The Human Factor (THF)

Week 1: Introduction to Human Factors

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Welcome from the teaching team!

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Who is taking this course?

Take a post-it note and write down if you are:

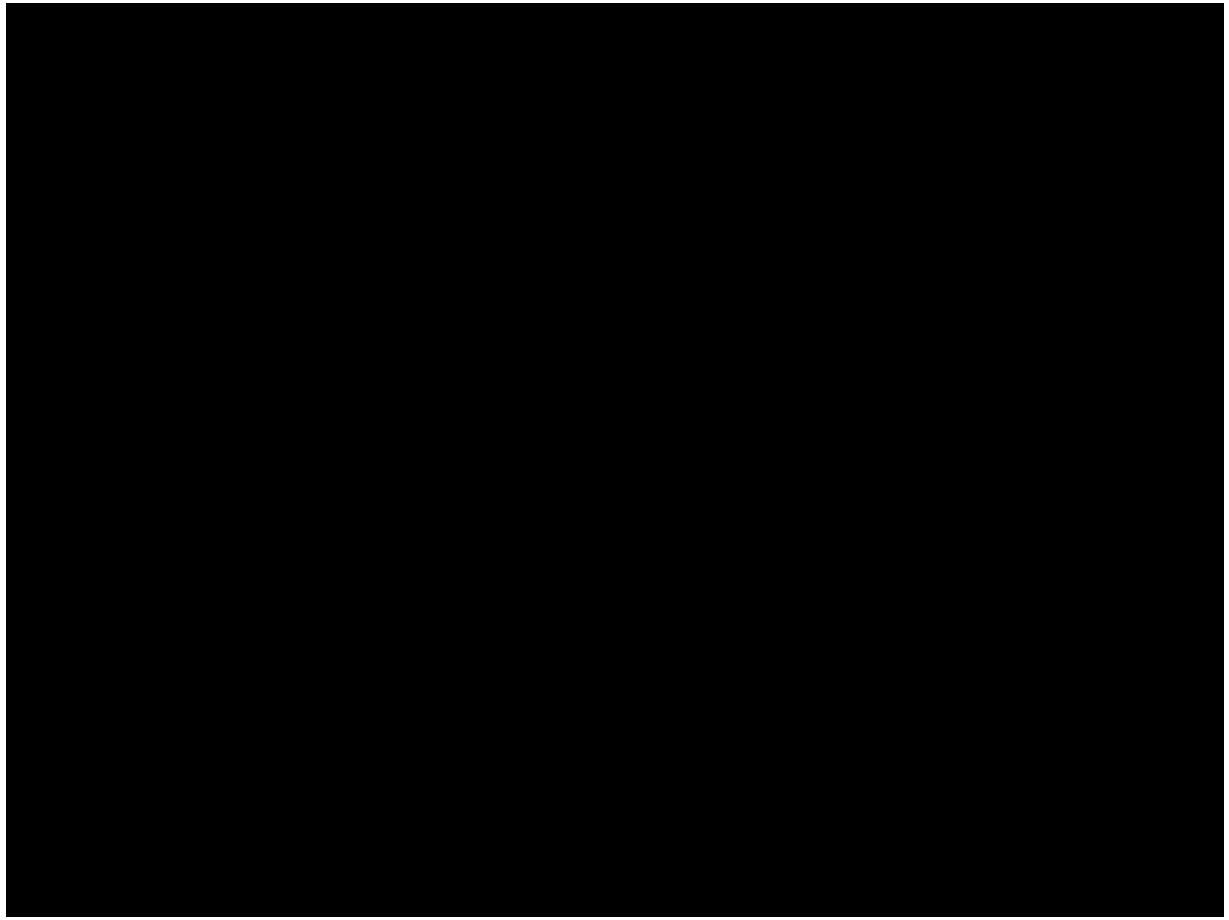
- A UG4 or Masters student
- Your programme (Design Informatics, Computer Science, Cognitive Science, Linguistics, etc)
- If you have taken a HCI or similar course before
  - If yes, write down which course

Week 1 Outline

- What is this course about?
- Key concepts
- Course structure and assessment tasks
- Next steps

What is this course about?

