

Fluid Mechanics 3

Syllabus Number

1B301

Special Subjects

Elective 2 credit

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1. Course Description

The study of compressible fluid flow. Group discussion is allowed when report is prepared at every exercise. In this lesson, we mainly acquire knowledge about DP1.

2. Course Objectives

The study of phenomena of fluid flow as a basis for mechanical engineer.

3. Grading Policy

A total of 60% or more from the result of the exercise in every lecture and the total exercise is regarded as passing.

Reports on exercises from every lecture (80%), general exercises (20%)

4. Textbook and Reference

Textbook

nothing special.

5. Requirements (Assignments)

We will apply the contents of previous lectures often, please read and review essential points in the notes (30 minutes). Preparation for each lesson : Contents and amount of preparation will be advised in writing, etc. at the end of the last lesson.

6. Note

nothing special.

7. Schedule

- [1] Outline of Fluid Dynamics 3
- [2] Basics of compressible fluid (isothermal change)
- [3] Basics of compressible fluid (adiabatic change)
- [4] Ideal gas
- [5] First law of thermodynamics
- [6] Basics of sound and shock waves
- [7] Sonic and sound speed
- [8] Mach number
- [9] Bernoulli's equation for compressed flow
- [10] Application of Bernoulli's equation for compressed flow (Pitot tube and expanding tube)
- [11] Isentropic flow (outflow from nozzle)
- [12] Subsonic flow
- [13] Supersonic flow
- [14] Shock wave
- [15] Total exercises and summary