



Module Specification

Key Information			
Module title	How Computers Work		
Level	4	Credit value	15
Member Institution	Goldsmiths	Notional study hours and duration of course	150
Module lead author/ Subject matter expert	Marco Gillies		
Module co-author			

Rationale for the module
This module teaches a basic understanding of a range of different elements of computer systems. This is a fundamental understanding that underpins both professional use of computer systems and further study in computer science. The broad overview provided in this course will support learning in a large range of topics in the degree and later modules will expand upon the topics covered here.

Aims of the module
This module aims to give you core knowledge that will help you understand, interact with, and design, computer systems. You will learn how to use knowledge about computational processes to analyse and explain the behaviour of computer systems. The module will use core computer science concepts to help you to reason about computer systems and to predict their behaviour. You will also learn about typical computer system architectures, basic networking and network services such as databases.

Topics covered in this module:

The topics listed here are an approximation of what will be covered. The topics presented may be slightly revised to ensure currency and relevance. Students will be advised of any changes in advance of their study.

1. How a Computer works
2. How the Web works
3. Data representations
4. Computer Architecture and Machine Language
5. Operating Systems
6. Operating System processes
7. Networks
8. The World Wide Web
9. Machine Learning
10. Data Science

Approximately 10-12 hours of study will be required per topic. The remaining study time is intended for coursework and examination preparation.

Learning outcomes for the module

Students who successfully complete this module will be able to:

1. Describe and illustrate contemporary practice in a range of areas of computing technology
2. Outline the elements that make up a computer system and describe their purpose
3. Explain the functioning of a computer system in terms of an abstract notional machine
4. Analyse and predict the behaviour of a computer system using a notional machine
5. Reason about computer systems in terms of a wide range of components and levels of abstraction such as hardware, operating systems, networks and data representations

Assessment strategy, assessment methods

Summative and Formative Assessments

The module will contain a range of summative and formative assessments. Summative assessments are assessments which contribute directly towards your final grade. Formative assessments do not count directly towards your final grade. Instead, they provide you with opportunities for low stakes practice, and will often provide some sort of feedback about your progress. For example, a practice quiz might provide you with feedback about why a particular answer was wrong.

Assessment Activities

The table below lists the assessment activity types you might encounter taking the module. It also states if that type of assessment can be automatically graded. For example, multiple choice quizzes can be automatically graded, and so can some programming assignments. It also states if that type of assessment will be found in the summative coursework and the summative examination. More details about the summative assessments are provided below.

Assessment activity type	Can it be automatically graded with feedback in some cases?	Coursework	Examination
Quiz	X	X	X
Writing task		X	X
Simulation task	X	X	

Peer review task		X	
------------------	--	---	--

Pass Mark

In order to pass this module, you must achieve at least 35% in each element of summative assessment and an overall weighted average of 40%, subject to the application of rules for compensation. Please refer to the programme regulations for more information.

Summative Assessment Elements

As this is a module that has a significant amount of theory it is assessed as a theory-based module. This means that the summative assessment is composed of two elements, whose weightings are listed in the table below.

Summative Assessment Component	Percentage of final credit	Deadline
Coursework	50%	Mid session
Examination	50%	End of session

The coursework comprises a variety of practical exercises and quizzes which in total will take up to 25 hours of study time to complete. The examination will be two hours long, and consist of written answer and multiple choice questions.

Learning resources

The module will draw on a number of different, largely web-based, public resources as well as the resources produced as bespoke material for this module. The standard text book for the module will be:

Glenn Brookshear, Dennis Brylow book - Computer Science: An Overview(12th edition)