KA502 Syllabus

(2009 Spring Semester)

Class	Date	Chapter	Summary of Lectures
1	3/06/09	1	• Introduction of Korean Air ASD, KIAT • Introduction of KA502 Course • Introduction of Composite Materials for Transportation – Introduction to Composite Materials – Properties of Laminated Composites – Design of Composite Laminates – Design Optimization
2	3/13/09	2	• Mechanics of Laminated Composites – Governing Equations for Elastic Medium – In-plane Response of Isotropic Layers – Bending Deformations of Isotropic Layers
3	3/20/09		• Mechanics of Laminated Composites – Orthotropic Layers
4	3/27/09		• Mechanics of Laminated Composites – Properties of Laminates Made of Sublaminates
5	4/03/09	3	• Hygrothermal Analysis of Laminated Composites – Hygrothermal Behavior of Composite Laminates – Laminate Analysis for Combined Mechanical & Hygrothermal Loads
6	4/10/09		• Hygrothermal Analysis of Laminated Composites – Hygrothermal Design Considerations
7	4/17/09	4	• Laminates In-Plane Stiffness Design – Design Optimization Problem Formulation – Graphical Solution Procedures – Dealing with the Discreteness of the Design Problems
8	4/24/09	5	• Integer Programming – Integer Linear Programming – In-Plane Stiffness Design as a Linear Integer Programming Problem
9	5/01/09		• Integer Programming – Solution of Integer Linear Programming Problems – Genetic Algorithms
10	5/08/09	6	Midterm Exam (25%)
			• Failure Criteria for Laminated Composites – Failure Criteria for Laminated Composites
11	5/15/09		• Failure Criteria for Laminated Composites – Failure of Fiber-Reinforced Orthotropic Layers – Failure of Laminated Composites
12	5/22/09	7	• Strength Design of Laminates – Graphical Strength Design

13	5/29/09		• Strength Design of Laminates – Numerical Strength Optimization Using Continuous Variables – Numerical Strength Optimization Using Discrete Variables
14	6/05/09	8	• Laminate Design for Flexural and Combined Response – Flexural Response Equations
15	6/12/09		• Laminate Design for Flexural and Combined Response – Stiffness Design by Miki's Graphical Procedure – Flexural Stiffness Design by Integer Linear Programming
16	6/19/09	–	• **Final Exam. (25%)** • Total Review of This Course • **Team Project Presentation & Evaluation (10%)** **Good Luck :)**

KA502 (Modern Transportation Systems I)

Lecture Code/ Title	KA502/ Modern Transportation System I : Design and Optimization of Light Weight Composite Structures – Mechanics, Processes, Design & Optimization	
Instructor	Name	Heung Soap Choi
	email	hschoi12@gmail.com
	Course URL	TBD
Lecture time	14:00–17:00 Friday	
Lecture Room	2N 363B	
MainText	– Design and Optimization of Laminated Composite Materials, 1999 by Zafer Gürdal etal., John Wiley & Sons.	
Subtext	– Engineering Mechanics of Composite Materials, 2nd ed. 2006 by I. M. Daniel and O. Ishai	
Evaluation	Midterm Exam 25% Final Exam 25% Homework 25% Attendance 15% Team Project 10%	
References	**Mechanics :** – Principles of Composite Materials Mechanics by Gibson – Mechanics of Fibrous Composites by C.T. Herakovich (John Wiley & Sons, Inc)	