SYLLABUS

Composite Materials 7.5 credits T7012T

Kompositmaterial

Course syllabus admitted: Autumn 2023 Sp 1 - Present

DECISION DATE
2022-06-17

Luleå University of Technology 971 87 Luleå, Sweden
Phone: +46 (0)920 49 10 00 • Corporate Identity: 202100-2841

LULEÅ TEKNISKA UNIVERSITET

Composite Materials 7.5 credits T7012T

Kompositmaterial

Second cycle, T7012T

Education level	Grade scale	Subject	Subject group (SCB)
Second cycle	G U 3 4 5	Polymerteknik	Materials Technology

Main field of study

Materials Science and Engineering

Entry requirements

Basic knowledge in elasticity and matris algebra.

Selection

The selection is based on 30-285 credits

Course Aim

After the end of this course the student is supposed to - have achieved knowledge about relationships between structure and constituents of composites and their macroscopic properties - understand the significant mechanisms steering the behaviour of composites and how they are affecting elastic properties and strength - be able to estimate properties of composites with different micro- and meso structure and to perform optimal material selection - be able to apply methods for calculation of composite structures and to analyse their mechanical performance - be able to do mechanical properties measurements and to analyse test results - be able to use simulation tools/software to design material with desired properties - be able to write research reports on the subject

Contents

The course considers the methods of analysis and properties of fiber and particle reinforced composites with polymeric, ceramic or metal matrices. Properties of constituents and manufacturing methods are analyzed. The significance of geometrical aspects, interfaces and statistical effects is considered. Mechanism based models are presented with the aim to determine thermo-mechanical properties, analyze load-transfer and failure mechanisms in composites. Methods to analyze laminated structures are developed and used in simulation exercises.

Realization

Each course occasion´s language and form is stated and appear on the course page on Luleå University of Technology's website.
Lectures combined with seminars Mandatory home works and laboratory work with reports

Examination

If there is a decision on special educational support, in accordance with the Guideline Student's rights and obligations at Luleå University of Technology, an adapted or alternative form of examination can be provided.
To pass the Course both home works and lab reports must be approved and graded. A written exam has to be passed and will be graded.

Unauthorized aids during exams and assessments

If a student, by using unauthorized aids, tries to mislead during an exam or when a study performance is to be assessed, disciplinary measures may be taken. The term “unauthorized aids” refers to aids that the teacher has not previously specified as permissible aids and that may assist in solving the examination task. This means that all aids not specified as permissible are prohibited. The Swedish version has interpretative precedence in the event of a conflict.

Overlap

The course T7012T is equal to MPP035

Course offered by

Department of Engineering Sciences and Mathematics

Modules

Code	Description	Grade scale	Cr	Status	From period	Title
0004	Written exam	G U 3 4 5	3.7	Mandatory	A21	
0005	Home work assignment	G U 3 4 5	1.3	Mandatory	S23	
0006	Laboratory work	U G#	2.5	Mandatory	S23	

Study guidance

Study guidance for the course is to be found in our learning platform Canvas before the course starts. Students applying for single subject courses get more information in the Welcome letter. You will find the learning platform via My LTU.

Last revised

by Niklas Lehto, huvudansvarig utbildningsledare 2022-06-17

Syllabus established

The syllabus was established by the Department of Applied Physics and Mechanical Engineering 2007-02-28, and remains valid from autumn 2007.