

\* Please ensure that you use the official UGR nomenclature and terminology (ES-EN) available in [UGRTerm](#) for the names of programmes, courses, faculties/schools, departments, competences/skills, teaching methodology, etc.

SEMESTER	CREDITS (ECTS)	TYPE	MODE OF DELIVERY	LANGUAGE(S) OF INSTRUCTION
1st	4	Elective	Face-to-face	English
MODULE		Master in Economics		
SUBJECT		Economics Analysis Techniques		
CENTRE / FACULTY / SCHOOL RESPONSIBLE FOR THE PROGRAMME		International School for Postgraduate Studies (EIP)		
MASTER'S DEGREE		Master in Economics		
FACULTY / SCHOOL		Economics and Business Administration		
TEACHING STAFF <sup>(1)</sup>				
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<b>Full name</b>				
CONTACT DETAILS				
OFFICE HOURS				
<b>Full name</b>				
CONTACT DETAILS				
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GENERAL AND SPECIFIC COMPETENCES				

<sup>1</sup> Consulte posible actualización en Acceso Identificado > Aplicaciones > Ordenación Docente

(∞) Esta guía docente debe ser cumplimentada siguiendo la "Normativa de Evaluación y de Calificación de los estudiantes de la Universidad de Granada" ([http://secretariageneral.ugr.es/pages/normativa/fichasugr/ncg7121/!](http://secretariageneral.ugr.es/pages/normativa/fichasugr/ncg7121/))

#### GENERAL COMPETENCES

CG1 – That the student obtain the ability for analysis and synthesis, which includes being capable of defining, distinguishing and relating both the basic concepts and the premises upon which the exposition of any argument is built, as well as stating and basing its content in a concise and critical way, in the context – scientific, political, economic, organizational or whatever the type may be – in which it is presented.

#### BASIC COMPETENCES

CB6 – To possess and understand knowledge that gives a basis or opportunity to be original in the development and/or application of ideas, often in a research context.

CB7 – That the students know how to apply the knowledge acquired and their ability to solve problems in new or little-known situations within broader (or multidisciplinary) contexts related to their area of study.

CB8 – That the students are able to integrate knowledge and handle the complexity of formulating judgements from information that, being incomplete or limited, includes reflections on the social and ethical responsibilities linked to the application of their knowledge and judgements.

CB9 – That the students know how to communicate their conclusions and the knowledge and underlying reasons that sustain them to specialist and non-specialist audiences in a clear and unambiguous way.

CB10 – That the students possess the learning skills to enable them to continue studying in a way that will necessarily be largely self-managed and autonomous.

#### SPECIFIC COMPETENCES

CE4 – Apply and extend existing theories to solve real problems

CE5 – Apply advanced techniques to real problems

CE20 – Draw up scientific articles

#### OBJECTIVES OR LEARNING OUTCOMES (ACCORDING TO THE MASTER'S PROGRAMME VALIDATION REPORT)

Student will know/understand:

- Abstracting the relevant of the merely accessory, making possible the formal analysis in situations of the economic sphere.
- Learn to differentiate between the hypotheses and the theses of the economic models, understanding the consequences of the same as the limitations derived from their assumptions.

Student will be able to:

- Simplify complex economic problems to be able to treat them through formal models.
- Use formal mathematical language to formulate problems and models in various economic fields.
- Understand the mathematical development of research articles of any economic field.
- Correctly apply optimization techniques to different types of economic problems and analyse the assumptions of the economic problems.

#### BRIEF DESCRIPTION OF THE COURSE CONTENT (ACCORDING TO THE MASTER'S PROGRAMME VALIDATION REPORT)

This course will provide students with the elementary tools, both on calculus and algebra, to successfully work with the mathematical models in the rest of the courses.

#### SYLLABUS



<p>THEORY AND PRACTICE</p> <p>0. Introduction</p> <p>1. Single variable optimization</p> <p>2. Optimization with several variables</p> <p>3. Constrained optimization</p> <p>4. Algebra</p> <p>5. (Dynamics)</p>
<p>REQUIRED AND RECOMMENDED READING</p>
<p>Main textbook:</p> <ul style="list-style-type: none"> <li>• Sydsaeter, Knut, Peter Hammond and Arne Strom (2014) "Essential Mathematics for Economic Analysis" 4th Edition. Pearson.</li> </ul> <p>Other recommended readings:</p> <ul style="list-style-type: none"> <li>• Klein, Michael W. (1997) Mathematical methods for economics. Addison Wesley</li> <li>• Sundaram, R. (1996) A First Course in Optimization Theory, Cambridge.</li> <li>• Black, John.(1994) "Essential mathematics for economists". John Wiley.</li> </ul>
<p>USEFUL LINKS (OPTIONAL)</p>
<p>TEACHING METHODOLOGY</p> <p>The course will consist in master classes, problem sets solving and discussion, individual coursework, and seminars.</p>
<p>ASSESSMENT (EVALUATION INSTRUMENTS, EVALUATION CRITERIA, PERCENTAGE OF FINAL MARK, ETC)</p>
<p>ORDINARY ASSESSMENT SESSION</p> <p>Article 17 of the UGR Assessment Policy and Regulations establishes that the ordinary assessment session (convocatoria ordinaria) will preferably be based on the continuous assessment of students, except for those who have been granted the right to a single final assessment (evaluación única final), which is an assessment method that only takes a final exam into account.</p> <p>With the purpose of assessing the acquisition of the contents and competencies to develop in the subject, the following assessment procedure will be used:</p> <ul style="list-style-type: none"> <li>• Attendance and participation. (15%) Participation in class: questions or remarks made during the lessons or the problem set seminars and seminar attendance (if it is eventually organized). It will be also 0 if the student does not attend, at least, a 50% of the lectures.</li> <li>• Execution of several problem sets. (25%)</li> <li>• Final Exam in which students are expected to solve some problems and/or theoretical questions related with the contents of the subject. (60%)</li> </ul> <p>A minimum grade of 3 (out of 10) in the final exam is required to pass the subject. If such a threshold is not</p>



achieved, the final grade of the course will be the grade of the final exam.

