

CSCI 415/515 Parallel Computing
Winter, 2018
Course Syllabus

About this Course

Instructor:	Tanzima Z. Islam
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Credit hours:	4

Goal

This course is designed to give students a solid understanding of the basics of parallel computation, high-performance computing. Also, it is expected that the student will have successfully implemented several parallel algorithms using a real parallel machine.

Course Outcomes

On completion of this course, students will demonstrate:

1. Understanding of parallel machine architecture.
2. Understanding of parallel programming models.
3. Parallelization techniques.
4. The ability to design and implement programs in a parallel environment.

Text Book

Recommended: Grama, Gupta, Karypis, Kumar, "Introduction to Parallel Computing", 2nd Edition. Addison Wesley 2003.

Course web site

Accessible through Canvas. Canvas will also be heavily used for communicating information, announcements, and assigning reading materials prior to a class.

Assessment

Assessment for the course will comprise written and programming assignments, one mid-term exam, and a course project. Students taking CS 515 will present research papers.

Midterm exam	15%
Labs	5%
Project	35%
Assignments [4 x 10% each]	40%
Research paper presentation [CS 515] / summary [CS 415]	5%

Note:

1. Not showing up for a lab means you get 0 credit for that class unless prior arrangements have been made.
2. Assignments (written and programming) carry different weights for CS 415 compared to CS 515.

Grading Policy

Grades will be assigned on the total of the assessment items according to the following:

Percentage	Grade
90-100	A
80-89	B
70-79	C
60-69	D
<60	F

The use of '+' or '-' discriminators is completely at the discretion of the instructor.

Attendance Policy

Attendance at lectures is not compulsory. However, students are responsible for ensuring that they keep up with course material and that they keep informed on class information, as presented in class or advised via the course web site.

Academic Dishonesty

Academic dishonesty is defined in the University Catalog as misrepresentation by deception or by other fraudulent means which compromises an instructor's ability to fairly evaluate a student's work or achievement. It is the instructor's responsibility to confront a student and to take appropriate action if academic dishonesty, in the instructor's judgment, has occurred. Please refer to the University Catalog for further information. Any student who violates the University policy on academic dishonesty could receive an F for the course.

Tentative Schedule

Week	Dates	Lecture Topic	Assignments
1	Jan 9 – 10	Introduction Parallel computing basics	Assignment 1 Course project proposal opens
	Jan 12	Lab in CS 416	

Week	Dates	Lecture Topic	Assignments
2	Jan 15 Jan 16 - 19	MLK day [no class] Parallel machine organization Scalability and performance <i>Lab in CS 162/164</i>	Assignment 2
3	Jan 22 Jan 23 - 26	<i>Lab in CS 162/164</i> Parallel programming models: Shared- and distributed-memory models Parallel applications	Finalize course project by Jan 28th
4	Jan 29 – Feb 2	Parallel communication: algorithms and analysis <i>Lab in CS 162/164</i>	Take home midterm
5	Feb 5 Feb 6 – Feb 9	<i>Lab in CS 162/164</i> Parallel I/O: Basics, application in HPC, scalability challenges	Midterm due on Monday
6	Feb 12 – Feb 16	Parallel file system: design and scalability challenges <i>Lab in CS 162/164</i>	Assignment 3 Finalize research paper selection
7	Feb 19 Feb 20 - 23	President's day [no class] Tools <i>Lab in CS 162/164</i>	
8	Feb 26 Feb 27 – Mar 2	<i>Lab in CS 162/164</i> Research paper presentations	
9	Mar 5 - 9	Research paper presentations	Research paper summary due [CS 415]
10	Mar 12 - 16	Project demos	

Note: This is a tentative schedule and the instructor may change the actual topics and/or their ordering without any prior notice.

Reasonable Accommodation

Reasonable accommodation for persons with documented disabilities should be established within the first week of class and arranged through Disability Resources for Students: telephone 650-3083; email rs@wwu.edu; and on the web at [Disability Resources](#).

Student Services

Western encourages students to seek assistance and support at the onset of an illness, difficulty, or crisis.

- In the case of a medical concern or question, please contact the Health Center: 650-3400 or visit Student Health.
- In the case of an emotional or psychological concern or question, please contact the Counseling Center: 650-3400 or visit Counseling Services.

- In the case of a health and safety concern, please contact the University Police: 650-3555 or visit University Police.
- In the case of a family or personal crisis or emergency, please contact the Dean of Students: 650-3450 or visit Dean of Students.
- To seek confidential support related to sexual violence, please contact CASAS (650-3700), the Student Health Center, and/or the Counseling Center. To report sexual violence, please contact University Police, Bellingham Police, and/or the Title IX Coordinator in Western's Equal Opportunity Office (650-3307). Faculty are responsible employees who are required to report sex discrimination, including sexual violence that they learn about to the Title IX Coordinator.

Equal Opportunity

I am committed to establishing and maintaining a classroom climate that is inclusive and respectful for all students. Learning includes being able to voice a variety of perspectives, and classroom discussion is encouraged. While students' expressed ideas may vary and/or be opposed to one another, it is important for all of us to listen and engage respectfully with each other.

I, and Western, are committed to an environment free of discrimination and harassment. Federal and State laws, as well as University policies, protect students, faculty and staff against discrimination based on the following legally protected characteristics: Race, Color, Creed, Religion, National Origin, Sex, (including pregnancy and parenting status), Age, Disability, Marital Status, Sexual Orientation, Gender Identity and Expression, Genetic Information and Veteran Status. (See Equal Opportunity and Western's Policies on Providing Equal Opportunity and Nondiscrimination and Preventing Sexual Harassment.)