

Operating Systems

CS 33211

Spring 2007, MW 5:30-6:45pm , MSB 115

Instructor **Dr. Mikhail Nesterenko**

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Course Prerequisites

CS 33001(Data Structures) and CS 35101 (Computer Architecture) or their equivalents. Familiarity with the basics of C++ is helpful since you will be writing C++ code during your projects.

Course Overview

The goal of this course is to provide an introduction to operating systems. We will study process management, threads, deadlocks, memory management, file system organization. If time permits we will also examine the networking and distributed aspects of OS design.

Textbook

Operating Systems Concepts, 7th edition, Silberschatz, Galvin and Gagne, John Wiley and Sons, 2004

Class Web Page, Mailing List, Contacting the Instructor

The web page for the class is <http://www.cs.kent.edu/~mikhail/classes/os/> (I have a link to this page from my homepage). The web page will contain links to the following course materials:

- course syllabus, class schedule;
- lecture notes;
- homework and programming projects assignments, homework solutions.

A mailing list is set up to for the students taking this course. I am going to send announcements and other class-related information to this list. The instructions how to subscribe to the mailing list as well as the list archive are linked to the course's mailing list. **You have to subscribe to the mailing list within the first two weeks of classes.** You can subscribe to the list from the account of your choice (it does not have to be Kent-State's university or departmental account.) You have to check your mail at least once a day while the school is in session.

The simplest way to contact me is via e-mail. **If you need to talk to me in person – see me during my office hours or make an appointment via e-mail.**

Lectures

Students are expected to attend each lecture. I will not take roll, yet attendance and active participation during a lecture will help you learn the material and succeed in class.

Class Assignments

Homeworks. There will be approximately 3 homework assignments during the semester. The homework assignments will be pencil-and-paper based and will involve solving problems from the textbook.

Quizzes. There will be approximately 3 quizzes. The date of the quiz is announced about a week in advance (there will be no surprise quizzes.) A quiz is held during the first 10 minutes of the class. Late students will not be given extra time to complete the quiz. A quiz usually contains 10 multiple-choice questions.

Programming projects. There will be approximately 3 programming projects. They will involve reading and writing C++ code. If you need quick refresher on C++, check the course's webpage for links to online tutorials.

The projects will be submitted and graded electronically. The details on project submission will be given to you together with project assignment.

Exams. There will be two midterm exams (held during class) and a final exam (held during finals week.) You will be tested on the material I covered in class. The textbook alone may not be sufficient for adequate preparation for the exams.

Late Policies

- quizzes no late quizzes accepted, no make-up quizzes;
- exams no late exams, no make-up exams;
- homeworks no late homeworks;
- projects late projects accepted. 10% of the grade is subtracted for each day the project is late. For penalty calculation Saturday and Sunday are counted as a single day.

Late work will be accepted as stated above. I may waive the late policy conditions only in case of a *documented* illness or another extraordinary circumstance. In either case you have to contact me immediately. With respect to projects and homeworks my decision to grant you a waiver is partially influenced by the degree of completion of the work assigned. For example, if the project is assigned for 2 weeks, by 10th day I expect you to complete 65-70% of the work.

In general, you will have adequate time to complete each assignment. However, you should begin working on each assignment early so that you will have plenty of time for debugging which may take significantly longer than the initial code writing. Waiting to start coding until the night before the project is due is a bad idea.

Academic Integrity

Student-teacher relationships are built on trust. Students must trust that teachers have made appropriate decisions about the structure and content of the courses they teach, and teachers must trust that the assignments which students turn in are their own. Acts that violate this trust undermine the educational process. Academic dishonesty in any form will be penalized up to assigning grade F.

Cooperation on Homework Assignments and Programming Projects

For both homework assignments and programming projects, I strongly believe that discussion with your peers is an excellent way to learn. If you don't understand something, discussing it with someone who does can be far more productive than beating your head against the wall.

Having advocated discussion, then, I must be about clear what is allowed, and what is not. In general, students are allowed to cooperate as follows: you are allowed to discuss with other students the assignment, and general methods for solving the assignment. However, you are not allowed to work with someone else to actually *solve* the assignment, or to *write code* (even pseudocode) for a program, and you are certainly not allowed to *copy* anyone else's solution; doing any of these things will be considered cheating, and will constitute grounds for failing the course.

Note that there is a fine line between discussion and cheating. If you are unsure what is allowed and what isn't, feel free to discuss the distinction with me, but if something feels uncomfortable, it's probably not allowed.

