

Engineering Materials 2

Syllabus Number

1F202

Special Subjects

Elective 2 credit

HINO, Hiroshi

1. Course Description

You learn about various metal materials and a nonmetallic substance, and learn the feeling to the basic knowledge of structure material, and machine material. You acquire the basic knowledge of the process of the metal material which constitutes the material and the machine for processing metal, mechanical properties, and the structure material that serves as the foundation of a machine design by learning about using and supporting the feeling to machine material.

Specifically, I also treat nonmetallic substances, such as cement, wood, plastic, etc. Besides nonferrous-metal materials, such as stainless steel, nickel and copper, aluminum alloy, magnesium alloy, special alloy, honeycomb structural body, shape memory alloy, and alloy for living bodies.

Based on a textbook, I perform a lecture and an exercise.

I ask for presentation by considering an exercise problem as a report at any time.

You learn the knowledge and skill about DP3, DP4, DP5, and DP6 in this lesson.

2. Course Objectives

We mainly acquire the basic knowledge of the process of the charge of non-iron material, mechanical properties, and the structure material that serves as the foundation of a machine design by learning about using and supporting the feeling to machine material.

3. Grading Policy

Perform a lecture and an exercise based on a textbook and ask for presentation by considering an exercise problem as a report at any time. About the subject which asked for presentation during session, I certainly answer, and include the answers in the results.

The results of a term-end examination are mainly estimate.

They are 90% of a periodic exam, and 10% of a subject in a lesson.

I do re-examination on the unsuccessful applicant(s) of a periodic exam in principle.

In addition, I am premised on or more 2/3 attendance of a course load.

4. Textbook and Reference

Textbook

Kaizo Momma University basic machine material SI unit version

Jikkyo Shuppan

5. Requirements(Assignments)

I am premised on studying the machine material science 1 in the second half of 1.

The student who did not study needs to look through a textbook with reference to the syllabus of the machine material science 1, and needs to create the note of an outline according to a table of contents. Before a lesson, please read and understand the next lecture range of the specified textbook, and summarize the main point. (About 1 hour)

After a lesson should carry out the review, when the subject in a lesson occurs, and please create the note of an important point. Moreover, the first technical term to get to know should understand the meaning, and should summarize it in a note. (About 2 hours)

6. Note

You may use a mathematical calculator by lesson.

In a periodic exam, the problem on condition of possession of a mathematical calculator is set.

7. Schedule

- [1] Ceramic stainless steel for tool steel tools
Tool steel
- [2] Ceramics for tools
- [3] Stainless steel Corrosion and corrosive protection of steel
- [4] Chromium system stainless steel, chromium nickel series stainless steel
- [5] Case hardening
- [6] Machine structural ceramics
- [7] Nickel and copper
- [8] A process, copper character and use
- [9] Brass and bronze
- [10] The aluminium alloy for casting
An aluminum introduction, the process of aluminum, character and a use
- [11] Heat treatment of an aluminium alloy
- [12] The aluminium alloy for casting
- [13] The process of a Magnesium alloy, character and a use
- [14] A special alloy, titanium, a shape memory alloy, the alloy for living bodies, a honeycomb structural body

[15] Nonmetallic substance Cement, wood, a plastic, adhesives,