Course
Outline

A. Basic Information

Semester : Fall 2025

Course Code : CSE 362

Course Title : Operating Systems Lab

Credit : 1.0

Pre-requisite Courses :

Course Code	Course Title

Course Offering Department : Department of Computer Science and Engineering

Faculty : APA

Class Schedule :

Course Code	Section	Room Number	Day	Start Time	End Time
CSE 362	1, 2, 3	SEU613	Sunday, Wednesday	8:00 11:30	10:00 13:30

Consultation Schedule :

Day	Start Time	End Time	Duration
Thursday	10.00	16:00	6 hours

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B. Routine of Faculty

C. Course Details

1. Importance of the Course

The "Operating Systems Lab" course provides an in-depth examination of the essential tools and principles required to develop modern operating systems, with a strong focus on UNIX-like environments such as GNU/Linux. The course is divided into two main parts: the first part emphasizes mastery of the GNU/Linux command-line interface, enabling students to efficiently navigate and administer systems. The second part concentrates on the GNU/Linux application programming interface (API), through which students complete practical exercises to understand process and thread creation, along with mechanisms for managing them. Via hands-on projects, learners develop skills in cooperative resource allocation among processes, process scheduling, concurrency control, memory management, and file input/output structures. More advanced concepts, such as synchronization primitives, mutual exclusion, deadlock prevention, and starvation avoidance are also covered, preparing students with a solid foundation in operating system principles for careers in software engineering, system administration, and related fields.

2. Objectives

The primary purpose of this course is to provide students with a practical introduction to command-based operations in UNIX-like operating systems. Its key objectives include enabling learners to effectively utilize the UNIX command line for navigating and exploring open-source software

within the GNU/Linux environment; developing foundational skills in shell scripting while addressing process and thread management in contemporary operating systems, including the implementation of concurrency control mechanisms, such as mutual exclusion, synchronization, deadlock prevention, and avoidance of starvation, through semaphores via the GNU/Linux POSIX API; and applying algorithmic concepts through programming in shell scripting.

3. Course Outcomes (COs)

At the end of the course, the students will be able to:

COs	Description	POs	Teaching-Learning Strategy	Assessment Strategy
CO1	**Interpret** the GNU/Linux GUI and command line interface.	PO5	Lectures, Active discussion, Solving logical problems.	**Formative**: - Essay Questions - Quiz - Viva voce **Summative**: - Final Examination
CO2	**Demonstrate** the file Handling in GNU/Linux, Programming with Shell Scripting.	PO3	Lectures, Practice problems	**Formative**: - Essay Questions - Quiz - Viva voce **Summative**: - Final Examination
CO3	**Implement** technical aspects of modern operating systems.	PO3	Lectures, Practice problems	**Formative**: - Essay Questions - Quiz - Viva voce **Summative**: - Final Examination

CO4	**Write** an effective report on the technical solutions of modern operating systems..	PO10	Lectures, Practice problems	**Formative**: - Essay Questions - Quiz - Viva voce **Summative**: - Final Examination

4. Course Outcomes (COs) and Program Outcomes (POs) Mapping

CO	PO											
	PO1	**PO2**	**PO3**	**PO4**	**PO5**	**PO6**	**PO7**	**PO8**	**PO9**	**PO10**	**PO11**	**PO12**
CO1					✓							
CO2			✓									
CO3			✓									
CO4										✓		

5. Tentative Lecture Plan

Sl no.	Lecture No.	Contents	Learning Outcome	Learning Resources
1	Lecture 1	Introduction to the course, Installation process, and project structure	Introduction to the course and course outline. Discussion on OBE of Operating System & System Program Lab & Introduction to Linux Operating system	Course Outline & Class Lecture
2	Lecture 2	Introduction to WSL	Installation: Linux Installation using Virtual Machine Platform	Class Lecture
3	Lecture 3	Windows Vs Linux	Windows Vs Linux: Type of files, directories, users	Class Lecture