Please raise your hand if you've ever had a similar experience



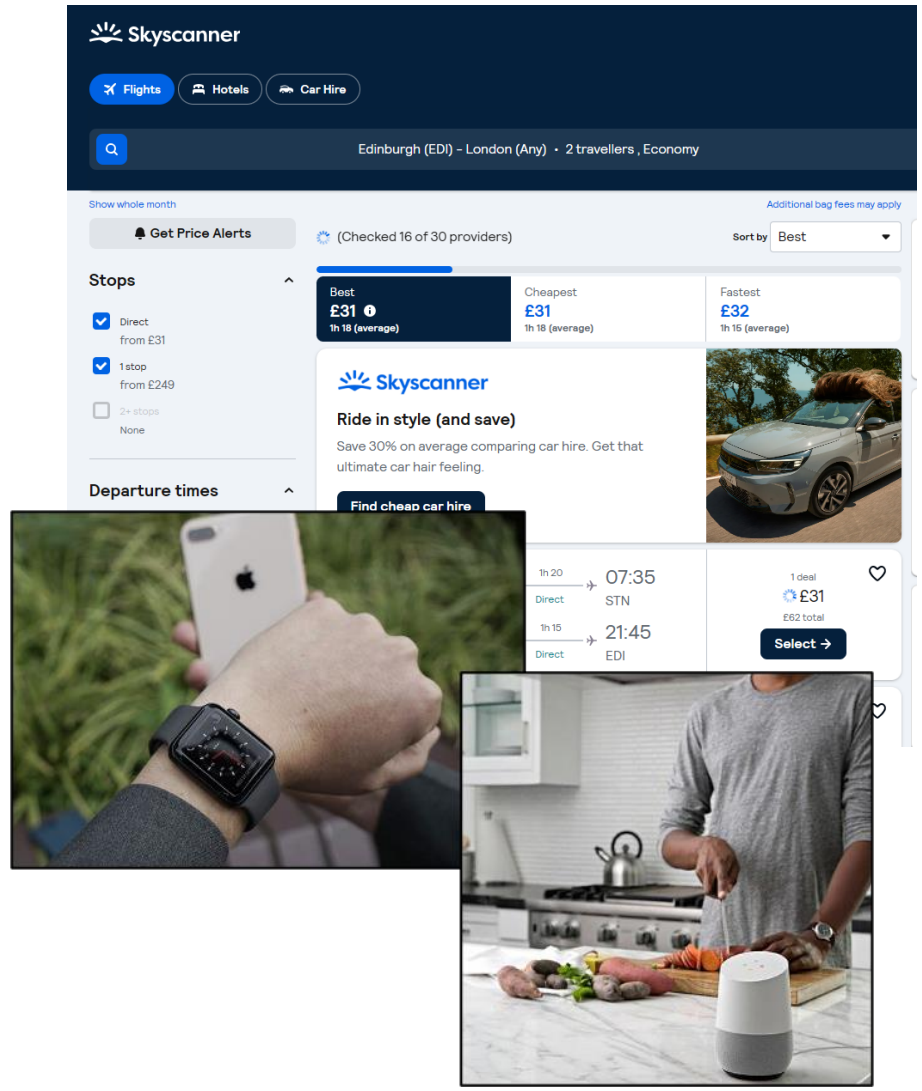
https://www.youtube.com/watch?v=HtTUsOKjWyQ

Experience with Technology

Consider the interactive technologies you use:

1. Think of any that are hard, confusing, or make you feel frustrated when you use them.
2. Which ones are enjoyable, easy or satisfying to use? Why?

Discuss in pairs and share with the class



This course is about the design and evaluation of interactive technologies that people can use

- If the user can’t use it, it does not work.
- Designing a good system is multifaceted.
- Whether a system is good or usable always depends on the context in which it is used.