#### EXTRAORDINARY ASSESSMENT SESSION

Article 19 of the UGR Assessment Policy and Regulations establishes that students who have not passed a course in the ordinary assessment session (convocatoria ordinaria) will have access to an extraordinary assessment session (convocatoria extraordinaria). All students may take part in this extraordinary assessment session, regardless of whether or not they have followed continuous assessment activities. In this way, students who have not carried out continuous assessment activities will have the opportunity to obtain 100% of their mark by means of an exam and/or assignment.

- Exam in which students are expected to solve some problems and/or theoretical questions related with the contents of the subject

#### DESCRIPTION OF THE EXAMS/TESTS THAT WILL FORM PART OF THE SINGLE FINAL ASSESSMENT "EVALUACIÓN ÚNICA FINAL" (AN ASSESSMENT METHOD THAT ONLY TAKES A FINAL EXAM INTO ACCOUNT) AS ESTABLISHED IN THE UGR ASSESSMENT POLICY AND REGULATIONS)

Article 8 of the UGR Assessment Policy and Regulations establishes that students who are unable to follow continuous assessment methods due to justifiable reasons shall have recourse to a single final assessment (*evaluación única final*), which is an assessment method that only takes a final exam into account.

In order to opt for a single final assessment (*evaluación única final*), students must send a request, using the corresponding online procedure, to the coordinator of the master's programme, in the first two weeks of the course or in the two weeks following their enrolment (if the enrolment has taken place after the classes have already begun). The coordinator will communicate this information to the relevant teaching staff members, citing and verifying the reasons why the student is unable to follow the continuous assessment system.

In this case, the assessment will comprise:

- Exam in which students are expected to solve some problems and/or theoretical questions related with the contents of the subject

### SCENARIO A (ON-CAMPUS AND REMOTE TEACHING AND LEARNING COMBINED)

#### TUTORIALS

TIMETABLE (According to Official Academic Organization Plan)	TOOLS FOR TUTORIALS (Indicate which digital tools will be used for tutorials)
The same as in full presentality	email

#### MEASURES TAKEN TO ADAPT TEACHING METHODOLOGY

On-campus and remote teaching will be combined. The groups will be split in sub-groups to allow some of them go on-campus and other via streaming in a rotatory system. The structure and timing will depend on the measures adopted by the School of Economics and Management and the Department.

#### MEASURES TAKEN TO ADAPT ASSESSMENT (Instruments, criteria and percentage of final overall mark)

Ordinary assessment session



<ul style="list-style-type: none"> <li>• Attendance and participation. (15%) Participation in class and/or forums, as well seminar attendance and participation (if it is eventually organized). It will be also 0 if the student does not attend, at least, a 50% of the lectures.</li> <li>• Execution of several problem sets. (25%)</li> <li>• Final Exam in which students are expected to solve some problems and/or theoretical questions related with the contents of the subject. (60%)</li> </ul>	
<b>Extraordinary assessment session</b>	
Exam in which students are expected to solve some problems and/or theoretical questions related with the contents of the subject	
<b>Single final assessment</b>	
Exam in which students are expected to solve some problems and/or theoretical questions related with the contents of the subject	
<b>SCENARIO B (ONCAMPUS ACTIVITY SUSPENDED)</b>	
<b>TIMETABLE</b> (According to Official Academic Organization Plan)	<b>TOOLS FOR TUTORIALS</b> (Indicate which digital tools will be used for tutorials)
The same as in full presentiality	email
<b>MEASURES TAKEN TO ADAPT TEACHING METHODOLOGY</b>	
<ul style="list-style-type: none"> <li>• Theoretical lessons by means of recorded videos.</li> <li>• Problem sets and their corresponding solutions available at Prado.</li> <li>• Participation through fóruns.</li> </ul>	
<b>MEASURES TAKEN TO ADAPT ASSESSMENT (Instruments, criteria and percentage of final overall mark)</b>	
<b>Ordinary assessment session</b>	
<ul style="list-style-type: none"> <li>• Attendance and participation. (15%) Participation in forums and seminar attendance and participation (if it is eventually organized).</li> <li>• Execution of several problem sets. (25%)</li> <li>• Final Exam in which students are expected to solve some problems and/or theoretical questions related with the contents of the subject. (60%). The exam will be made through Prado.</li> </ul>	
<b>Extraordinary assessment session</b>	
Exam in which students are expected to solve some problems and/or theoretical questions related with the contents of the subject. The exam will be made through Prado	
<b>Single final assessment</b>	
Exam in which students are expected to solve some problems and/or theoretical questions related with the contents of the subject. The exam will be made through Prado	

