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

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Host Institution Course Details

Host Institution Campus
TUBS

Host Institution Faculty

Host Institution Degree

Host Institution Department

Course Last Reviewed

Print