

BASIC DETAILS:

Subject:	BUSINESS WORKSHOP II		
Id.:	32270		
Programme:	GRADUADO EN ADMINISTRACIÓN Y DIRECCIÓN DE EMPRESAS (CA)		
Module:	MÓDULO TRANSVERSAL		
Subject type:	OBLIGATORIA		
Year:	3	Teaching period:	Primer Cuatrimestre
Credits:	6	Total hours:	150
Classroom activities:	54	Individual study:	96
Main teaching language:	Inglés	Secondary teaching language:	Inglés
Lecturer:	VARELA MANUEL	Email:	mvarela@usj.es

PRESENTATION:

The aim of this course is to introduce demand forecasting and sales planning techniques to predict future outcomes using past data, big data and AI. Students will learn qualitative and quantitative models, analyze patterns, and apply forecasting to real-world business decisions, gaining skills to foresee trends, manage risks, and support strategic planning.

PROFESSIONAL COMPETENCES ACQUIRED IN THE SUBJECT:

General programme competences	G01	Ability to analyse and summarise information from several sources.
	G02	Creative and efficient resolution of problems that arise in day-to-day, in order to ensure the highest levels of quality of professional work.
	G03	Ability to organise and plan the work in the context of continuous improvement.
	G04	Use of information and communication technologies.
	G05	Ability to work effectively in interdisciplinary teams, integrating and participating in scientific and professional teamwork, contributing ideas and respecting and valuing the diversity of views of other team members.
	G06	Ability to incorporate ethical principles into the professional culture, giving priority to ethical commitment to customers and society.
	G07	Ability to work in an international context and innovate and adopt new approaches used in other national contexts.
	G09	Oral and written communication in English in academic and professional contexts.
	G10	Ability to apply the acquired knowledge, adapting it to the needs and special features of each situation and person.
	G11	Ability to come up with new ideas (creativity).
	G12	Ability to incorporate scientific research and evidence-based practice as a professional culture, updating knowledge and skills continuously.
	G13	Ability to develop learning strategies throughout life to be able to acquire new knowledge, by developing their own academic and professional path.
	G14	Oral and written communication in native language and in English, according to the needs of their field of study and the demands of their academic and professional environment.
	G15	Ability to establish and meet the most appropriate quality criteria and apply methodologies and work strategies geared towards continuous improvement.
	G16	Ability to assimilate concepts of a social and humanistic nature into a comprehensive university education to enable the development of ethical values such as solidarity, multiculturalism, equality, commitment, respect, diversity, integrity, etc.
Specific programme competences	E01	Understand the specific aspects of the operation, management and control of the different functional areas of the company.
	E02	Know and understand the local, national and international socio-economic context in which the companies operate and be able to interpret its impact on them.

	E03	Ability to apply the acquired knowledge of the functional areas of the company and the socio-economic environment.
	E04	Ability to identify related variables and understand their impact on business organisations.
	E13	Know the decision making processes in terms of policy and business strategy.
	E14	Understand the principles of business ethics and be able to design scenarios in which these principles can be put into business practice.
	E15	Propose, plan and lead business innovation projects that ensure the competitiveness of the company.
Learning outcomes	R01	Knowledge and familiarity with the problems
	R02	Development of analytical skills
	R03	Improved decision-making
	R04	Rationality in decision-making.
	R05	Development of communication and interpersonal skills.

PRE-REQUISITES:

Strong knowledge of Mathematics, Statistics and Econometrics.

SUBJECT PROGRAMME:

Subject contents:

1 - The essentials of forecasting
1.1 - Introductory issues
1.2 - Key Concepts
1.3 - Basic steps
1.4 - Sources of problems
1.5 - Types of forecasts
2 - Business Forecasting
2.1 - Types and sources of data
2.2 - Introduction to graphics analysis
2.3 - Components
2.4 - Autocorrelation
2.5 - Forecast Error
3 - Time Series
3.1 - Time-series decomposition
3.2 - Non-parametric forecasting
3.3 - Quarterly forecasts
4 - Forecasting with linear regressions (structural models)
4.1 - Forecasting with simple regression
4.2 - Forecasting with multiple regression
5 - Forecasting with ARIMA models
5.1 - Introduction to the Box-Jenkins Models (non-structural models)
5.2 - Forecasting with Autoregressive Models (AR)
5.3 - Forecasting with Moving average (MA)
5.4 - Forecasting with Autoregressive-Moving Average (ARMA) models
5.5 - Forecasting seasonal time series
6 - Data mining
6.1 - Data Mining and techniques
7 - Logit model
7.1 - Logit model

Subject planning could be modified due unforeseen circumstances (group performance, availability of resources,

changes to academic calendar etc.) and should not, therefore, be considered to be definitive.