Finally, you should be careful not to give others access to your code. This means that you shouldn't keep your program in a publicly accessible directory, you shouldn't leave your terminal unattended, and you shouldn't forget to pick up your printouts.

Grades

Your final course grade will be calculated as follows:

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| • quizzes (approximately 3) | 10 points each (the lowest quiz score will be dropped) |
| • programming projects (approximately 3) | 50 points each |
| • homeworks (approximately 3) | 20 points each |
| • midterm exams (2) | 100 points |
| • final exam | 100 points |

The sum of possible scores on all assignments is considered 100% and your final course grade will be determined as follows – A = 90–100%, B = 80–99.99%, etc. **There will be no curve at the end of the course**, although individual exams, homeworks, etc. may occasionally (although rarely) be curved. Note, that this means that **your score will not be rounded up: if you get 69.99% you will get a D not a C**. Thus you should always be able to determine how well you are doing in the course.

You will provide me with a pseudonym. Your grades will be posted on the course's webpage under your pseudonym.

Students with Disabilities

University policy 3342-3-18 requires that students with disabilities be provided reasonable accommodations to ensure their equal access to course content. If you have a documented disability and require accommodations, please contact the instructor at the beginning of the semester to make arrangements for necessary classroom adjustments. Please note, you must first verify your eligibility for these through Student Disability Services (contact 330-672-3391 or visit <http://dept.kent.edu/sds> more information on registration procedures).

Statement on Academic Dishonesty

Excerpted from the University's Administrative policy and procedures regarding student cheating and plagiarism. Policy #3342-3-07(A) Policy statement. It is the policy of the university that: (1) Students enrolled in the university, at all its campuses, are to perform their academic work according to standards set by faculty members, departments, schools and colleges of the university; and (2) Cheating and plagiarism constitute fraudulent misrepresentation for which no credit can be given and for which appropriate sanctions are warranted and will be applied.

(B) Intent and scope of the policy. (1) In providing this policy, the university affirms that acts of cheating and plagiarism by students constitute a subversion of the goals of the institution, have no place in the university and are serious offenses to academic goals and objectives, as well as to the rights of fellow students. (2) It is the intent of this policy to provide appropriate sanctions, to provide fair and realistic procedures for imposing those sanctions, to provide safeguards for any student suspected of cheating or plagiarism, and to coordinate the policy with procedures of the code of student conduct, rule 3342-4-15 of the Administrative Code and of this register. (3) This policy applies to all students of the university, graduate and undergraduate, full or part-time, whose conduct is of such a nature prohibited by the policy. Other offenses of a nonacademic nature are covered by the code of student conduct, rule 3342-4-15 of the Administrative Code and of this register. (C) Definitions. As used in this rule: (1) "Cheating" means intentionally to misrepresent the source, nature, or other conditions of academic work so as to accrue undeserved credit, or to cooperate with someone else in such misrepresentation. Such misrepresentations may, but need not necessarily, involve the work of others. As defined, cheating includes, but is not limited to: (a) Obtaining or retaining partial or whole copies of examination, tests or quizzes before these are distributed for student use; (b) Using notes, textbooks or other information in examinations, tests and quizzes, except as expressly permitted; (c) Obtaining confidential information about examinations, tests or quizzes other than that released by the instructor; (d) Securing, giving or exchanging information during examinations; (e) Presenting data or other material gathered by another person or group as one's own; (f) Falsifying experimental data or information; (g) Having another person take one's place for any academic performance without the specific knowledge and permission of the instructor; (h) Cooperating with another to do one or more of the above; and (i) Using a substantial portion of a piece of work previously submitted for another course or program to meet the requirements of the present course or program without notifying the instructor to whom the work is presented. (j) Presenting falsified information in order to postpone or avoid examinations, tests, quizzes, or other academic work. (2) "Plagiarize" means to take and present as one's own a material portion of the ideas or words of another or to present as one's own an idea or work derived from an existing source without full and proper credit to the source of the ideas, words, or works. As defined, plagiarize includes, but is not limited to: (a) The copying of words, sentences and paragraphs directly from the work of another without proper credit; (b) The copying of illustrations, figures, photographs, drawings, models, or other visual and nonverbal materials, including recordings, of another without proper credit; and (c) The presentation of work prepared by another in final or draft form as one's own without citing the source, such as the use of purchased research papers.

