

AE401 – Aerospace System Design II (Fall 2020)

Course Introduction

AE401 is the course in the curriculum of the Department of Aerospace Engineering that allows students opportunities to learn and apply the knowledge to outline, design, and analyze aerospace systems. The course is composed of *in-class lectures* and a *team project*. Lectures will cover topics such as design procedure, the conceptual design procedure for spacecraft, and discussion on the disciplines that should be considered for design. The team project will be assigned to apply the knowledge learned to design practice as a team effort.

Instructors

Prof. Hyosang Yoon (Aerospace Engineering, hyosang.yoon@kaist.ac.kr)

Dr. Junga Hwang (Korea Astronomy and Space Science Institute, jahwang@kasi.re.kr)

Teaching Assistant

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Meeting Times and Location:

Lecture: Friday 10 am – 12 noon, @ N7-2 Rm. 2320

Lab.: Friday 1 – 4 pm, @ N7-2 Rm. 2320 (arranged when necessary)

Textbook

- Course Materials (will be uploaded to the course website before the lecture)
- P. Fortescue, *Spacecraft Systems Engineering*, 4th Ed., Wiley. (Available online at KAIST: <https://onlinelibrary.wiley.com/doi/book/10.1002/9781119971009>)

References

- W.J. Larson and J. R. Wertz, *Space Mission Analysis and Design*, 3rd Ed., Microcosm Press
- J. R. Wertz, D. F. Everett, and J. J. Puschell, *Space Mission Engineering: the new SMAD*, Microcosm Press

Grading: The grading will occur on the letter scale A-F based on the following composition.

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| • Attendance | 10% |
| • Assignments | 20% |
| • Midterm Exam | 30% |
| • Project (Review Presentations, Final Report) | 40% |

Course Schedule (as of AUG. 8, subject to change)

[L]: Lecture, [P]: Presentation, [T]: Team discussion

Wk	Date	Friday Morning (10 am – 12 noon)	Friday Afternoon (1– 4 pm)
1	9/2	[L00] Course introduction	[L01] Systems Engineering Process (HY)
2	9/9	No Class (Korean Thanksgiving)	
3	9/16	[L02] Orbital Mechanics (HY)	[L03] Mission Analysis (HY)
4	9/23	[L04] Space Environments (JH)	[L05] Payload – Space Science (JH)
5	9/30	[L06] Power Subsystem (HY)	[L07] Attitude Sensors and Actuators (HY)
6	10/7	[L08] Communications (JH)	[T] Team Discussion with JH
7	10/14	[L09] Structures and Thermal (Guest)	[L09-1] Structure Software Recitation (T/A)
8	10/21	Midterms	
9	10/28	[T] Team Discussion – Team-Base Meeting with T/A	[P01] Kick-Off Presentation
10	11/4	[T] Team Discussion – Team-Base Meeting with T/A	[T] Team Discussion – Team-Base Meeting with T/A
11	11/11	[T] Team Discussion – Team-Base Meeting with T/A	[P02] System Requirements Review (SRR)
12	11/18	[T] Team Discussion – Team-Base Meeting with T/A	[T] Team Discussion – Team-Base Meeting with T/A
13	11/25	[T] Team Discussion – Team-Base Meeting with T/A	[T] Team Discussion – Team-Base Meeting with T/A
14	12/2	[T] Team Discussion – Team-Base Meeting with T/A	[T] Team Discussion – Team-Base Meeting with T/A
15	12/9	[T] Team Discussion – Team-Base Meeting with T/A	[P03] Preliminary Design Review (PDR)
16	12/16	Finals	