APRIL 2005

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COMPUTING 253 -- Course Outline

(3 Credits)
COMP253: Small Computer Systems: Organisation and Architecture (3,2,0)
Winter 2005

Instructor:	**Yanni Giftakis**	Phone/Voice-mail: **250-371-5933**
Office:	**OM2842**	E-mail: **giftakis@yahoo.com**
Website: http://giftakis.tripod.com/		

Course Description

This course presents the organisation and higher-level architecture of modern, small microcomputer systems (PCs). General topics include data representation in computers, logic design basics, essential computer organisation, and principles of operating systems. Attention is brought to topics for computer resource management, as well as relevant, current, and popular topics.

The above are complemented by lab workshops, providing hands-on experience with configuration, troubleshooting, and understanding of small system components and peripherals.

Educational Objectives/Outcomes

After completing the course, the student will,

- understand the principles of internal data representation and computer organisation;
- be familiar with the functions of computer components and their relationships;
- understand the division and management of computer resources;
- have studied the relevant aspects of modern small computer operating systems;
- gain practical experience in installing, configuring, and troubleshooting small computer systems

Prerequisites

Admission to the **Computer Systems: Operations and Management** Program (CSOM); or the course instructor's consent.

Co-requisites

Common keyboarding skills and basic familiarity with common computer components and an operating system (such as Microsoft Windows) is an asset.

Texts/Materials

- Andrews, Jean, <u>A+ Guide to Managing and Maintaining Your PC, Comprehensive, Fifth Edition</u>, Course Technology, 2005
- Mention will be made of other resources, whether in the UCC library and/or online

Student Evaluation

Assignments/Reports	20%		*Midterm Exam*	25%
Workshops	5%		*Final Exam*	40%
Quizzes	10%			

Course Notes

- **Successfully Passing the Course**

To pass the course, the student must achieve a <u>minimum</u> of **50%** overall, as well as a <u>minimum</u> of **50%** on the final exam.

- **Attendance**

Students are <u>strongly</u> encouraged to attend EVERY lecture and workshop; in particular, workshops frequently present material not mentioned in lecture. For missed classes and workshops, it is the student's responsibility to determine missed topics.

- **Late Submission Policy** (for homework, assignments, and reports)

Items are due at the **BEGINNING** of class, or the specific time, on the indicated due date. Late submissions, exceeding the stated date and time, receive a mark of zero (0).

- **Assignment Presentation**

All submitted work <u>must</u> be organised neatly on 8½ x 11 inch paper, typed when possible, <u>always</u> accompanied by a detailed title page. Report documents must be <u>properly bound</u>.

- **Workshops and Research Projects—Team work!**

During workshops, students are expected to work in teams. Various workshop submissions and research projects may be the result of such teamwork.

- **Academic Honesty Policy**

UCC's academic honesty policies are followed in this course, covering all quizzes and exams, as well as all submitted work. Students are expected to be familiar with these policies (refer to the UCC Course Calendar).

Course Lecture Topics

Part 1:
1. Introduction: History of Computing and Computers, & Computing Basics
2. OSes (DOS, Linux): User Interfaces
3. Number Systems, Internal Representation
4. Computer Arithmetic (introductory)
5. The Central Processing Unit
6. Logic and Circuits

Part 2:
7. Mainboard Aspects
8. Input and Output Devices
9. Storage Systems and Technologies
10. System & Peripheral Bus Architectures
11. Aspects of Operating Systems
12. System Performance Aspects

Workshops (entire semester):
Pending new topics or schedule changes, there are nine (9) lab workshops throughout the semester. Each workshop focuses on a particular aspect of hardware, diagnostics, operating systems, or system assembly/maintenance. Reports may be the result of some, summarising observations and activities.

Research:
This course encompasses many popular topics in computer technology; hence, students can expect assignments that require extra-class research. Results of such research are presented in report form.

Quizzes and Exams:
- *quizzes* can cover any course topic; although announced in advance, students must be prepared
- generally, the *midterm* covers Part 1 & workshops to that point; *final* covers Part 2 & <u>all</u> workshops

Use of Technology

The student is expected to use time outside of class to consult relevant reference materials, with focus on resources available on the Internet, for deeper understanding of course themes.

Students are <u>not</u> expected to use his/her own computer systems as a practise or experimentation model. *Outside (home) equipment should <u>not</u> be brought into the lab environment.*