Theory of Aerospace Propulsion2

Syllabus Number 2B302
Basic Major Subjects
Elective Requisites 2 credit

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1. Course Description

The aero-turbo engine, which in these days are applied to many aeroplanes, are studied as follows;
・Requests for aeroplanes and engines
・Classification of engines
・The configuration, function and performance of especially the trubofan engine,
which supplies propulsion to aeroplanes by fan and jet and is applied to almost
large airliners
Students will have the knowledge and techniques for the calculation related to DP1 and DP2.
This lecture is taught by teachers with practical experience. The teacher has been involved in the rocket engine development work at a company. In class, explanation and discussion etc. will be held based on actual example and actual experiences at the company and topics at the site.

2. Course Objectives

In this course students will master general knowledge about aero-turbo engines and understand the characteristics and roles of each.
This course aims to understand the actual products by figures, pictures, and movies.

3. Grading Policy

Evaluation will be done referring regular test. Answer of the test will be explained individually.

4. Textbook and Reference

Textbook
No text is used.
Reference
Materials including figures, pictures and movies are indicated on slide.
These will be presented by LMS.

5. Requirements(Assignments)

Preparation (about 1.5 hour);The materials used in the lesson will be presented beforehand through LMS, so please read them and do research by yourself which you do not understand and deepen your knowledge about gas turbine. Please also summarize what you do not understand in a notebook and ask questions by writing on a paper distributed every lesson.
Review (about 1.5 hour); The materials used in the lesson are presented by LMS, so please use them for review about function, performance, and formulas equation of gas turbine. And also answer of exercises will be presented by LMS, so please become able to calculate engine performance.

6. Note

The contents of the lesson may be changed according to the progress.

7. Schedule

[1] Requests for aircrafts and aircraft engines
[2] Types of aircraft engines (piston engine and turbojet engine)
[3] Types of aircraft engines (turbofan engine, turboshaft engine and ramjet engine et. al.
[4] Outline of gas turbine engine
[5] Basic performance of gas turbine (thrust et. al.)
[6] Basic performance of gas turbine (efficiency et. al.)
[7] Basic performance of gas turbine (specific fuel consumption et. al.)
[8] Basic performance of gas turbine (exercises)
[9] Turbofan engine (outline, intake and fan)
[10] Turbofan engine (outline of compressor)
[11] Turbofan engine (performance of compressor)
[12] Turbofan engine (outline of combustor)
[13] Turbofan engine (performance of combustor)
[14] Turbofan engine (outline of turbine)
[15] Turbofan engine (performance of turbine, bearing and seal)