

## Department of Computing

### Computer Hardware First Year course (DoC 112)

*Lecturer:* Duncan Gillies (dfg)

*Course website:* <http://www.doc.ic.ac.uk/~dfg/hardware/hardware.html>

Note about email: Please do not send any of your questions or problems by e-mail. Answering technical problems by email is very difficult. If you are stuck, bring your problem to the weekly tutorial and ask one of the tutors or lectures at the beginning of the session for help. If you are still stuck email us to fix an appointment.

*Lectures:*

The course does not assume any previous knowledge of digital circuit design. Emphasis will be on how digital systems work and how they can be designed. Although it is not possible in the time allotted to cover the whole subject exhaustively, the course aims to cover enough material for students to understand how a simple digital computer works and is designed.

*Tutorials:*

The tutorials are primarily intended to reinforce the lecture material using practical design examples. They also provide you examples of the types of question that will be found in the exams. In addition to helping you with the problem sheets, the tutors will be pleased to answer any other questions on the course material.

*Course Work:*

The coursework assessment is in two parts:

**Combinatorial Circuit Design:** You will be given the specification of a combinational circuit which you have to design and test. The exercise will be given to you during the third week of term. It can be started after lecture 3. It will be due to be handed in during the fifth week. It will be corrected, marked and returned to you in the seventh week of term. It contributes 60% of the coursework marks.

**Sequential Circuit Design (Spring term):** You will be given a sequential circuit design problem which involves using a professional hardware design system - Quartus II - which is installed in the laboratories. This exercise will be done during the first two weeks of term 2. It contributes 40% of the coursework marks.

*Examination*

Of course, unfortunately for you, there will be an examination paper on this material in May. The exam paper contains 2 questions on hardware and two questions on architecture. You need to answer all four questions.

*Recommended Books*

The recommendation is that you don't buy a book until you really need one. This one is fairly well known and may be helpful, but it goes into far more detail than you will need.

Morris Mano and Charles Kime: Logic and Computer Design Fundamentals (Second Edition) Prentice Hall International (2001)