Learning activities:

Week	Unit/Block/Theme	Classroom sessions	Hours	Individual study activities	Hours
1	07/09/2026 1.The essentials of forecasting 1.1.Introductory issues 1.2.Key Concepts	Presentation: learning, teaching methods, evaluation, assignment deadlines, use of the PDU. Introducing the essential of forecasting. Why do we need to learn forecasting?	2	Reviewing material. Individual study. Exercises	4
2	14/09/2026 1.The essentials of forecasting 1.3.Basic steps 1.4.Sources of problems 1.5.Types of forecasts	Lecture and class activities.	4	Preparing notes. -Individual study Integrated case 1	4
3	21/09/2026 2. Business Forecasting 2.1.Types and sources of data 2.2.Introduction to graphics analysis	Lecture and class activities Examples	4	Individual study. Preparation of individual portfolio Integrated case 1	4
4	28/09/2026 2. Business Forecasting 2.3.Components 2.4.Autocorrelation	Lecture and class activities Individual portfolio: exercise	4	Individual study Prepare individual portfolio Solve the questions of Integrated case 1	4
5	05/10/2026 2.4.Autocorrelation 2.5.Forecast Error	Master class and practical exercises.	2	Exercises	4
6	12/10/2026 1.The essentials of forecasting 2. Business Forecasting	First quiz. The group assignment, due December 15.	2	Individual study Exercises	4
7	19/10/2026 3. Time Series 3.1.Time-series decomposition 3.2.Non-parametric forecasting	Lecture and class activities.	4	Individual study. Preparation of group assignment.	4
8	26/10/2026 3. Time Series 3.2.Non-parametric forecasting 3.3.Quarterly forecasts	Exercises Theoretical explanation	4	Individual study Exercises Preparation of group assignment.	4
9	02/11/2026 4. Forecasting with linear regressions (structural models) 4.1.Forecasting with simple regression	Master class and practical exercises.	2	Individual study. Preparation of group assignment.	6
10	09/11/2026 4.1.Forecasting with simple regression 4.2.Forecasting with multiple regression	Master course and practical exercises. Written test I.	4	Individual study Exercises and readings related to the content presented in class Preparation of group assignment.	4
11	16/11/2026 5. Forecasting with ARIMA models 5.1.Introduction to the Box-Jenkins Models (non-structural models) 5.2.Forecasting with Autoregressive Models (AR) 5.3.Forecasting with Moving average (MA)	Lecture and class activities. Practical exercise	4	Individual assignment due on December 5. Preparation of group assignment.	6
12	23/11/2026 5.4.Forecasting with Autoregressive-Moving Average (ARMA) models 5.5.Forecasting seasonal time series	Class activities Exercises Examples	4	Exercises Individual study Preparation of group assignment.	6
13	30/11/2026 6. Data mining 6.1.Data Mining and techniques	Lecture and class activities.	4	Individual study. Preparation of group assignment.	6
14	07/12/2026 7. Logit model 7.1.Logit model	Master class and practical exercises.	2	Individual study Exercises and readings. Preparation of group assignment.	4

