

Design and Drawing 2

Syllabus Number

1G303

Basic Major Subjects

Elective Requisites 2
credit

ONO, Takenori

1. Course Description

Main topics are as followings:

- Understanding the structure and functions of the hand winch
- Design planning (include the development of specifications)
- Design of the wire rope
- Design of the winch drum
- Design of the geared-transmission
- Design of the ratchet and wheel
- Design of the band brake
- Design of various shafts and winch handle

It is desirable that the student has an experience of designing the typical machine elements such as a flange, screw, shaft, coupling and geared-transmission before attendance.

2. Course Objectives

A practice of the mechanical designing with a simple hand winch. The practice includes the design planning, analysis and drawing using CAD systems.

3. Grading Policy

Final grade will be calculated according to following, design reports (50%), drawing assignments (50%). To pass, students must earn at least 60 points out of 100.

4. Textbook and Reference

Textbook

手巻きウインチの設計 (Design of hand winch, in Japanese), Third edition
by 機械設計研究会 (kikai sekkei kyokai)
OHM sha

And other references will be introduced in the class.

5. Requirements(Assignments)

This course will be taught in Japanese.

6. Note

7. Schedule

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|------|---|
| [1] | Guidance, Structure and features of the hand winch, Design process, Part design #1: Wire and Drum |
| [2] | Part design #2: Gear |
| [3] | Part design #3: Ratchet |
| [4] | Part design #4: Brake 1 |
| [5] | Part design #5: Brake 2 |
| [6] | Part design #6: Shaft 1 |
| [7] | Part design #7: Shaft 2 |
| [8] | Part design #8: Bearing |
| [9] | Part design #9: Flame, Check the report |
| [10] | Drawing #1: Drum, Gear, Ratchet |
| [11] | Drawing #2: Break |
| [12] | Drawing #3: Shaft, Bearing |
| [13] | Drawing #4: Flame, Assembly, Check drawings (#1-#4) |
| [14] | Design project #1: group discussion and designing |
| [15] | Design project #2: modeling and check, presentation |