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| Module Title | PSYCGI18 |
| Human Factors for Digital Health | |

Academic Session	Date Description Last Updated
2017/18	19 May 2017

Module Convenor:

Name	Office	Phone	Email
Ann Blandford	66GS 2.02	020 3108 7049	A.Blandford@ucl.ac.uk

Module aims and objectives:

The aim of this module is to introduce people to the human factors and design opportunities that pertain particularly to digital health technologies. While many of these are common to other technologies, there are also defining issues. For example:

- Some interactive devices, such as those delivering drugs and similar therapies, are safety-critical, and need to be shown to be appropriately safe.
- Many health technologies need to be used by people with a wide variety of backgrounds and experiences – both trained clinicians and people with no medical education. In particular, some of the users are, by definition, suffering from a health condition, and may be feeling vulnerable.
- Systems that hold personal data need to be appropriately secure to ensure the required levels of personal privacy while also enabling data to be shared as needed for managing care and for advancing understanding of health conditions.

There is a spectrum of applications, from those to manage serious long-term health conditions to personal wellness applications, and also systems to make sense of large health datasets, used by researchers to better understand health conditions and develop new future therapies.

The objectives of this module are to give people with a background in human factors an understanding of the particular issues that relate to the design and evaluation of digital health technologies, and to equip people with a background in health technologies with the skills to design and evaluate them in a user-centred way.

Module description:

HF4DH is designed for those with an interest in developing and evaluating health technologies, whether as researchers, innovators, regulators, or purchasers.

This module is designed to bring together people with different backgrounds (medical, digital health, health technologies, human factors, interaction design) to learn from each other as well as from the formal course syllabus, so is suited to participants from this range of backgrounds.

Foundational topics covered will include:
- o The design space: who and what are we designing for?
- o The design lifecycle in a nutshell
- o An overview of digital health technologies
- o Cultures of HCI and health technologies

Across the course, we will review the spectrum of digital health technologies and the relevant theories and practices that shape their effective design and use. The following are illustrative examples of issues and theories:
- Self-management of health and wellbeing:
  - o Designing for behaviour change
  - o Digital interventions
  - o Information seeking and sensemaking

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     o Turning to peers
- Shared care
  - o Self-care, shared care and telecare
  - o New models of care enabled by digital technologies
  - o Digital technologies for primary and secondary care
- Safety, regulations, medical devices and health IT
  - o Medical devices: regulations and standards
  - o Use errors and patient safety
  - o Designing technologies for use in hospitals
- Big data and learning health systems
  - o Data privacy
  - o Real-time uses of data in care
  - o Learning health systems
  - o Epidemiology and public health

Lectures will be complemented by talks by visiting speakers (patients and professionals), extensive group working and self-study.

Module learning outcomes:

Knowledge and understanding of:
- requirements gathering, design, and user-centred evaluation and techniques pertinent to digital health technologies.
- theories of interaction, behaviour change and human error.
- issues specific to the design of health technologies, including working with vulnerable groups, regulatory matters, ethics, data privacy, etc.

Intellectual (thinking skills) – able to:
- select and apply appropriate methods when gathering user requirements, designing, and evaluating systems.
- understand the strengths and limitations of techniques, and how to select appropriate techniques for the situation.
- analyse situations critically to address deep problems in the design and use of digital health technologies.

Practical skills:
- practical application of user-centred design and evaluation methods;
- collecting and analysing data;
- prototype design;
- different styles of evaluation (qualitative and quantitative);
- reporting outcomes to multiple audiences.

Transferable skills:
- argumentation and communication of ideas;
- critical reading;
- group working;
- design for health technologies

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Module schedule: Term 2 Monday afternoons (tbc)

Example programme:

Teaching week	Topic
1	Fundamentals of HCI and digital health
2	Wellbeing and behaviour change
3	Making sense of health information – individually and with peers
4	Care at home: shared care and telecare
5	Data privacy
6	Hospital care: patient and clinician perspectives
7	Medical devices: regulations and human factors
8	Use error and patient safety
9	Learning health systems through big data
10	Looking to the future: challenges and possibilities

Assessment method: Coursework (based on case studies). 2500-3000 words.

Note: Module descriptions may be subject to minor alterations due to lecturer availability & changes to regulations.

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