CESE4130: Computer Engineering

2024-2025, Introduction

The First Edition (2024-2025)

Computer Engineering Lab
Faculty of Electrical Engineering, Mathematics & Computer Science
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Summary of the Basic Information

- Course Code: CESE4130
- Lecturers: Anteneh Gebregiorgis and Georgi N. Gaydadjiev
- Teaching Assistants: (see Brightspace)
- E-mails: CESE4130.2024@tudelft.nl, a.b.gebregiorgis@tudelft.nl, g.n.gaydadjiev@tudelft.nl (please use “CESE4130HelpDesk:<your text>” as the beginning of the subject lines)
- Exam: Written examination on Monday, October 28, 9:00-12:00 @ Drebbelweg-Hall 2 (35.0.160)
- Lecturing method: lectures and four hands-on labs
- Office hours: EWI 10.030 (30 min after the lectures) or Brightspace
- Book: N/A (see Webpage/BrightSpace for more information)
- Additional reading: see the recommended literature per topic

The CESE4130 (2024-25) Team

Georgi

Anteneh

Mahmood

Andre

Himanshu

Plus seven more …

Course Structure (2024-2025)

- Sixteen (16) lectures
- Covering the entire computational stack, design tools and methods
- Some additional information needed for the labs
- Four (4) on site, PASS/FAIL labs (check the schedule)
- TAs will guide you through the labs
- Preparing for the labs is essential for a PASS
- Slides on BrightSpace may be changed right after each lecture
- New relevant material will be added when needed

Grading Scheme

- Final exam and/or Resit, and bonuses from the labs (4 x 0.25 max)

- Final grade F=min(E+B, 10) with
- E = your Exam or Resit grade
- B = your Bonus from labs (0.25*(BL1..BL4))
- Passing? (6.0 is still the required minimum)
  - iff (E >= 6.0) and (all four Labs == PASS)
  - otherwise (E<5 or one or more Lab == FAIL) F=min(E, 5)
- Rounding F to the .5 up (e.g., 7.76 ➔ 8.0)

Lab Assignments

- The main goal: *to gain deeper understanding of the covered theory and concepts and remove magic what concerns digital computing technology.*

- Four (4) practical lab assignments
- Content and information on the web pages
- You will work in groups of two
- Support:
  - joining the lab sessions is a must to grant a PASS
  - asking questions is highly encouraged
  - you can always send e-mail with subject line “Helpdesk:….”
  - please note, that after sending your question some time might be needed to provide a good answer

Corner Cases

- Lab grades from the last year can’t be used (well, this is the first year)
  - Repeating students should perform all labs as everybody else
  - Please contact us if you have questions about this
- Lab assignment results are valid for the same year’s Resit
- It is important to let us know way ahead of time if you will not be able to attend one of the four lab sessions along with a valid reason

The CESE4130 Schedule, 2024

Date	Time	Location(s)
week 36		
Wed 4 Sep	13:45 - 15:45	EEMCS-Lecture Hall Ampere (36.HB.01.670)
Fri 6 Sep	08:45 - 10:45	AS-Lecture Hall E (22.F.005)
week 37		
Wed 11 Sep	13:45 - 15:45	EEMCS-Lecture Hall Ampere (36.HB.01.670)
Fri 13 Sep	08:45 - 10:45	AS-Lecture Hall E (22.F.005)
week 38		
Tue 17 Sep	08:45 - 12:45	Drebbelweg-PC Hall 2 (35.0.200)
Wed 18 Sep	13:45 - 15:45	EEMCS-Lecture Hall Ampere (36.HB.01.670)
Fri 20 Sep	08:45 - 10:45	AS-Lecture Hall E (22.F.005)
week 39		
Wed 25 Sep	13:45 - 15:45	EEMCS-Lecture Hall Ampere (36.HB.01.670)
Fri 27 Sep	08:45 - 10:45	AS-Lecture Hall E (22.F.005)
week 40		
Tue 1 Oct	08:45 - 12:45	Drebbelweg-PC Hall 2 (35.0.200)

LAB1

LAB2

Date	Time	Location(s)
week 40		
Wed 2 Oct	13:45 - 15:45	EEMCS-Lecture Hall Ampere (36.HB.01.670)
Fri 4 Oct	08:45 - 10:45	AS-Lecture Hall E (22.F.005)
week 41		
Wed 9 Oct	13:45 - 15:45	EEMCS-Lecture Hall Ampere (36.HB.01.670)
Fri 11 Oct	08:45 - 10:45	AS-Lecture Hall E (22.F.005)
week 42		
Tue 15 Oct	08:45 - 12:45	Drebbelweg-PC Hall 2 (35.0.200)
Wed 16 Oct	13:45 - 15:45	EEMCS-Lecture Hall Ampere (36.HB.01.670)
Fri 18 Oct	08:45 - 10:45	AS-Lecture Hall E (22.F.005)
week 43		
Tue 22 Oct	08:45 - 12:45	Drebbelweg-PC Hall 2 (35.0.200)
Wed 23 Oct	13:45 - 15:45	EEMCS-Lecture Hall Ampere (36.HB.01.670)
Fri 25 Oct	08:45 - 10:45	AS-Lecture Hall E (22.F.005)
week 44		
Mon 28 Oct	09:00 - 12:00	Drebbelweg-Hall 2 (35.0.160)

LAB3

LAB4

EXAM!

Some Additional Information

- The course “official” website is: https://cese.pages.ewi.tudelft.nl/
- Additional information will be made available as we progress during the quarter (check the webpages)

- If you are really interested in learning, please ask questions!
- We are here to help you get insights about how computers work
- Our plans are very ambitious, so let us stay focused
- Let us explore the fascinating world of digital computers…

Course Objectives (slightly adjusted)

- Describe number representation systems and inter-conversion
- Perform binary arithmetic operation such as addition and multiplication
- Use logic gates to implement combinational circuits and functional units
- Explain and inter-relate the concepts of computer architecture
- Explain system software and operating systems fundamentals, task management, synchronization, compilation, and interpretation
- Use design and automation tools to perform synthesis and optimization
- Explain the advantages of full system simulators and use them

There is no Magic in the World of Digital Computing

- Deterministic system – behaves the same way every time
- Does exactly what we tell it to do: no more, no less
- **Complex** system made of **very simple** parts
- Even recent advances in AI come from our ability to do many (billions!) simple computations very fast!
- We will build understanding from the bottom up: