

# **MAT 307 – Composite Materials**

## **Spring 2022**

### **Instructor**

Cagan DIYAROGLU

[cagan.diyaroglu@sabanciuniv.edu](mailto:cagan.diyaroglu@sabanciuniv.edu)

### **Room**

FENS L029

### **Teaching Assistant**

Pouya ZOGHIPOUR

[pouyazoghypour@sabanciuniv.edu](mailto:pouyazoghypour@sabanciuniv.edu)

### **Class Schedule**

The courses will be conducted physical and online

Monday 2:40pm – 3:30pm

Wednesday 10:40am – 12:30pm

### **Recitation**

Recitations will be online via zoom

Friday 4:40pm – 6:30pm

### **Office hours**

Please request online zoom meeting by email

### **Objectives**

- 1) Understanding mechanics and manufacturing technologies of composite materials.
- 2) Solving engineering problems which involve composite materials.
- 3) Doing research either online or by using library.
- 4) Working as a group and the ability to prepare a technical report

### **Grading**

Midterm Exam I and II – 2 × %20

Quiz – 2 × %5 (conducted at recitation session)

Group Project – %25

Final – %25

Attendance to the courses (%80) and recitations (%80) is mandatory

## References

- Main Text Book: Kaw, A.K. (2005). Mechanics of Composite Materials (2nd ed.). CRC Press. <https://doi.org/10.1201/9781420058291>
- Barbero, E.J. (2011). Introduction to Composite Materials Design (2nd ed.). CRC Press. <https://doi.org/10.1201/9781439894132>
- Buragohain, M.K. (Ed.). (2017). Composite Structures: Design, Mechanics, Analysis, Manufacturing, and Testing (1st ed.). CRC Press. <https://doi.org/10.1201/9781315268057>

## Course Content

<i>Lecture</i>	<i>Topic</i>	<i>Week</i>
1	Introduction to Composite Materials	28.02.2022 – 04.03.2022
2	Composite Manufacturing Processes	07.03.2022 – 11.03.2022
3	Strength of Materials (Review)	14.03.2022 – 18.03.2022
4	Macromechanical Analysis of a Lamina	21.03.2022 – 25.03.2022
		(Quiz I) 28.03.2022 – 01.04.2022
5	Micromechanical Analysis of a Lamina	04.04.2022 – 08.04.2022
		11.04.2022 – 15.04.2022 (Midterm Exam I)
6	Macromechanical Analysis of Laminates	18.04.2022 – 22.04.2022
		25.04.2022 – 29.04.2022
		09.05.2022 – 13.05.2022 (Quiz II)
7	Strength and Failure Criteria for Lamina and Laminate	16.05.2022 – 20.05.2022
		23.05.2022 – 27.05.2022
8	Design of a Laminated Composite	30.05.2022 – 03.06.2022
		(Midterm Exam II) 06.06.2022 – 10.06.2022
9	Final Exams	11.06.2022 – 23.06.2022 (Project Report Deadline)

## Course Material

Lecture notes and videos will be posted online at SUCourse website

<https://sucourse.sabanciuniv.edu/>