



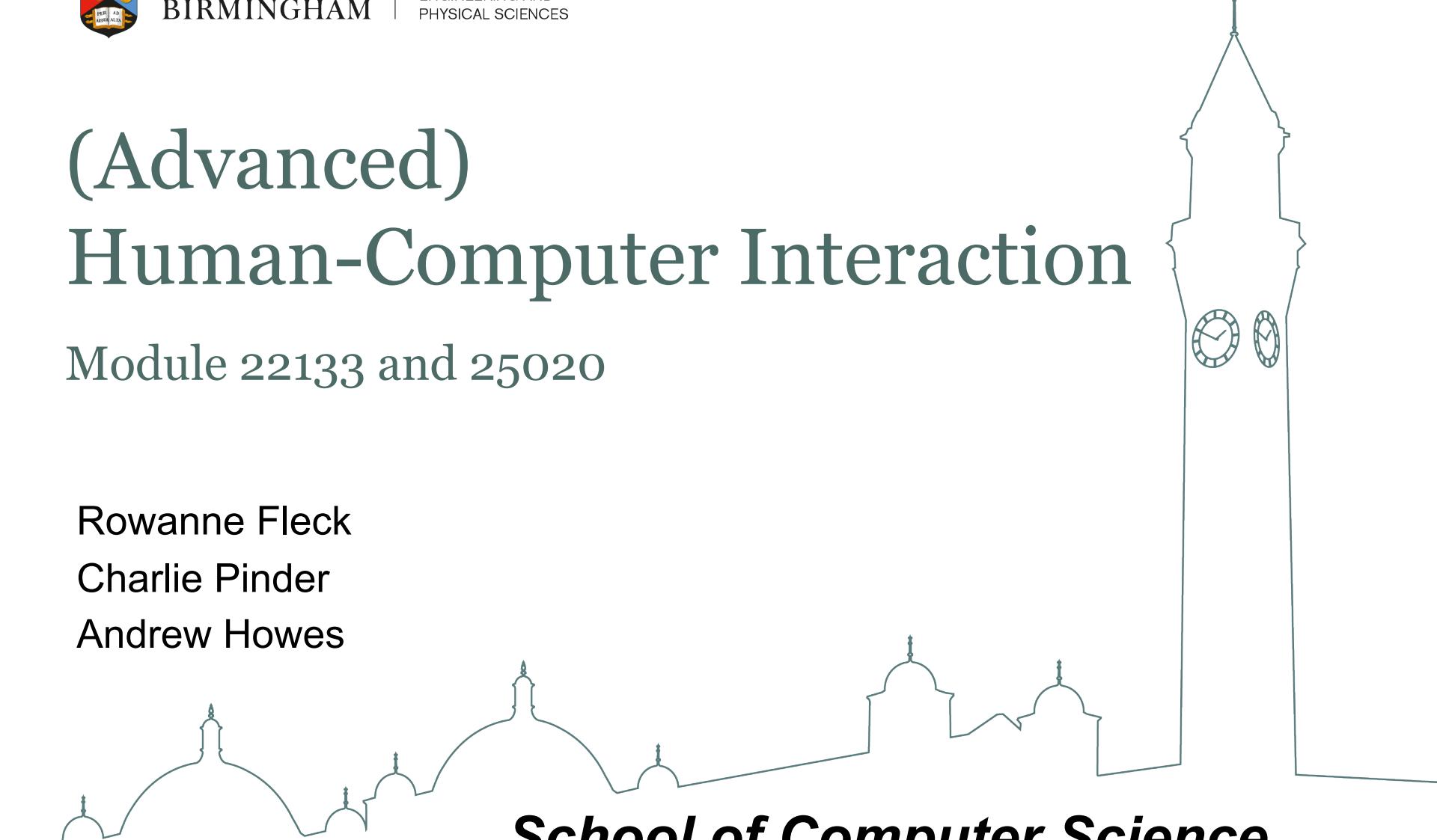
UNIVERSITY OF  
BIRMINGHAM

COLLEGE OF  
ENGINEERING AND  
PHYSICAL SCIENCES

# (Advanced) Human-Computer Interaction

Module 22133 and 25020

Rowanne Fleck  
Charlie Pinder  
Andrew Howes



**School of Computer Science  
University of Birmingham 2016/17**

# What *is* HCI?

Human  
Computer  
Interaction

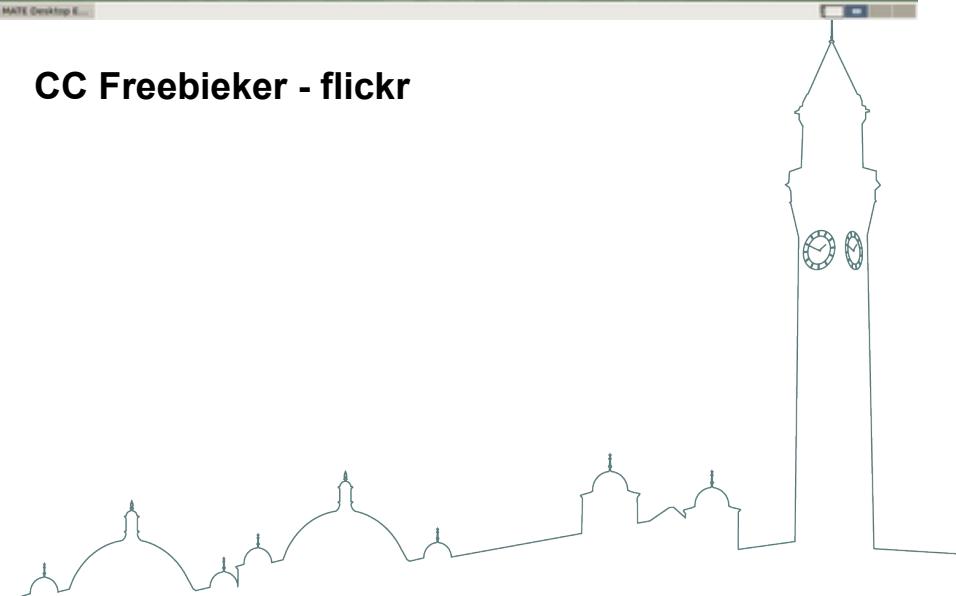




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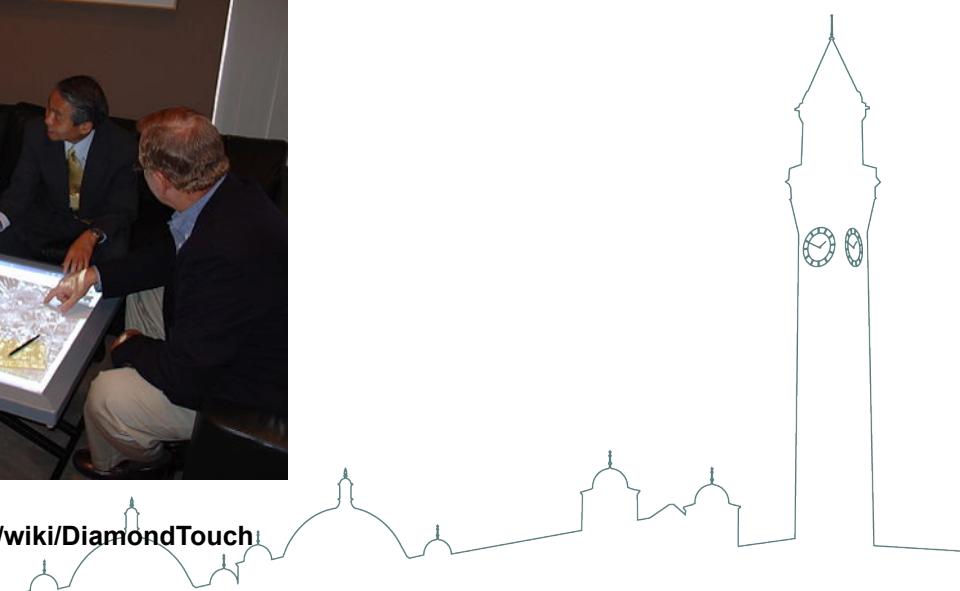
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CC Daniel Williams from NYC, USA - The Reactable



<https://en.wikipedia.org/wiki/DiamondTouch>





# What is Human Computer Interaction?

*“Human-computer interaction is a discipline concerned with the design, evaluation and implementation of interactive computing systems for human use and with the study of major phenomena surrounding them.”*

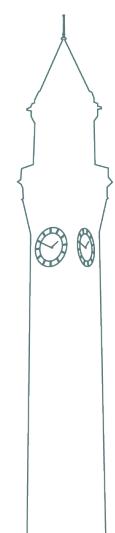
**ACM SIGCHI Curricula for Human-Computer Interaction,  
accessed 27<sup>th</sup> Nov. 2015**