15	14/12/2026	2. Business Forecasting 3. Time Series 4. Forecasting with linear regressions (structural models) 5. Forecasting with ARIMA models 6. Data mining 7. Logit model	Final group presentations due on December 16 .	4	Exercises Individual study	4
16	21/12/2026	6. Data mining 7. Logit model	Christmas holidays.	0	Individual study Final exam preparation.	4
17	28/12/2026	6. Data mining 7. Logit model	Christmas holidays.	0	Individual study Final exam preparation.	4
18	04/01/2027	1.The essentials of forecasting 2. Business Forecasting 3. Time Series 4. Forecasting with linear regressions (structural models) 5. Forecasting with ARIMA models 6. Data mining 7. Logit model	Christmas break.	0	Compulsory readings. Individual study for final exam.	10
19	11/01/2027	1.The essentials of forecasting 2. Business Forecasting 3. Time Series 4. Forecasting with linear regressions (structural models) 5. Forecasting with ARIMA models 6. Data mining 7. Logit model	Written exam and exam review The final date for the examination will be set in the official examination calendar	3	Individual study	10
20	18/01/2027	1.The essentials of forecasting 2. Business Forecasting 3. Time Series 4. Forecasting with linear regressions (structural models) 5. Forecasting with ARIMA models 6. Data mining 7. Logit model	Exam review The final date for the examination will be set in the official examination calendar	1	Individual study.	0
TOTAL CLASSROOM HOURS:				54	TOTAL INDIVIDUAL STUDY HOURS:	96

Observations for students exempt from compulsory attendance due to special circumstances:

Those students who are unable to attend 80 % of classes during the semester due to justified reasons, for example, working while studying, will have to get in touch with the lecturer and degree program coordinator by September 28. However, it is highly recommended students to attend this class in person because of the practical nature of the class it would be hard to catch-up.

Those students are also responsible to hand in the individual and group assignments, and written tests specified in the PDU. If they fail to get an overall score of 5.0 out of 10, then they need to take resit exam.

Each particular case will be analysed to design a learning strategy and related individualized activities that ensure the achievement of the identified course objectives. In these cases, the student will need to attend the tutorials, previously determined with the lecturer. If the student does not contact with the lecturer by September 28, they may lose their right to be evaluated in the first call since they exceed the allowed absences (20%).

Those students who have been exempt from compulsory attendance will be assessed with the same criteria as attending students. The evaluating criteria and deadlines are the same for these students as for attending students, will only be allowed to be exempt from class attendance when absence has been justified and agreed.

Los estudiantes que, por causas justificadas (por ejemplo, compatibilizar estudios y trabajo), no puedan asistir al 80 % de las clases durante el cuatrimestre, deberán ponerse en contacto con la profesora de la asignatura y el coordinador del grado antes del 28 de septiembre. Sin embargo, es importante

destacar que la asignatura esta establecido actividades practicas por lo tanto es recomendable la asistencia a la asignatura. Estos estudiantes también serán responsables de entregar las tareas individuales y en grupo, así como de realizar las pruebas escritas especificadas en el PDU. En caso de no alcanzar una calificación global mínima de 5,0 sobre 10, deberán presentarse al examen de recuperación (convocatoria extraordinaria).

Cada caso particular será analizado con el fin de diseñar una estrategia de aprendizaje individualizada, con actividades adaptadas que garanticen la consecución de los objetivos de aprendizaje de la asignatura. En estos casos, el estudiante deberá asistir a las tutorías previamente acordadas con el profesor. Si el estudiante no contacta con el profesor antes del 28 de septiembre, podría perder el derecho a ser evaluado en la primera convocatoria, al superar el límite permitido de ausencias (20 %).

Los estudiantes que hayan sido liberado de la asistencia obligatoria serán evaluados con los mismos criterios que el resto de los estudiantes asistentes. Es decir, los criterios de evaluación y los plazos entregar tareas serán los mismos con el resto del alumnado. Esta exención solo será válida cuando la ausencia esté debidamente justificada y haya sido acordada con el profesor y la coordinación académica.

TEACHING AND LEARNING METHODOLOGIES AND ACTIVITIES:

Teaching and learning methodologies and activities applied:

Many class activities are carried out in pairs and groups through problem solving exercises with (or without) software, presentations, debates, project preparation, etc. Students should check the PDU every week. During theoretical classes, where the lecturer explains concepts orally with technological support, students are also expected to participate with questions. After theoretical classes, the student must study individually with the exercises and tasks to apply. During these sessions, students can ask questions, clarify concepts and ask for additional bibliography. The main methodologies used in this course will be:

