Computing in Medicine (MPHY0020)

Description
The aim of this module is to provide an introduction to topics that are important in the application of computing in a medical context.

Students completing this course will be able to:
- Identify and explain the function of key components of a modern computer
- Describe the major uses of computers in a healthcare setting (e.g. PACS)
- Explain key regulatory, legal, and ethical principles of medical data security and protection
- Represent numbers using different binary number representations (e.g. floating point)
- Demonstrate an understanding of the fundamental concepts of computer programming, including recommending appropriate data types for different forms of data, and demonstrating a working knowledge of basic MATLAB commands
- Write a MATLAB program to perform simple analysis and visualisation of biomedical data
- Demonstrate an understanding of the principles and application of key elements of digital signal and image processing, including sampling theory; quantisation; representing a signal in both the time/space and frequency domains; convolution; the Discrete Fourier Transform; representing and storing binary, greyscale, and colour images; linear filtering; image edge detection; computing gradients; interpolation; morphological filters; and an introduction to image segmentation and image registration.

This module is assessed by written examination (66%) and coursework (34%) in the form of a MATLAB programming assignment.

A video description can be found at the UCL Media Central.
Computing in Medicine (MPHY0020)

Description
The aim of this module is to provide an introduction to topics that are important in the application of computing in a medical context.

Students completing this course will be able to:
- Identify and explain the function of key components of a modern computer
- Describe the major uses of computers in a healthcare setting (e.g. PACS)
- Explain key regulatory, legal, and ethical principles of medical data security and protection
- Represent numbers using different binary number representations (e.g. floating point)
- Demonstrate an understanding of the fundamental concepts of computer programming, including recommending appropriate data types for different forms of data, and demonstrating a working knowledge of basic MATLAB commands
- Write a MATLAB program to perform simple analysis and visualisation of biomedical data
- Demonstrate an understanding of the principles and application of key elements of digital signal and image processing, including sampling theory; quantisation; representing a signal in both the time/space and frequency domains; convolution; the Discrete Fourier Transform; representing and storing binary, greyscale, and colour images; linear filtering; image edge detection; computing gradients; interpolation; morphological filters; and an introduction to image segmentation and image registration.

This module is assessed by written examination (66%) and coursework (34%) in the form of a MATLAB programming assignment.

A video description can be found at the UCL Media Central.

Key information
- Year: 2020/21
- Credit value: 15 (150 study hours)
- Delivery: PGT L7, Campus-based
- Reading List: View on UCL website
- Tutor: Dr Erwin Alles
- Term: Term 1
- Timetable: View on UCL website

Assessment
- Written examination (main exam period): 66.0%
- Coursework: 34.0%

Find out more
For more information about the department, programmes, relevant open days and to browse other modules, visit ucl.ac.uk

Disclaimer: All information correct as of March 2020. Please note that aspects of the module may be subject to change. UCL will make best efforts to inform applicants of major changes.
Computing in Medicine (MPHY0020)

Description
The aim of this module is to provide an introduction to topics that are important in the application of computing in a medical context.

Students completing this course will be able to:
- Identify and explain the function of key components of a modern computer
- Describe the major uses of computers in a healthcare setting (e.g. PACS)
- Explain key regulatory, legal, and ethical principles of medical data security and protection
- Represent numbers using different binary number representations (e.g. floating point)
- Demonstrate an understanding of the fundamental concepts of computer programming, including recommending appropriate data types for different forms of data, and demonstrating a working knowledge of basic MATLAB commands
- Write a MATLAB program to perform simple analysis and visualisation of biomedical data
- Demonstrate an understanding of the principles and application of key elements of digital signal and image processing, including sampling theory; quantisation; representing a signal in both the time/space and frequency domains; convolution; the Discrete Fourier Transform; representing and storing binary, greyscale, and colour images; linear filtering; image edge detection; computing gradients; interpolation; morphological filters; and an introduction to image segmentation and image registration.

This module is assessed by written examination (66%) and coursework (34%) in the form of a MATLAB programming assignment.

A video description can be found at the UCL Media Central.

Key information
- Year: 2020/21
- Credit value: 15 (150 study hours)
- Delivery: UGM L7, Campus-based
- Reading List: View on UCL website
- Tutor: Dr Erwin Alles
- Term: Term 1
- Timetable: View on UCL website

Assessment
- Written examination (main exam period): 66.0%
- Coursework: 34.0%

Find out more
For more information about the department, programmes, relevant open days and to browse other modules, visit ucl.ac.uk

Disclaimer: All information correct as of March 2020. Please note that aspects of the module may be subject to change. UCL will make best efforts to inform applicants of major changes.