Faculty Procedures regarding sanctions for Academic Dishonesty. Excerpted from Policy #3342-3-07 Administrative policy and procedures regarding student cheating and plagiarism. (D) Academic sanctions. The following academic sanctions are provided by this rule for offenses of cheating or plagiarism. Kent campus instructors shall notify the department chairperson and the student conduct office each time a sanction is imposed. Regional campus instructors shall notify the regional campus dean and the student conduct officer each time a sanction is imposed. Regional campus student conduct officers shall notify the Kent student conduct office each time a sanction is imposed by a regional campus instructor. (See paragraph (G)(2)(a)(i)(b) of this rule. (1) Coursework. The following academic sanctions are provided by this rule for offenses of cheating or plagiarism. In those cases the instructor may: (a) Refuse to accept the work for credit; or (b) Assign a grade of "F" or zero for the project, test, paper, examination or other work in which the cheating or plagiarism took place; or (c) Assign a grade of "F" for the course in which the cheating or plagiarism took place; and/or; (d) Recommend to the department chair or regional campus dean that further action specified in paragraph (D)(2) of this rule be taken. The department chairperson or regional campus dean shall determine whether or not to forward to the academic dean or to the vice president for the extended university a recommendation for further sanctions under paragraph (D)(2) of this rule. (2) Degree. The following academic sanctions are provided for acts of cheating or plagiarism which so permeate the student's work that the effect is to compromise the validity of a degree. Such occurrences may be related, but not limited, to professional or graduate work. Sanctions which can be invoked by the dean of the college in which the student is enrolled or by the associate vice president for the extended university include those provided in paragraph (D)(1) of this rule; and/or (a) Revocation or recommendation to decertify or not to certify; or (b) Rejection of the thesis, dissertation or work; or (c) Recommendation for revocation of a degree. (E) Other sanctions. If the instructor feels—or the department chair or director, or dean where appropriate—that the offense is of such nature that the academic sanctions are an insufficient remedy, or that they are not available, he or she may initiate additional procedures or alternate sanctions under the code of student conduct which may result in formal disciplinary sanctions. Sanctions which may only be invoked through the code of student conduct include disciplinary dismissal, suspension, and probation. (F) Procedures for invoking sanctions. (1) Academic administrative procedures pertaining to paragraph (D)(1) of this rule. In the event that an instructor determines that it is more probable than not that a student in a course or program under the instructor's supervision has presented work for university credit which involves an act of cheating, plagiarism or cooperation in either, then the instructor shall: (a) Inform the student as soon as is practical, in person or by mail, of the belief that an act of cheating or plagiarism has occurred. If the student cannot be reached in a reasonable period of time, the instructor may proceed with sanctions, notifying the student in writing as promptly as possible of the belief and the procedural steps the instructor has taken. (b) Provide the student an opportunity to explain orally, in writing, or both, why the student believes the evaluation of the facts is erroneous. (c) If the explanation is deemed by the instructor to be inadequate or if no explanation is offered, the instructor may impose one of the academic sanctions listed in paragraph (D)(1) of this rule. Where appropriate, the instructor may recommend the imposition of academic sanctions listed in paragraph (D)(2) of this rule. In addition, the instructor may refer the matter to the dean of the college, campus, or school in which the student is enrolled for imposition of academic sanctions listed in paragraph (D)(2) of this rule. (d) The instructor shall notify the student conduct office of the circumstances and action taken. Such notification will be used as background information in the event that formal conduct charges are initiated against the student. (e) The instructor shall inform the student in writing of the right to appeal, and the procedure to follow. (f) The instructor shall keep the evidence of cheating or plagiarism in a secure place and provide it upon request to any appeals officer or the conduct officer. The instructor shall provide copies on request to the student at the student's expense. (g) The instructor shall cooperate with academic and student conduct personnel in any appeal of the decision, and/or in adjudication of any disciplinary proceedings. (2) Code of student conduct procedures pertaining to paragraph (D)(1) of this rule. (a) Applicable procedures including appeals are provided and defined in the code of student conduct, rule 3342-4-15 of the Administrative Code and of this register. (b) Upon receipt of notification of sanctions for cheating or plagiarism, the office of student conduct will inform, by memo, the dean, the college or campus in which the student is enrolled of the offense, academic sanction(s), and/or conduct sanction(s) imposed. (3) Academic administrative procedures pertaining to paragraph (D)(2) of this rule. (a) With concurrence from the faculty member and the department chairperson, the academic dean or the associate vice president of the extended university may invoke sanctions specified in paragraph (D)(2) of this rule. (b) The recommendation for sanction, paragraph (D)(2)(c) of this rule, is made by the academic dean or the associate vice president for the extended university who forwards it to the vice president and dean for enrollment