

I.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				Number		Ratio (%)					
				Midterms							
	Quizzes										
	Assignments			2		60					
	Projects										
	Other Projects										
	Laboratory										
	Other (Seminars)										
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