COURSE INTRODUCTION

Spring semester

2021/22

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- **Name:** Joan Cabestany (course responsible)
- **Coordinates:**
  - **Office:** Building C4, Floor 2, Office 209
  - **Phone:** 93 401 6742
  - **E-mail:** joan.cabestany@upc.edu

- **Consultation schedule:**
  - **On demand by e-mail or phone.**

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- **Name:** Andreu Català
- **Coordinates:**
  - **Office:** NEAPOLIS Building 2nd floor – Vilanova i la Geltrú
  - **Phone:** 938967270
  - **E-mail:** andreu.catala@upc.edu
- **Consultation schedule:**
  - **On demand by e-mail or phone.**

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Course description:

- Course deals with how to correctly interact with computing machines
- Background will be always supported by Artificial Intelligence concepts
- Main covered topics:
  - The main objective of this course is to provide the students with a wide understanding of the state of the art in human computing and machine interaction concepts.
  - **Perception** and **cognition** topics are esential to design interactive systems. Special attention will be paid on **pervasive computing** and **Ambient Intelligence** where the central object of study are people surrounded by **intelligent systems** and **enhanced environments** capable to monitorize and/or interact in a **user friendly** way.
  - The **user-centered design** methodology is one of the targets of the course.
  - **Social aspects** of HCI will also be revised.
- Project management and its correct organization will be covered.

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Basic organization of the course:

- **Theory sessions:** Plenary sessions organized at the classroom or in a telematic way (see table for concrete scheduling).

  Main covered subjects will be:

  - HCI main concepts
  - Interaction
  - Pervasive computing introduction
  - Person centred design – AAL concepts
  - Social aspects of HCI

- **Self-study sessions:** After some plenary sessions, a **self-study proposal** or **discussion on given readings** will follow. Self-study activity will be organized according a specific assignment, containing the necessary description and references.

- **Student's presentations:** Self-study proposal activity will be followed by a presentation done by the students (done by the working group). This presentation will be ranked by professors and students, and finally used as part of the course evaluation (see proposed evaluation in following slides). The **discussion activity** will be defined on-time.

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Basic organization of the course (2):

- **Laboratory sessions (Project sessions):** Students, as part of a working team, will be asked to propose and develop a personal project proposal. The working team (the students) will:
  - Propose and present an idea.
  - Prepare and present an extended description of the proposal, together with an analysis of the State-of-the Art (comparative analysis of the already existing similar ideas)
  - Prepare and present the concrete specifications of the project (technical, use, methodology…). Presentation will followed by a discussion.
  - Present the state and evolution of the work at a given moment (Interim presentation)
  - Prepare, present and discuss the Final project (at the end of the course activity)

- **Course interim evaluation:** None

- **Presentations done on the project activity are part of the evaluation process. Some written reports must be submitted after the presentations.**

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Course summary (I):

Course contents is related to 5 basic blocks:

Block 1 and 2. General concepts

- Introduction. Brief history of HCI
- User-centred concepts (design, usability…)
- Context and functional requirements
- Project organization and management. IPR aspects
- Innovation aspects and trends of HCI

Block 3. Interaction

- Principles of human information processing, performance, learning, cognition.
- Sensation and perception
- Emotions and cognitive engineering
- Situated interaction

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Course summary (II):

Block 4. Pervasive computing

- Principles and technology overview.
- Architectures and Operating Systems.
- Location and context awareness.
- Ubiquitous interfaces.
- Introduction to IoT. Overview

Block 5. Person-centred design and social aspects (AAL)

- Smart environments. Principles and technologies of Ambient Intelligent design.
- HCI Ethics: privacy, autonomy, integrity, reliability, security
- e-Inclusion
- Technology in the society
- Social Computing and Legal aspects

