



SD2417 Applied Composites Design in Sports Application 6.0 credits

Tillämpad kompositkonstruktion för sporttillämpningar

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for SD2417 valid from Autumn 2008

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Specific prerequisites

Recommended prerequisites are:

Base program B, M, T, or equivalent.

SD2413 Fibre Composites - Analysis and Design ORSD

2414 Fibre Composites - Materials and Manufacturing OR Equivalent

SE1025 FEM for engineering applications OR Equivalent

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

To provide knowledge of design of a component with multiple constraints on stiffness, strength and mechanical damping and to provide insight into how the component interacts with the human body.

After the course the student should be able to:

- Recognize the complexities of the human-equipment interface and its influence on the design process with respect to static and dynamic properties
- Design and execute a test program for benchmarking a given piece of sporting equipment as well as analyze the results and draw relevant conclusions
- Carry out both dynamic and static finite element analysis using commercially available FE code
- Understand the basic concepts of optimization
- Develop an engineering specification for a new design based on testing and simulation results
- Realize a prototype of the chosen design using available manufacturing processes
- Evaluate the strengths and weaknesses of different manufacturing processes
- Validate the final design in the laboratory and compare with aforementioned design specifications

Course contents

Benchmarking, static and dynamic testing, design specification, finite element modelling, optimization, prototype construction, design validation.

Course literature

Compendium

Examination

- LAB1 - Laboration, 2.0 credits, grading scale: P, F
- PRO1 - Project, 4.0 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Other requirements for final grade

Laborations (P/F)

Project reports (A-F)

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.