Syllabus of Aircraft Structural Mechanics

(autumn, 2007)

Title	Aircraft Structural Mechanics		Department	Mechanical & Aerospace	
Course No	446.322			Credit hour	3
Lecturer	Prof. Kim	e-mail	sjkim@snu.ac.kr	Phone	880-7388
homepage	http://aeroguy.snu.ac.kr				
Level	Undergraduate Junior		Prerequisite	Mechanics of Materials	
Lecture hour	Tue, Thu 14:30~15:45		room	Building 301, Room 105	
Teaching Assistant	Sung Hwan Cho		office hour	Tue, Thu 16:00~17:30	
Objective	In this lecture, students will learn about aircraft structural mechanics and also learn to calculate the stress and strain using simplified procedures for structural analysis, so that they can utilize it in aircraft's preliminary design. Also they are encouraged to use of numerical computer software packages (DIAMOND/IPSAP) along with the topics in theory.				
Overview of Lecture Contents	Structural Stability, reduction in gross weight and safety are the primary concern, while designing aerospace structure. Accommodating all these factors in an aircraft design is the biggest challenge for an aerospace engineer. In order to achieve this complex design, aircraft structures are categorized into complex substructures. This course covers the the basic statics numerical analysis on substructure which includes simple beams, shear stiffended shear webs, torque boxes, frames and buckled column and panels.				
contribution to aerospace engineering field	Aerospace engineering can be divided into several parts and aircraft structures is one of them. With this course students can understand the basic concepts of structures of fixed wing plane, rotor-craft, satellite and launch vehicle.				
Text & Reference	text	Fundamentals of Aircraft Structural Analysis, IRWIN, Howard D. Curtis, 1997			
	reference	Aircraft Structures for Engineering students, Edward Arnold, T.H.G. Megson, 1990			
Course Plan	Lecture (65%), Excercise (35%)				
Estimation	Mid-Term Exam1(20%), Mid-Term Exam2(30%), Final Exam(40%), Attendancy(10%)				

Schedule		
week	Contents	note
1~2	Chapter 1. Historical Perspective (student reading) Chapter 2. Statically Determinate Structures	
3	Chapter 3. Applies Elasticity : Fundamental Concepts	Exercise
4	Mid-Term Exam 1	Mid-term Exam
5	Chapter 4. Box Beam Stress Analysis	computational software simulation
6	Chapter 4. Box Beam Stress Analysis	Exercise
7	Chapter 5. Load Transfer in Stiffened Panel	
8	Mid-Term Exam 2	Mid-term Exam
9	Chapter 6. Work-Energy Principles	
10	Chapter 6. Work-Energy Principles	Exercise
11	Chapter 7. Force Method : Trusses, Beams and Frames	
12	Chapter 7. Force Method : Trusses, Beams and Frames	Exercise
13	Chapter 8. Force Method : Idealized Thin-Walled Structures	
14	Chapter 12. Structural Stability	computational software simulation
15	Final Exam	Final Exam
16	Summary & Extimation	