

Introduction to Operating Systems

CPSC 3125)

INSTRUCTOR: Jianhua YANG, Ph.D.

Office: CCT 440

Dept. phone: (706) 507-8170

Office Hours: TBA; via e-mail, and by appointment

e-mail address: jianhua_yang@ColumbusState.edu

Office phone: (706) 507-8180

FAX: (706) 565-3529

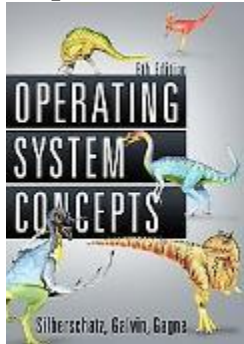
Class Meets: T TR 6:00 – 7.15 p.m. at CCT406

Course Title: CPSC 3125 – Operating Systems.

Official Course Description: An introduction to basic operating system level software concepts. Course topics include processes, threads, symmetric multi-processing, thread synchronization, memory management, and file system techniques.

Prerequisites: CPSC 2108 with a grade C or better.

Required Textbook:



Operating System Concepts, Author: Silberschatz, Galvin, Gagne

Publisher: Wiley. 9th edition

ISBN: 978-1-118-06333-0

Course Outcomes:

Upon completion of this course, students will demonstrate an understanding of process and thread concepts, process and thread synchronization, CPU scheduling algorithms, and memory management techniques. Students will also demonstrate basic skills in system programming.

Major topics:

- Process Management
- Threads
- CPU Scheduling
- Process Synchronization

- Memory Management
- Virtual Memory
- Storage Management

Evaluation Criteria:

- **Quiz:** There will be quiz on each chapter. The quizzes will be taken online through D2L.
- **Programming Assignments:** Three programming assignments.
- **Written assignments:** 12 assignments.
- **Midterm:** Multiple choices. It will be a paper test on theoretical concepts.
- **Final:** A comprehensive paper-based test on theoretical concepts.
- **Class participation and question posting:** it is required to post at least one question for every class. Posting “I do not have a question” is not accepted.

Tentative Distribution of Points:

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|---------------------------------|-----|
| • Midterm examination | 20% |
| • Final examination | 30% |
| • Assignments | 10% |
| • Quiz | 10% |
| • Class participation & posting | 10% |
| • Programming assignments | 20% |

Final grades in this class will be determined as follows:

- A: 90 and above
- B: 80-89
- C: 70-79
- D: 60-69
- F: <59

Course Rules:

- *Timing:* Class meetings will begin promptly at the scheduled time. If you come late, not only will you miss class lecture, but also it will be a disturbance to the other students in the class.
- *Attendance:* Attendance is very important. You will sign in a sign-up sheet every day. Any student who accumulates more than 6 hours of unexcused absences will be dropped from the class for excessive absences. Students arriving late to class meetings will be counted as tardy and 2 instances of tardiness will be considered equivalent to 1 absence.
- *Assignments:* Assignments must be completed and submitted in time. **No late assignment will be accepted** unless some urgent medical reason. In case of medical problems, you need to submit a doctor’s note. Start your assignments early.
- *Help for assignments:* Feel free to ask the instructor for help. Start your assignments early so that you have plenty of time to get required help.
- *Plagiarism:* You must submit your own work. You are not allowed to copy answers from the Internet. Your answers will be checked at a random basis using plagiarism detector

website “turnitin”. The first incident of plagiarism will result in negative credit (-10). The second incident will be escalated.

- *Copying from classmate*: If there are two identical answers, both students, one who copied and one who let the other student copy will receive negative credit (-10) for the first such incident. In case of second incident, our department head will be notified.
- *Examinations and quizzes*: Everyone is expected to take exams and quizzes at their scheduled times. Make-up quizzes will be given **only for legitimate, documented absences** for which *the instructor has been notified ahead of time*. **No make-ups** will be given for the midterm or the final exam except for medical emergencies. Please be sure you are present for all these examinations. Refer to the CSU catalog (<http://aa.columbusstate.edu/advising/a.htm#AbsencePolicy>) for more information on class attendance and withdrawal.
- Classroom rule:
 - **Browsing** through the Internet, facebooking, checking e-mail, sending SMS - **are completely prohibited** in class. In case of such incidents, the instructor will have a face-to-face private talk with the violator.
 - There may be non-graded exercises to complete in class. These exercises will be regarded as part of your class participation.
 - You are encouraged to communicate with the instructor, ask questions and be actively involved in class. This is another form of class participation.
- If any concern about the course’s format and contents need to be addressed, you must immediately consult with the instructor via email or during office hours.

Student Responsibilities

As a student in this course, you are responsible to:

- manage your time and maintain the discipline required to meet the course requirements,
- complete all assignments in time,
- read any e-mail sent by the instructor and respond accordingly.

“I didn’t know” is **NOT** an acceptable excuse for failing to meet the course requirements. If you fail to meet your responsibilities, you do so at your own risk.

Instructor Responsibilities

As your instructor in this course, I am responsible to:

- post assignments for each class,
- respond to students questions and help them with programming assignments in class,
- grade assignments and post scores within one week of the end of the week in which they are submitted, and
- read any e-mail sent by the you and respond accordingly within 48 hours.

