

**İ.T.Ü.
HAVACILIK ENSTİTÜSÜ
SAVUNMA TEKNOLOJİLERİ
DERS TANITIM FORMU**

Course Name	Code	Type	Semester	Credit	Lecture	Recitation	Laboratory				
					(hour/week)						
STATICS	STP 604E	PhD	2	3	3	0	0				
Department	Defence Technologies										
Lecturer & Office Hours & CRN	Asst. Prof. Kaan Yıldız – yildizkaa@itu.edu.tr Office Hours: Monday, 09:30 – 11:30 AM. Office: ITUARC										
TA & Office Hours	N/A										
Course Language	English										
Compulsory/Elective	Compulsory										
Course Day & Hours	Wednesday, 12:30 – 3:30 PM										
Content	This course covers; classical laminated plate theory (CLPT), composite material design principles, damage mechanisms of composite materials, composite material structures and areas of use, the basics of composite beam and plate analysis.										
Course Objectives	To teach composite materials, application areas, the design and analysis via classical lamination plate theory, and structural optimization for aerospace applications using metaheuristic optimization algorithms										
Weekly Topics Covered in this Course	Week	Date		Definition							
	1	01/10/2025		Introduction to Composite Materials and Applications							
	2	08/10/2025		Mechanics of Laminated Composite Materials							
	3	15/10/2025		Classical Lamination Plate Theory							
	4	22/10/2025		Hygrothermal Analysis of Laminated Composites							
	5	29/10/2025		REPUBLIC DAY							
	6	05/11/2025		Failure Criteria for Laminated Composite Structures							
	7	12/11/2025		Basic Stress Analysis & Failure Envelope							
	8	19/11/2025		Laminate In-Plane Stiffness Design							
	9	26/11/2025		Discreteness of the Design Problem							
	10	03/12/2025		Structural Optimization – PSO							
	11	10/12/2025		Laminate Strength Design							
	12	17/12/2025		Bending of Composite Plates – Navier & Levy Solutions							
	13	24/12/2025		Buckling & Vibration of Composite Plates							
	14	31/12/2025		Laminate Out-of-Plane Design							
Prerequisites	Yok										
Text book	Zafer Gürdal, Raphael T. Haftka, Prabhat Hajela, <i>Design and Optimization of Laminated Composite Materials</i> , John Wiley & Sons, 1999.										
Other References	Autar K. Kaw, <i>Mechanics of Composite Materials</i> , CRC Press, 1997. Robert M. Jones, <i>Mechanics of Composite Materials</i> , Taylor & Francis, 1999. Kirshan K. Chawla, <i>Composite Materials</i> , CRC Press, 1998. Ronald F. Gibson, <i>Principles of Composite Material Mechanics</i> , McGraw-Hill, 1994. Christos Kassapoglou, <i>Design and Analysis of Composite Structures</i> , Wiley, 2010.										
Laboratory Studies	None										
Computer Usage	None										
Other Issues											
Course Evaluation	Midterms				Number		Ratio (%)				
	Quizzes										
	Assignments				2		60				
	Projects										
	Other Projects										
	Laboratory										
	Other (Seminars)										
Final				1		40					
Outcomes	a	b	c	d	e	f	g	h	i	j	k
	3	1	1		3	1	1	1	1	1	1

Prepared by
Asst. Prof. Kaan Yıldız

Date
01/10/2025