordinator	Cancela Carral, María Ángeles			
Lecturers	Cancela Carral, María Ángeles			
E-mail	chiqui@uvigo.es			
Web	http://faitic.uvigo.es/			
General description	(*)Esta materia pretende repasar e homoxenizar os conceptos básicos de química con fin de que sirvan de base para outras materias.			

Competencies	
Code	
B1	Ability to understand the biological, chemical, physical, mathematical and representation systems necessary for the development of professional activity, as well as to identify the different biotic and physical elements of the forest environment and renewable natural resources susceptible to protection, conservation and exploitations in the forest area.
C7	Basic knowledge of general chemistry, organic and inorganic chemistry and its applications in engineering.
D4	Sustainability and environmental commitment
D7	Skill in the use of IT tools and ICTs.
D8	Ability to solve problems, critical reasoning and decision making
D9	Teamwork skills, skills in interpersonal relationships and leadership.
D10	Autonomous Learning

Learning outcomes	
Expected results from this subject	Training and Learning Results

1R. 2018 Knowledge and understanding of the mathematicians and other inherent basic sciences to the his speciality in engineering, it a level that allow them purchase the rest of the competitions of the qualifications.	B1	C7	D4 D7 D8
3R. 2018 Be conscious of the multidisciplinary context of the engineering.			D9
4R. 2018 Capacity to #analyze products, processes and complex systems in the his field of study; choose and apply analytical methods, of calculation and experimental *relevantes of form *relevante and interpret correctly the results of these analyses.			D10
5R. 2018 Capacity to identify, formulate and resolve problems of engineering in the his speciality; choose and apply analytical methods, of calculation and experiments properly established; Recognize the importance of the social restrictions, of health and security, environmental, economic and industrial.			
6R. 2018 Capacity to project, design and develop complex products (pieces, component, products finished, etc.), processes and systems of the his speciality, that fulfil the requirements established, including the knowledge of the social aspects, of health and environmental security, economic and industrial; as well as select and apply methods of appropriate project.			
7R. 2018 Capacity of the project using any knowledges advanced of the his speciality in engineering.			
8R. 2018 Capacity to realize bibliographic researches, consult and use databases and other sources of information with discretion, to realize @simulación and analysis with the objective to realize investigations on technical subjects of the his speciality.			
9R. 2018 Capacity to consult and apply codes of good practices and security of the his speciality.			
10R. 2018 Capacity and capacity to project and realize experimental investigations, interpret results and obtain conclusions in the his field of study.			
12R. 2018 practical Competition to resolve complex problems, realize complex projects of engineering and realize specific investigations stop his speciality.			
13R. 2018 Knowledge of the application of materials, teams and tools, technological processes and of engineering and his limitations within the scope of the his speciality.			
19R. 2018 Capacity to communicate of effective way information, ideas, problems and solutions in the field of the engineering and with the society in general.			
21R. 2018 Capacity to recognize the need of a continuous training and realize this activity of independent way during his professional life.			
22R. 2018 Capacity to be to the day of the scientific and technological news.			

Contents

Topic	
1. Fundamental concepts.	Atoms. Periodic table. Molecules. Mixes. Units of concentration. Chemical reactions and stoichiometry.
2.- Atomic structure and chemical link.	Quantum mechanical description. Periodic properties. Covalent link. Geometry and hybridisation. Polarity. Ionic link and metallic Link. Intermolecular strengths
3. Gases, solids and liquids. Ideal gas, real gas. Liquid state and solid state.	Ideal gas, real gas. Liquid state and solid state.
4. Thermodynamics and Thermochemical	Energy. Enthalpy. Calorimetry. Free energy and spontaneity.
5.- Chemical balances	Balance Gaseous chemical, acid- Base, solubility, balance redox.
6.- Kinetical chemical	Speed of reaction and kinetical equation
7.- Basic concepts of organic chemistry.	Functional groups, isomerism. Reactions and intervals. Mechanisms of reaction
8.- Basic principles of inorganic chemistry	Metallurgy and chemistry of metals
9.- Chemical industrial.	Ways of operation. Processes and basic operations. Diagrams of flow.
10.- Exploitation Of the biomass. Biorefinery	Bioenergy utilization: biopetroleum, biogas, biodiesel and bioethanol Use alimentary: vitamins, mineral and feed. Harnessing Like biomaterials: bioplastics and biopolymers

Planning

	Class hours	Hours outside the classroom	Total hours
Laboratory practical	14	22	36
Seminars	2	4	6
Presentation	1	3	4
Problem solving	16	54	70
Lecturing	45	62	107