Tentative Schedule

Weeks	Topics	Examination/Project
1: Aug 12 - 18	Chapter 1: Introduction	
2: Aug 19 - 25	Chapter 2: OS structure	Q1, A1
3: Aug 26 - Sept 1	Chapter 3: Process	Q2, A2
4: Sept 2 - 8	Chapter 4: Processes	Q3, A3
5: Sept 9 - 15	Chapter 5: CPU Scheduling	PA1, Q4, A4
6: Sept 16 - 22	Chapter 6: Process synchronization	Q5, A5
7: Sept 23 - 29	Chapter 7: Deadlocks	Q6, A6
8: Sept 30 - Oct 6	*****	Midterm Exam
9: Oct 9 - 13	Chapter 8: Memory	Q7, A7
10: Oct 14 - 20	Chapter 9: Virtual Memory	PA2, Q8, A8
11: Oct 21 - 27	Chapter 9: Virtual Memory	
12: Oct 28 - Nov 3	Chapter 10: Mass-Storage Structure	Q9, A9
13: Nov 4 - 10	Chapter 11: File system Interface	Q10, A10
14: Nov 11 - 17	Chapter 12: File system implementation	PA 3
15: Nov 18 - 24		Q11, A11
Nov 26 (last class)	Final Exam Review	Q12, A12
TBA		Final Exam

Student Portfolio

Students are encouraged to keep and maintain a portfolio of all of their work (assignments, projects, etc.) throughout their academic program. It is recommended that you keep a copy on your personal H: drive at CSU and back it up regularly on your own portable media.

Academic dishonesty

Academic dishonesty includes, but is not limited to, activities such as cheating and plagiarism. It is a basis for disciplinary action. Collaboration is not permitted on assignments or exams/quizzes in this course. Any work turned in for individual credit must be entirely the work of the student submitting the work. **All work must be your own.** You may share ideas but submitting identical assignments (for example) will be considered cheating. **You may discuss the material in the course and help one another with debugging, however, I expect any work you hand in for a grade to be your own.** . A simple way to avoid inadvertent plagiarism is to talk about the assignments, but don't read each other's work or write solutions together. Keep scratch paper and old versions of assignments until after the assignment has been graded and returned to you. **If you have any questions about this, please see me immediately.**

For assignments, access to notes, textbook, books and other publications is allowed. Stealing, giving or receiving any code, diagrams, drawings, text or designs from another person (CSU or non-CSU) is not allowed. Having access to another person's work on the system or giving access to your work to another person is not allowed. It is your responsibility to keep your work confidential.

No cheating in any form will be tolerated. The penalty for the first occurrence of academic dishonesty is a zero grade on the assignment or exam/quiz; the penalty for the second occurrence is a failing grade for the course. For exams/quizzes, access to any type of written material or discussion of any kind (except with me) is not allowed.

<http://ace.columbusstate.edu/advising/a.php#AcademicDishonestyAcademicMisconduct>

Getting help

Student assistants in the Computer Center can help you with basic computer-related problems such as logging on to the network, saving your work, etc., but they are not obligated to help you with your assignments. There are several tutors at the Department of Computer Science lab (CCT450) who can help you with the assignments. Their schedule is posted in the Computer Science department. You can always contact me during my posted office hours, by e-mail, or by appointment.

Electronic Devices and Academic Integrity: All cell phones and pagers must be turned off prior to entering the classroom or lab. The use of any electronic device during a test or quiz is prohibited. This includes cell phones, handheld calculators, iPhones, Android phones, PalmPilots, Blackberrys,

PocketPCs, and laptops. Any use of such a device during a test or quiz will be considered a breach of academic integrity.

CSU ADA statement

"If you have a documented disability, as described by the Rehabilitation Act of 1973 (P.L. 933-112 Section 504) and the Americans with Disabilities Act (ADA) and subsequent amendments and would like to request academic and/or physical accommodations, please contact the Office of Disability Services in the Schuster Student Success Center (room 221), 706-507-8755, as soon as possible. Course requirements will not be waived, but reasonable accommodations may be provided as appropriate."

ABET Criteria:

- A. An ability to apply knowledge of computing and mathematics appropriate to the discipline;
- B. An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution;
- C. An ability to design, implement and evaluate a computer-based system, process, component, or program to meet desired needs;
- D. An ability to function effectively on teams to accomplish a common goal;
- E. An understanding of professional, ethical, legal, security, and social issues and responsibilities;
- F. An ability to communicate effectively with a range of audiences;
- G. An ability to analyze the local and global impact of computing on individuals, organizations and society;
- H. Recognition of the need for, and an ability to engage in, continuing professional development;
- I. An ability to use current techniques, skills, and tools necessary for computing practice.
- J. An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computer-based systems in a way that demonstrates comprehension of the tradeoffs involved in design choices;
- K. An ability to apply design and development principles in the construction of software systems of varying complexity.

CS Program Objectives:

Our graduates will have achieved:

- 1) A broad general education assuring an adequate foundation in science and mathematics relevant to computing.
- 2) A solid understanding of concepts fundamental to the discipline of computer science.
- 3) Good analytic, design, and implementation skills required to formulate and solve computing problems.
- 4) The ability to function and communicate effectively as ethically and social responsible computer science professionals.