Summary
The objective of the course is to: 1. Introduce topics in properties, processing, mechanical behavior, characterization, analysis and structural design of Fiber Reinforced Composites 2. Help students develop their research skills through independent investigations on research topics.

Content
1. Introduction-Basic ideas about the use of composite materials, fibers, resins, applications.
5. Classical lamination theory.
6. Introduction to structural design.
7. Laboratory experience: Fabrication and testing of laminates.
8. Failure of FRP laminates.
10. Joints and joining techniques.

Keywords
Composites, engineering structures, mechanics of composites, laminates analysis.

Learning Prerequisites
Required courses
No obligation.

Recommended courses
Basic knowledge of physics, mechanics of materials, mathematics.

Learning Outcomes
By the end of the course, the student must be able to:
• Analyze the behavior of composite structures.
• Design composite structures.
• Assess / Evaluate the strength of composite structures.
• Manage design projects.
• Express their opinion on design projects.
• Define needs and set priorities.
• Organize their work (especially when working in a team).
• Create complete technical reports.

Transversal skills
• Take feedback (critique) and respond in an appropriate manner.
• Plan and carry out activities in a way which makes optimal use of available time and other resources.
• Give feedback (critique) in an appropriate fashion.
• Continue to work through difficulties or initial failure to find optimal solutions.
• Use both general and domain specific IT resources and tools
• Evaluate one’s own performance in the team, receive and respond appropriately to feedback.
• Keep appropriate documentation for group meetings.
• Negotiate effectively within the group.

Teaching methods
Lectures will be given in the class assisted by powerpoint presentations.
Lecture notes will be distributed before each class.

Expected student activities
Class participation.
Homework (not obligatory).

Assessment methods
Project report and oral exam (based on project presentation).

Supervision
Office hours No
Assistants Yes
Forum Yes

Resources
Bibliography
No textbook required

Notes/Handbook
Lecture notes are distributed.

Moodle Link
• https://go.epfl.ch/CIVIL-443