

Materials and Civilisation

Code: 106233
ECTS Credits: 6

Degree	Type	Year	Semester
2504235 Science, Technology and Humanities	OB	3	2

Contact

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Teaching groups languages

You can check it through this [link](#). To consult the language you will need to enter the CODE of the subject. Please note that this information is provisional until 30 November 2023.

Prerequisites

NONE

Objectives and Contextualisation

- Understand the interrelationship between structure, processing and properties determines the applications of the different types of materials.
- Relate the development of materials and materials science to the construction of civilizations and societies up to the contemporary era, with special emphasis on economic, social, and environmental aspects.

Competences

- Describe the fundamental forces of nature in relation to the configuration of the universe and the structure of matter.
- Make critical use of digital tools and interpret specific documentary sources.
- Recognise the political, social and cultural dimension of science and technology development in the different historical periods.
- Work collaboratively in teams.

Learning Outcomes

1. Assess the reliability of sources, select important data and cross-check information.
2. Describe the concept of material culture and the relationship it has with technological development.

3. Describe the different types of materials and the interrelationship between structure, properties, processing and applications of materials.
4. Develop teamworking skills, blend in and actively collaborate in achieving common goals.
5. Relate the development of materials to the construction of the modern and contemporary societies.
6. Understand the technological basis for the great cultural periods with regard to the possibilities for controlling matter, energy and information.

Content

- Topic 1. Introduction
- Topic 2. Materials and materials science
- Topic 3. Materials, geopolitics, and power
- Topic 4. Materials for construction and transport
- Topic 5. Materials for information and communication
- Topic 6. Materials for energy
- Topic 7. Materials and sustainability
- Topic 8. Materials for health

Methodology

- Theoretical classes. Presentation of the topic (objectives, contents, relationship with the notes, complementary readings, or videos of the topic, available in the Moodle Classroom).
- Resolution of demonstrative exercises in the classroom
- Elaboration of individual and group work
- Cooperative learning through commenting on texts in the classroom
- Group activities in the classroom
- Group oral presentations
- Independent work by reading and analyzing proposed texts and carrying out assignments

Annotation: Within the schedule set by the centre or degree programme, 15 minutes of one class will be reserved for students to evaluate their lecturers and their courses or modules through questionnaires.

Activities

Title	Hours	ECTS	Learning Outcomes
Type: Directed			
Lecturing	32	1.28	3, 5

Practical Tutorial teaching	6	0.24	4, 1
Practical-theoretical lectures	14	0.56	3, 5, 1
Type: Autonomous			
Cooperative learning	40	1.6	3, 4, 5
Individual work	55	2.2	3, 5, 1

Assessment

The global assessment will be carried out continuously and consists of:

- 1 final knowledge exam with a weight of 25% of the final grade
- 1 oral group presentation, with individual assessment weighing 15% of the final mark
- Several knowledge tests in the classroom or the moodle classroom that will have a weight of 20% of the final grade
- 1 group written assignment with a weight of 20% of the final grade
- 1 individual assignment on a reading with a weight of 10% of the final mark
- A minimum of 2 contributions to the moodle classroom forum, answering questions or doubts on each subject with a weight of 10% of the final mark.

In the moodle classroom of the subject, the deadlines for each piece of evidence and each activity or work group will be described.

Students who have accepted the single assessment modality must complete within the agreed deadlines:

- 1 final knowledge exam with a weight of 25% of the final grade.
- 1 individual presentation (in video format) with a weight of 15% of the final mark
- Several knowledge tests in the moodle classroom with a weight of 20% of the final grade
- 2 individual written work with a weight of 15% , each one, of the final mark
- A minimum of 2 contributions to the moodle classroom forum, answering questions or doubts about the various topics analyzed with a weight of 10% of the final grade.

IMPORTANT: In order to pass the subject, you must have an overall grade equal to or higher than 5.0. When the assessment is not passed, but a minimum of 3.5 is obtained in the subject overall, you will have the right to a written recovery test on the entire syllabus that will allow you to pass the subject with a grade of 5 out of 10 .

Assessment Activities

Title	Weighting	Hours	ECTS	Learning Outcomes
Continuous tests in classroom and virtual classroom	20	0	0	3, 6, 5
Delivery of group written work	20	0	0	2, 3, 4, 6, 5, 1
Final Exam	25	3	0.12	3, 5
Individual and written submission of the summary of a reading	10	0	0	3, 5
Individual contribution to the discussion forum	10	0	0	4, 1
Oral presentation	15	0	0	4, 5, 1

Bibliography

Available online (ebook) through the UAB Library Service

- Making the Modern World - Materials and Dematerialization. by Vaclav Smil. Wiley.
- Materials and the Environment, by Ashby, Michael.F, 2020.

Available for free at <https://ufl.pb.unizin.org/imos/> (creative commons attribution noncommercial)

- Impact of Materials on Society by Sophia Krzys Agreement; Kevin S. Jones; Marsha Bryant; Debra Dauphin-Jones; Pamela S. Hupp; Susan D. Gillespie; Kenneth E. Sassaman; Mary Ann Eaverly; Florin Curta; Sean Adams; and Bonnie Effros

Others:

The Substance of Civilization, by Stephen L. Sass, Arcade Publishing. New York ISBN-10: 1-61145-401-8.

Software

NONE