

CS5970

Spring 2016

INTRODUCTION TO PARALLEL PROGRAMMING
(4:25-7:05 PM, Monday, FH 334)

Instructor: S.K. Dhall, #231 DEH TEL: 325-4042

Office Hrs: 2:30 – 4:00 pm, Monday, Wednesday

- Reference Books:
1. Introduction to Parallel Programming, Peter Pacheco, Morgan Kaufmann, 2011.
 2. CUDA by Example: An Introduction to General Purpose GPU Programming, Jason Sanders, Edward Kandrot, Nivida, Addison-Wesley, 2010.
 3. Heterogeneous Computing with OpenCL, Benedict Gaster, Lee Howes, David R. Kaeli, Perhaad Mistry, Dana Schaa, Morgan Kaufmann, 2012.
 4. Hadoop, the Definite Guide, Third Edition, Tom White, O'Reilly Media, Inc., 2012.

Course Outline: Parallel Computing, Hardware, and Software
Distributed Memory Programming with MPI
Shared Memory Programming with OpenMP
Parallel Algorithms and Applications
CUDA and OpenCL programming for the GPUs and multicore architectures
Distributed Programming Issues and Algorithms
Distributed Computing Tools and Technologies: MapReduce, Hadoop, etc.
Grid and Peer-to-Peer Computing

Homework: All homework should be turned in when due. **The homework must be typed.** Late and/or illegible work will not be accepted. Homework may include reading/writing a technical paper. Homework will count for 30% towards the final grade.

Each student will work on a project that will be worth 20% of the grade.

Each student will be required to make a short presentation – 5% of the grade.

Examinations: Mid-term Exam (20%): Date to be announced later
Final Exam (25%): Last day of classes

Grading: Grade assignment will be as follows:
'A': 90% and above;
'B': 78% - 90%;
'C': 65% - 78%;
'D': 50% - 65%;
'F': below 50%.

Cooperation: *A good way to learn the material is to explain it to someone else, so student-student discussion is encouraged. Student conversation is a valuable tool in suggesting different approaches to problem solution. However, since a grade must be assigned to each student that reflects the individual's mastery of the subject, and not the communication talent, the work you turn in must be your own.*
COLLABORATION IS NOT ALLOWED, AND WHEN DISCOVERED, WILL BE REPORTED TO THE APPROPRIATE AUTHORITIES TO BE DEALT WITH ACCORDING TO THE UNIVERSITY REGULATIONS.

ANY STUDENT IN THIS COURSE WHO HAS A DISABILITY THAT MAY PREVENT HIM/HER FROM FULLY DEMONSTRATING HIS/HER ABILITIES SHOULD CONTACT ME PERSONALLY AS SOON AS POSSIBLE SO WE CAN DISCUSS ACCOMMODATIONS NECESSARY TO ENSURE FULL PARTICIPATION AND FACILITATE YOUR EDUCATIONAL OPPORTUNITIES.

The College of Engineering utilizes student ratings as one of the bases for evaluating the teaching effectiveness of each of its faculty members. The results of these forms are important data used in the process of awarding tenure, making promotions, and giving salary increases. In addition, the faculty uses these forms to improve their own teaching effectiveness. The original request for the use of these forms came from students, and it is students who eventually benefit most from their use. Please take this task seriously and respond as honestly and precisely as possible, both to the machine-scored items and to the open-ended questions.

Students with Disabilities: Any student who, because of a disabling condition, may require some special arrangements in order to meet course requirements should contact the instructor as soon as possible to make necessary accommodations.

Academic Integrity: All work submitted for an individual grade, such as homework and projects should be the work of that single individual, not their friends or their tutor. Students who fail to do their own work not only violate the Code of Conduct for the University of Oklahoma, but also may fail to learn critical learning objectives for the class.

1. Do not show another student a copy of your homework or projects before the submission deadline.
2. Do not email your project to another student, even if they promise they will not copy it.
4. Make sure that your computer account is properly protected. Use a good password, and do not give your friends access to your account or your computer system.
5. Do not leave thumb drives around a laboratory where others might access them.
3. The penalties for knowingly permitting your work to be copied are the same as the penalties for copying someone else's work.

Upon the first documented occurrence of collaborative work, I will report the academic misconduct to the Campus Judicial Coordinator. The procedure to be followed is documented in the University of Oklahoma Academic Misconduct Code. In the unlikely event that I elect to admonish the student, the appeals process is described at http://integrity.ou.edu/summary_of_the_process.html

Rights and responsibilities under the academic misconduct code, University of Oklahoma Norman Campus can be found here: <http://www.ou.edu/provost/integrity-rights/>

Religious observance: It is the policy of the University to excuse absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required class work that may fall on religious holidays. If you need to observe any religious holiday, **PLEASE LET ME KNOW IN ADVANCE.**

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. Generally, modifications will be made where medically necessary and similar in scope to accommodations based on temporary disability. Please see www.ou.edu/content/eoo/pregnancy-faqs.html for commonly asked questions.

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 405-325-2215 (8-5) or the Sexual Assault Response Team 405-615-0013 (24.7) to learn more or to report an incident.