




Aspetos Profissionais e Sociais da Engenharia Informática

Licenciatura Engenharia Informática
3º ano, 2º semestre, 2024/2025

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APSEI

- Professors
 - Rui L Aguiar (ruilaa@ua.pt) – DETI (UA)/IT
 - (regente)
 - Raquel Castro Madureira (rcmadureira@ua.pt)
 - Invited experts

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Planning

- 14 weeks scheduled for theoretical/practical classes
 - Information in elearning...
 - Multiple changes to what is being expected
 - Classes with invited speakers
 - English language in slides

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Draft Program

Content order, date and session will be adjusted weekly.
Invited speakers will potentially force reorder of the classes.

Information in e-learning, updated regularly.

13/fev	Not used
14/fev	Apresentação. Introdução à cadeira e ao seu funcionamento.
14/fev	Especificação do trabalho individual 1
20/fev	2x Discussão sobre o trabalho individual 1
21/fev	Aspectos de avaliação do trabalho #1. Segunda parte do trabalho #1.
21/fev	Inteligência Artificial. Conceitos, tecnologias.
21/fev	Problemas sociais e legislação. O futuro.
27/fev	Not used - deadline for delivery for W1
28/fev	Standards - impacto e processo.
28/fev	Apresentação convidada: propriedade intelectual e conceitos associados: marcas, registos
28/fev	Open Source software.
28/fev	Apresentação do Trabalho #2
6/mar	Probably not used: Dúvidas sobre o trabalho 2.
7/mar	Problemas éticos - o caso da condução autónoma.
7/mar	O problema do trolley e o problema do barco de Teseu. Identidades e identificadores.
13/mar	2x Discussão dos resultados do trabalho 1
13/mar	2x Discussão do trabalho 2
14/mar	Cybersegurança. Cybercrime.
14/mar	Ecosistema de cibersegurança.
14/mar	Falhas de segurança e reputação empresarial.
14/mar	Intercepção legal.
20/mar	2x Discussão do trabalho 2
21/mar	Responsabilidade e impacto pessoal (awareness).
21/mar	Apresentação convidada. GDPR e Leis associadas.
27/mar	Full time: Apresentações sobre o trabalho 2
28/mar	Apresentações do trabalho 2.
28/mar	Especificação de Trabalho de grupo 3
3/abr	Not used
4/abr	Redes sociais e aspectos de escala: o valor da dimensão.
4/abr	Efeitos de rede. Modelos de rede, e "leis de rede".
4/abr	Modelos: endos e scale-free.
10/abr	2x Trabalho de grupo 3 - dúvidas
10/abr	Discussão sobre os resultados do trabalho 2.
11/abr	Os hyperscalers.
11/abr	Aspectos económicos e de controlo de mercados. O valor dos dados.
8/mai	Full time: Apresentações sobre o trabalho 3
8/mai	Especificação do trabalho de grupo final - PI (7)
9/mai	Apresentações dos alunos sobre o trabalho 3 (7)
15/mai	2x Discussão sobre o trabalho de grupo final
16/mai	Apresentação sobre o ecossistema de informática.
16/mai	O que é a Engenharia Informática: modelos de classificação ACM.
16/mai	História da Computação: momentos chave.
16/mai	A realidade ICT - integração da computação com a comunicação.
16/mai	Atividades de Informática - o aparecimento da IoT.
16/mai	Empresas e trabalhos - o objetivo da Informática.
22/mai	Probably not used: Dúvidas sobre o trabalho 3.
29/mai	Full time: Apresentações do trabalho final
30/mai	Apresentações do trabalho final
5/jun	
6/jun	Exame?

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Rules of the course

- No way one course provides you with all the information you need for becoming a successful engineer.
- Classes are oriented towards providing the scope of the topic.
- Course will be run under the understanding that you will look for added information along the topics
 - Books (some in elearning)
 - Material on Internet
 - Discussions with experienced professionals.

