



University of Science and Technology of Hanoi
 Address: Building 2H, 18 Hoang Quoc Viet, Cau Giay, Hanoi
 Telephone/ Fax: +84-4 37 91 69 60
 Email: officeusth@usth.edu.vn
 Website: <http://www.usth.edu.vn>

COURSE SYLLABUS

Subject: Space System Design

Academic field: Space and applications

Lecturer: Dr. Le Xuan Huy

Phone: +84-1652867761

E-mail: lxhuy@vnsc.org.vn

Academic year: 3

COURSE DESCRIPTION

Credit points	3	
Level	Undergraduate	
Teaching time Location	University of Science and Technology of Hanoi	
Time Commitment	Lecture	25 hrs
	Exercises	5 hrs
	Practicals	6 hrs
	Total	36 hrs
Prerequisites	Maths, Electronics, Software Engineering, Classical Mechanics, Introduction to Space Systems	
Recommended background knowledge	Control Theory, Probability and statistics, Numerical Methods – Modelling, Introduction to Communications	
Subject description:	This course concentrates on the design of spacecraft, including the impacts of the atmosphere and the space environment on requirements and configurations. The principals and design aspects of the structure, propulsion, power, thermal, communication, and control subsystems were studied. Graduates will assess key interactions between the various subsystems and their effects on the system performance. Acting as a single project team, students will design a satellite or space system from conception to critical design review.	
Objectives & Out-come	<i>(Knowledge &/ Skills gained via the course)</i> <i>System Engineering, Basic of Project Management, Modelling, Simulation and Design Skills</i>	
Assessment/ Evaluation	Attendance/Attitude	5%
	Exercise(s)	10%
	Practicals	10%
	Mid-term test	25%
	Final exam	50%
Prescribed Textbook(s)	[1] J.R. Wertz & W.J. Larson, Space Mission Analysis and Design, 3 rd Edition [2] V.I. Pisacane & R.C. Moore, Fundamentals of Space Systems	



COURSE CONTENTS & SCHEDULE

Class	Contents	Hours			Ref./Resources	Assignment(s)
		Lect	Exr.	Prc.		
1.	Introduction	2				
2.	Systems Engineering and Management	2				
3.	Astrodynamics	2				
4.	Mission Definition & System Design	2	1			
5.	Spacecraft Propulsion, Launch Systems, and Launch Mechanics	2				
6.	Spacecraft Attitude Determination and Control	2	1	2		
7.	Mid-term Examination	1				
8.	Spacecraft Communications and Data Transfer	2				
9.	Spacecraft Power Systems	1	1	2		
10.	Spacecraft Onboard Computer	2				
11.	Spacecraft Structural and Thermal	2	1			
12.	Systems Engineering and Integration	2				
13.	Spacecraft Simulator	2	1	2		
14.	Final Examination	1				

Notes:

- Abbreviation: *Lect.* (lecture), *Exr.* (Exercise), *Prc.* (Practise).
- Exercises may include assignment, reports, student's presentation, homework, class exercises ...for each class sessions
- Practicals mostly refer to Lab- work or outside practice such as field trip.

Reference Literature:

[1]. Robert F. Stengel, Space System Design, Princeton University

[2]. Professor D. Hyland, Space System Design, Texas A&M University