



IDENTIFYING DATA

Basics of business management

Subject	Basics of business management			
Code	P52G381V01306			
Study programme	(*)Grao en Enxeñaría Mecánica			
Descriptors	ECTS Credits	Choose	Year	Quadmester
	6	Mandatory	3rd	2nd
Teaching language	Spanish			
Department				
Coordinator	Rodríguez Rodríguez, Francisco Javier			
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General description

The primary objective of the subject Basics of Operations Management is to provide students with a basic and sufficient level of knowledge related to the specific methods and techniques of Operations within organizations. In this field, the word Organization is applicable to private enterprises, whether industrial, commercial or services, public enterprises and administrations, public institutions and bodies, as well as quarters, headquarters, organs, fleets and sections of The Spanish Navy. All these organizations have in common that they must be managed by people with adequate training to perform an effective and efficient direction of operations, both from a strategic and operational perspective.

The future graduates will practice their profession in the different organisms and units grouped within the Navy, which can be considered the parent organization of all the organizations that integrate it. Therefore, it is important that all students know the management tools needed to run an organization of any kind. The study of this subject will allow students to consolidate and expand some of the knowledge previously acquired in the first year subject Introduction to Business Management. The necessary skills will be developed to manage the organizations through the study and practice of applied knowledge of Operations management.

Basics of Operations Management has an important relationship with the subject Logistics and Management of Resources in the Navy, which is taught within the specific military training of the two fundamental specialties of General Corps and Marine Infantry.

The contents of the subject Basics of Operations Management of the Degree in Mechanical Engineering have been divided into six parts: General Introduction, Introduction to Project Management, Forecasting Demand, Basic Decisions in Production Management, Introduction to work study and Introduction to the Quality, Safety and Environmental managing. These six parts will be developed in eleven topics as specified in the subject planning.

Competencies

Code	
B8	Ability to apply the principles and methods of quality.
B9	Ability to organize and plan within the sphere of a company, and other institutions and organizations.
C15	Basic knowledge of production systems and manufacturing.
C17	Applied knowledge of business organization.
D1	Analysis and synthesis
D2	Problems resolution.
D7	Ability to organize and plan.
D8	Decision making.
D9	Apply knowledge.
D11	Ability to understand the meaning and application of the gender perspective in the various fields of knowledge and professional practice with the aim of achieving a more just and egalitarian society.
D18	Working in an international context.

Learning outcomes

Expected results from this subject	Training and Learning Results		
To know the basis on which the activities related to production and operations management are supported.	B8 B9	C15 C17	D1 D2 D7 D8 D9 D18
To know the scope of the different production-related activities.	B8 B9	C15 C17	D1 D2 D7 D8 D9 D18
To obtain an overall view for the execution of the activities related to production and operations management.	B8 B9	C15 C17	D1 D2 D7 D11
To conduct a workplace assessment from an approach that helps the development of people with a perspective of efficiency and equality.			D11
ENAAEE learning outcome: KNOWLEDGE AND UNDERSTANDING: LO1.3.- Awareness of the wider multidisciplinary context of engineering [level of achievement (basic (1), intermediate (2) and advanced (3)) for this learning outcome:Basic (1)].	B9	C15 C17	
ENAAEE learning outcome: ENGINEERING ANALYSIS: LO2.1.- Ability to analyse complex engineering products, processes and systems in their field of study; to select and apply relevant methods from established analytical, computational and experimental methods; to correctly interpret the outcomes of such analyses [Suitable (2)].		C15 C17	D2 D8 D9
ENAAEE learning outcome: ENGINEERING ANALYSIS: LO2.2.- Ability to identify, formulate and solve engineering problems in their field of study; to select and apply relevant methods from established analytical, computational and experimental methods; to recognise the importance of non-technical -societal, health and safety, environmental, economic and industrial - constraints [Suitable (2)].			D1 D2 D8 D9 D11
ENAAEE learning outcome: ENGINEERING DESIGN: LO3.1.- Ability to develop and design complex products (devices, artefacts, etc.), processes and systems in their field of study to meet established requirements, that can include an awareness of non-technical - societal, health and safety, environmental, economic and industrial- considerations; to select and apply relevant design methodologies [Suitable (2)].	B8		D2 D7 D9 D11
ENAAEE learning outcome: ENGINEERING PRACTICE: LO5.4- Ability to apply norms of engineering practice in their field of study [Suitable (2)].	B9		D9
ENAAEE learning outcome: ENGINEERING PRACTICE: LO5.5- Awareness of non-technical -societal, health and safety, environmental, economic and industrial - implications of engineering practice [Suitable (2)].			D11
ENAAEE learning outcome: ENGINEERING PRACTICE: LO5.6.- Awareness of economic, organisational and managerial issues (such as project management, risk and change management) in the industrial and business context [Suitable (2)].	B9	C17	
ENAAEE learning outcome: MAKING JUDGEMENTS: LO6.1.- Ability to gather and interpret relevant data and handle complexity within their field of study, to inform judgements that include reflection on relevant social and ethical issues [Basic (1)].	B9		D11
ENAAEE learning outcome: MAKING JUDGEMENTS: LO6.2.- Ability to manage complex technical or professional activities or projects in their field of study, taking responsibility for decision making [Suitable (2)].	B9	C17	

Contents

Topic	
Chapter 1. Production systems and components.	Chapter index:
Aims:	1.1. Notions of production. Production system. Current production systems.
To identify the concepts of operations, production and productivity in the organizational context.	1.2. Operations management. Organizing to produce goods and services.
	1.3. New trends in production and operations.
	1.4. Productivity, quality and social responsibility.

Chapter 2. Productivity and its measurement.	Chapter index:
Aims:	2.1. Concept of productivity. Productivity measurement.
To define and describe productivity measurement. To gain knowledge on the factors affecting productivity and to apply management techniques that improve productivity.	2.2. Productivity variables. Management role. Strategies for productivity growth.
	2.3. Productivity in companies and organizations. Productivity and the service sector.
Chapter 3. Concept and functions of operations management.	Chapter index:
Aims:	3.1. Production management. Production planning, scheduling and controlling.
To define production management and to identify its basic functions.	3.2. Relationships between production, logistics and operations.
	3.3. Supply chain. Managing inventory. Independent vs. Dependent demands.
	3.4. The role of an Operations manager.
Chapter 4. Project Planning, Scheduling and Controlling.	Chapter index:
Aims:	4.1. Strategic importance of project management.
To understand each product or service as a new project. To explain the main project management techniques.	4.2. Project planning.
	4.3. Project scheduling.
	4.4. Project controlling.
	4.5. Introduction to PERT and CPM.
	4.6. PERT/CPM networks.
	4.7. Calculating Slack time and identifying the critical path(s).
	4.8. Variability in activity times.
Chapter 5. Forecasting demand.	Chapter index:
Aims:	5.1. Forecasting. Types of forecasts. The importance of forecasting. Forecasting approaches.
To define the forecasting process and its approaches. To describe the quantitative forecasting methods.	5.2. Quantitative methods. Time-series models. Associative models.
Chapter 6. Strategic decisions.	Chapter index:
Aims:	6.1. Process and layout strategies. Process analysis and design.
To identify the process and layout strategies within the organizations. To present the concept of capacity planning.	6.2. Capacity. Capacity planning. Tools for analysis and decision-making.
	6.3. Location strategy. Factors that affect location decisions. Methods of evaluating location alternatives.
Chapter 7. Tactical decisions. Inventory management.	Chapter index:
Aims:	7.1. Functions of inventory. Inventory management.
To describe the functions of inventory and basic inventory models.	7.2. Inventory models. Models for independent demand. Other models.
Chapter 8. Tactical decisions. Production Planning, Scheduling and Controlling.	Chapter index:
Aims:	8.1. The planning process. Aggregate planning. Production scheduling and control.
To identify the planning, scheduling and controlling processes. To explain Material Requirements Planning.	8.2. Material Requirements Planning (MRP). Inventory management for dependent demand.
	8.3. MRP structure and management.
	8.4. Enterprise Resource Planning (ERP).
Chapter 9. Tactical decisions. JIT Philosophy. Definition and principles.	Chapter index:
Aims:	9.1. Introduction to JIT.
To describe Just In Time (JIT) philosophy and Lean Manufacturing. Objectives and principles.	9.2. The 4Ps of JIT.
	9.3. Lean Manufacturing.
	9.4. Total productive maintenance, TPM.
Chapter 10. Introduction to work study.	Chapter index:
Aims:	10.1. Job design.
To define job design. To understand the importance of an effective and efficient Human Resources management. To explain the fundamentals of the Method study. To describe Time studies. To explain Predetermined Time Standards. To describe work sampling.	10.2. Ergonomics and work physiology.
	10.3. Method analysis and work measurement.
	10.4. Time studies.
	10.5. Predetermined Time Standards. Methods-Time Measurement (MTM).
	10.6. Work sampling.

Chapter 11. Introduction to quality, environment and safety.

Aims:

To define quality and the international quality standards. To identify the environmental management systems and standards. To define safety and industrial hygiene and to understand their importance in the prevention of occupational risks.

Chapter index:

11.1. Quality. International quality standards. ISO 9000 standards. Standards PECAL/AQAP with requirements of the Spanish Ministry of Defense (NATO requirements).

11.2. Environmental management systems. ISO 14000 standards. EMAS regulation.

11.3. Safety and industrial hygiene. Prevention of occupational risks.

Practical session 1. Productivity calculations.	Situations of industrial or services companies are raised in which students should determine or measure the productivity from the data supplied. These exercises are presented and resolved.
Practical session 2. Project planning.	It comprises the determination of project schedules with PERT/ CPM charts.
Practical session 3. Forecasting demand.	It consists in forecasting the demand for products or services of a company, using time-series models and associative models that have been studied. Several exercises for forecasting are presented and resolved.
Practical session 4. Process analysis. Layout design. Capacity decisions.	Examples are given of flow charts and operation process charts (process charts, flow diagrams, etc.) for process analysis. Problems on break-even analysis are presented and resolved.
Practical session 5. Inventory models for independent demand.	Inventory problems are presented and resolved using the ABC method, as well as exercises based on the Economic Order Quantity (EOQ) model and its variations (independent demand).
Practical session 6. Aggregate planning.	Aggregate planning problems, with the two pure strategies: chase and level, are presented and resolved.
Practical session 7. Inventory models for dependent demand.	Diverse problems are presented and resolved using the MRP technique, preparing materials lists and calculating gross and net requirements (dependent demand).

Planning

	Class hours	Hours outside the classroom	Total hours
Lecturing	26	39	65
Problem solving	14	21	35
Seminars	22	15	37
Essay questions exam	13	0	13

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

Methodologies

	Description
Lecturing	<p>Each lecture session will be presented by the professor, setting examples for a better understanding of the contents. By raising issues in theoretical contents and examples, the active student participation will be boosted and assessed.</p> <p>Office presentations and the dashboard will be used to convey information such as definitions, graphics, pictures, etc. As far as possible, copies of the presentations will be provided to the students prior to the lecture, focusing the effort of the teacher and students in the exhibition and understanding of the knowledge. Printed reproductions of the presentations should never be considered as substitutes for notes taken in class or the texts suggested in the bibliography, but as complementary material.</p>
Problem solving	Problems and /or exercises are formulated that the student must solve by interpreting the available information, applying formulas or algorithms and interpreting the results. These exercises can be collected at the end of the class or sent over the intranet in a short time.
Seminars	<p>They consist in the realization of activities of reinforcement to the learning by means of:</p> <p>Troubleshooting. Complementing to the realised in the practical classes.</p> <p>Case studies. Analysis of real events, fundamentally in companies and Defense organizations with the purpose of knowing them, interpreting them, reflecting, diagnosing and elaborating possible solutions.</p> <p>Those exercises in laboratory classes that students were unable to finish, need to be addressed in their study hours and if there is any difficulty or doubt, they can be resolved in these seminars.</p> <p>Intensive course (15 hours) for those students who have failed the subject at first call, prior to the exam in second call. Group tutoring with the lecturer.</p>

Personalized assistance

Methodologies Description

Seminars	PERSONALIZED ATTENTION In addition to tutorials or group seminars, individual tutorials can be carried out, in which each student, individually, can consult the professor doubts or difficulties that prevent him from following the theoretical or practical contents of the subject. Additional exercises will be proposed to reinforce the learning of the contents of the subject, aimed at students who show difficulties to follow in an appropriate way the development of classes.
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Assessment

Description		Qualification	Training and Learning Results		
Lecturing	Intermediate test of continuous assessment: It has as objective the evaluation of the acquired competences, being able to include multiple-choice test questions with different alternatives of answer, direct short answer questions and troubleshooting. It will be realized during the quadmester and will be of short duration. The execution of the test will be compulsory and required to pass the subject. (Percentage on the final grade: 25%) Final exam of continuous assessment: a final test will be carried out covering all the contents of the subject, both theoretical and practical, and it may include test questions, reasoning questions, troubleshooting and case study's development. It is required to achieve a minimum grade of 4 points out of 10 possible to be able to pass the subject, as well as exceed a minimum grade of 3 points out of 10 in each part (theory and problems) of the aforementioned exam.(Percentage over final grade: 50%)	70	B8 B9	C15 C17	D1 D2 D7 D8 D9 D11
Problem solving	Assessment of the practical sessions: during the quadmester, in certain practical sessions, problems or exercises will be raised to be solved by the students and submitted for evaluation when determined by the professor. The evaluation of each deliverable will be in accordance with the criteria that have previously been communicated to the students.	25	B8 B9	C15 C17	D1 D2 D7 D8 D9 D11 D18
Seminars	Participation: Participation and attitude will be evaluated during theoretical classes, practical sessions and group tutorials, as well as contributions in the virtual platform.	5	B8 B9	C15 C17	D1 D2 D7 D8 D9 D11

