

COURSE DETAIL

THEORY AND COMPUTATION OF COMPOSITE MATERIALS

Country

Germany

Host Institution

Technical University Berlin

Program(s)

Technical University Summer

UCEAP Course Level

Upper Division

UCEAP Subject Area(s)

Mechanical Engineering Materials Science

UCEAP Course Number

114

UCEAP Course Suffix**UCEAP Official Title**

THEORY AND COMPUTATION OF COMPOSITE MATERIALS

UCEAP Transcript Title

COMPOSITE MATERIALS

UCEAP Quarter Units

6.00

UCEAP Semester Units

4.00

Course Description

In this course students learn the theory of elasticity for composite materials used in lightweight structures such as airplanes, race cars, and laptop covers. Students write their own code and simulate deformation in composite materials and work on solving engineering problems in elasticity in a small team. The emphasis of this course is on a theoretical understanding of problems in continuum mechanics, especially elasticity of composite materials. Participants understand elasticity theory, laminate theory, and apply it by solving various engineering examples with open-source codes in Python. Lecture topics include: composite materials, manufacturing of composites, tensor algebra, theory of elasticity, laminate theory, anisotropy, analytical solution of simple structures, continuum mechanics, finite element method, Python. As a prerequisite students should have completed one of the following courses: Introduction to Solid Mechanics, Mechanics of Materials, Differential Equations, Linear Algebra, Programming Methodology (or worked with any programming language).

Language(s) of Instruction

English

Host Institution Course Number

Host Institution Course Title

THEORY & COMPUTATION OF COMPOSITE MATERIALS

Host Institution Course Details

Host Institution Campus

TUBS

Host Institution Faculty

Host Institution Degree

Host Institution Department

Course Last Reviewed

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