This course will extend the Informatics HCI course in that it places more emphasis on the people who use technology, and the context in which technology is used.

Course Learning Outcomes

On completion of this course, you should be able to:

- Understand how relevant aspects of context affect the interaction between people and technical systems, with a particular emphasis on anthropometric, behavioural, cognitive, and social factors (ABCS)
- Assess the usability of a technological artefact, including both hardware and software, given a particular context of use
- Integrate user experience and human factors into the process of designing or improving a technological artefact
- Ensure that systems are resilient and learn from user errors

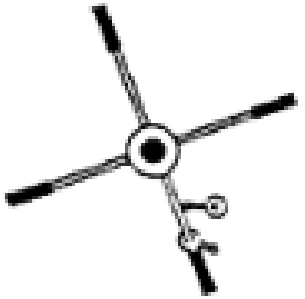
Key Concepts

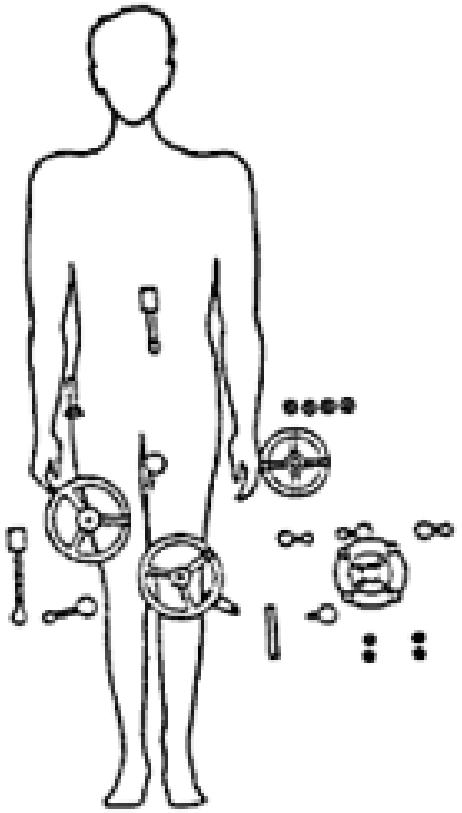
Human Factors

The factors that impact the way in which a person would interact with a piece of technology

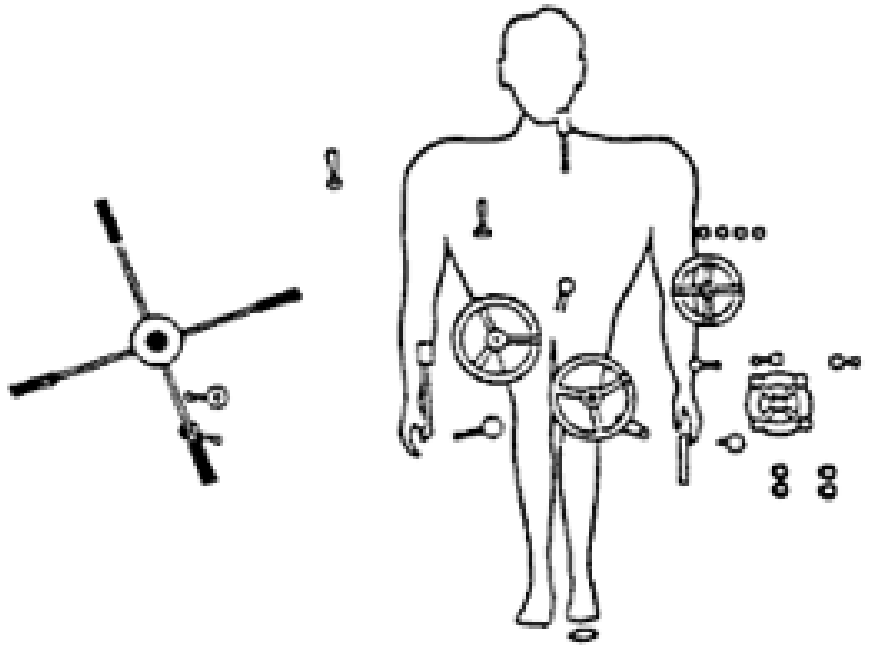
- Anthropometric factors: physical, anatomical and physiological aspects
- Behavioural factors: what can users see, perceive and act on?
- Cognitive factors: what cognitive processes are involved when someone uses a system?
- Social factors: what is the social context in which a system is used?

Ritter/Baxter/Churchill (2014), Foundations for Designing User-Centred Systems, Springer





http://en.wikipedia.org/wiki/Lathe
http://www.lathe-machine.in/pics/lathe_05.jpg



The controls of a lathe in are not within easy reach of the average man, but are so placed that the ideal operator should be 137 cm (4.5ft) tall, 61cm (2 ft) across the shoulders and have an arm span of 234cm (8ft). (Pheasant, 1986)

Technology-centric design --> **human-centred design**

http://en.wikipedia.org/wiki/Lathe
http://www.lathe-machine.in/pics/lathe_05.jpg

Principles of Human-Centred Design

(also known as *User-Centred Design, User Experience Design, Design Thinking*)

- **Human-centred:** focused on people, activities and context from the project start
- **Participative:** involving target users as members of the design team
- **Empirical:** evaluating usability and user experience in trial studies with end users
- **Iterative:** designing, evaluating, and redesigning as a regular cycle until results satisfy the user experience needs

Usability & User Experience

Usability

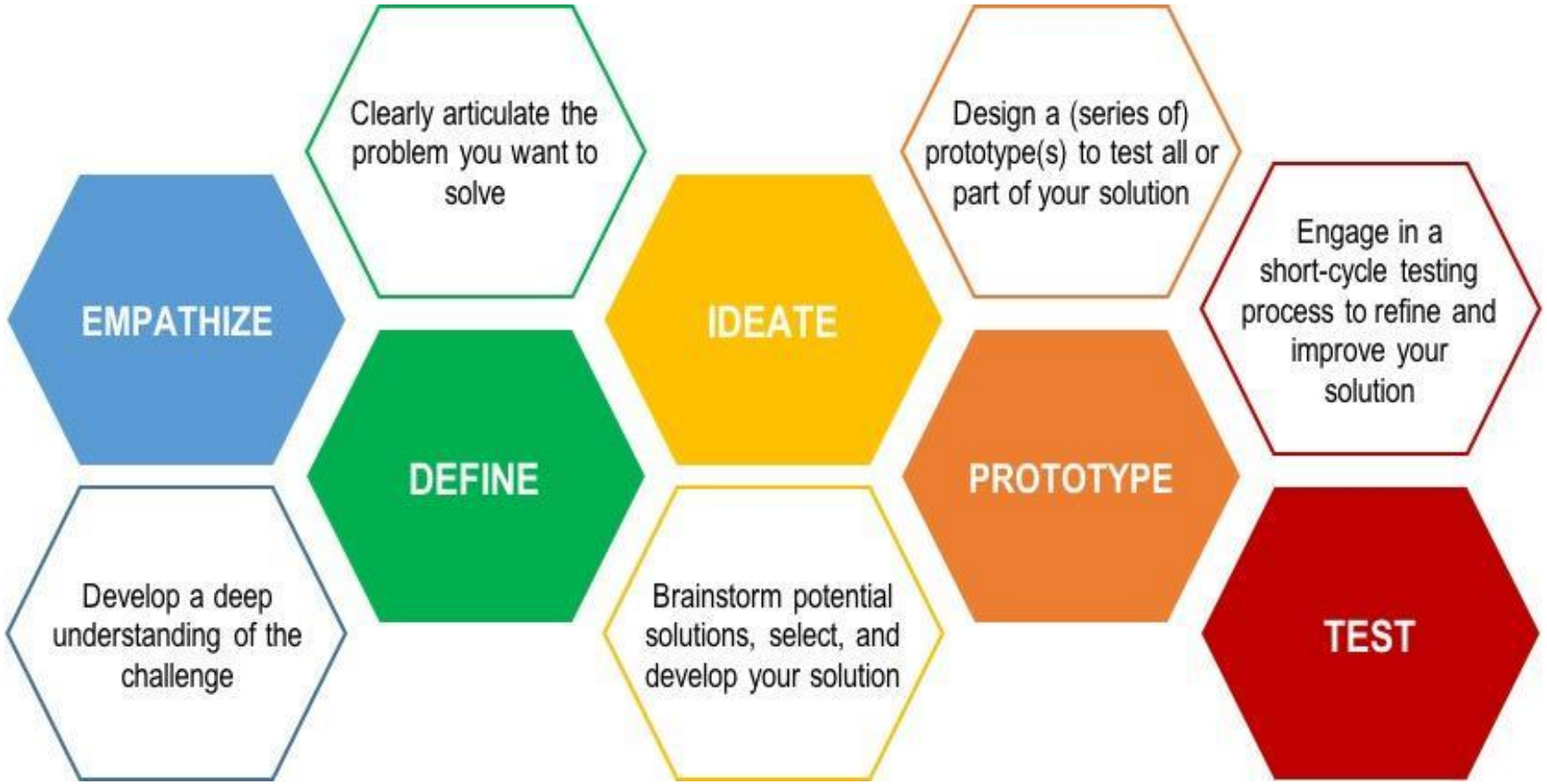
Effective to use
Efficient to use
Safe to use
Have good utility
Easy to learn
Easy to remember how to use

User Experience

The way people feel about technology and their satisfaction when using it, looking at it, holding it, e.g.,
Satisfying
Enjoyable
Helpful
…

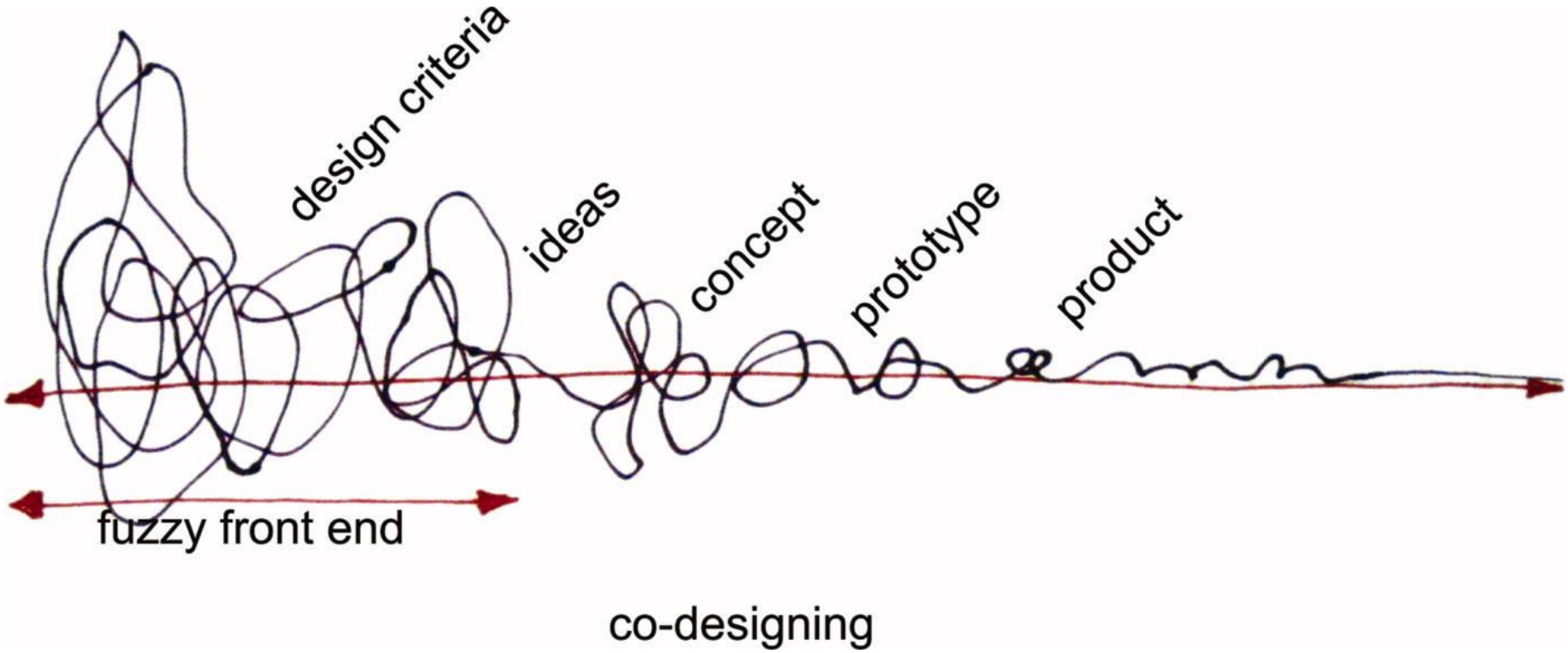
Sharp et al (2019)

