# **Syllabus – EGR 226 – Operating Systems and Networking**

**Purpose of the Course:**

The Operating System is the software that turns a collection of electronic circuits into a computer. It’s usually what we interact with, and all programs use key elements from the OS. In this course, we will look at the major pieces of an OS: what they do and how they do it. We will program some key pieces of an OS, look at the design decisions of common operating systems in use, and examine in detail two important attributes: networking and security.

**Pre/co –requisites:**

There are no pre- or co-requisites for this course.

**Required Materials:**

**Textbook (optional):**

* William Stallings, *Operating Systems:Internals and Design Principles*, 8th Edition, Addison-Wesley, 2015, ISBN-13: 9780133805918.
* Silberschatz, Galvin and Gagne, *Operating System Concepts*, 9th edition.

**External Disk Drive:** We will be installing several open-source components on hard disk to provide a “safe” environment to develop operating systems code. The course emphasizes the use of virtual machine infrastructure to grant access to multiple OS features and enhancements that we will explore throughout the course.

**Bibliography (for additional reading and reference; these are not required):**

Kevin Fall, *TCP/IP Illustrated, Volume 1: The Protocols,* Addison-Wesley Professional, 2011. ISBN-13: 9780321336316.

**CBU’s College of Engineering Mission Statement:**

"Preparing engineering students of competence and character, with a Christian worldview who are called to serve, equipped to lead and sent to engage the world with their lives and the appropriate use of technology."

**General Course Objectives**

Students who successfully complete EGR226 will be able to:

* describe the overall structure and function of a modern operating system (1);
* understand and use processes and threads (11);
* describe concurrency and synchronization issues in an OS (5);
* describe the management of memory, files and I/O (1);
* understand computer and OS security, including current threats (6);
* list the levels of the TCP/IP protocol stack and give examples at each level (8);
* perform basic network programming (5); and
* understand basic network hardware devices and their function (11).

**WebEx Instructions for Live Synchronous Instruction:**

1) Create a new webex account with: [https://calbaptist.webex.com](https://calbaptist.webex.com/)

2) More information on how to use WebEx can be accessed here: <https://help.webex.com/en-us/n62wi3c/Get-Started-with-Cisco-Webex-Meetings-for-Attendees>

3) To meet with me during **office hours**: M-F, please use the information below; you may be placed into the waiting room, in that event, I will let you have access.

|  |  |
| --- | --- |
| Meeting Link | https://calbaptist.webex.com/meet/bknisley |
| Meeting Number | 804 172 709 |
| Join by Video System | Dial bknisley@calbaptist.webex.com and enter your host PIN 8449.  You can also dial 173.243.2.68 and enter your meeting number. |
| Join by phone | Join by phone 1-650-479-3208 Call-in number (US/Canada)  Access code: 804 172 709  Host PIN: 8449 |

**As part of the Software Engineering and Computer Science majors, this course addresses the following CBU College of Engineering overall Student Learning Objectives:**

1. An ability to apply knowledge of mathematics, science, and engineering.

5. An ability to identify, formulate and solve engineering problems.

6. An understanding of professional and ethical responsibility.

8. The broad education necessary to understand the impact of engineering solutions in a global, economic, environmental, and societal context.

11. An ability to use the techniques, skills, and modern engineering tools necessary for engineering practice.

**Class preparation**

It is the general policy that the student will contribute a minimum of two hours of preparation time for each one hour of class time.

**Students with Disabilities**

Students who have qualified disabilities and wish to arrange the appropriate accommodations, in addition to the general academic support services coordinated by the Academic Resources Center, must identify themselves to the Director of Disability Services. Disabled students who wish to arrange appropriate accommodations must complete and submit a Request for Accommodations form and provide recent (not older than 3 years) diagnostic test results. If you require accommodation for an exam, please make sure that I have your request form no later than 72 hours prior to the exam.

**Technological Support**

This course will be supported by Blackboard. Go to <http://www.calbaptist.edu> and click on the Blackboard icon. Grades will be posted on the Blackboard website. Check in frequently for announcements, assignments, and discussions. All assignments must be submitted through Blackboard. Unless specifically requested by me, I cannot accept homework that is emailed! Course materials such as PowerPoint slides, assignments, sample code, etc. will be posted in Blackboard. Please note that you will be responsible for all material covered during lectures and assigned reading, not just what appears on the PowerPoint slides! Check the Announcements on Blackboard for updated info throughout the semester.

**Homework assignments and projects**

Homework assignments will be submitted via Blackboard. Specific requirements for each assignment will be stated at that time.

**Academic Integrity**

Discussion of assignments with other students is generally encouraged, unless specifically prohibited by the instructor.  All work submitted for grading, however, must be your own.  Any evidence of plagiarism, academic dishonesty, or other violations of the CBU Honor Code may constitute grounds for a zero on the assignment and possibly a failing grade in the course.  A first offense will be reported to the office of Student Services and the Dean. For further guidance please refer to the CBU Student Handbook for the CBU Honor Code and to the College of Engineering Policy on Academic Integrity.

**Academic Environment**

Students are expected to encourage and maintain a positive learning environment.  Actions and behavior that distract fellow students or is disruptive in the classroom will not be tolerated.  To maintain a positive learning environment, the following will be enforced:

At the end of a lecture or lab session, all students are expected to clean up after themselves including moving classroom furniture back if rearranged during class.

Mobile phone use of any kind is prohibited in the classroom, unless specific permission is granted on a case by case basis (then your cell phone must be on vibrate and you must LEAVE before taking a call).

I will allow students to use their laptop computers for note-taking and/or referring to other materials. However, I will not tolerate other uses such as email, browsing or working on homework for this or any other course. You will be asked to leave, and I will consider the day as an excused absence. Please respect me in this matter.

No food may be eaten in the classroom at any time. Drinks (e.g., coffee, water, etc.) may be consumed during class as long as it is not disruptive of the learning environment.

**Attendance**

Attendance at all lectures is required. Attendance will be taken at the beginning of classes. If arriving after attendance, it is the student’s responsibility to inform the professor after class. Two late arrivals will count as one unexcused absence. For an absence to be excused, you must give the instructor a written/email notice in advance, or within 24 hours after class in case of an emergency. A note from your doctor, coach of campus sports team, court, etc. may be required. The instructor will determine if the absence is excused. You will lose 1% of your final grade (up to 5%) per two unexcused absences. The student is responsible for studying materials covered during missed classes. **Unless other arrangements are explicitly agreed to by the instructor assignments are due at their original time as listed on Blackboard even when there is an excused or unexcused absence**.

**Late work policy**

Homework assignments and projectssubmitted late will not be accepted. Homework assignments are due at 11:59 PM on the due date.

**Grading**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Graded Item** | **# of Items** | **Points per Item** | **Total Points** | **Percentage** |
| **Homework Assignments** | 10 | 20 | 200 | 40% |
| **Mid-Term Exam** | 1 | 100 | 100 | 20% |
| **Final Exam** | 1 | 200 | 200 | 40% |
|  |  |  | 500 | 100% |

Grades will be assigned on the following basis:

A 93-100% A- 90-92% B+ 87-89% B 83-86% B- 80-82%

C+ 77-79% C 73-76% C- 70-72% D+ 67-69% D 63-66% D- 60-62% F below 60%

A table of information

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Final Exam