

航空宇宙の誘導制御学特論

Advanced Course of Aerospace Guidance and Control

1 担当教員名・単位数 米本 浩一 2単位

2 目的: Objective

The objective of this lecture is to gain the knowledge of the basic theory of flight dynamics, guidance and control, and their application to spacecraft and aircraft.

3 授業計画: Course Overview

You will learn the basic theory of flight dynamics, guidance and control of spacecraft in the first half of lecture, and those of aircraft in the latter half.

I. Spacecraft

- (1) Natural Motions of Rigid Spacecraft
- (2) Spacecraft Sensors and Attitude Determination
- (3) Attitude Control with Thrusters
- (4) Attitude Control with Reaction Wheels
- (5) Attitude Stabilization with Spin
- (6) Attitude Control with a Gimbale Momentum Wheel
- (7) Attitude Control during Thrust Maneuvers
- (8) Control of Translational Motions
- (9) Flexibility and Fuel Slosh

II. Aircraft

- (1) Natural Motions of Rigid Aircraft
- (2) Aircraft Sensors
- (3) Control of Longitudinal Motions of Aircraft
- (4) Control of Lateral Motions of Aircraft
- (5) Aeroelastic Systems

4 評価方法: Grade Evaluation

Grade is evaluated by taking the score of final exam or submission of reports into account.

5 履修上の注意事項: Guidline for Students

It is desirable or recommended for the students to take courses related to "Fluid Dynamics (Aerodynamics)", "Dynamics of Machinery" and "Control Engineering" in the undergraduate course.

6 教科書・参考書: Textbook and References

- [1] Arthur E. Bryson, Jr., "Control of Spacecraft and Aircraft," Princeton University Press