Course guide
240624 - 240624 - The History of Applied Mathematics in Engineering

Unit in charge: Barcelona School of Industrial Engineering
Teaching unit: 749 - MAT - Department of Mathematics.
Degree: BACHELOR'S DEGREE IN INDUSTRIAL TECHNOLOGY ENGINEERING (Syllabus 2010). (Optional subject).
Academic year: 2022   ECTS Credits: 3.0   Languages: Catalan, Spanish

LECTURER
Coordinating lecturer: Mª Rosa Massa Esteve
Others: Mª Rosa Massa Esteve

PRIOR SKILLS
Students with the knowledge of mathematics of first course could follow easily the course.

DEGREE COMPETENCES TO WHICH THE SUBJECT CONTRIBUTES
Transversal:
1. SELF-DIRECTED LEARNING. Detecting gaps in one's knowledge and overcoming them through critical self-appraisal. Choosing the best path for broadening one's knowledge.
2. EFFICIENT ORAL AND WRITTEN COMMUNICATION. Communicating verbally and in writing about learning outcomes, thought-building and decision-making. Taking part in debates about issues related to the own field of specialization.
3. TEAMWORK. Being able to work as a team player, either as a member or as a leader. Contributing to projects pragmatically and responsibly, by reaching commitments in accordance to the resources that are available.
4. USE. EFFECTIVE USE OF INFORMATION RESOURCES. Managing the acquisition, structure, analysis and display of information from the own field of specialization. Taking a critical stance with regard to the results obtained.

TEACHING METHODOLOGY

LEARNING OBJECTIVES OF THE SUBJECT
The history of sciences gives a dynamic and humanist view that contribute to the integral formation of students and besides complement the thematic study of the textbooks. The course complements the scientific formation of students, analysing the treats more relevant in the history on the relationship between mathematics and engineering.

STUDY LOAD

<table>
<thead>
<tr>
<th>Type</th>
<th>Hours</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self study</td>
<td>45,0</td>
<td>60.00</td>
</tr>
<tr>
<td>Hours medium group</td>
<td>30,0</td>
<td>40.00</td>
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</tbody>
</table>

Total learning time: 75 h
## CONTENTS

**Tema 1. Mathematics and engineering in the Antiquity**

**Description:**

**Full-or-part-time:** 10h  
Theory classes: 4h  
Self study: 6h

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**Tema 2. Engineers-Artists in the Renaissance**

**Description:**

**Full-or-part-time:** 20h  
Theory classes: 8h  
Self study: 12h

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**Tema 3. The algebraization of mathematics. Scientific Revolution**

**Description:**

**Full-or-part-time:** 15h  
Theory classes: 6h 20m  
Self study: 8h 40m

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**Tema 4. Applied Mathematics and engineering in the Illustration**

**Description:**
The works of Leonhard Euler, mathematic and engineer of the eighteenth century: Mechanics of the science of motion 2 volumes (1736). The Encyclopedie and the Illustration. D’Alembert and the applied mathematics.

**Full-or-part-time:** 20h  
Theory classes: 10h  
Self study: 10h
Tema 5. Mathematical courses for engineers, mixed mathematics. The Royal Military Academy of Mathematics in Barcelona (1720)

Description:
The origin of the engineering in Catalonia. The relations and contents of the mathematical courses for engineers of eighteenth century in France, Spain and Portugal: Belidor, Lucuce and Pimentel.

Full-or-part-time: 10h
Theory classes: 4h
Self study: 6h

GRADING SYSTEM

BIBLIOGRAPHY

Basic: