COURSE DETAIL

MECHANICS OF MATERIALS

Country
Japan

Host Institution
Tohoku University

Program(s)
Engineering and Science

UCEAP Course Level
Upper Division

UCEAP Subject Area(s)
Engineering Civil Engineering

UCEAP Course Number
100

UCEAP Course Suffix
BW

UCEAP Official Title
MECHANICS OF MATERIALS

UCEAP Transcript Title
MECHNCS OF MATERIAL

UCEAP Quarter Units
3.00

UCEAP Semester Units

2.00

Course Description

Mechanics of Materials utilizes models that drastically simplify the geometry of structures/components to be designed and the loading modes acting on them, while retaining their essential feature. Based on the simplified models the fundamental and necessary knowledge of their mechanical responses is derived and therefore provides the design of the structures/components. This course is intended as an introduction to mechanics of solids to engineering students. It presents the underlying theories and formulations for the description of stress/strain and deformations under various types of loading.

Mechanics of Materials II discusses the loading mode of bending in addition to tension/compression and torsion treated in Mechanics of Materials I. Beams subjected to bending moments are extensively analyzed. This course covers topics such as (1) Theory of beams, which allows us to calculate bending/shear stresses in beams and their deflections; (2) Energy methods such as Castigliano’s theorem, and (3) Compression-induced failure such as buckling.

By the end of the course, students should be able to calculate the stresses and deformation and determine the condition of buckling in simple structures/components such as beams and frames.

Language(s) of Instruction
English

Host Institution Course Number
N/A

Host Institution Course Title
MECHANICS OF MATERIALS II

Host Institution Course Details

https://gkms3.bureau.tohoku.ac.jp/sa_qj/slbssbdr.do?value(risyunen)=2023&value(...

Host Institution Campus
Tohoku University

Host Institution Faculty

Host Institution Degree

Host Institution Department
JYPE

Course Last Reviewed
2023-2024

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