- **Theoretical classes:** Main concepts are presented. Besides, there might be slides with questions and/ or problems which are solved during the class discussions.
- **Practical exercises:** Those exercises aim to reinforce the knowledge. Active participation of students is encouraged.
- **Group assignment:** Students carry out group assignment using GRET. Late submissions of assignments won't be accepted.
- **Quiz and Written tests:** To ensure understanding of business forecasting essentials and methods, written tests are conducted on each topic.
- **Independent study:** Students are expected to complete all independent study tasks and devote time to reviewing concepts and exercises.
- **Tutorial hours:** Students are encouraged to attend tutorial sessions, since, tutorial sessions provide an opportunity to students to address their questions and ask for additional bibliography, etc. It is worth mentioning that students must contact with the lecturer via email and ask for an appointment beforehand.

IMPORTANT: Tutorials are sessions intended to address specific questions or doubts, not to provide private lessons or to explain the entire topic from the beginning.

Integration of English language in the subject:

This course will be taught entirely in English.

Student work load:

Teaching mode	Teaching methods	Estimated hours
Classroom activities	Master classes	18
	Other theory activities	6
	Practical exercises	9
	Practical work, exercises, problem-solving etc.	7
	Debates	2
	Coursework presentations	8
	Assessment activities	4
Individual study	Tutorials	8
	Individual study	42
	Individual coursework preparation	15
	Group coursework preparation	16
	Project work	7
	Research work	2
	Compulsory reading	6
Total hours:		150

ASSESSMENT SCHEME:

Calculation of final mark:

Others (Group assignment 20%, Written test I 20%, Written test II 30%, One Quiz 15%, class exercises 15%):	100	%
TOTAL	100	%

Specific assessment criteria

- **Two written tests**, one on each topic. Written Test I 20% and Written Test II 30%.
- **One Quiz**, on first two units (15%)
- **Group and Individual assignment** through GRETL (20 %). Late submissions of assignments will not be accepted.
- **Class exercises**: (15%)

To pass this course, students must obtain an overall score of at least 5.0 across all evaluation components (Two written exams, one quiz, group assignments and class activities). The material given by the lecturer will be an indication of what needs to be studied. The student will have to search for and work on various sources of information.

If the students fail to obtain 5.0 then they need to attend resit exams in July.

The resit exams or second call (convocatoria extraordinaria) will consist of a **single comprehensive exam** covering all topics included in the syllabus. This exam will account for **100% of the final grade**.

Spelling: Within the evaluation criteria, the University considers spelling a priority issue. Under the protection of the changes in the language standard in the Spanish language included in the Spelling of the Spanish Language (2010), published by the Real Academia Española, CESUGA has established some correction criteria related to this work that will be applied in all tests of the matter. The document that includes the set of criteria and its sanction is published in the University Teaching Platform (PDU) of the subject. The same applies if English is the main language. Refer to unacceptable grammar errors.

Plagiarism: Likewise, and in accordance with the University's Good Practices manual, the commission of plagiarism in any of the work carried out will be considered a very serious offense, since it violates the deontological code of any profession. All assignments/ tasks must be handed in through the PDU and will be checked through Turnitin to avoid plagiarism.

Electronic devices (e.g. smartphones, tablets, etc.) which can distract students or disrupt learning are not allowed in the classroom unless the lecturer specifically allows the use of certain devices (e.g. laptops).

Absences: Failure to attend class more than 20 % of the stipulated hours without authorization may lead to the loss of the evaluation on first call.

Regulation on Plagiarism and Unlawful Practices

Actions that constitute copying or plagiarism, whether in whole or in part, of an assessment instrument will result in the student receiving a fail (zero) for that assessment. In the case of group assessment instruments, the same grading will apply, with an attempt to individualise the responsibility of each member where possible. If individualisation of responsibilities is not possible or the responsibility is clearly collective, all members will receive the same fail grade (zero).

In the case of external placements, the resulting grade (fail, zero) entails the obligation to repeat the placement.

The final assessment of the impact of the grade (fail, zero) on an assessment instrument in relation to the final grade for the subject is at the discretion of the subject teacher.

