1. **Title of the module**

COMP5550 (CO555) Computer Science Topics in Health

1. **School or partner institution which will be responsible for management of the module**

School of Computing

1. **The level of the module (e.g. Level 4, Level 5, Level 6 or Level 7)**

Level 5

1. **The number of credits and the ECTS value which the module represents**

15 credits (7.5 ECTS)

1. **Which term(s) the module is to be taught in (or other teaching pattern)**

Spring

1. **Prerequisite and co-requisite modules**

None

1. **The programmes of study to which the module contributes**

Computer Science for Health (BSc)

1. **The intended subject specific learning outcomes.  
   On successfully completing the module students will be able to:**
   1. Understand Health-related Computer Science and associated concepts regarding data handling and analysis – both in the small (personalised and single sensor) and large (medical records and big data).
   2. Identify strategies for the design, implementation and evaluation of Health-related Computer Science systems for a given problem.
   3. Understand ethical issues related to computing systems used in relation to human health and wellbeing.
   4. Present innovative solutions to specific health-related Computer Science problems and address this to a variety of audiences.
   5. Write software to handle and analyse health-related computer data in a given particular computer science for health context, for example the automated analysis of medical images in Matlab, or the development of a health analysis app.
2. **The intended generic learning outcomes.  
   On successfully completing the module students will be able to:**
   1. Demonstrate comprehension of the trade-offs involved in design choices.
   2. Demonstrate an understanding of theory and the ability to deploy it in design, implementation, information management and evaluation of computer-based systems.
   3. Demonstrate effective use of general IT facilities.
   4. Reflect on organisational skills including the management of people, operations  management, marketing and organisational strategy.
   5. Understand professional responsibility relating to economic, social, moral and ethical issues.
   6. Show communication skills in delivering messages to a range of audiences about  technical problems and their solutions.
3. **A synopsis of the curriculum**

This module guides Stage 2 students in their understanding of the current state of the art in the application of computer science, computing technology and data analysis to human health and modern medicine

1. An introduction of basic concepts related to current health-related computing, and innovation in healthcare that advanced computing techniques can enable.
2. Review of representative example healthcare related computing applications.
3. Introduction to the handling of clinical records, medical data and health systems, including an appreciation of the ethics issues pertaining to health-based computing systems.
4. Development of the use of analysis tools such as Matlab for medical and health data handling and analysis, for example in the automated analysis of medical imagery, or similar methods of computer processing that would be suitable for mobile and/or web based handling and analysis.
5. Introduction to the techniques, limitations and potential of big-data analysis for human health related computing systems of the present, as well as potential solutions in the future.
6. **Reading List (Indicative list, current at time of publication. Reading lists will be published annually)**
7. Karen A. Wager, Frances W. Lee, John P. Glaser, Health Care Information  Systems: A Practical Approach for Health Care Management, John Wiley & Sons,  2009
8. Tom Jones, Developing an E-Health Strategy: A Commonwealth Workbook of  Methodologies, Content and Models, 2011
9. Martin Szomszor, Patty Kostkova, Electronic Healthcare: Third International  Conference, eHealth 2010, Casablanca, Morocco, December 13-15, 2010
10. Joseph K. H. Tan, E-health Care Information Systems: An Introduction For Students  and Professionals, John Wiley & Sons, 2005
11. R. Palaniappan (2010) Introduction to Biological Signal Analysis, <http://bookboon.com/en/textbooks/it-programming/introduction-to-biological-signal-analysis>, BookBoon.
12. **Learning and Teaching methods**150 hours in total  
    30 Contact hours  
    120 Private study, assessment & presentation preparation
13. **Assessment methods.**
    1. Main assessmentWritten reports (25%) (approx. 15 hours)  
       Group work/presentation (25%) (approx. 40 hours)  
       2 hour unseen written examination (50%).
    2. Reassessment method  
       Like for like
14. **Map of module learning outcomes (sections 8 & 9) to learning and teaching methods (section12) and methods of assessment (section 13**

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Module learning outcome** | *8.1* | *8.2* | *8.3* | *8.4* | *8.5* | *9.1* | *9.2* | | *9.3* | *9.4* | *9.5* | *9.6* |
| **Learning/ teaching method** |  |  |  |  |  |  |  | |  |  |  |  |
| Private Study | X | X | X | X | X | X | X | | X | X | X |  |
| Assessment, portfolio preparation and presentation preparation. | X | X | X | X | X | X | X | | X | X | X | X |
| *Lectures* | X | X | X | X |  | X | | X | X | X | X |  |
| *Supervised practical classes* | X | X | X | X | X | X | | X | X | X | X |  |
| *Group work and presentation* | X |  |  |  | X | X | | X | X | X | X | X |
| **Assessment method** |  |  |  |  |  |  |  | |  |  |  |  |
| *Written report* | X | X | X | X | X | X | X | |  | X |  |  |
| *Groupwork* | X |  |  |  | X | X | X | | X | X | X | X |
| *Presentation* |  |  | X | X | X | X |  | | X |  | X | X |
| *Written examination* | X | X | X | X | X | X | X | | X |  |  |  |

1. The School recognises and has embedded the expectations of current equality legislation, by ensuring that the module is as accessible as possible by design. Additional alternative arrangements for students with Inclusive Learning Plans (ILPs)/ declared disabilities will be made on an individual basis, in consultation with the relevant policies and support services.

The inclusive practices in the guidance (see Annex B Appendix A) have been considered in order to support all students in the following areas:  
  
a) Accessible resources and curriculum  
b) Learning, teaching and assessment methods

1. **Campus(es) or Centre(s) where module will be delivered:**

Medway

1. **Internationalisation**

The topics addressed by this module relate to a field which is of international importance, given the global role of computers in today's technological innovation.  The topics covered by this module are international in nature, being identical worldwide and independent of traditional spoken language.

**FACULTIES SUPPORT OFFICE USE ONLY**

**Revision record – al revisions must be recorded in the grid and full details of the change retained in the appropriate committee records.**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Date approved | Major/minor revision | Start date of the delivery of revised version | Section revised | Impacts PLOs (Q6&7 cover sheet) |
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