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Classes

- Classes will comprise
 - Expositions
 - Invited presentations
 - Practical examples
 - Discussions on the practical works
- Times for the classes may change
 - Warnings on e-learning
 - Friday should always be used for EVERYONE.
 - Thursday Schedule will be not always used.
 - When used, the Schedule may be continuous between the two classes, for students to present their materials
 - "Discussion of results" is also a class with teaching material⁶

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Evaluation criteria

- Five different evaluations moments:
 - Online test to be performed during classes: 25%
 - Individual practical work 1 : 10%
 - Group practical works 2 : 20%
 - Group practical work 3 : 25%
 - Group practical work 4 : 20%

Work	#	Deadline	Time	Early ideas on evaluation
1	(1)	28th Feb	14 (7) days	Report (individual)+sample discussion
2	(2)	27th March	28 days	Report
3	(3)	8th May	40 days	Presentation + Handouts
4	(4-6)	29th May	21 days	Presentation + Report

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Organization

- All information to be displayed in e-learning
 - Announcements
 - Classes handout
 - Practical works
 - Evaluation and grades
- Summaries in paco.

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Objectives

■

The purpose of this discipline is to provide a general overview about the profession of an informatics engineer and his relation with society.

■

Overall perspective of different professional aspects of being an engineer in Informatics.

■

Students should be able to deal with the following aspects:

■

Possible social impacts of the use of informatic products and services.

■

Possible attitudes towards the challenges of the profession and its personal implications.

Needs

technical

legal

regulation

cybersec

hyperscale

AI

Solution

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Definitions

■

Social:

■

adjective: social

1. relating to society or its organization.

■

Society:

■

noun: society

1. the aggregate of people living together in a more or less ordered community

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Definitions

■ Professional:

■ *adjective:* professional

1. relating to or belonging to a profession.

2. engaged in a specified activity as one's main paid occupation rather than as a pastime

■ Informatics Engineering:




■ *South Europe:* engineering discipline most commonly known in English as Computer Science & Engineering.

1. Both computer science (CS) and computer engineering (CE) *are tech-intensive fields oriented around computer and information systems*

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So, the scope is....



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So, the scope is....



Technical aspects are often dominant on these situations – but also policy and values


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Lets talk about....



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ChatGPT

- Chat Generative Pre-trained Transformer
 - Chatbot, based on previous GPT-3 models
 - Started Nov 2022
 - Class of AI algorithm
 - Uses supervised + reinforcement learning
 - Human effort in pre-training
 - Used MS Azure for model development
 - RL ongoing based on users.
 - Qualities?
 - Limitations?

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Qualities? Problems/limitations?

(built in class 2025 with students)

Qualities	Problems/limitations
<ul style="list-style-type: none">■ Rapid access to information■ free■ Easy to use■ Useful for simple code generation■ Good for code correction■ Good for project starts■ Good understanding of user inputs■ Understanding of images	<ul style="list-style-type: none">■ "lies a lot"■ Resource waste: bad to environment■ Spends too much energy■ Creates dependency■ Lack of originality/creativity■ Does not respect autorship rights■ Limited by the existing information

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Qualities? Problems/limitations?

(OLD: built in class 2024 with students)

Good	Bad
<ul style="list-style-type: none">■ Personalized responses■ Practical and Fast■ Free Tier■ Learning tool■ Image generator■ Supporting diferent programming languages■ Surrogate partner/ company/therapeut	<ul style="list-style-type: none">■ Hallucinations■ Copyright material (in training)■ Cannot run locally■ "Near-misses"■ Free tier is outdated■ "Heavy regulated" (?)■ Hard to train (impossible locally)■ Danger to some professions■ Implicit bias (... as the Internet)

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Assignment 1 – Part 1 - individual

Should students be allowed to use chatGPT in this course (APSEI)?

- If yes, should students be *expected* to use chatGPT?
- If yes, should students be *incentivized* to use chatGPT in which way?
- If no, why not?
- And can/should **professors** follow the same rules as the students?
That is: use ChatGPT to classify and grade the students work?

NOTES:

- The important aspect is the application to APSEI. "Generic answers" are not welcomed.
- There is another question in this assignment. The second part will be presented next week in the practical class.
- Typical size expected: 4-8 A4 pages (total for both answers)
- **DEADLINE for both parts: 28th February**

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