For more information on what constitutes plagiarism and how to avoid it, you can consult: [https:// www.usj.es/alumnos/ vidauniversitaria/ biblioteca/ investigacion/ como-publicar/ plagio](https://www.usj.es/alumnos/vidauniversitaria/biblioteca/investigacion/como-publicar/plagio)

Regulation on the Use of AI Systems

The use of any Artificial Intelligence in the learning activities such as carrying out the assignments, projects, tasks, essays, or research, including the exam, requires an authorisation and supervision from the lecturer(s). This authorisation will be indicated in the particular learning activity's instructions and must be strictly adhered to within the established scope and limits.

If the use of AI is allowed for the learning activity e.g. assignment, it will primarily be limited to the early stages of research, where it can serve as inspiration or suggest directions, but not to produce content that is directly included in submissions. If the reproduction of AI-generated texts is authorised, the student must clearly disclose this in the submitted document. This disclosure should explicitly indicate which AI methods and tools are embraced. In any case, the student must provide a detailed explanation of how AI was employed in the research process of the learning activity or assignment, including the prompts used, the checks performed to ensure the authenticity of the information proposed by the AI, and any modifications made to the AI-generated content.

The use of AI in learning activities and/ or academic work must respect the ethical principles of academic integrity and intellectual honesty. If a student misuses AI including the violation of the established regulations, the result will be a fail grade (zero) for the corresponding learning activity.

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Assessment methods:

Assessment method	Learning outcomes	Assessment criteria	%
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	assessed		
Quiz	R01 R02 R03 R04	Testing the basic knowledge and methods on business forecasting.	15
Group assignment. Integrated cases	R01 R02 R03 R04 R05	Developing necessary skills on demand forecasting, sales planning and making informed decision based on the results of forecasting techniques. Communicating findings and presenting their informed decisions to audience.	20
Written exams	R01 R02 R03 R04	Understanding the theories and practices learned throughout the semester.	50
Class activities	R01 R02 R03 R04 R05	Performing class exercises and activities to support the learning experience.	15
Total weighting:			100

Observations for students exempt from compulsory attendance due to special circumstances:

This subject has a very high practical component and distance learning is not recommended. It is only accepted under special and justified circumstances. Contact the lecturer regarding distance learning before 26/ 09/ 2025

- **Two written tests**, one on each topic. Written Test I 20% and Written Test II 30%.
- **One Quiz**, on first two units (15%)
- **Group and individual assignment** through GRETl (20 %). Late submissions of assignments will not be accepted.
- **Class exercises:** (15%)

To pass this course, students must obtain an overall score of at least 5.0 across all evaluation components (Two written exams, one quiz, group assignments and class activities). The material given by the lecturer will be an indication of what needs to be studied. The student will have to search for and work on various sources of information.

If the students fail to obtain 5.0 then they need to attend resit exams in July.

The resit exams or second call (convocatoria extraordinaria) will consist of a **single comprehensive exam** covering all topics included in the syllabus. This exam will account for **100% of the final grade**.

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in the classroom unless the lecturer specifically allows the use of certain devices (e.g. laptops).

Absences: Failure to attend class more than 20 % of the stipulated hours without authorization may lead to the loss of the evaluation on first call.

Regulation on Plagiarism and Unlawful Practices

Actions that constitute copying or plagiarism, whether in whole or in part, of an assessment instrument will result in the student receiving a fail (zero) for that assessment. In the case of group assessment instruments, the same grading will apply, with an attempt to individualise the responsibility of each member where possible. If individualisation of responsibilities is not possible or the responsibility is clearly collective, all members will receive the same fail grade (zero).

In the case of external placements, the resulting grade (fail, zero) entails the obligation to repeat the placement.

The final assessment of the impact of the grade (fail, zero) on an assessment instrument in relation to the final grade for the subject is at the discretion of the subject teacher.

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Regulation on the Use of AI Systems

The use of any Artificial Intelligence in the learning activities such as carrying out the assignments, projects, tasks, essays, or research, including the exam, requires an authorisation and supervision from the lecturer(s). This authorisation will be indicated in the particular learning activity's instructions and must be strictly adhered to within the established scope and limits.

If the use of AI is allowed for the learning activity e.g. assignment, it will primarily be limited to the early stages of research, where it can serve as inspiration or suggest directions, but not to produce content that is directly included in submissions. If the reproduction of AI-generated texts is authorised, the student must clearly disclose this in the submitted document. This disclosure should explicitly indicate which AI methods and tools are embraced. In any case, the student must provide a detailed explanation of how AI was employed in the research process of the learning activity or assignment, including the prompts used, the checks performed to ensure the authenticity of the information proposed by the AI, and any modifications made to the AI-generated content.

The use of AI in learning activities and/ or academic work must respect the ethical principles of academic integrity and intellectual honesty. If a student misuses AI including the violation of the established regulations, the result will be a fail grade (zero) for the corresponding learning activity.

The final assessment of the impact of the fail grade (zero) on an assessment instrument in relation to the final grade for the subject is at the discretion of the subject teacher.

Extract from the internal regulations of the permanence regime

A student who does not appear for the final test provided in the Teaching Guide when it has a weight equal to or greater than 40% will be considered a "Not Presented" and will not use up the sitting. If the final exam percentage is lower or there is no final exam, the student will be considered "Not Presented" if he or she has taken assessment elements that represent less than 40% of the final grade.

A student will be considered "Presented" to a test or assessment item if he or she takes it and, once the questions or instructions have been submitted and/or viewed and/or read, decides to withdraw.

In the event of a failure, the Teaching Guide may specify whether the results of the tests or assessment elements taken will be carried over to the next sitting within the same academic year. In any case, the results of tests or assessment elements from a sitting, if considered a "Not Presented," cannot be used for the next sitting within the

same academic year. In general, the results of the evaluation tests of a course cannot be saved for the next courses.

Regulation for plagiarism and illegal practices

Any total or partial copying or plagiarism in an evaluation will result in a fail (zero) in said evaluation. In the case of group evaluations, they will be scored in the same way, trying to individualise the responsibility of each member, if possible. If this is not possible or the responsibility is clearly of all members, all of them will be awarded a fail (zero). In the case of external work placements, the resulting grade (fail, zero) obliges the student to repeat said work placements. The scope of the grade of the final assessment (fail, zero) in an evaluation with respect to the final subject grade is at the discretion of the subject teacher. To find out more about what plagiarism is and how to avoid it, you can consult: <https://www.usj.es/alumnos/vidauniversitaria/biblioteca/investigacion/como-publicar/plagio>

Regulation for the use of AI systems

The use of any form of Artificial Intelligence (AI) in carrying out learning activities such as assignments and exams, including projects, assignments, essays or research, requires due authorisation and supervision of the corresponding teaching staff. This authorisation will appear in the specific statement of the assessed learning activity and the scope, and limits established therein must be strictly respected.

Where the use of AI is authorised for the development of a learning activity, it will be limited primarily to the early stages of the research, where it can provide inspiration or suggest direction, but not to produce content that is included directly in the final submission. If authorisation is given to reproduce texts generated by AI, the student must clearly disclose this fact in the submitted document. The AI methods and tools used must be expressly specified. In any case, the student must provide a detailed explanation about how the AI has been used in the research or process of the activity and/or work, including any prompts used, the verifications carried out to guarantee the authenticity of the information proposed by the AI and the modifications made to the content generated by the AI. The use of AI in learning activities and/or academic work must respect the ethical principles of academic integrity and intellectual honesty. If the student makes inappropriate use of AI in violation of the established regulations, the result of the grade in the corresponding learning activity will be a fail (zero).

The scope of the grade of the final assessment (fail, zero) in an evaluation with respect to the final subject grade is at the discretion of the subject teacher.

BIBLIOGRAPHY AND DOCUMENTATION:

Basic bibliography:

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Recommended websites:

Eurostat (statistical office of the European Union)	epp.eurostat.ec.europa.eu
GRET	https://gret.sourceforge.net/
Instituto Aragonés de Estadística	www.aragon.es/Temas/Estadistica
Instituto Nacional de Estadística	www.ine.es
International Monetary Fund	www.imf.org/external/index.htm
Ministerio de Industria, Energía y Turismo	www.minetur.gob.es/
The World Bank	data.worldbank.org
World Trade Organization	www.wto.org/index.htm

OBSERVATIONS: