

<i>Course</i>	Mechanical and Industrial Informatics			<i>Academic year</i>	2021/2022		
<i>Subject</i>	Production and Quality Control			ECTS	5		
<i>Type of course</i>	Compulsory						
<i>Year</i>	3rd	<i>Semester</i>	2nd	<i>Student Workload:</i>			
<i>Professor(s)</i>	Amândio Pereira Baía			<i>Total</i>	135	<i>Contact</i>	60
<i>Area Coordinator</i>	José Reinas dos Santos André						

Planned SD

1. LEARNING OBJECTIVES

Students should:

- Gain a general and conceptual but accurate understanding and view of production system issues, in terms of strategy and operations, and understand how goods and services are produced.
- Understand how the indispensable tool for business survival that is quality, including its basic principles, concepts and criteria as well as for quality management systems and total/overall quality; Apply control chart creation techniques and concepts in a productive environment and identify continuous improvement processes and methodologies.
- Use real-world production and quality control techniques to increase business competitiveness.

2. PROGRAMME

Production

Developing a Production Strategy

Decision Making Techniques in Production

- Decision Making Tools;
- Forecasting;
- Waiting Line Models.

Strategic Decisions in Production

- Product Strategy;
- Process Strategy
- Location Strategy;
- Operations Layout Strategy;
- Human Resource Strategy;
- Procurement/Demand and Just in Time Strategies.

Tactical Decisions in Production

- Aggregate Planning Tactics;
- Inventory Management;
- Materials Requirement Planning (MRP);
- Maintenance and Reliability Tactics.

Quality Control

- Quality, Process and Quality Improvement Techniques;
- Control Charts for Variables;

- Control Charts for Attributes;
- Lot by Lot Acceptance Sampling by Attributes.

3. COHERENCE BETWEEN PROGRAMME AND OBJECTIVES

Through the syllabus topics, this course aims to provide the students with knowledge in the area of production and quality for their integration into the world of work. In particular, the syllabus aims to grow their awareness of the need to know how and what to do instrumentally and operationally.

The proposed syllabus will also allow increase student autonomy in participating productively in production and quality issues in their future companies and organizations.

4. MAIN BIBLIOGRAPHY

Baía, A. (2017). *Investigação Operacional*. Edições IPG.

Baía, A. (2018). *Gestão da Qualidade*. Edições IPG.

Besterfield, D. (2016). *Quality Control*. 8th Edition. Prentice Hall.

Chopra, S. (2015). *Supply Chain Management: Strategy, Planning, and Operation*, Global Edition: *Strategy, Planning, and Operation*. Pearson Education Limited. England.

Heizer, J., Render, B., & Munson C. (2016). *Operations Management: Sustainability and Supply Chain Management*. Pearson Education Limited. England.

Jacobs, R. J., & Chase, R. (2019). *Operations and Supply Chain Management: The Core*. McGraw-Hill. New York.

Schroeder, R., Rungtusanatham, J., & Goldstei, S. (2018). *Operations management in the supply chain: decisions & cases*.

Slack, N., & Brandon-Jones, A. (2019). *Operations Management*. Pearson Education Limited. England.

5. TEACHING METHODOLOGIES (INCLUDING EVALUATION)

Lectures, case studies, debates, audiovisuals, work sessions, research work. Availability of e-learning content.

The evaluation will include an individual test (60%) and four case study projects on the world of work (Group Work - 10% each).

Mean grade equal to or higher than 10 values to obtain approval, with 20 being the highest grade possible.

6. COHERENCE BETWEEN TEACHING METHODOLOGIES AND OBJECTIVES

We aim to expose the subject clearly and concisely through lectures and student participation. Theory is related to business reality, using case studies. Students are guided through reading and a project to apply the knowledge acquired in a real context.

Lecturing is a pedagogical method centered on content, via oral transmission of information and knowledge where the structure, sequence and type of contents are defined by the teacher. This method is considered the most appropriate and the most effective solution to achieve the training objectives.

Case studies propose problem solving that will oblige the students to discover the possible solutions as the primary motor in the search for information, knowledge and know-how so that students learn to learn. The teacher becomes a tutor/facilitator, supporting students in the process of solving cases. Students in their attempt to solve the cases learn the subject taught.

7. ATTENDANCE

N.A.

8. CONTACTS AND OFFICE HOURS

Professor: Amândio Pereira Baía (Ph.D); baia@ipg.pt; office n.º 41

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