University of Oklahoma
Gallogly College of Engineering
School of Computer Science

CS4473/CS5473: Parallel, Distributed, and Network (PDN) Programming

Instructor: Dr. Chongle Pan, Associate Professor of Computer Science and Microbiology
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Synchronous Class Schedule: **4:30 pm - 5:45 pm on Mondays and Wednesdays**
Physical Classroom: Sarkeys Energy Center N0202
Zoom Classroom ID: 966 3370 3906
Passcode: 53575515
https://oklahoma.zoom.us/j/96633703906?pwd=VUpTNVpWc1FwVGN5ZDNBc0pyOTVGUT09

Office Hours

Dr. Chongle Pan's Office Hour: 9:00 am – 10:00 am on Wednesdays and by Appointment
Zoom Meeting Room ID: 913 1570 2326
Passcode: 74747333
https://oklahoma.zoom.us/j/91315702326?pwd=TVRqOWlPaVZNVWZjZG1lNGR5MUNSQT09

TA Jessica Shaw's Office Hour: 11:00 am – 11:30 am on Tuesdays, Thursdays, and by Appointment
Zoom Meeting Room ID: 954 341 4141
Passcode: 51867553
https://oklahoma.zoom.us/j/9543414141?pwd=TUYraWZQazJkUmRDVlpEUll4Q3MxZz09

OSCER Support for Schooner

Website: https://www.ou.edu/oscer
Email: support@oscer.ou.edu
Zoom help session: 1:00 pm – 3:00 pm on Thursdays
https://oklahoma.zoom.us/j/94533999288?pwd=dEtGaFl0dTNMZXA5b005dmloZDRFUT09

Course Details

Parallel and distributed computer architectures, algorithms, and programming paradigms. Topics include distributed and shared memory systems, network programming, GPU architectures, load balancing,

message passing interface (MPI), multithreaded programming, and distributed and cloud computing. Students will learn to program using MPI, OpenMP, and CUDA.

Course Prerequisites

CS 3113 Operating Systems, CS 4413 Algorithm Analysis

Recommended Textbooks

OpenMP and MPI programming

An introduction to parallel programming, Peter S. Pacheco, 2011, Morgan Kaufamnn, ISBN-13: 918-0123742605

https://www.elsevier.com/books/an-introduction-to-parallel-programming/pacheco/978-0-12-374260-5

GPU programming

Programming Massively Parallel Processors: A Hands-on Approach, David Kirk, Wen-mei Hwu, Morgan Kaufmann; 2016, 3rd edition, ISBN-10: 0128119861

https://www.elsevier.com/books/programming-massively-parallel-processors/kirk/978-0-12-811986-0

Distributed computing:

Distributed and Cloud Computing: From Parallel Processing to the Internet of Things, Kai Hwang, Jack Dongarra, Geoffrey Fox, 2011, 1st Edition, Morgan Kaufmann, ISBN-10: 0123858801

https://www.elsevier.com/books/distributed-and-cloud-computing/hwang/978-0-12-385880-1

Network programming

Computer Networking: A Top-Down Approach, James Kurose, Keith Ross, 2016, 7th Edition, Pearson, ISBN-10: 9780133594140

https://www.pearson.com/us/higher-education/program/Kurose-Pearson-e-Text-Computer-Networking-Access-Card-8th-Edition/PGM2877610.html

Grades

Assignments and Grade break-down

Assignments	Description	Percentage
Exercises	You have two attempts. You are expected to submit an initial solution completed by yourself in the first attempt and then re-submit a revised solution based on the instructor's solution in the second attempt. You will receive the full points if your initial solution is non-trivial and your revised solution is generally correct.	15%
Projects	You are expected to answer essay questions, solve programming problems, benchmark performance, and write project reports. You will be graded based on correct implementation of the programs and	70%

	correct answers in the project reports. Your programs will be tested using auto-grading scripts. You must complete all the projects independently.	
Final Exam	You are expected to complete a take-home exam composed of both theory questions and programming problems. You must complete the final exam independently.	15%
	Total	100%

Graduate students taking this course as CS5473 will have additional assignments in the projects and the final exam (beyond those required for CS4473). Graduate students enrolled in CS4473 will not get graduate credit for the class.

Grading Scale

Grade	Points
A	90 ~ 100
B	80 ~ 89
C	70 ~ 79
D	60 ~ 69
F	0 ~ 59

The letter grade thresholds will be no higher than above; they may be lowered at the discretion of the instructors.

Course Policies

Late policy for projects:

- 5% penalty for 1-day late
- 10% penalty for 2-day late
- 20% penalty for 3-day late
- 0 point beyond 3 days

Every project has a due date and an available date on Canvas. The available date is set to be 3 days later than the due date in order to accommodate late submissions. You need to submit by the due date to avoid the late penalty. You are allowed to submit past the due date and before the available date, but the late penalty will apply as described above.