Human-Centred Design (Stanford model)



http://longevity3.stanford.edu/designchallenge/design-thinking-process/

Human-Centred Design Process in the Real World



Sanders EB, Stappers PJ. Co-creation and the new landscapes of design. Co-design. 2008 Mar 1;4(1):5-18 https://doi-org.ezp01.library.qut.edu.au/10.1080/15710880701875068

Course Structure and Coursework

Lectures and Q&A Session

Lecture: Tuesday 16:10-17:00

- Lectures will be in-person
- Lectured will be recorded and uploaded to Learn

Q&A Session: Thursday 16:10-17:00

- These sessions are designed for students to drop-in and ask questions and discuss any of the course content or get feedback on coursework.
- You can also ask questions via email or on Piazza

Flipped Classroom

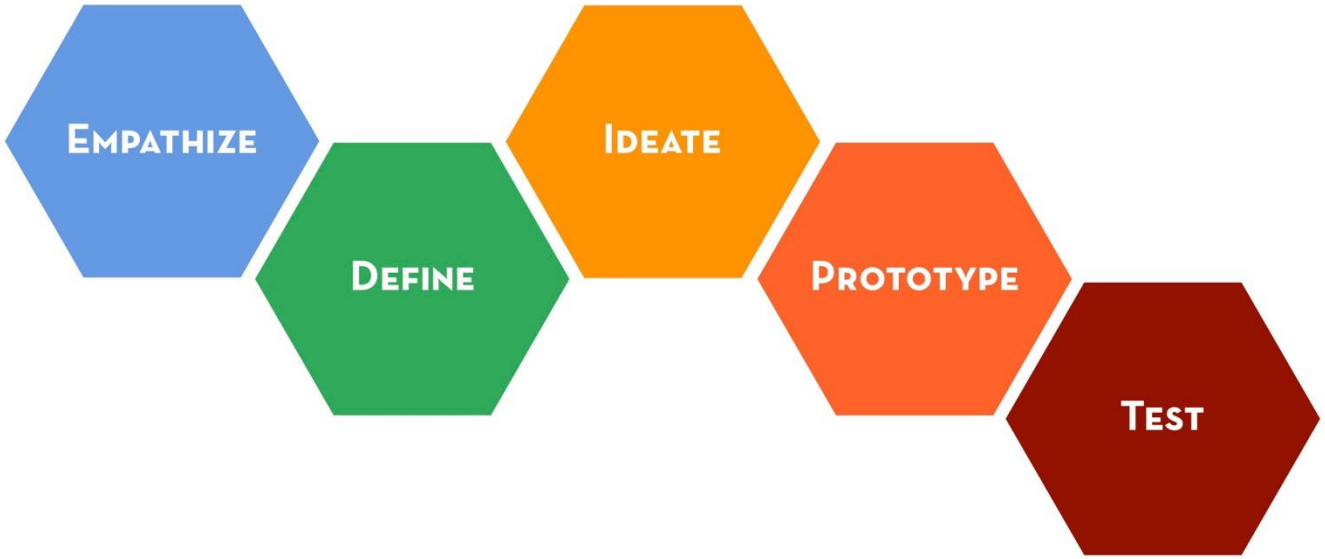
- Before class you will work through materials
- During class we will work on activities designed to review the material and deepen your learning
- Content for each week will be available on OpenCourse by Wednesday of the previous week
  - Materials for week 2 will be published by Wednesday of Week 1 and so on

Assessment Tasks

No Exams!