management and student affairs, who must approve it and forward it to the president, who must approve it and forward it to the board of trustees for approval. (G) Academic appeals. The general principle that applies to the following procedures is that an appeal is directed to the administrative level immediately above the unit from which the appeal emanates. (1) Appeals are limited to the following reasons: (a) The decision is arbitrary or unreasonable. (b) The decision resulted from a procedural error. (c) The decision is not in accordance with the facts presented. (d) New information is available which may suggest modification of the decision. (2) Procedure for appealing sanctions imposed under paragraph (D)(1) of this rule. Appeals to the department and regional campus level and to the college and associate vice president for the extended university level are provided by this rule for violations involving coursework as described in paragraph (D)(1) of this rule. There may be cases in which an administrator, serving as an instructor, charges a student with either cheating or plagiarism. If this administrator would normally be required by this policy to serve as an appeal officer, the appropriate faculty advisory committee shall be empowered to select a member of the faculty to serve as the appeal officer. In the case of the graduate college, the graduate college council shall select an appeal officer. (a) Department, independent school and regional campus level appeals. (i) Notice and timing. (1) The instructor shall give the student notice of right of appeal and the procedures or persons to contact at the time the sanction in paragraph (F)(1)(c) of this rule is applied. (2) The instructor imposing a sanction is required to notify the chairperson, independent school dean or regional campus dean. However, since the chairperson, dean or regional campus dean may be requested to hear an appeal, only the charge without elaboration, the sanction imposed by the instructor, and the date of transmittal of the right of appeal should be given to the chairperson or regional campus dean by the instructor. (3) An appeal of a sanction imposed by an instructor must be made by the student within fifteen working days of receipt of notice of right to appeal. (ii) Appeal procedure. (1) Appeal. Student appeals of sanctions imposed by an instructor are directed to the department chairperson, school dean or regional campus dean in writing. (2) Upon notice. The chairperson, school dean or campus dean shall notify the student of the time and place for the appeal hearing. (3) Hearing. (1) The burden of establishing that cheating or plagiarism occurred is on the person who claims the act took place. (2) The instructor shall provide documents, if any, in support of the decision and shall make a statement, orally, in writing, or both, of the facts and the basis for the decision. (3) The student may make a statement in writing, orally, or both. (4) Both the instructor and student may ask questions of the other at an appropriate time during the hearing. (5) Both may present witnesses. (6) Both have the right to hear all testimony and examine all evidence. (7) At the hearing, the student may be accompanied by one other person of his or her choice. That person may act as an advisor to the student, but may not participate in the hearing procedure in any manner whatsoever. No party may be represented by legal counsel. (8) All matters pertaining to the conduct of the appeal hearing shall be under the sole authority of the chairperson or regional campus dean. (iii) Department, independent school and regional campus level appeal decision. (1) The chairperson, school dean or regional campus dean shall hear all the statements and have all the documents which support the claim. (2) Following the hearing, the chairperson, school dean, or regional campus dean shall prepare a short statement in writing of the facts as they are judged to be true. (3) The chairperson, school dean or regional campus dean shall make the decision, and in writing, provide a summary of the reasons for upholding or rejecting the appeal. (4) This decision shall be communicated to the student and the instructor within fifteen working days of receipt of the appeal. (b) College and associate vice president of the extended university level appeals. (i) College level appeals are a matter of right for a student to whom academic sanctions have been applied and for an instructor whose decision has been overturned. (ii) Appeals from the decision of the departmental chairperson shall be transmitted by the student or instructor to the appropriate dean within fifteen working days of receipt of the appeal. (iii) Appeals at the college level that are on the record shall consist of all documents submitted to the chairperson and the written report prepared by the chairperson as required by paragraph (G)(2)(a)(iii)(c) of this rule. (iv) The person appealing has a right to a copy of the record at the college's expense. (v) The college dean shall review the record. The student and instructor may prepare an additional written statement for the dean. The dean, at his or her discretion, may consider other new evidence or argument. The appeal procedure shall be established by the dean. (vi) In considering the matter at the college level, the burden is on the person appealing the decision of the chairperson. (vii) The decision of the dean shall be in writing, and shall be transmitted to the student and instructor within fifteen working days of receipt of the written appeal. (viii) There shall be no right to further appeal on the merits of the case, and the decision of the dean shall be final, except in those cases covered by paragraph (H) of this rule. Paragraph (H) Vice president and dean for enrollment management and student affairs review authority. This pertains to matters related to the extended University. Complete procedural details are in policy #3342-3-07