Summary
The latest developments in processing and the novel generations of organic composites are discussed. Nanocomposites, adaptive composites and biocomposites are presented. Product development, cost analysis and study of new markets are practiced in team work.

Content

Basics of composite materials
- Constituents
- Processing of composites
- Design of composite structures

Current development
- Nanocomposites
- Textile composites
- Biocomposites
- Adaptive composites

Applications
- Driving forces and markets
- Cost analysis
- Aerospace
- Automotive
- Sport

Keywords
Composites - Applications - Nanocomposites - Biocomposites - Adaptive composites - Design - Cost

Learning Prerequisites
Required courses
Notion of polymers

Recommended courses
Polymer Composites

Learning Outcomes
By the end of the course, the student must be able to:
• Propose suitable design, production and performance criteria for the production of a composite part
• Apply the basic equations for process and mechanical properties modelling for composite materials
• Discuss the main types of composite applications

Transversal skills
• Use a work methodology appropriate to the task.
• Use both general and domain specific IT resources and tools
• Communicate effectively with professionals from other disciplines.
• Evaluate one’s own performance in the team, receive and respond appropriately to feedback.

Teaching methods
Ex cathedra and invited speakers
Group sessions with exercises or work on the project

Expected student activities
Attendance at lectures
Design of a composite part, bibliography search

Assessment methods
Written exam + report and oral presentation in class

Supervision
Office hours Yes