

## Instructor's Information

**Name and Title** Dr. Alioune Ngom, Associate Professor of Computer Science.

**Office Location** 5107 Lambton Tower, School of Computer Science, 401 Sunset Avenue, University of Windsor.

**Web Page** <http://www.cs.uwindsor.ca/~angom>.

### Contact information

**Telephone** 519-253-3000 extension 3789. Never call me unless it is *very* important.

**Fax** 519-973-7093. Never fax me.

**E-Mail** [angom@cs.uwindsor.ca](mailto:angom@cs.uwindsor.ca).

**Office Hours** Friday, 8:30AM to 12:00PM. Walk-ins with *very short* questions are encouraged anytime.

## Course Description, Objectives, and Prerequisite

**Course Description** Number systems. Switching algebra and logic Gates. Gate-level minimization. Combinational logic circuits. Memory and programmable logic devices: ROM, RAM, PLDs. Sequential circuits: synchronous and asynchronous, latches and flip-flops. Registers and Counters. Register transfer level. Control unit: CPU, ALU, busses and main memory. Instruction set architecture and addressing modes.

**Course Objectives** In this course you will learn the subject of computer architecture by following a *bottom-up* approach: by starting from basic hardware components (transistors and logic gates) to construct more sophisticated circuits (adders, decoders, flip-flops, registers, . . . ), which are then combined into memory units, processor units as well as a whole computer system. The main objectives of this course are the followings. To know and to understand the fundamentals principles and basic elements of discrete information processing systems. To know and to understand their analytical and design principles and how they are used to build computers. To know and to understand the basic principles of microprocessors, instruction sets and addressing modes, and conventional computer architecture and organization.

**Course Prerequisite** Minimum grade of C- in 03–60–141.

## Basic Course Information

### Lecture and Laboratories

**Lectures** Monday and Wednesday, 08:30–09:50 AM, TC 104.

### Laboratories

Section 51: Monday , 10:00AM–11:20AM, ER 3119.

Section 52: Wednesday , 10:00M–11:20AM, ER 3119.

Section 53: Wednesday , 11:30PM–12:50PM, ER 3119.

**Course Textbook** M. Morris Mano, *Digital Design*, Fourth (or Third) Edition, Prentice Hall, 2007, ISBN 0-13-062121-8.

**Course Notes and Site** Lecture slides and other course-related information are at <http://www.cs.uwindsor.ca/angom>. Additional resources are available in a companion web-site at <http://www.prenhall.com/mano>; it includes solutions for about one-third of the textbook's problems.

**Course Outline** (tentative and subject to change)

1. Introduction to Digital Design.
2. Number Systems.
3. Boolean Algebra and Logic Gates.
4. Gate-Level Minimization and Karnaugh Maps.
5. Combinational Logic: Adders and Subtractors.
6. Combinational Logic: Coders and Decoders.
7. Combinational Logic: Multiplexers and Demultiplexers.
8. Memory and Programmable Logic Devices.
9. Synchronous Sequential Logic: Latches and Flip-Flops.
10. Synchronous Sequential Logic: Registers and Counters.
11. Microprocessor system.
12. ....

## Course Work and Grading

**Course Work** Grades are based on the following:

**Q** Average over a maximum of 10 Quizzes, worth 8%.

**A** Average over a maximum of 5 Assignments, worth 12%.

**M** Average over two Midterm Exams, worth 30%.

**F** Final Exam, worth 50%.

### Exam Dates

Quizzes: Every laboratory session: First 15 minutes of lab.

Midterm Exam 1: Wednesday February 8-th 2012.

Midterm Exam 2: Wednesday March 7-th, 2012.

Final Exam: Check the School's website.

**Grading** *To pass this course, one must have at least 50% of the weighted sum of midterm and final examinations.* That is, the final numeric grade  $G$  (total: 100 points) will be calculated as follows:

If  $(0.30 \times M) + (0.50 \times F) < 40$  Then

$$G = (0.30 \times M) + (0.50 \times F)$$

Else

$$G = (0.08 \times Q) + (0.12 \times A) + (0.30 \times M) + (0.50 \times F)$$

**Letter Grading** The final letter grade,  $L$ , will be given from the numeric grade based on the following conversion rule:

Letter Grade	Numeric Grade Range
A+	$93 \leq G < 100$
A	$86 \leq G < 93$
A-	$80 \leq G < 86$
B+	$77 \leq G < 80$
B	$73 \leq G < 77$
B-	$70 \leq G < 73$
C+	$67 \leq G < 70$
C	$63 \leq G < 67$
C-	$60 \leq G < 63$
D+	$57 \leq G < 60$
D	$53 \leq G < 57$
D-	$50 \leq G < 53$
F	$35 \leq G < 50$
F-	$0 \leq G < 35$

## Teaching Evaluation

Student Evaluation of Teaching (SET) forms will be administered during the last two weeks of the class schedule.

