Course manual

Course Setup

The course Energy & Heat Transfer provides the fundamentals in the area of energy, energy efficiency and the three heat transfer mechanisms (conduction, convection and radiation) in seven online lectures (including one summary of lectures) and six Lectorials (on campus). There are also 5 sessions for self-learning which are unsupervised. All data can also be found in MyTimetable. **Check this regularly for any changes.**

In the lectorials, an exercise on that weeks topic will be discussed together, after which you can work on the other exercises. Student assistants will be present to help when you have questions. If you finish the exercises you can check them with the student assistants, and if determined to be sufficient, earn bonus points on your final grade. After the lectorial, the weekly assignment will be put online. The deadline for the assignment is generally a week later, the exact dates can be found below. Furthermore, a discussion page will be opened on Canvas, where you can ask questions regarding the exercises and the assignments.

The course is finalized with a written exam. For the dates and weights of all deliverables and deadlines, see below.

Schedule

Location: Check timetable

Lectures and Lectorials

LEC 1 – Tue 07 Sept: 13:45 – 15:30 Introduction, organization; work, energy, power, units	
LEC 2 – Thu 09 Sept: 10:45 – 12:30 Efficiency, electricity; heat transfer through conduction	*TUT 1 – Fri 10 Sept: 13:45 – 15:30
LEC 3 – Tue 14 Sept: 10:45 – 12:30 Heat transfer through forced convection	*TUT 2 – Thu 16 Sept: 13:45 – 15:30
LEC 4 – Tue 21 Sept: 13:45 – 15:30 Heat transfer through natural convection	*TUT 3 – Thu 23 Sept: 10:45 – 12:30
LEC 5 – Tue 28 Sept: 15:45 – 17:30 Heat transfer through radiation; Combined heat transport	*TUT 4 – Thu 30 Sept: 8:45 – 10:30
LEC 6 – Tue 05 Oct: 13:45 – 15:30 Time-dependent heat problems	*TUT 5 – Thu 07 Oct: 13:45 – 15:30
LEC 7 – Tue 12 Oct: 13:45 – 15:30 Summary of all lectures	*TUT 6 – Thu 14 Oct: 13:45 – 15:30

*) For these lectures the group will be split. More details will be made available later on.

Self-learning sessions	/ Unsupervised
Thu 16 Sept:	15:45 – 17:30
Thu 23 Sept:	15:45 – 17:30
Thu 30 Sept:	15:45 – 17:30
Thu 7 Oct:	15:45 – 17:30
Thu 14 Oct:	15:45 – 17:30

Course Deliverables

I. **Complete assignments (Lectorials)**
During the lectorial sessions, questions from the tutorial bundle will be solved individually. You are allowed to discuss with your fellow students, but the finished assignments will be checked individually at the end of the lectorial. By attending all lectorials and solving the stated problems during these sessions you can earn an extra 10% on your final grade. The lectorial sessions are not mandatory, but it is highly recommended to attend these sessions!

II. **Submit assignments (Weekly)**
The weekly assignments can be found on canvas. Make the exercises in the exercise bundle of a chapter before making the weekly assignment, to get an idea of how to solve such a problem. The weekly assignments should be done with your project group, which consists of **5 people maximum**. The assignments can be submitted via Canvas. One student per group can hand in the assignment, please provide the names of the members of your group in the submission.

The deadlines for the assignments are:

- Deadline assignment 1: Friday 17 September at 23:59
- Deadline assignment 2: Friday 24 September at 23:59
- Deadline assignment 3: Friday 1 October at 23:59
- Deadline assignment 4: Friday 8 October at 23:59
- Deadline assignment 5: Friday 15 October at 23:59
- Deadline assignment 6: Friday 22 October at 23:59

Note that the deadlines are strict. **Late submissions will not be graded.**

III. **Examination**
The examination will be held on **Friday, 29 October 2021, from 8:45 to 11:45**. The exam will be available on the exam date, from the designated time. The use of a simple calculator is allowed (so no graphing calculator). You can bring the lecture slides and, optionally, the books stated in the references of this manual to the exam as well. Do not forget to bring your student card to the exam!

IV. **Resit Oral Examination**
The resit oral exams will be scheduled on **Friday, 12 November 2021, from 8:45 to 11:45**. The resit is for those who did not get a sufficient grade (Final Exam + Weekly Assignments + Lectorial).

Assessment

To pass the course, it is required that the minimum final grade is at least a 5,5. The final grade consists of the following parts:

- 80 % for the final exam (individual mark)
- 20 % for the weekly assignments (group mark)
- **Extra:** 10 % for completing the questions from the tutorial bundle in the lectorials (individual mark)

Organization

Teacher

- Dr. Mohammad Mehrali (HR-N224, m.mehrali@utwente.nl)

Teaching Assistants

- Harold Steenstra (h.steenstra@student.utwente.nl, contact person for weekly assignments)

- Evert van der Hoek (e.j.vanderhoek@student.utwente.nl)

- Jeroen Kin (j.kin@student.utwente.nl)

Books for reference

1. Y. A. Cengel & A. J. Ghajar. Heat and Mass Transfer: Fundamental & Application.

2. F. P. Incropera & D. P. DeWitt. Introduction to Heat Transfer.