Aerospace Navigation

Syllabus Number 2B214
Special Subjects
Elective 2 credit

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1. Course Description

We will first take a look at the overview of the significance of navigation, earth and coordinates, and navigation elements. Then, we will engage in an in-depth study of aeronautical charts, magnetic compasses, the effect of wind on aircrafts, and supplemental navigation. Lastly, we will examine an actual aircraft navigation from origin to destination, including the pilotage navigation, and celestial navigation, as well as the latest GPS systems. We will also study the guidance and navigation technology, and navigation instruments of spacecrafts, and remote sensing from the space.

2. Course Objectives

In order for aircrafts and ships to travel from their origins to their destinations according to planned routes, their positions, directions, and speeds must be monitored constantly and calculated as the course paths are constantly adjusted. Navigation is the basis of such the travel operation. The goal of this course is to learn its history of development, the fundamentals of navigation, as well as the latest navigation technology. The guidance and navigation technology, navigation instruments of spacecrafts, and remote sensing from the space are also included.

3. Grading Policy

Based on the final exam (100%).
In addition to the attendance rate there is a requirement to take the final exams. Read "Note" below.
For LMS exercises, I will give feedback on LMS or lecture.

4. Textbook and Reference

Textbook
Distribute the lecture print.

Reference
紺谷均 『空中航法入門』ISBN-13: 978-4892792809 著鳳文書林出版

5. Requirements(Assignments)

Next time lecture materials will be posted on LMS so prepare well (1.5 hours). Also, do a solid review of the lecture print.
As an independent learning support, have LMS exercises submitted within one week after the lecture is done. I will set it so that you can try it several times, so I think you can review it while checking your understanding situation (1.5 hours). Do go through your work before you submit them in order to sit for the final exams. Please read "Note" below.

6. Note

For the LMS exercises after the lecture, if you are making efforts to respond properly and the number submitted is not more than 2/3 of the total number of LMS exercises, you can not basically take the final exam.

7. Schedule

[1] The significance of navigation and the history of navigation technique development.
[2] Earth and coordinates, atmosphere, radio waves, wind.
[3] Aeronautical Chart.
[4] Magnetic compass.
[5] Other instruments.
[6] Influence of wind on aircraft navigation, Dead reckoning.
[7] Auxiliary navigation, Radio air navigation systems.
[8] Navigation systems.
[9] Actual navigation scene (watching video).
[10] Navigation from departure to arrival and Terrestrial navigation.
[11] Use of celestial bodies (Celestial navigation).
[12] Navigation guidance method and measuring instrument of spacecraft (rocket).
[13] Navigation guidance method and measuring instrument of spacecraft (artificial satellite).
[14] Remote Sensing from Space.
[15] Summary, Examination