



IDENTIFYING DATA

Mathematics: Overview of mathematics

Subject	Mathematics: Overview of mathematics			
Code	P03G370V01203			
Study programme	(*)Grao en Enxeñaría Forestal			
Descriptors	ECTS Credits	Type	Year	Quadmester
	9	Basic education	1st	2nd
Teaching language	Spanish			
Department				
Coordinator	Casas Mirás, José Manuel			
Lecturers	Casas Mirás, José Manuel			
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General description				

Competencies

Code	
CG1	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.
CE3	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.
CE5	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.
CT1	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
CT6	Organization and planning capacity
CT7	Skill in the use of IT tools and ICTs.
CT8	Ability to solve problems, critical reasoning and decision making

Learning outcomes

Learning outcomes	Competences
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- 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. CG1 CE3 CT1
CE5 CT6
CT7
CT8
- 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.

Contents

Topic	
Differential geometry	Functions of several real variables Curves and surfaces
Infinitesimal calculation	Concept of limit in \mathbb{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	Evaluated Competences	
Lecturing	(*)Comprensión específica e global dos contidos	20	CE5	CT1
Problem solving	(*)Uso de técnicas estándar, ideas orixinais	5	CE5	CT6
Presentation	(*)Claridade, verbalización, uso de recursos externos	15	CE5	CT1
Laboratory practical	(*)Destreza, capacidade atopar recursos,	40	CE5	CT6
Problem and/or exercise solving	(*) Uso de técnicas estándar, ideas orixinais	5	CE5	CT6
Essay questions exam	(*)Capacidades de expresión e comprensión	15	CE5	CT1

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.
