

## COURSE OUTLINE

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### ECE 569A – Reconfigurable Computing

Term – FALL 2019 (201909)

#### Instructor

Dr. Mihai SIMA  
Phone: (250) 721-8680  
E-mail: msima@ece.uvic.ca

#### Office Hours

Days: Tuesday  
Time: 12:30pm – 3:20pm  
Location: EOW-313

#### Course Objectives

- Expose students to state-of-the-art FPGA architectures
- Make students understand what the FPGA design challenge is
- Show students where to look for information and how to read it
- Present a literature digest for the FPGA domain

#### Learning Outcomes

- Ability to write efficient VHDL code for FPGAs
- Ability to choose the appropriate FPGA architecture given a specific application
- Ability to use FPGA design tools (e.g., Vivado)

#### Syllabus

- Field-Programmable Gate Arrays (FPGA) and Reconfigurable Computing paradigm
- FPGA: major architectural classes
- FPGA as a performance accelerator
- Optimizing circuits for a specific FPGA architecture
- Programmable interconnection networks
- Low-energy FPGA's
- CAD tools for mapping onto FPGA's

A-Section(s): A01 / CRN 11016 and A02 / CRN 11017

Days: Tuesdays

Time: 3:30pm – 6:20pm

Location: ECS-104

#### Required Text

Title: Course notes available online

Author: Mihai SIMA

Year: 2019

**References:**

Title: Reconfigurable Computing

Author: S. Hauck, A. DeHon

Publisher: Elsevier

Year: 2010

Title: Architecture and CAD for deep-submicron FPGA's

Author: V. Betz, J. Rose, A. Marquardt

Publisher: Springer

Year: 1999

Title: Design of Interconnection Networks for Programmable Logic

Author: G. Lemieux, D. Lewis

Publisher: Springer

Year: 2003

Title: Low-energy FPGA's: architecture and design

Author: V. George, J. Rabaey

Publisher: Springer

Year: 2001

Title: Research Papers on IEEE Digital Library

**Assessment:**

Mid-term report	10%
Project report	30%
Presentation and Powerpoint slides	30%
Final Exam (questions and answers)	30%

**Note:** Failure to pass the final exam will result in a failing grade for the course.

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 Graduate Calendar.

<https://web.uvic.ca/calendar2019-09/grad/academic-regulations/grading.html>

**Note to Students:**

Students who have issues with the conduct of the course should discuss them with the instructor first. If these discussions do not resolve the issue, then students should feel free to contact the Chair of the Department by email or the Chair's Secretary to set up an appointment.

**Course Withdrawal Deadlines:**

- September 17: Withdrawal with 100% reduction of tuition fees
- October 8: Withdrawal with 50% reduction of tuition fees
- October 31: Last day for withdrawal without penalty of failure (no fees returned)

**Accommodation of Religious Observance:**

<https://web.uvic.ca/calendar2019-09/grad/registration/Registration.1.17.html#>

**Policy on Inclusivity and Diversity:**

<https://web.uvic.ca/calendar2019-09/general/policies.html>

**Standards of Professional Behaviour:**

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

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

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

<https://web.uvic.ca/calendar2019-09/grad/academic-regulations/grading.html>

**Equality:**

This course aims to provide equal opportunities and access for all students to enjoy the benefits and privileges of the class and its curriculum and to meet the syllabus requirements. Reasonable and appropriate accommodation will be made available to students with documented disabilities (physical, mental, learning) in order to give them the opportunity to successfully meet the essential requirements of the course. The accommodation will not alter academic standards or learning outcomes, although the student may be allowed to demonstrate knowledge and skills in a different way. It is not necessary for you to reveal your disability and/or confidential medical information to the course instructor. If you believe that you may require accommodation, the course instructor can provide you with information about confidential resources on campus that can assist you in arranging for appropriate accommodation. Alternatively, you may want to contact the Centre for Accessible Learning located in the Campus Services Building.

The University of Victoria is committed to promoting, providing, and protecting a positive, and supportive and safe learning and working environment for all its members.

**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.

**Sexualized Violence Prevention and Response at Uvic:**

UVic takes sexualized violence seriously, and has raised the bar for what is considered acceptable behaviour. We encourage students to learn more about how the university defines sexualized violence and its overall approach by visiting [www.uvic.ca/svp](http://www.uvic.ca/svp). If you or someone you know has been impacted by sexualized violence and needs information, advice, and/or support, please contact the sexualized violence resource office in Equity and Human Rights (EQHR). Whether or not you have been directly impacted, if you want to take part in the important prevention work taking place on campus, you can also reach out:

**Where:** Sexualized violence resource office in EQHR; Sedgewick C119

**Phone:** 250.721.8021

**Email:** [svpcoordinator@uvic.ca](mailto:svpcoordinator@uvic.ca)

**Web:** [www.uvic.ca/svp](http://www.uvic.ca/svp)

**Office of the Ombudsperson:**

The [Office of the Ombudsperson](https://uvicombudsperson.ca/) is an independent and impartial resource to assist with the fair resolution of student issues. A confidential consultation can help you understand your rights and responsibilities. The Ombudsperson can also clarify information, help navigate procedures, assist with problem-solving, facilitate communication, provide feedback on an appeal, investigate and make recommendations. Phone: 250-721-8357; Email: [ombuddy@uvic.ca](mailto:ombuddy@uvic.ca); Web: <https://uvicombudsperson.ca/>