## Course Policies

**Attendance and preparation** Lecture attendance is mandatory and students are expected to come well-prepared for every class. Note-taking is encouraged to help understand ideas more deeply.

**Assignment submission** All assignments must be handed in to me in classroom at the beginning of the lecture on the due dates and in envelopes with the School of Computer Science and University of Windsor logo on them. ***Late submission will not be accepted (tolerated).*** Students are responsible for making sure that I receive their assignments by or on the due dates. All assignments as well as envelopes must be clearly marked with the student name, student number, course name and number, section number and the instructor's name.

**Academic honesty** *You are expected to do all of your work on assignments and examinations individually. That is, collaboration on the assignments and/or plagiarism is not accepted; what you turn in should be your own work. **Anyone found cheating on any graded assignment or examination will get no points at all for that homework assignment or question in exam.** The instructor reserves the right to assign anyone involved in cheating a failing grade (F-) and will initiate the proceedings for disciplinary actions by the department and the university. This will be irrespective of who cheated from whom. In other words, you are responsible to protect your work from others. **Please read the University of Windsor regulations on cheating.***

**Makeup/Incomplete** *Makeup work or incomplete grade are only given in unusual circumstances, and only when work has been completed satisfactorily up to the point when the incomplete was requested. If you suspect that you will be unable to attend an examination because of a **valid and verifiable reason**, you **must** give me a prior notice, **at least** one full day before the examination. Even if you are sick or face unavoidable circumstances, you **must** notify me or the department through phone, email, fax, etc. along with a valid documentary evidence. I **must** receive a **proper documentary evidence within a week** of the examination. **In the absence of such notice and a proper documented proof, makeup examination(s) will not be allowed.** Unless mentioned otherwise, all examinations will be closed book, closed notes and closed neighbors. Date and place for makeup examination will be announced at an appropriate time. It **!** will be your responsibility to get the necessary information about the makeup examination. **Please read the University of Windsor regulations.***

**Appeal** Students who wish to appeal an assignment or exam mark should do it within two weeks of the reception of the mark. I will be glad to remark your work and explain my marking scheme to you. Numerical errors in adding marks will be corrected when identified. In case of a total disagreement on a mark, you must then submit a formal appeal. **Please read the University of Windsor regulations on appealing**

## Policy on Cheating

The professor and teaching assistants for 03-60-265 will put a great deal of effort into helping students to understand and to learn the material in the course. However, they will not tolerate any form of cheating.

The professor and teaching assistants will report any suspicion of cheating to the Director of the School of Computer Science. If sufficient evidence is available, the Director will begin a formal process according to the University Senate Bylaws. The instructor will not negotiate with students who are accused of cheating but will pass all information to the Director of the School of Computer Science.

The following behaviors will be regarded as cheating (together with other acts that would normally be regarded as cheating in the broad sense of the term):

- Copying assignments.
- Allowing another student to copy an assignment from you and present it as their own work.
- Copying from another student during a test.
- Referring to notes, textbooks, etc. during a test, unless allowed by the instructor.
- Talking during a test.
- Not sitting at the pre-assigned seat during a test.
- Communicating with another student in any way during a test.
- Having access to a test paper prior to the test, unless allowed by the instructor.
- Asking a teaching assistant for the answer to a question during a test.
- Presenting another's work as your own.
- Modifying answers after they have been marked.
- Any other behavior which attempts unfairly to give you an advantage over other students in the grade-assessment process.
- Refusing to obey the instructions of the officer in charge of an examination.
- ....

Several University of Windsor students have been caught cheating during the last few years. In most cases the evidence was sufficient to invoke a disciplinary process which resulted in various forms of punishment including letters of censure, loss of marks, failing grades, and expulsions. As example, a student who copied a project from another student and presented it as his own was expelled from the university.

Do not cheat, if you are caught and found guilty, you could be thrown out of the university and will have to explain why when you go looking for a job.