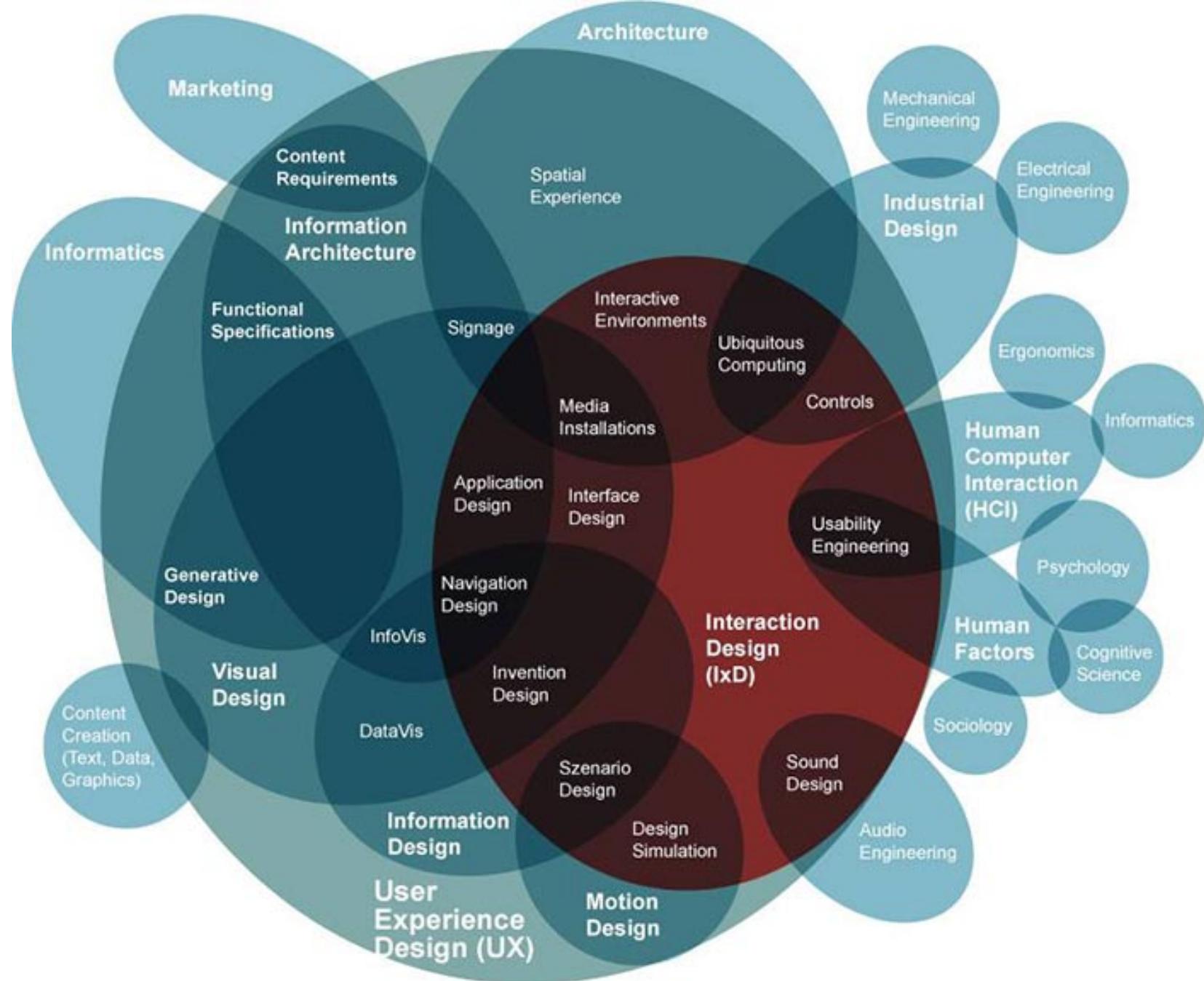


# What is Human Computer Interaction?

- One of a range of academic disciplines that studies the interaction of people with and through technology.
- It is also an area of professional practice.
- Human-Computer Interaction involves understanding both the capabilities of technology and the capabilities of people, organisations and groups.









## Your Search Criteria

Keywords: "human computer interaction"

[Email me jobs like this](#)

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## Change Search

Keywords

Search job titles only

Salary From

Salary To

Exclude jobs with no salary specified

Academic Discipline /

Field of Expertise

Note: Hold down Ctrl and click on list values to make multiple selections

Agriculture, Food and Veterinary  
Agriculture  
Food Science

## Your search returned 40 results

Sort by: [Relevance](#) | [Salary](#) | [Date Placed](#) | [Closing Date](#) | Show  results per page

### [Post-doctoral Position in Interaction Design and Human-Computer Interaction](#)

Singapore University of Technology and Design

Placed on: 30-08-2016 Salary: Not specified.

Expires  
Oct  
31

### [Lecturer in Human-Computer Interaction \(Technology-Enhanced Learning\) - D46432A](#)

Computing Science

Newcastle University

Placed on: 06-09-2016 Salary: £33,574 to £52,219 per annum

Closes  
Oct  
04

### [Post-Doctoral Research Fellow in Human Robot Interaction \(MoveCare Project\)](#)

Faculty of Science and Engineering - School of Computing and Mathematics

University of Plymouth

Placed on: 07-09-2016 Salary: £32,958 to £38,183 pa- Grade 7

Closes  
Oct  
09

### [Postdoctoral Researcher and Research Fellow, Information Retrieval, Human-Computer Interaction HCI, Machine Learning](#)

