NTE 217 - Sustainability in the Aviation Industry

Course Code	Course Name	Semester	
NTE 217	Sustainability in the Aviation Industry	Fall ☐ Spring ☒ Summer ☐	
Hours		**Credit**	**ECTS**
Theory	**Practice** / **Lab**	3	3
3	0 / 0		

Course Details	
Department	Aerospace Engineering
Course Language	English
Course Level	Undergraduate ☒ Graduate ☐
Mode of Delivery	Face to Face ☒ Online ☐ Hybrid ☐
Course Type	Compulsory ☐ Elective ☒
Course Objectives	To provide a comprehensive understanding of sustainability concepts and their applications in the aviation industry. To analyze the economic, social, and environmental dimensions of sustainability within the aviation sector. To explore international trends and best practices in sustainable aviation, with a focus on leading global firms. To assess the historical development and current status of the Turkish aviation industry, including its challenges in achieving sustainability. To investigate the role of localization, nationalization, and government policies in promoting sustainability within the aviation industry. To develop critical thinking and problem-solving skills for proposing innovative strategies to enhance the sustainability of the aviation industry in Turkey and globally.

Course Content	Definition, history, and dimensions of sustainability: economic, social, and environmental perspectives. The importance of localization and nationalization in achieving sustainability in the aviation industry. Sectoral analysis of global aircraft production and sustainability practices in the international aviation industry. Case studies of aviation companies leading sustainability efforts worldwide. Historical analysis of the Turkish aviation industry, including the establishment of key factories and reasons for their lack of sustainability. International sustainability factors: R&D, innovation, sectoral ecosystem, financial architecture, business models, and market dynamics. The role of government policies in shaping sustainable aviation practices. Turkey's sustainability strategies and policies in the aviation sector. Proposals and recommendations for improving the sustainability of the Turkish aviation industry.
Course Method/ Techniques	Lecture ☒ Question & Answer ☒ Presentation ☒ Discussion ☒
Prerequisites/ Corequisites	
Work Placement(s)	

Textbook/References/Materials

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Course Category				
Mathematics and Basic Sciences	☐		Education	☐
Engineering	☐		Science	☐
Engineering Design	☐		Health	☐
Social Sciences	☒		Profession	☐

Weekly Schedule

No	Topics	Materials/Notes
1	Definition and History of Sustainability	
2	The Importance of Localization and Nationalization in Sustainability	
3	Dimensions of Sustainability	Economic Dimension of Sustainability Social Dimension of Sustainability Environmental Dimension of Sustainability
4	International Aviation Industry: A Sectoral Analysis of Global Aircraft Production	
5	Sustainability in the International Aviation Industry	
6	Aviation Companies Leading Sustainability Worldwide	
7	Historical Development of the Turkish Aviation Industry: Analysis of Factories Established and Reasons for Their Lack of Sustainability	
8	Midterm Exam	
9	International Sustainability Factors in the Turkish Aviation Industry: R&D and Innovation	
10	International Sustainability Factors in the Turkish Aviation Industry: Sectoral Ecosystem and Companies, Financial Architecture	
11	International Sustainability Factors in the Turkish Aviation Industry: Market Structure, Business Models, Human Resources, Image and Impact, Government Policies	
12	The Importance of Government Policies in Sustainability	
13	Analysis of Turkey’s Sustainability Strategy and Policy	
14	The Importance of Localization and Nationalization in Sustainability	
15	Suggestions and Opinions on the Sustainability of the Turkish Aviation Industry	
16	Final Exam	

Assessment Methods and Criteria		
In-term studies	**Quantity**	**Percentage**
Attendance		
Lab		
Practice		
Fieldwork		
Course-specific internship		
Quiz/Studio/Criticize		
Homework		
Presentation / Seminar		
Project		
Report		
Seminar		
Midterm Exam – Homework 1	1	50%
Final Exam – Homework 2	1	50%
	Total	**100%**
Contribution of Midterm Studies to Success Grade		50
Contribution of End of Semester Studies to Success Grade		50
	Total	**100%**

ECTS Allocated Based on Student Workload			
Activities	**Quantity**	**Duration (Hrs)**	**Total Workload**
Course Hours	14	3	42
Lab			
Practice			
Fieldwork			
Course-specific Work Placement			
Out-of-class study time			
Quiz/Studio/Criticize			
Homework			
Presentation / Seminar			
Project			
Report			
Midterm Exam and Preparation for Midterm	1	10	10
Final Exam and Preparation for Final Exam	1	20	20
Total Workload			**72**
Total Workload / 25			**2,90**
ECTS Credit			**3**

Course Learning Outcomes	
No	**Outcome**
L1	Understand the fundamental principles and dimensions of sustainability (economic, social, and environmental) and their relevance to the aviation industry.
L2	Analyze the role of localization and nationalization in promoting sustainability within the aviation sector.
L3	Evaluate the sustainability practices of leading global aviation companies and identify best practices.
L4	Conduct sectoral analysis of global aircraft production, focusing on sustainability challenges and opportunities.
L5	Critically assess the historical development of the Turkish aviation industry and identify factors affecting its sustainability.
L6	Explore the impact of R&D, innovation, and sectoral ecosystems on achieving sustainability in the aviation industry.
L7	Examine the influence of government policies and financial structures on sustainable aviation practices.
L8	Develop strategic proposals for enhancing the sustainability of the Turkish aviation industry, considering international trends and best practices.
L9	Apply critical thinking and problem-solving skills to address real-world sustainability challenges in the aviation sector.
L10	Demonstrate an understanding of Turkey's sustainability strategies and policies in the aviation industry and propose improvements.

Contribution of Course Learning Outcomes to Program Competencies/Outcomes

Contribution Level: 1: Very Slight, 2: Slight, 3: Moderate, 4: Significant, 5: Very Significant

	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**	**P10**	**P11**					**Total**
L1	4	3	2	2	2	3	3	4	4	5	5					37/55; 67%
L2	3	4	3	3	3	3	3	4	4	5	5					40/55; 72%
L3	3	3	3	3	3	4	4	4	4	5	5					41/55; 74%
L4	4	4	4	4	4	3	4	4	4	5	5					45/55; 82%
L5	4	4	4	3	3	3	4	5	4	5	5					44/55; 80%
L6	4	4	3	3	3	3	4	4	5	5	5					43/55; 78%
L7	3	3	4	3	3	3	3	4	4	4	5					39/55; 71%
L8	4	4	5	4	4	4	4	5	5	5	5					45/55; 82%
L9	4	3	4	3	3	3	3	4	4	5	5					41/55; 74%
L10	4	4	5	4	4	4	4	5	4	5	5					48/55; 87%
															Total	423/550; 77%