

Advanced Precision Engineering

General Engineer
Subjects Elective
2 credit

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1. Course Description

We will discuss about the cases which are regarded as problems in engineering. And we consider the results of computer science and semiconductor industry. We will also discuss about the infrastructure technology. Furthermore, we will discuss about the technology of manufacturing arms and ammunition and the protection of the environment.

2. Course Objectives

Precision engineering has dealt with a wide range of issues such as design, production, processing, mechatronics and measurement. The purpose of this course is summarizing the facts learned in the undergraduate school and developing discernment in engineering. After summarizing technology spanning the millennia, we shall discuss up-to-date manufactured products and consider the future engineering methods.

3. Grading Policy

I ask for two or more theme discussion or the report presentation summarized the view during a term. A view is shown also from the teacher in charge of the contents, and I will evaluate. Even if it is a different opinion, I am rational, respect and evaluate the opinion with backing. Thus, the contents of the discussion under lecture and the contents of the submitted subject estimate results.

4. Textbook and Reference

Textbook
No textbook specified.

5. Requirements(Assignments)

In the societies, your own graduation research dissertation some way please think whether position it can attach. Think whether and how the result of your graduation research contributes to society.

6. Note

There will be times when video and animation will be used as teaching aids.

7. Schedule

- [1] Introduction: Position of engineering in society, Differentiation of study area
- [2] Development process of engineering: Ancient Greece and Rome, Industrial revolution
- [3] Case of engineering: Aircraft industry
- [4] Case of engineering: Nuclear power generation
- [5] Precision engineering and power:
External combustion engine, Internal combustion engine, Nuclear power generation, Fuel cell
- [6] Energy: Future of energy industry
- [7] Ecology: Industrial society and protection of the environment
- [8] Development of information industry:
The beginning and advancement of computers, Semiconductor production process
- [9] The infrastructure technology which supports information industry:
CPU, DRAM, Component separated technology, Photolithography, ion implantation, Stepper
- [10] Information industry 1: Mobile computing
- [11] Information industry 2: Computer Graphics
- [12] Technology of manufacturing arms and ammunition :
Steel iron, the Japanese sword, how weapons affect society
- [13] Technology of manufacturing arms and ammunition: Mechanism of firearms
- [14] Trends of engineering:
Fuel cell, nucleus fusion, Clean energy, Nano technology, Biotechnology
- [15] Summary lecture