

mainly focuses on the mostly used fibre reinforced plastics.

Contents

- Technology of fibre reinforced materials: fibre reinforced composites, review of reinforcing fibres and matrices, properties and applications, fabrication processes, sandwich constructions
- Stiffness and strength: micromechanics of a layer, macromechanics of a layer, classical laminate theory, interlaminar stresses
- Mechanical behaviour and testing: fracture and damage mechanics, static testing, fatigue, impact, non-destructive testing and characterisation
- Design aspects

Initial competences

Mechanics of materials, basic material science

Final competences

- 1 To understand and to know basic terminology of the technology and the manufacturing of composite materials
- 2 To be able to deal with the mechanics and the design of layered, orthotropic materials
- 3 To be able to handle in a judicious way orders of magnitude and estimations of material properties
- 4 To be able to make a founded choice of a candidate material (class) for a specific application
- 5 To be able to calculate the stiffness and strength of laminates under simple load situations

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Seminar, Lecture, Practical, Independent work

Extra information on the teaching methods

Classroom lectures; Lab sessions; Computer-assisted problem solving

Study material

Type: Handouts

Name: Composites

Indicative price: € 20

Optional: no

Language : English

Number of Pages : 300

Oldest Usable Edition : Version 2023

Available on Ufora : Yes

Online Available : Yes

Available in the Library : Yes

Available through Student Association : Yes

Usability and Lifetime within the Course Unit : intensive

Usability and Lifetime within the Study Programme : regularly

Usability and Lifetime after the Study Programme : occasionally

References

- An introduction to composite materials, Derek Hull, Cambridge Solid State Science Series, ISBN 0 521 28392
- Materials Science and Engineering an introduction, W.D. Callister Jr.

Course content-related study coaching

Assessment moments

end-of-term assessment

Examination methods in case of periodic assessment during the first examination period

Written assessment

Examination methods in case of periodic assessment during the second examination period

Written assessment

Examination methods in case of permanent assessment

Possibilities of retake in case of permanent assessment

not applicable

Extra information on the examination methods

During examination period: written examination with closed books

Calculation of the examination mark