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## **ELEC 546 – Mapping of DSP Algorithms onto Processor Arrays**

Jan-Apr 2016 (CRN: 24264)

### **Instructor**

Dr. F. Gebali, PhD, PEng

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### **Office Hours**

Days: Everyday

Time: Drop in but phone first

Location: EOW 451

### **Lectures**

Days: Tue & Wed

Time: 3:30 – 4:50

Location: COR A132

### **Course Objectives**

Enhancing processor performance. Parallel computers. Shared memory processors. Interconnection networks. Ad hoc techniques for parallel algorithms. Non serial-parallel algorithms. Z-transform parallelization. Dependence graph analysis. Case studies of several algorithms.

### **Learning Outcomes**

Upon completion of this course you will acquire the following skills:

1. Know the factors that can improve processor performance
2. Different types of parallel computers
3. Different types of algorithms
4. Explore the available design space for a given algorithm
5. Gain knowledge of how to explore design space of a given algorithm

### **Syllabus**

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|----------------------------------|--|
| 1. Overview                      | 2. Enhancing processor performance           |
| 3. Parallel computers            | 4. Shared memory multiprocessors             |
| 5. Interconnection networks      | 6. Ad hoc techniques for parallel algorithms |
| 7. Nonserial-parallel algorithms | 8. Z-transform analysis                      |
| 9. Dependence graph analysis     |  |

### **Required Text**

Fayez Gebali, *Algorithms and Parallel Computing*, John Wiley, 2011.

**Assessment**

Activity	Grade
Topic Selection	2 %
Progress Reports (#1, #2, #3)	18 %
Design Implementation	30 %
Final Presentation	20 %
Final Report	30 %
Total	100 %

The final grade obtained from the above marking scheme for the purpose of GPA calculation will be based on the percentage-to-grade point conversion table as listed in the current Undergraduate Calendar.

<http://web.uvic.ca/calendar/GRAD/FARe/Grad.html>

**Accommodation of Religious Observance**

<http://web.uvic.ca/calendar/GI/GUPo.html>

**Policy on Inclusivity and Diversity**

<http://web.uvic.ca/calendar/GI/GUPo.html>

**Standards of Professional Behaviour**

You are advised to read the Faculty of Engineering document Standards for Professional Behaviour in current Undergraduate Calendar, which contains important information regarding conduct in courses, labs, and in the general use of facilities.

Cheating, plagiarism and other forms of academic fraud are taken very seriously by both the University and the Department. You should consult entry in current Undergraduate Calendar for the UVic policy on academic integrity.

<http://www.uvic.ca/engineering/assets/docs/professional-behaviour.pdf>

**Course Lecture Notes**

Unless otherwise noted, all course materials supplied to students in this course have been prepared by the instructor and are intended for use in this course only. These materials are NOT to be re-circulated digitally, whether by email or by uploading or copying to websites, or to others not enrolled in this course. Violation of this policy may in some cases constitute a breach of academic integrity as defined in the UVic Calendar.