



# **International Diploma in Computer Studies**

## **Lecturer Guide**

**Fundamentals of Hardware  
and Operating Systems**

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## Modification History

Revision	Date	Revision Description
V1.0	November 2007	For issue.

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# Fundamentals of Hardware and Operating Systems Lecturer Guide

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## How to Use this Lecturer Guide

The materials for this module consist of the following:

- Lecturer Guide/Notes for Lecturers – containing information needed when teaching this module, including a suggested timetable.
- Visuals in Adobe PDF format are provided on the Lecturer CD ROM.
- Required textbooks – it is around these that you should base your lectures (using the visuals provided). All the class exercises and self study exercises are included in the textbooks.
  - *Hardware Service Technician* (2004) Galatea Training Services Limited.
  - *Operating System Technologies* (2004) Galatea Training Services Limited.
  - These textbooks are included in electronic format on the International Diploma in Computer Studies, Student and Lecturer CD ROMs.
  - Bound hardcopies of the textbooks can be obtained from Galatea at a price very significantly below the normal publication price. Contact Steve Newton (email: [steve.newton@galatea.co.uk](mailto:steve.newton@galatea.co.uk); telephone: +44(0) 1706 351389).

After allowing the appropriate time within the lecture for students to carry out an exercise, it is useful to spend time discussing the students' answers/suggested answers.

# Notes for Lecturers

## Module Specification

### The Fundamentals of Hardware and Operating Systems Module

This module is intended to provide a student with a thorough understanding of the technical and practical skills involved in the maintenance and configuration of personal computers. The module will be of particular benefit to students who seek employment in a technical support role. However, it will also be of great benefit to other students because a student or computing professional who has an understanding of the practical aspects of the maintenance and configuration of a personal computer is better placed to understand other material (in, for example, computer technology, programming, data networking, etc) and to interact with staff engaged in a technical support role.

### Duration

This module is of 150 hours duration.

### Method of Presentation

The lectures should be based on the required textbooks (using the visuals provided).

- Lecturer-led.
- Lectures and workshops.
- Extensive use of visual aids.
- Use of a flipchart or whiteboard.
- Self study.

### Equipment and Resources Required

The following equipment is required:

- Overhead projector and screen.
- Flipchart stand, flipchart and broad-tipped felt pens.
- Audio/visual equipment.

## Additional Resources

Each module has one or more required textbooks which form the primary reference source for students undertaking the module. The required textbook is identified in the Module Outline presented in the Programme Handbook, and also on Page 5 of this document. All of the diploma modules have a required textbook that is available on the Student and Lecturer CDs in PDF format. Lecturers should encourage students to refer to printed copies of the textbooks because this will make study easier for most students.

Students can greatly benefit by being exposed to sources of information beyond the required textbook. Additional resources include other textbooks, websites, academic papers and journals. The section below indicates the additional resources for this module, suggested by its writers.

Lecturers should inform the students of the additional resources as the module progresses (i.e. when the appropriate material is being covered) and, if possible, make the printed resources available in the Accredited Partner Centre's library. The list of additional resources is not intended to be exclusive; lecturers should inform students of other additional resources as they see fit.

## Web Resources

Useful websites include:

<http://computer.howstuffworks.com/>

<https://www.mysecurecyberspace.org/>

## Sample Lecture/Tutorial/Practical Workshop and Independent Study Activity Timetable

The teaching staff and students must cover the syllabus thoroughly and effectively. It is necessary to ensure that the understanding and demonstrable knowledge related to the learning outcomes are acquired by the student.

The following table provides examples of the topics it is advisable to cover in lectures/tutorials/practical workshops and independent study activities over the twelve week teaching semester.

- Each week there should be a lecture and tutorial/practical workshop, totalling at least 3 hours.
- Students should spend approximately 9.5 hours each week on independent study, which may include the sample activities indicated in the table, and is inclusive of time spent on assignments and examination revision.

This totals 150 hours of study per module.

Semester 1	Lecture Topic	Tutorial Topic/Independent Activity	Class Hours	Independent Hours
Week 1	Hardware Installation, Configuration and upgrading	Peripherals and ports, installing disk drives, configuring peripheral devices, system upgrading and optimising	3	9.5
Week 2	Diagnosing and Troubleshooting	Symptoms and basic trouble shooting techniques	3	9.5
Week 3	Preventive Maintenance, Safety and Environment Issues	Cleaning, surge protection, high voltage hazards, storage protection, disposal procedures	3	9.5
Week 4	Motherboards, Processors and Memory	Various types of current processors (Intel, AMD), clock speeds, types of RAM, motherboards, CMOS RAM	3	9.5
Week 5	Printers and Scanners	Printer Types, Installation, Servicing, Scanners and Scanner types, Installation	3	9.5
Week 6	Laptops and Portable Devices	Types of laptops and portable devices, Introduction to WI-FI	3	9.5
Week 7	Basic Networking	LAN, network media, troubleshooting LANs, network repair, Internet connectivity (modem, ADSL, WI-FI)	3	9.5
Week 8	Windows Operating System Fundamentals	Windows XP, system files, command line functions, disks directories and files, system utilities	3	9.5
Week 9	OS Installation, Configuration and Upgrading	Installing Windows XP, patches and service packs, upgrading the OS, upgrade problems, dual booting with other OSs, system start-up, working with devices, applications and printers	3	9.5
Week 10	OS Diagnosing and Troubleshooting	Troubleshooting startup problems, using XP system Restore, Emergency Repair, ASR backups, blue screen errors, application problems, virus symptoms, removal of viruses.	3	9.5
Week 11	Networking with Windows	Windows network protocols, network printing, installing other network protocols, network troubleshooting tools, Internet connectivity, private IP addresses, Internet application protocols, configuring internet options, WAN with Windows XP, Network Address Translation (NAT), Windows XP firewall	3	9.5
Week 12	Hardware and Software Security	Computer security risks to home and LAN users	3	9.5
Total hours			36	114

**Note:** The above information applies to full-time study, therefore needs adjusting accordingly for online or part-time study. It is intended as a guide, but Accredited Partner Centres may adapt this to meet local needs.