

University of Texas at Tyler  
College of Engineering & Computer Science  
Department of Computer Science  
Syllabus

## COSC 5390 Topics in Computer Science: Advanced Operating Systems

**Instructor:** Dr. Artur Mikitiuk

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**Office hours:** MWF 12:00-13:00 and by appointment

**Semester:** Summer II 2007

**Meeting time:** MTWR 15:30 – 17:40

**Classroom:** SCI 247 or 248

**Credit hours:** 3

**Prerequisites:** COSC 2315, COSC 2336

**Purpose of the Course:** The purpose of the course is to provide a state-of-the-art introduction to practical, advanced concepts in operating systems design.

**Course Description:** This advanced graduate course aims to expose students to practical challenges in operating systems design today, especially securing it from threats from viruses and worms, and intelligent attacks. The course will combine lectures with a significant project and feature extensive analysis of case studies. It will focus on understanding in depth and through a hands-on project why and how are operating systems, even UNIX, vulnerable. The focus will not merely be on conventional security issues.

**Texts for the course:** Select reading from peer-reviewed journal and conference papers. Case studies of attacks on operating systems.

### Topics covered and tentative time allotments:

Topics	Hours
1. Introduction to security environment	4
2. User authentication	4
3. Authorization	4
4. Comprehensive analysis of threats to O/S	4
5. Vulnerabilities to viruses & worms	4
6. Vulnerabilities in embedded O/S	4
7. Attacks from inside the system	4
8. Attacks from outside the system	4
9. Trusted systems	4
10. Security in distributed systems	4
11. Why does Windows O/S crash and reboots automatically?	2

**Typical Papers and Projects:** Students will be required to complete a significant, practical project related to operating systems security.

**Late policies:** All assignments will be collected on the due date at the beginning of the class period. Any assignment that is not turned in at that time (including assignments submitted after class!) will be considered late. Since meeting deadlines is an important aspect of every work, you will be penalized 5% for each day your assignment is late. Only weekdays count as penalty days. This means that if an assignment is due on Thursday at 11:00 am and is turned in between 11:01 am on Thursday and 11:00 am on Friday, it receives 5% penalty while an assignment due on Thursday at 11:00 am and submitted between 11:01 am on Friday and 11:00 am on Monday receives 10% penalty. **Late penalty applies also to students who missed class when the assignment was due.** Only if you provide a valid excuse for your absence, the instructor may void or decrease late penalty. However, even if your absence is excused, you may still incur late penalty if you had plenty of time to do the assignment and you knew in advance that you would be absent on the due date. For example, a basketball player knows in advance his schedule of games and should plan accordingly. If he is scheduled to be out of town when the assignment is due, he should submit the assignment before his departure.

If you submit your assignment before the deadline, you will get extra credit 3% for every weekday your assignment is early. This means that an assignment due on Tuesday at 11:00 am and submitted before 11:00 am on Monday gets 3% extra credit while an assignment due on Tuesday at 11:00 am and submitted before 11:00 am on Friday gets 6% extra credit.

Programming assignments overdue more than a week cannot be accepted. No written assignment can be accepted after the solutions have been presented in the class.

**Examinations:** A student who misses an exam must present a valid excuse before being allowed to make it up. If not made up within a week of the original exam, a grade of zero will be assigned for the missed exam.

**Academic dishonesty:** You are expected to do your own work. You may assist each other with general concepts, but direct assistance with a particular assignment or any attempts to gain an unfair academic advantage will not be tolerated. Cheating is considered a serious academic offense both by the instructor and by the University. It may result in a failing grade from this course for all parties involved. If you have questions about the line between assistance and cheating, discuss it with your instructor. The instructor reserves the right to ask you to explain any assignment that you turn in to judge if the work is actually yours.

**Course Evaluation:** During the semester, various methods of evaluation will be used to ensure that the course objectives are being achieved. Various aspects of your performance will contribute to your final grade as follows:

Midterm exam	20%
Final exam	25%
Written assignments	5%
Project	50%

**Disabilities:** If you have a disability, including a learning disability, for which you request an accommodation, please contact Ida MacDonald in the Disability Support Services office so that the appropriate arrangements may be made. In accordance with federal law, a student requesting accommodation must provide documentation of his/her disability to the Disability Support Services counselor. For more information, call or visit the Student Services Center located in the University Center, Room 282. The telephone number is 566-7079 (TDD 565-5579).