Other comments on the Evaluation

Final assessment of students will attend to the sum of the score given to each of the above mentioned parts, being their overall continuous assessment grade (CAG):

$$CAG = 0,25 * INTERMEDIATE TEST + 0,20 * PRACTICAL SESSIONS + 0,50 * FINAL EXAM + 0,05 * PARTICIPATION$$

In order to pass the subject, the overall continuous assessment grade (CAG) calculated by the previous formula must be at least 5 points out of 10. Otherwise, students must take the ordinary exam.

However, minimum requirements and conditions will be required in some of the sections, which ensure a balance between all types of competences.

The student must take the ordinary exam of all the contents of the subject, which will represent 100% of the grade, in the following cases:

- If a student fails to take the intermediate test or does not attend more than one practical session.
- If a student earns a grade below 4 points out of 10 in the final exam of continuous assessment, as well as not achieve a minimum grade of 3 points out of 10 in any of the parts (theory and problems) of the aforementioned exam.

In either of these two assumptions, the continuous assessment grade will be the minimum of the continuous assessment grade calculated with the previous formula and 4 points. In any case, students who have passed the continuous assessment, will have the possibility to take the ordinary exam to increase grades.

Both the ordinary and the extraordinary exams (July call) will evaluate all the competences of the subject. To pass the

subject in either of these two calls, it will be necessary to exceed a minimum grade of 3 points out of 10 in each part (theory and problems) of these exams.

ETHICAL COMMITMENT: Students are expected to have appropriate ethical behavior. If unethical behavior is detected (copying, plagiarism, use of unauthorized electronic devices or others), the student will be penalized with the impossibility of passing the subject by the continuous assessment modality (in which he/she will obtain a grade of 0,0). If this type of behavior is detected in ordinary or extraordinary exams, the student will obtain in that call a grade of 0,0.

Sources of information

Basic Bibliography

Heizer, J., Render, B., **Dirección de la producción y de operaciones. Decisiones estratégicas**, 8ª ed., Pearson Educación S.A., 2007

Heizer, J., Render, B., **Dirección de la producción y de operaciones. Decisiones tácticas**, 8ª ed., Pearson Educación S.A., 2008

Chase, R.B., Jacobs, F.R., Aquilano, N.J., **Administración de operaciones. Producción y cadena de suministros**, 13ª ed., McGraw-Hill, 2014

Complementary Bibliography

Velasco, J., Campins, J.A., **Gestión de la producción en la empresa. Planificación, programación y control**, Ediciones Pirámide, 2013

Velasco, J., **Organización de la producción. Distribuciones en planta y mejora de los métodos y los tiempos**, Ediciones Pirámide, 2010

López Varela, P., Iglesias Baniela, S., **Planificación, programación y control de proyectos mediante técnicas de camino crítico**, Tórculo Edicions, 2007

Vallhonrat, J.M., Corominas, A., **Localización, distribución en planta y manutención**, Marcombo, 1991

Roux, M., **Manual de logística para la gestión de almacenes**, Ediciones Gestión 2000, 1997

Oficina Internacional del Trabajo (OIT) Ginebra, **Introducción al estudio del trabajo**, 1986

Hodson, W.K., **Manual del Ingeniero Industrial Maynard**, McGraw-Hill, 1996

Goldratt, E.M., Cox, J., **La Meta: un proceso de mejora continua**, Ediciones Díaz de Santos, 2005

American Production Inventory Control Society, **Información sobre producción y control de inventarios**,

Heizer, J., Render, B., **Blog del libro: Dirección de la producción y de operaciones**,

Toyota, **Toyota Production System**,

PennState University, **Supply Chain Professional Certificate - Military options**,

Asociación Española de Normalización y Certificación, **Normas de Calidad y Medioambiente**,

Ministerio de Defensa, **Normativa PECAL/AQAP**,

Instituto Nacional de Seguridad e Higiene en el Trabajo, **Normativa PRL**,

Recommendations

Other comments

The subject has no associated prerequisite. However, in order to successfully complete this course, the student must have:

- Sufficiently developed written and oral comprehension skills.
- Capacity of basic calculation and synthesis of information.
- Teamwork and communication skills.
- At least basic knowledge acquired in the subject Introduction to Business Management taught in first year.

The most frequent learning difficulties are related to the lack of such knowledge, but can be saved with a little effort and the means available in this center.

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
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