Helsinki Institute for Information Technology

Aalto University

Placed on: 09-09-2016 Salary: £2,920.08 to £3,131.68 per month

Closes  
Sep  
30

# THE PROCESS WHEN DEALING WITH INEXPERIENCED WEB FIRMS - CHOOSE WEBDESIGN.<sup>TM</sup>



How the customer explained it



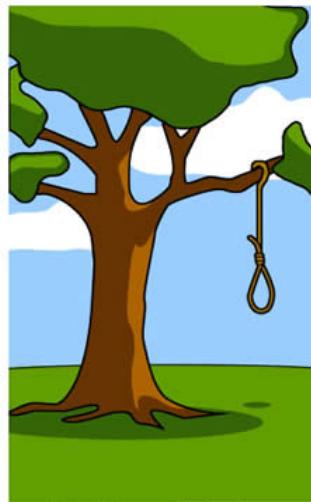
How the project leader understood it



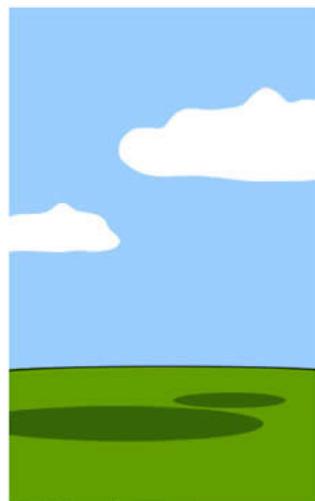
How the analyst designed it



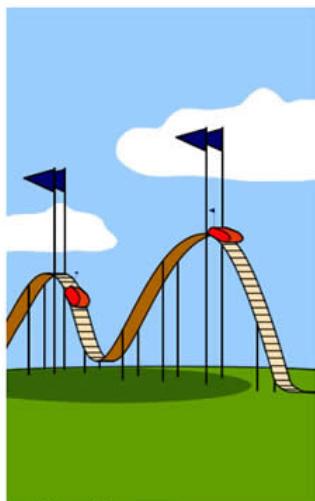
How the programmer wrote it



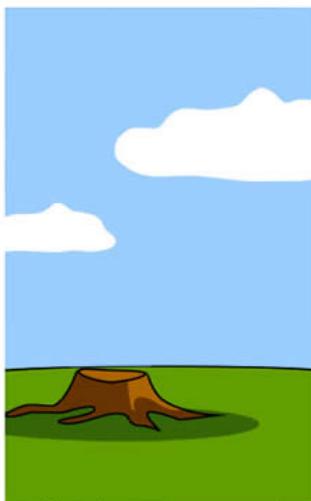
What the beta testers received



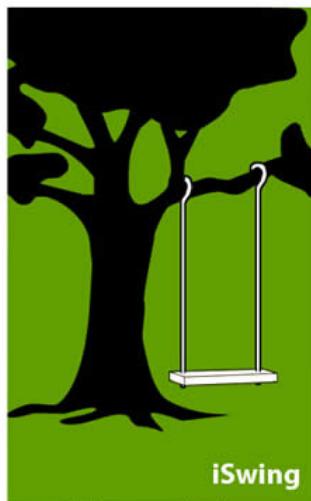
How the project was documented



How the customer was billed



How it was supported



iSwing  
What marketing advertised



What the customer really needed

WebDesign<sup>TM</sup>

Cartoon depictions copyright original artists independent of WebDesign.tm

<https://www.webdesign.tm>

# User Researcher

Deliveroo ★★★★☆ 38 reviews - London

## Who we are:

At Deliveroo, our mission is to bring the world's local restaurants into everyone's home or office - fast.

We work with hundreds of local premium restaurants to deliver their meals to homes and offices everywhere. Our customers are as passionate about great food as we are — and we get fantastic food to them in just 30 minutes on average!

We're growing quickly, having already launched in several countries across Europe, with many more launches in the works.

## What we do:

Design at Deliveroo takes centre stage.

Our mission is to build the best food delivery experience in the industry. To do this, we design, build and maintain a range of apps for our customers, drivers, restaurants and internal teams - all of which are mission critical to our company's operations. We also create packaging for our restaurants, international marketing campaigns both on print and in digital, company apparel for our team, and when time allows for it, mugs.

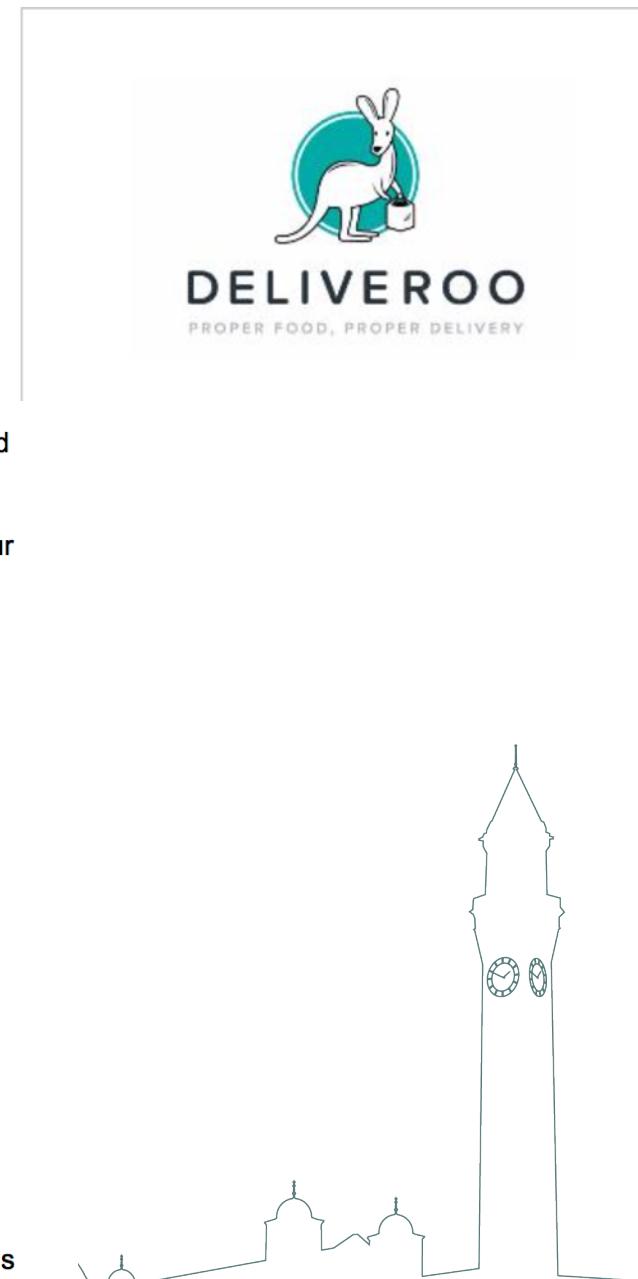
We're a small but effective team that supports the entire business across multiple countries in delivering a fantastic Deliveroo experience that is unique and delightful every step along the journey, and ensure that we reach both new and existing customers in a way that is effective and memorable.

## You:

We're looking for a smart, tenacious and detailed User Researcher to join our growing research team.

## As a User Researcher on our London-based team, you will:

- Establish a plan and toolkit for explorative and directive user research that helps question and validate our design and product assumptions
- Plan and execute field research, surveys, user interviews, diary studies and usability tests with our customers, restaurants and drivers to understand how we can serve them better
- Work with our data scientists and engineers in identifying trends and patterns in user behaviour to support and aid your research
- Turn your insights into recommendations and actions for our design team and product management
- Work with the team on challenging, validating and iterating on wireframes and visual designs to ensure insights generated by your research are being considered in our design decisions
- Support the entire design team in setting a common standard for how design is done at Deliveroo



# User Experience Designer

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Recruiter	<b>AMNESTY INTERNATIONAL</b>
Location	London (Central), London (Greater)
Salary	£43,200 per annum
Posted	28 Aug 2015
Closes	13 Sep 2015
Industry	<b>Charities, Human Rights, International, Social welfare, Design, Technology, Development, IT Support, IT Systems &amp; Testing</b>
Job Level	Experienced (non manager)
Hours	Full Time
Contract	Permanent
Listing Type	Job vacancy
Education Level	Undergraduate degree (or equivalent)

## User Experience Designer

London

Permanent

**£43,200 per annum**

To maximise human rights awareness on a global level, Amnesty International needs to be at the forefront of digital technology. To help us achieve this you'll play a leading role in the user experience design and optimisation of all our digital products.

### About the role:

As the business expert on UX Design you will work with the Head of Design to take a lead on a strategic user-centred vision developed for Amnesty International's family of digital products and services. Working alongside project teams and colleagues in global content you will translate and develop business requirements, market needs and user behaviour into high-quality solutions. You will also take responsibility for the overall vision and direction of user experience across all digital products and act as the ultimate advocate for UX across the organization.

### About you:

With significant experience of user experience and interface design, you will have expertise in graphic design and content management. You will have expert knowledge of Adobe PhotoShop and Adobe Illustrator and the ability to prototype in HTML, CSS and DHTML, Axure or equivalent. You will have in-depth knowledge of user testing and agile working methods. Experience of presenting and communicating technical and design solutions to a non-specialist audience is also essential.

A working Knowledge of CSS and HTML is desirable.



Recruiter	<a href="#">ECOM RECRUITMENT LTD</a>
Location	London (Richmond)
Salary	£30,000 - 32,000 (depending on experience)
Posted	18 Aug 2015
Closes	18 Sep 2015
Ref	AK
Industry	<a href="#">Media, Digital Media, Technology, Development, Infrastructure</a>
Hours	Full Time
Contract	Permanent
Listing Type	Job vacancy

## UX Designer

A leading Digital Telecoms client are looking for a midweight UX Designer with experience of working on high volume and large audience sites. The company want someone who is a dynamic thinker and truly understands the customer. They need someone who can bring their UX expertise and passion for the user to better the experience and business alike. This role is both challenging and inspiring.

### Responsibilities:

- Use analytics to uncover user behaviour patterns
- Prioritise web development work
- Research and create interactive wireframes
- Discover ways to improve the customer experience of the company through new technology
- Collect ideas and insights to make rounded decisions
- Work with all areas of business to create exceptional customer experience
- Continuous A/B and MTV Testing
- Wireframing, Sketching, getting buy-in from stakeholders

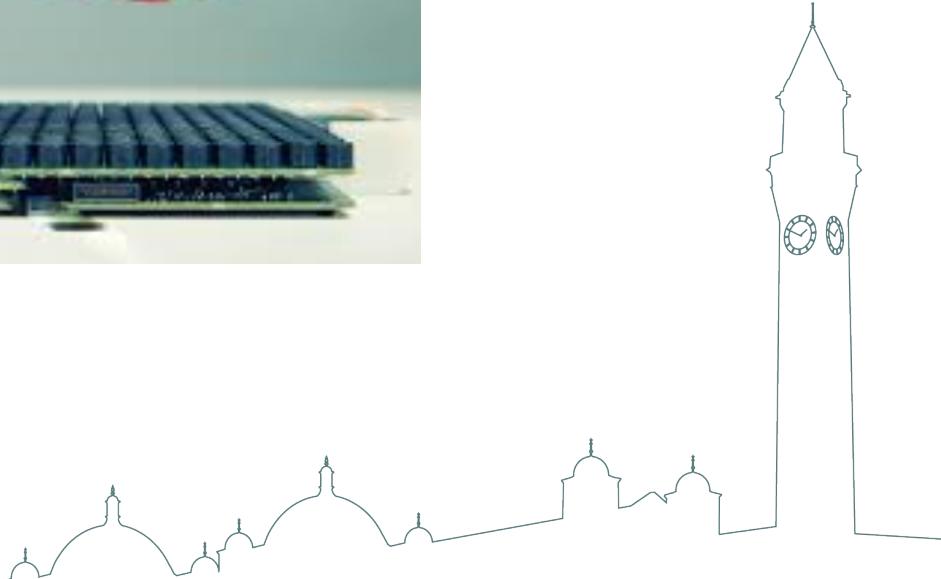
### Skills Required:

- Adobe Creative Suite
- Google Analytics
- MS Office

### Skills Preferred:

- HTML5 / CSS / JS
- After Effects/Animation Principles

# Approaches: Building new interface technologies

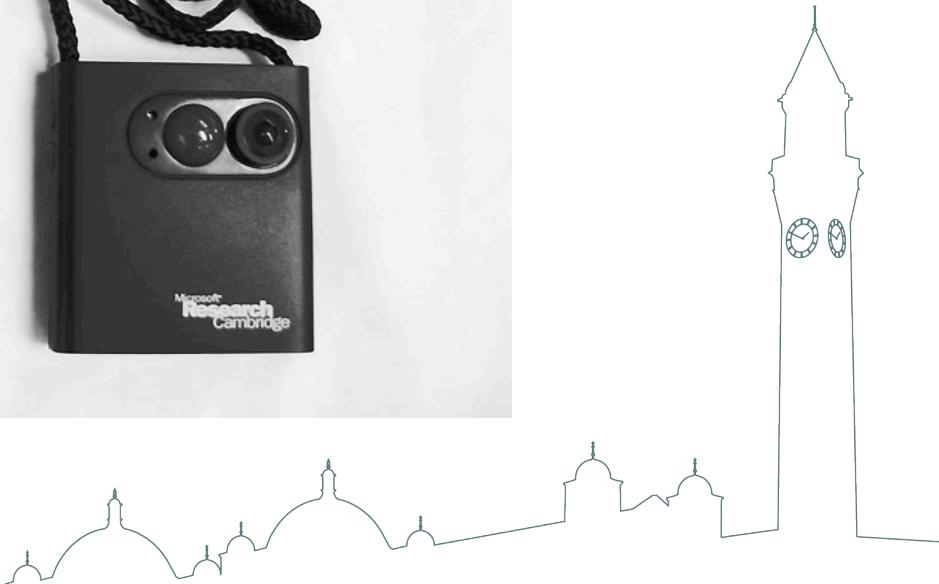


# Approaches: Typical technology-driven HCI problems

- smartphones are context aware! What can we use that for?
- we can now create large, interactive displays! What can we use that for?
- objects can be connected to the internet and each other! What can we use that for?



# Technology looking for a problem: SenseCam



# SenseCam

- Wearable
- Digital camera with built in sensors
- Automatically takes photos approx. 3-4 times a minute
- Initially developed by Microsoft Research in Cambridge

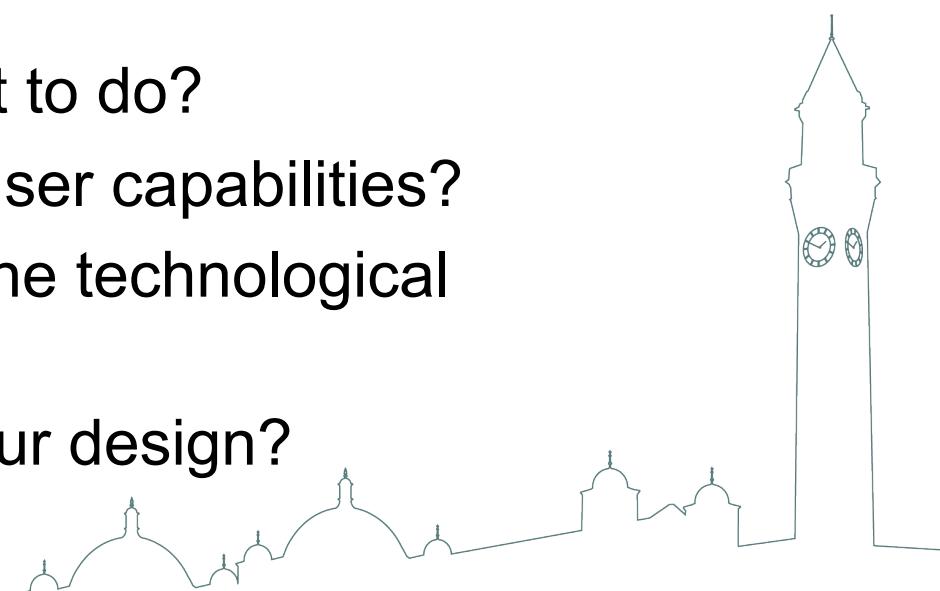


# Supporting Teachers' Reflective Practice



# A typical HCI design problem

- You want to design an application that helps students determine the suitability of different career paths.
- How would you solve this problem?
- How would you determine the requirements (needs) of potential users?
- What tasks would they want to do?
- How would you determine user capabilities?
- How would you determine the technological resources?
- How would you evaluate your design?



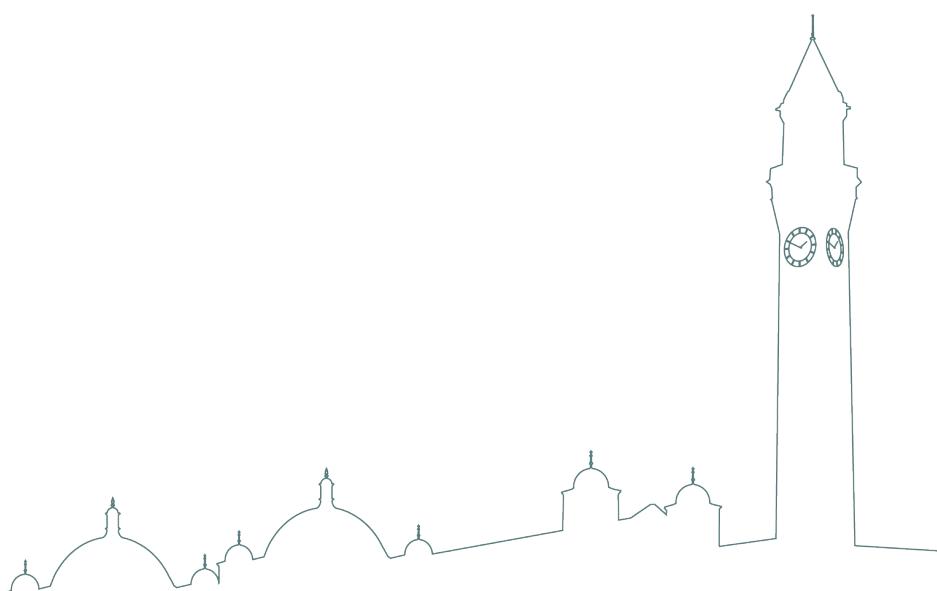
# A typical HCI design problem

- You want to design an application that helps students determine the suitability of different career paths.
- How would you solve this problem?
  - Iterative design, participatory design, scenario-based design ...
- How would you determine the requirements (needs) of potential users?
  - anthropology, field studies...
- How would you determine user capabilities and limits?
  - cognitive science, experimental psychology
- How would you evaluate your design?
  - user testing, A/B testing, ...

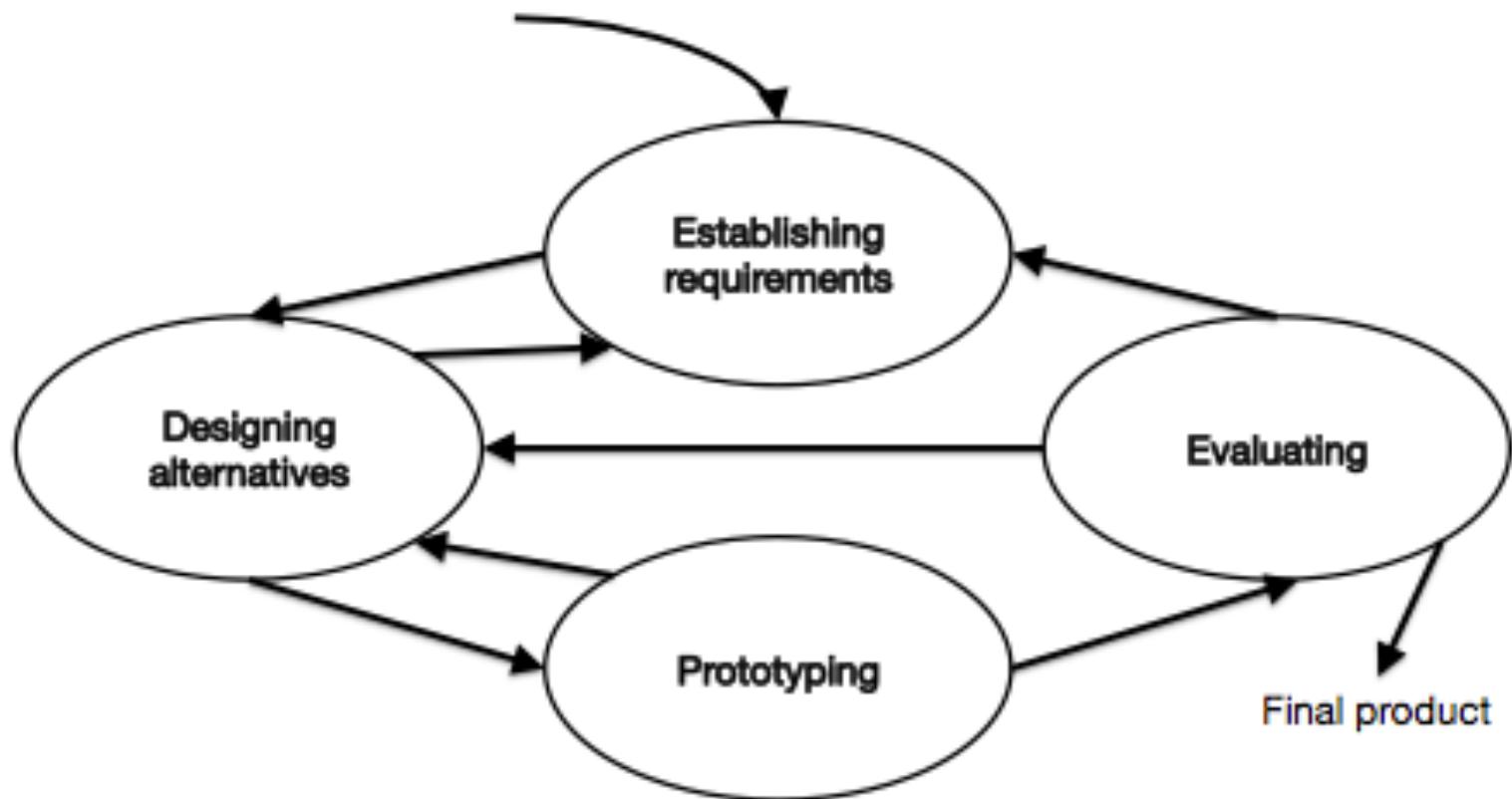


# Basic processes of interaction design

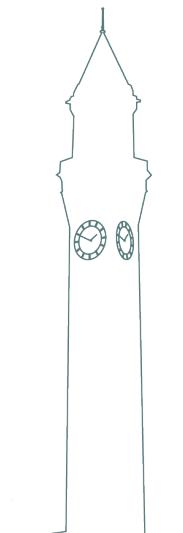
- Establishing requirements
- Designing alternatives
- Prototyping
- Evaluating



# Simple Life-cycle model



Rogers, Sharp and Preece (2011)



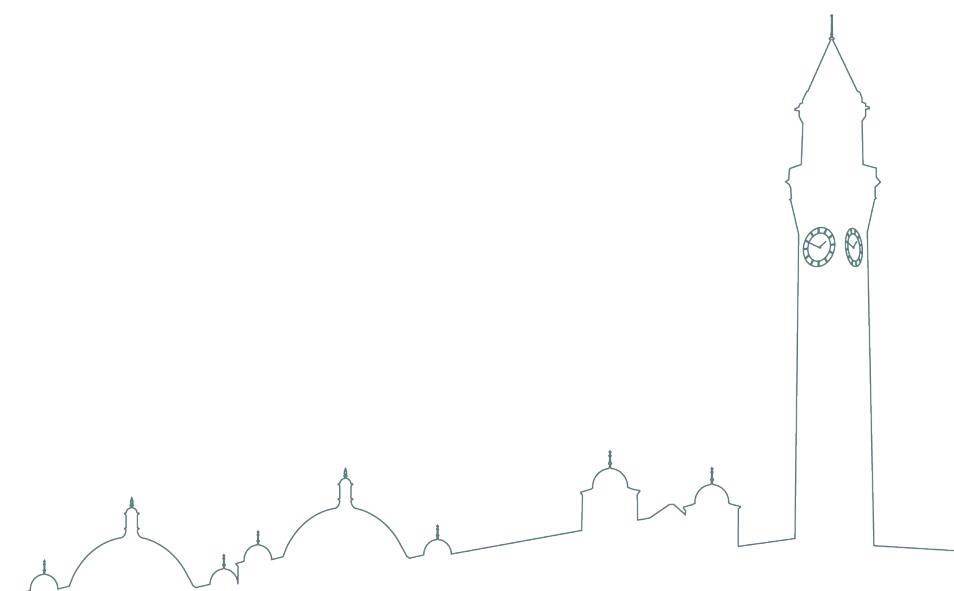
# Aims of HCI

- Inform the design of new systems
- Understand interactions
- Evaluate existing design
  
- Can be considered to cover both
  - Interaction design
  - Interaction science



# Plan for the module

- a mix of design process topics and topics about people
- two lectures a week and a practical class
  - practitioner talks
- practical class is split
  - Monday in CS LG04
  - UG 11-12
  - MSc 12-1



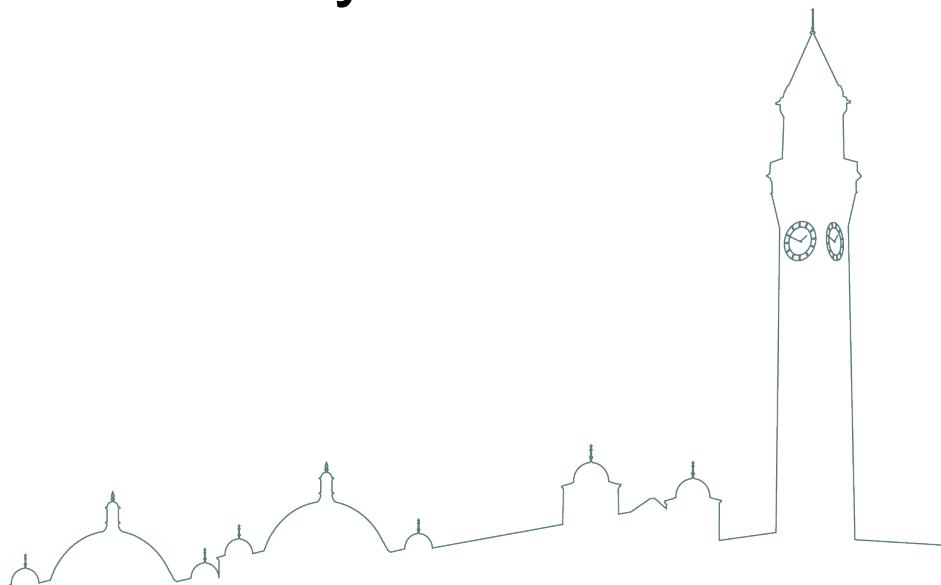
# HCI Pre-requisites

- A willingness to engage with theories of human behaviour.
- A willingness to think deeply about how to design technology for people.



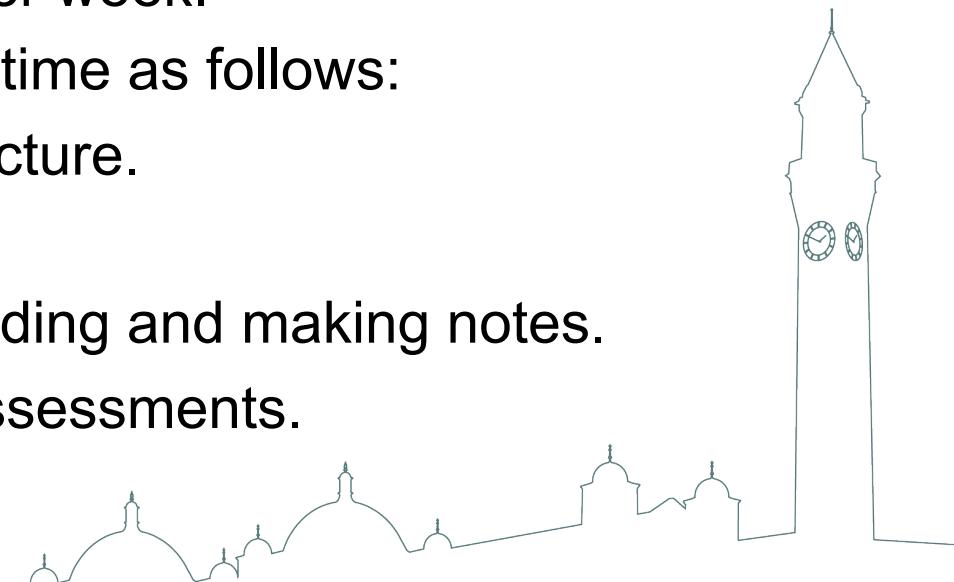
# Assessment

- 10% Class test questionnaire. (approx. Week 7)
- 10% Design exercise. (approx. end of term).
- 80% examination using short essay format.



# Workload

- You take 60 credits per semester and the module is a 1 semester 10 credit module.
- Therefore  $\frac{1}{6}$  of your time should be spent on this module.
- Assuming that you work 36 hours per week (you may choose to work much more) then the module represents a time commitment of 6 hours per week.
- We suggest you allocate your time as follows:
  - 2 hours per week for the lecture.
  - 1 hour for the practical.
  - 1 hours on background reading and making notes.
  - 2 hours per week on the assessments.



# Next Week

- Lab Class on Monday
  - Techniques for gathering requirements
- Lectures
  - Interaction design and the design process
  - Understanding users
  - Feeding findings into the design process



# Reading

- Carroll, John M. (2014): Human Computer Interaction - brief intro. In: Soegaard, Mads and Dam, Rikke Friis (eds.). "The Encyclopedia of Human-Computer Interaction, 2nd Ed.". Aarhus, Denmark: The Interaction Design Foundation.
  - Available online at [https://www.interaction-design.org/encyclopedia/human\\_computer\\_interaction\\_hci.html](https://www.interaction-design.org/encyclopedia/human_computer_interaction_hci.html)

