COURSE CALENDAR DESCRIPTION

The internal structure and design ideas embodied in many computers and the techniques for evaluating them. Fast arithmetic algorithms, memory system designs, pipeline techniques, input-output subsystems and parallel computing structures. Future trends in computer architecture. Prerequisites: General prerequisite; LE/EECS 2030 3.00 or LE/EECS 1030 3.00; LE/EECS 3201 4.00, LE/EECS 3221 3.00. Course credit exclusions: LE/CSE 4201 3.00, AK/AS/SC/CSE 4201 3.00. (NOTE: The General Prerequisite is a cumulative GPA of 4.50 or better over all major EECS courses. EECS courses with the second digit "5" are not major courses.)

INSTRUCTOR(S)

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<th>Name</th>
<th>Section / Format / Term</th>
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<tbody>
<tr>
<td>Aboelaze, Mokhtar</td>
<td>Sec. E / LECT / F</td>
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TOPICS AND CONCEPTS

Topics covered may include the following:
- Fundamentals of computer design
- Performance and cost
- Instruction set design and measurements of use
- Basic processor implementation techniques
- Pipeline design techniques
- Memory-hierarchy design
- Input-output subsystems
- Future directions

LIST OF LEARNING OUTCOMES AND EXAMPLES OF

LEARNING OUTCOMES

After successful completion of the course, students are expected to be able to:

1. Design cache, memory hierarchy, and virtual memory using different techniques to improve cost/performance ratio.
2. Demonstrate how dynamic scheduling and speculative execution can improve the system performance and explain how it is implemented in modern processors.
3. Evaluate different design alternatives and make quantitative/qualitative argument for one design over the other.
4. Identity the different types of parallelism (data, instruction, thread, transaction) for a given application.
5. Compare and evaluate different techniques (such as multithreading, multicore, or vector) to improve CPU performance.
GRADED ASSESSMENT

The weight distribution of the course components is as follows:

- 10% - Assignments
- 15% - Quizzes
- 25% - Midterm
- 10% - Paper review
- 40% - Final Exam

ADDITIONAL INFORMATION

TEXTBOOK

You will require the following textbook for this course:


ACADEMIC INTEGRITY LINKS

- Senate Policy on Academic Honesty
- Academic Integrity

STUDENT LINKS

- Student Rights and Responsibilities
- Religious Observance
- Academic Accommodation for Students with Disabilities
- Counselling and Disability Services

Many courses utilize Moodle, York University’s course website system. If your course is using Moodle, click here to access it.

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