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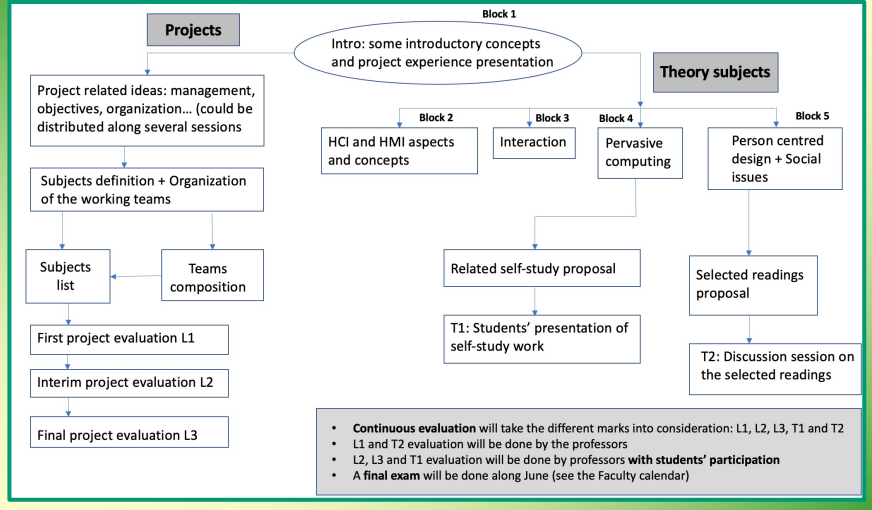
HCI: Organization overview



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Tentative timing scheduling. An overview.

TENTATIVE SCHDULING OF THE HCI SEMESTER

Month	Date	Block	Theory activity	Project activity	Evaluation	Required report
February	17	1	Intro and semester organization Brief on HCI + History view	Some ideas on past students activity		
	24	2	Main aspects of HCI and HMI	Intro to projects organization Own professors projects experience		
March	3		HCI: innovation and Guidelines	Final subjects decision Working teams constitution		
	10	3	Interaction			
	17	4	Pervasive + Self study proposals			
	24			First project presentation	✓ L1	Yes (<5 pages)
April	7		Students' presentations on Pervasive		✓ T1	Yes (< 10 pages)
	21		Person centred design (1)	Insights on evolution of projects		
	28	5	Person centred design (2) Giving some related readings	Projects organization (2)		
May	5			Project interim presentations	✓ L2	No
	12		Discussion organized on given readings		✓ T2	No
	19		HCI: Social aspects			
	26			Final project presentations	✓ L3	Yes (no limit)
			Evaluation: From theory: T1 (with the participation of students) and T2 From Project:L2, L3 (with the participation of students) and L1			

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Some reports will be required:

- L1: a report specifying topic, title, organization, state of the art, objectives (<5 pages)
- T1: a report with the conclusions of self-study activity (<10 pages)
- L3: a final report on the project results and objectives achieved (no page number limit)

Course evaluation:

Course global mark will be obtained from a continuous and participative evaluation process. A **FINAL EXAM** will be organized as part of the process in June.

- Professors will evaluate all the scheduled presentations and submitted reports.
- Students will be asked to evaluate their colleagues during some of the scheduled presentations.

Final Mark = 0,3 Project evolution mark + 0,3 Final project mark + 0,15 Theory presentations and reporting mark + 0,25 Final Exam mark.

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Course evaluation (II):

- Presentations evaluated with the participation of the students (theory and Lab sessions) will be assessed considering three aspects of the presentations done by the students and should be ranked from 0 to 10:
  - Presentation quality (organization, objectives…) – P
  - Contents aspects, correctness – C
  - Oral communication (how they are able to transmit) – OC
- Students contribution on the evaluation will be = (P + C + OC)/3
- Professors assessment will also consider the submitted reports:
  Prof. Ass. = 0,6 (P+C+OC)/3 + 0,4 Report mark
- When evaluation is a participative process:
  Assessment= 0,7 Prof. Assess. + 0,3 Stud. Assess.

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Some basic bibliography:

- Jounghyun Kim, G., ***Human Computer Interaction. Fundamentals and Practice,*** CRC Press 2015 ISBN 978-1-4822-3390-2
- Scott MacKenzie, I ***, Human-Computer Interaction An Empirical Research Perspective*** , Elsevier / Morgan Kaufmann , 2012 .
- Carol Righi, Janice James ***, User-Centered Design Stories Real-World UCD Case Studies*** , Elsevier / Morgan Kaufmann , 2010
- Werner Weber, Jan M. Rabaey, Emile Aarts ***, Ambient Intelligence*** , ISBN:978-3-540-23867-6 .