Submissions via Learn

Assessment will follow a human-centred design process



Coursework 1
Usability and UX Evaluation Report

Coursework 2
Group Presentation

Coursework 3
Individual Reflection

CW1: Usability and User Experience Evaluation Report

Weight	50%
Assessment Type	Report
Description	The aim of this assessment is to evaluate the usability and user experience of an existing technology and generate suggestions for improving the design with particular emphasis on human factors. CW1 is presented through a report that describes the background, methods, findings, and re-design suggestions and detailed appendices. The report will be 2500-3000 words long, not including references and appendices.
Relates to learning outcomes	1, 2, 3
Individual/group	Individual
Due date (indicative)	Friday 28/02/2025 12:00 (Week 6)

CW2: Group Presentation

Weight	40%
Assessment Type	Presentation
Description	The aim of this assessment is to develop an interactive technology prototype. The re-design suggestions based on the issues identified in CW1 are used as a starting point to generate a range of design ideas and sketches, which will be refined into an interactive prototype (for example, a paper prototype, a wireframe, or a high-fidelity prototype). This will be presented via a group presentation in class.
Relates to learning outcomes	1, 3, 4
Individual/group	Group
Due date (indicative)	Tuesday 1/04/2025 During Class (Week 11)

CW3: Individual Reflection

Weight	10%
Assessment Type	Report
Description	The aim of this assessment is to critically reflect on the design process engaged in during the course and the application of human factors during this process. The reflection will be 500-1000 words long, not including references.
Relates to learning outcomes	1, 2, 3, 4
Individual/group	Individual
Due date (indicative)	04/04/2025 12:00 (Week 11)

CW1 Steps

Week 1:

- **Team formation:** form a group of 3 and register your group on Learn by next Tuesday. This will be the group you will work with in CW2 so ensures you are all working on the same topic.
- **Pick a topic:** pick from the examples provided or propose your own
- **Pick a technology:** each individual student will then pick a technology that fits that topic – these technologies need to be different for each member
- Email Srravya with your topic, technologies and group number. Your topic and technologies will need to be approved before you start.

CW1 Steps

Week 2/3: Individually create usability and UX methods

- **Say methods:** prepare an interview guide to learn about what people have to say.
- **Do methods:** prepare a plan and materials to observe what people do, either through an in-person observation or through a usability test.
- **Make methods:** select an appropriate make method and prepare materials and instructions, integrate method with your interview guide.

CW1 Steps

Week 4:

- **Collect data:** use the instruments created over the past two weeks to study the experiences and needs of your participants (your participants will be the other two members in your group).
- **Transcribe recordings:** transcribe your recordings (you can use online tools). Anonymise transcripts by changing names to pseudonyms. Anonymise any photos or images by covering faces.

CW1 Steps

Week 5:

- **Analyse data and write up findings:** analyse the data thematically to give an overview of key findings. Present data from all methods and participants. Present each theme together with concrete evidence (e.g., interview response, image).
- **Create recommendations for re-designing the technology** based on your findings and human factors.

Week 6:

- **Compile your individual report:** work on activities week by week to build the report.

Example Assessment Topics

- Sustainability
- Health and Wellbeing
- News and Information
- Computing Education
- Creativity

Next Steps

- **Team formation:** form a group of 3 and register your group on Learn by next Tuesday. This will be the group you will work with in CW2 so ensures you are all working on the same topic.
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Any Questions?