4	Lecture 4	Commands Terminal V/s GUI	Commands Terminal V/s GUI File Commands (ls, cd, pwd, mkdir, cp, mv, rm, rmdir, cat, more, less, touch, head, tail, ls)	Class Lecture
5	Lecture 5	File Permissions	File Permissions (chmod), File Redirection (>, >>), vi Editor, nano editor and their functionalities	Class Lecture
6	Lecture 6	Searching and System Information	Searching (grep, locate, find) System Information (date, cal, w, whoami, finger, uname, cat /proc/cpuinfo)	Class Lecture
7	Lecture 7	Unix Administration	Unix Administration (Creating a User, Deleting, disabling account, Adding users to the user groups, Finger, Linux/Unix User Management Commands	Class Lecture
8	Lecture 8	Basic of Shell Scripting	Introduction, a brief understanding of Basic of Shell Scripting	Class Lecture
9	Lecture 9	Conditional statement	Implement Conditional statement in shell scripting.	Class Lecture
10	Lecture 10	Loop in shell scripting	Implement Loop in shell scripting and Implementation of the scheduling algorithm.	Class Lecture
11	Lecture 11	File Handling	File Handling in GNU/Linux, Programming with Pipes, Sockets Programming.	Class Lecture
12	Lecture 12	Review Class		Class Lecture
Final Exam Week				

6. Teaching and Learning Methods

- Online Learning Management System (Google Classroom)
- Lecture delivery in Physical Class
- Lecture materials in Google Classroom
- Discussion during class and counseling hours
- Sample codes provided during physical class and via Google Classroom

7. Assessment

i. Tentative Assessment Schedule

Serial	Assessment Type	Schedule	Comments
1.	Lab Performance Test	Week 6	Announcements will be given ahead of time.
2.	Lab Report	Week 11	Announcements will be given ahead of time.
3.	Final Exam	Week 12	Announcements will be given ahead of time.

ii. Tentative Weight Assessment

Assessment Tools	Percentage
Attendance	10%
Lab Performance	10%
Lab Report	20%
Viva	20%
Final Examination	40%
Total	**100%**

iii. Grading Policy

Obtained Marks		Letter Grade	Grade Point	Assessments
Minimum	**Maximum**			
80%	100%	4.00	A+	Outstanding
75%	79%	3.75	A	Excellent
70%	74%	3.50	A-	Very Good

Obtained Marks		Letter Grade	Grade Point	Assessments
Minimum	Maximum			
65%	69%	3.25	B+	Good
60%	64%	3.00	B	Average
55%	59%	2.75	B-	Below Average
50%	54%	2.50	C+	Poor
45%	49%	2.25	C	Very Poor
40%	44%	2.00	D	Passing
0%	39%	0.00	F	Fail

8. Lecture Materials

Lecture Notes	As provided during class
Text Book(s)	1. Richard Blum, Christine Bresnahan, Linux Command Line and Shell Scripting Bible, 4th Edition, Wiley, 2021, ISBN: 978-1118983843.
Reference Book(s)	1. William Stallings, Operating Systems: Internals and Design Principles, 9th Edition, Pearson, 2015, ISBN: 978-0134670959. 2. Lab Manual
Online Resources	Resources as provided during class time

9. Aiding Materials for Learning

i. Internet Connectivity
ii. SEU official email ID.
iii. Should know how to use "Google Meet" and "Google Classroom."

10. Faculty Suggestions

- The dates and syllabus of the lectures, class tests, midterm, and final exams are already given here; however, announcements will be made ahead of time. There is **NO** provision for make-up class tests.
- The reading materials for each class may be given before that class so that students can have a cursory look at the materials. All materials (lecture notes, supporting reading materials, etc) will be made available through Google Classroom (classroom.google.com).
- Class participation is vital for a better understanding of the subject matter. The class will be conducted in an interactive environment where the teacher and the students must pose questions and discuss solutions for better understanding.
- Mobile phones or other devices **MUST** stay silent during class and exam periods.
- A student who cheats, plagiarizes, or furnishes false, misleading information in the course is subject to disciplinary action up to and including an F grade in the course and/or suspension/expulsion from the University.
- Students must maintain the code of conduct specified by SEU.
- The goal of any assignment is to give you practice in mastering the course material. Consequently, you are encouraged to collaborate on problem sets. In fact, students who form study groups generally do better on exams than do students who work alone.
- You must write up each problem solution by yourself without assistance. It is a violation of this policy to submit a problem solution that you cannot explain verbally to the course teacher.
- No collaboration whatsoever is permitted during the examination.