

Introduction to CAE

Syllabus Number

1G304

Special Subjects

Elective 2 credit

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1. Course Description

This course explains the basic principle of the finite element method for CAE, which currently plays a very demanding role in the field of manufacturing. The students use software to create and calculate models for static analysis, vibration analysis, and structural optimization calculation.

In this class, it acquires knowledge and technology and ability about diploma policy 2 and 3 and 4. and 5.

2. Course Objectives

This course aims to master the basic principles of the finite element method, use software to create models, calculate, view calculation results, compare with experiments, and understand the differences between real and computational models, static analysis, vibration analysis.

3. Grading Policy

- Test and questions from lecturing classes : 75%

- Final test : 25%

It isn't dealt with for the grade when not attending a lecture more than 2/3.

4. Textbook and Reference

Textbook

The materials for each lesson will be uploaded on the LMS in advance.

5. Requirements(Assignments)

The materials for each lesson will be uploaded on the LMS in advance. Please prepare and review the lecture for about 3 hours each time.

6. Note

Please bring a USB memory every lecture.

If you are absent from lecture, be sure to check the progress and advance the rest before the next class.

7. Schedule

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|------|---|
| [1] | Introduction to finite element method, introduction of various CAE analysis |
| [2] | How to use software for creating finite element models |
| [3] | 2D meshing |
| [4] | 3D meshing |
| [5] | Linear structural analysis |
| [6] | Linear static analysis using shell elements |
| [7] | Linear static analysis using solid elements |
| [8] | Vibration analysis |
| [9] | Eigenvalue analysis |
| [10] | Frequency response analysis |
| [11] | Vibration experiments |
| [12] | Structural optimization |
| [13] | Topology optimization |
| [14] | Topology optimization |
| [15] | Vibration of the rotor system |