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

Methodologies

	Description

Laboratory practical	Sessions of laboratory of two hours in groups of two students, of where will explain the appearances applied of the part of the theoretical contents. Each *prácticatiene incorporated a series of questions that have to be delivered before the realisation of the following practical.
Seminars	Group tutoring of compulsory assistance, in where the students explain the work realised on a number reduced of exercises proposed previously.
Presentation	Each student will have to realise an oral presentation and written of any of the practices realised in the laboratory.
Problem solving	They will explain and/they will resolve it problems in groups reduced of students from a series of billed facilitated by the professor. The students will have to resolve a small number of exercises for each one of the subjects, that will have to deliver in the term indicated for *sua qualification.
Lecturing	Classes in the classroom to numerous groups, in where they explain the corresponding contents to each subject.

Personalized assistance

Methodologies	Description
Laboratory practical	they are resolution of real cases.
Seminars	In the course, there are nine seminars. The first part of the seminar will be made in classroom and the second part will be made at home.
Presentation	It is mandatory to present the project in classroom.
Problem solving	

Assessment

	Description	Qualification	Training and Learning Results
Laboratory practical	(*)Evaluarase o traballo contínuo durante o curso (actitud, implicación e traballo en grupo) Evaluarase a calidade da memoria presentada de forma oral e escrita.	30	
Problem solving	(*)Evaluarase a resolución dos ejercicios entregados durante o curso.	20	
Lecturing	(*)Realizarase un examen final de toda a materia, basado en preguntas tipo test e exercicios numéricos. Asi mesmo poderanse realizar exames de control o largo de todo o curso.	50	

Other comments on the Evaluation

the matter will be pass if you pass each activities that it constitute, so that it can not approve activities independently. The final note will be the sum of each one of the parts.

EXAMS DATA 2019-2020

First Call: May 25, 2020, 10:00 Hours.

Second Call: May 10, 2020, 10:00 Hours.

The official dates can be found in the official table of the Forest Engineering School and web http://forestales.uvigo.es/gl/

Sources of information

Basic Bibliography

BROWN, T.L. y otros, **Química: la Ciencia Central**, 7ª, Prentice-Hall, 1998

CHANG, RAYMOND, **Química**, 6ª, McGraw-Hill, 1995

PETRUCCI, HARWOOD, **Química General**, 8ª, Prentice Hall, 2003

Willis, C.J., **Resolucion de problemas de quimica general**, Reverté, 1980

Complementary Bibliography

KOTZ, JOHN C.y otros, **Química y Reactividad Química**, International Thomson,

Recommendations

Subjects that are recommended to be taken simultaneously

Mathematics: Overview of mathematics/P03G370V01203
Mathematics: Mathematics and IT/P03G370V01103

Other comments

*Consideranse Necessary previous requirements the following:
- Know the system of units.
- Know realise basic mathematical calculations.
- Know basic concepts of the type: atoms, element, composed, mix, density, composition *porcentual and inorganic basic formulation.

To surpass the *asignatura is necessary to achieve the less 50% of the qualification of each one of the sections *evaluables. The assistance the face-to-face educational activities are compulsory. Absences in the justified, upper 20% of the hours scheduled, suppose a suspense in each one of the sections and in consequence in the matter.

Contingency plan

Description

Changes in teaching methodology in exceptional circumstances:

In this matter, we will cover all the content included in the teaching guide.

Master classes: They are held at the same time as those established on the center's website, but through online platforms, with the Remote Campus platform and the Faitic platform. Thematic slides, teaching units, and teaching pills are available from Faitic.

Practices: the experimental part of the two blocks of projects will be carried out in the laboratory, will be presented orally through the remote campus and the reports will be sent to the teachers of the subject. If, due to circumstances, you cannot go to the laboratory, the work will be carried out on the basis of bibliographic data.

Seminars: Problems will be explained through the remote campus platform, exercises that students must send by email or will be uploaded to Faitic.

Changes in personalized attention.
The request is answered by email, email or from the remote campus.

Changes in evaluation methodologies:
The Chemistry course will be evaluated in person following the criteria established in the teaching guide. Master class 50%, laboratory practices 30% and problem solving 20%.
The master class will be evaluated with theory tests and problem tests. Theoretical exams are carried out on every two subjects and the test model is used through the Faitic platform. The problem tests will be two partial exams, with the possibility of gradually passing parts of the subject and making the evaluation more continuous. This will be done through the Remote Campus platform (50%).

Work exhibitions (internship projects) take place across the remote campus and correspond to laboratory internships. (30%)

The delivery of the seminars will be done by email and will correspond to the resolution of problems. (20%)