Late policy for exercises:

You have two attempts for every exercise. You need to submit the first attempt in class and submit the second attempt within the same week (before the mid-night coming Sunday) of the first attempt. We

will grade the exercises in the following week based on your last attempt. You will lose any un-used attempt after the exercises are graded.

Academic Integrity

You must independently complete the projects and the final exam without any help from another human being. All code submissions in this class will be compared with each other and with all code submissions from previous classes and all code examples that can be found on the internet using anti-plagiarism software. We will check the code plagiarism at the end of the semester for all project assignments and the final exam in a single batch processing. Any suspected academic misconduct will be reported by the instructor and be investigated by OU through the due process.

Thus, if you cheat on a project, you may receive a good score at the time, but you should be worried for the rest of the semester that you can be caught at the end of the semester and you will receive an email directly from the OU Office of Academic Integrity for a formal investigation.

Communication Plan

You are expected to read the announcements within a day of their release. The announcements may contain important time-sensitive information, including clarification and correction to the project assignments. If you have questions, please contact the instructor or the TA by email with a subject line that begins with "PDN: ". If you do not receive a reply within 2 days, please send a reminder.

University Academic Policies and Student Support

Course Catalog

Search the **OU Course Catalog**.

Student Handbook

Please familiarize yourself with the **OU Student Handbook**.

Online Library

Access digital materials and other resources at **OU Libraries**.

Academic Misconduct

In addition to the course conduct policies outlined by your professor in the Course Syllabus in the online classroom, please review the Graduate Student Handbook.

It is the responsibility of each student to be familiar with the definitions, policies, and procedures concerning academic misconduct. The Student Code is available from the Office of the Vice President for Student Affairs, and is contained in the **Student's Guide to Academic Integrity**.

This site also defines misconduct, provides examples of prohibited conduct, and explains the sanctions available for those found guilty of misconduct.

Plagiarism

Plagiarism is the most common form of academic misconduct at OU. There is basically no college-level assignment that can be satisfactorily completed by copying. OU's basic assumption about writing is that all written assignments show the student's own understanding in the student's own words. That means all writing assignments, in class or out, are assumed to be composed entirely of words generated (not simply found) by the student, except where words written by someone else are specifically marked as such with proper citation. Including other people's words in your paper is helpful when you do it honestly and correctly. When you don't, it's plagiarism.

For more information about plagiarism, watch this **video** and then take this **short course** offered by University Libraries.

Reasonable Accommodation for Disabilities

The University of Oklahoma is committed to providing reasonable accommodation for all students with disabilities. Students with disabilities who require accommodations in this course should contact their professor as early in the semester as possible.

Students with disabilities must be registered with the Disability Resource Center prior to receiving accommodations in this course.

If you have a disability and you would like to make a request for reasonable accommodation, please see the Graduate Student Handbook or get in touch with the **Accessibility and Disability Resource Center**.

Adjustments for Pregnancy/Childbirth Related Issues

Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact me as soon as possible to discuss your options. Generally, modifications will be made where medically necessary and similar in scope to accommodations based on temporary disability. Learn more about the rights of pregnant and parenting students by consulting the **FAQ sheets** provided by the **Institutional Equity Office**.

Title IX Resources

For any concerns regarding gender-based discrimination, sexual harassment, sexual misconduct, stalking, or intimate partner violence, the University offers a variety of resources, including advocates on-call 24/7, counseling services, mutual no contact orders, scheduling adjustments, and disciplinary sanctions against the perpetrator. Please contact the **Sexual Misconduct Office** at 405-325-2215 (8-5, M-F) or **OU Advocates** at 405-615-0013 (24/7) to learn more or to report an incident.

Religious Holidays

It is the policy of the University to excuse absences of students that result from religious observances and to provide for the rescheduling of examinations and additional required classwork that may fall on religious holidays without penalty. It is the responsibility of the **student** to make alternate arrangements with the instructor **at least one week prior to the actual date of the religious holiday**.

Copyright Policy

It is illegal to download, upload, reproduce, or distribute any copyrighted material, in any form and in any fashion, without permission from the copyright holder or his/her authorized agent. The University of Oklahoma expects all members of its community to comply fully with federal copyright laws. If such laws appear to have been violated by any user, the university reserves the right (1) to terminate that user's access to some or all of the university's computer systems and information resources and (2) to take additional disciplinary actions as deemed necessary or appropriate. Repeat offenders will be sanctioned and their privileges terminated.

Registration and Withdrawal

If you choose to withdraw from this course, you must complete the appropriate University form and turn the form in before the deadline. If you stop attending the course and doing the coursework without doing the required paperwork, your grade will be calculated with missed homework and examination grades entered as zero. This could result in receiving a grade of F in the course. Deadlines are shown in the **Academic Calendar**, which is available from the Office of the Registrar.

Student Grievances

In addition to any policies outlined related to submitting an informal or formal grievance by your professor in the Course Syllabus in the online classroom, please review the Graduate Student Handbook for more information about the process of submitting a formal grievance.