

CSE 5434 (Approved): Comparative Operating Systems

Course Description

A careful examination of a number of representative computer operating systems.

Prior Course Number: 741

Transcript Abbreviation: Compar Opr Systems

Grading Plan: Letter Grade

Course Deliveries: Classroom

Course Levels: Undergrad, Graduate

Student Ranks: Junior, Senior, Masters, Doctoral

Course Offerings: Summer

Flex Scheduled Course: Never

Course Frequency: Every Year

Course Length: 7 Week

Credits: 2.0

Repeatable: No

Time Distribution: 4.0 hr Lec

Expected out-of-class hours per week: 8.0

Graded Component: Lecture

Credit by Examination: No

Admission Condition: No

Off Campus: Never

Campus Locations: Columbus

Prerequisites and Co-requisites: CSE2431 (660) or CSE5431

Exclusions: Not open to students with credit for CSE 741

Cross-Listings:

The course is required for this unit's degrees, majors, and/or minors: No

The course is a GEC: No

The course is an elective (for this or other units) or is a service course for other units: Yes

Subject/CIP Code: 11.0501

Subsidy Level: Doctoral Course

Programs

Abbreviation	Description
BS CSE	BS Computer Science and Engineering
MS CSE	MS Computer Science and Engineering
PhD CSE	PhD Computer Science and Engineering

Course Goals

Be competent with the concept of an operating system and the resources they manage.
Be familiar with restrictions on potential parallelism.
Be familiar with the virtual memory illusion.
Be familiar with how the scheduler distributes work in space and time.
Be familiar with an OS service, an OS customer.

Course Topics

Topic	Lec	Rec	Lab	Cli	IS	Sem	FE	Wor
Fundamentals.	6.0							
Process management.	6.0							
Memory management.	4.0							
Processor scheduling.	4.0							
File management.	4.0							
Performance management. The assembled package.	4.0							

Representative Assignments

Basic linux system-call programming that implements a simple shell.
Implement a multilevel-queue-based scheduler.
Implement a disk cache based on the second-chance algorithm.

Grades

Aspect	Percent
Term Paper	66%
Final Exam	34%

ABET-EAC Criterion 3 Outcomes

Course Contribution		College Outcome
***	a	An ability to apply knowledge of mathematics, science, and engineering.
**	b	An ability to design and conduct experiments, as well as to analyze and interpret data.
**	c	An ability to design a system, component, or process to meet desired needs.
	d	An ability to function on multi-disciplinary teams.
**	e	An ability to identify, formulate, and solve engineering problems.
	f	An understanding of professional and ethical responsibility.
*	g	An ability to communicate effectively.
*	h	The broad education necessary to understand the impact of engineering solutions in a global and societal context.
*	i	A recognition of the need for, and an ability to engage in life-long learning.
***	j	A knowledge of contemporary issues.
**	k	An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

BS CSE Program Outcomes

Course Contribution		Program Outcome
***	a	an ability to apply knowledge of computing, mathematics including discrete mathematics as well as probability and statistics, science, and engineering;
**	b	an ability to design and conduct experiments, as well as to analyze and interpret data;

Course Contribution		Program Outcome
***	c	an ability to design, implement, and evaluate a software or a software/hardware system, component, or process to meet desired needs within realistic constraints such as memory, runtime efficiency, as well as appropriate constraints related to economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability considerations;
	d	an ability to function on multi-disciplinary teams;
**	e	an ability to identify, formulate, and solve engineering problems;
*	f	an understanding of professional, ethical, legal, security and social issues and responsibilities;
	g	an ability to communicate effectively with a range of audiences;
*	h	an ability to analyze the local and global impact of computing on individuals, organizations, and society;
*	i	a recognition of the need for, and an ability to engage in life-long learning and continuing professional development;
**	j	a knowledge of contemporary issues;
***	k	an ability to use the techniques, skills, and modern engineering tools necessary for practice as a CSE professional;
***	l	an ability to analyze a problem, and identify and define the computing requirements appropriate to its solution;
***	m	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;
**	n	an ability to apply design and development principles in the construction of software systems of varying complexity.

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