

ME 453
Heat Exchangers Design (3 credits, 5 ECTS) Fall 2025-2026

<u>INSTRUCTOR</u>	<u>OFFICE</u>	<u>PHONE</u>	<u>E-mail</u>
Yağmur Nalbant Atak	B-3034	5868331	yagmur.atak@atilim.edu.tr

INSTRUCTOR

Asst. Prof. Yağmur Nalbant Atak

- Office: A-3034
- Tel: 0(312)586 8331
- Email: yagmur.atak@atilim.edu.tr

ASSISTANT

Res. Asst. Mehmet Furkan Özbey

- Email: furkan.ozbey@atilim.edu.tr

GOALS OF THE COURSE

- Learning the essentials and basic concepts of heat exchangers,
- Learning heat exchanger types and selection criteria of the heat exchanger according to usage area,
- Calculating the overall heat transfer coefficient,
- Capability to do thermal, pressure drop, strength, and cost analysis of heat exchangers.

RECOMMENDED TEXTBOOKS

- Kakac, S., Liu, H., & Pramuanjaroenkij, A. (2020). Heat exchangers: selection, rating, and thermal design. CRC press.
- Shah RK, Sekulić DP, “Fundamentals of Heat Exchanger Design”, John Wiley & Sons, Hoboken, New Jersey, USA, 2003.

COURSE NOTES

Course notes covering the presentation slides and all the material related to the course can be obtained from the Moodle <http://moodle.atilim.edu.tr/> (Course Name: ME 453 - Sec01 | Heat Exchanger Design 25-26Güz | Yağmur Nalbant Atak)

COURSE OUTLINE

Weeks	Topics	Pre-study
1. Week	Introduction and Classification of Heat Exchangers	Course Material on Moodle
2. Week	Basic Design Methods of Heat Exchangers	Course Material on Moodle
3. Week	Basic Design Methods of Heat Exchangers	Course Material on Moodle
4. Week	Forced Convection Correlations for Single-phase Side of Heat Exchangers	Course Material on Moodle
5. Week	Forced Convection Correlations for Single-phase Side of Heat Exchangers	Course Material on Moodle
6. Week	Heat Exchangers Pressure Drop and Pumping Power	Course Material on Moodle
7. Week	Fouling of Heat Exchangers	Course Material on Moodle
8. Week	Problem Solutions - Exercises	
9. Week	Midterm exam	
10. Week	Double-pipe Heat Exchangers	Course Material on Moodle
11. Week	Shell and tube Heat Exchangers	Course Material on Moodle
12. Week	Shell and tube Heat Exchangers	Course Material on Moodle
13. Week	Condensers and Evaporators	Course Material on Moodle
14. Week	Condensers and Evaporators	Course Material on Moodle
15. Week	Final exam	
16. Week	Final exam	

GRADING POLICY

Midterm Exam (30%)

Final Exam (40%)

Homeworks (30%)

EXAMINATIONS

The dates of the midterm final examinations will be announced by the Faculty of Engineering. Make-up examinations will be granted to those with valid excuses that are approved by the Department. If you believe that you are eligible to take the make-up exam, you must contact the course instructor within one week after the regular exam date. Students who miss the midterm exam will get an NA grade.