

CS 619: Advanced Operating Systems and Networking

Course Information

Ball State University Course Catalog Description

Investigation on concepts, models, and algorithms in computer operating systems and networking. Topics include process and thread management, memory management, I/O, internetworking, and networked applications.

Prerequisites

[CS 601](#) or [CS 617](#), and [CS 602](#) with a minimum grade of C or permission of the Computer Science Graduate Program Director.

Learning Outcomes

Upon successfully completing this course, the student should be able to

- describe the concepts and components of computer operating systems.
- explain how an operating system manages hardware resources.
- explain how an operating system executes and synchronizes software applications.
- describe the architecture, protocols, and algorithms of internetworking.
- design and implement software applications that run multiple threads and communicate over the Internet.

Course Modality and Structure

This course is offered in an online, asynchronous format through Coursera. Course content and assignments are arranged in weekly modules. Each module is composed of the following items: recorded lectures, reading assignments, projects, short discussions, and scheduled exams. Students can work through each module's material at their own pace.

Course Time Commitment

At Ball State University, it is expected that students will spend approximately 2 hours of study time for every one credit hour of class. Since this is a 3-credit hour class, you should expect to spend up to 9 hours on this class each week: approximately 3 hours of "in class" work (watching

lectures, completing quizzes, contributing to discussions, and exams when scheduled) plus up to 6 hours per week of study time (reading assignments, projects, and related work).

Course Materials

Required Textbooks

Both books are freely available online.

- Computer Networks: A Systems Approach. Larry Peterson and Bruce Davie. <https://book.systemsapproach.org/>
- Operating Systems: Three Easy Pieces. Remzi H. Arpaci-Dusseau and Andrea C. Arpaci-Dusseau. <https://pages.cs.wisc.edu/~remzi/OSTEP/>

Computer Requirements

A computer is required for this class, either Windows or Mac. Any modern computer should work, as all assignments can be done using a browser on the Coursera platform. Program execution will occur on the Coursera servers, so all your computer needs to do is to connect through the browser. Alternately, you can choose to install the software packages directly on your computer, but all assignments still need to be submitted through the Coursera interface.

Course Grading Formula & Assignments

Grading Summary

Assignment Type	Percent of Final Grade
Module Quizzes	45%
Projects	20%
Exam 1	10%
Exam 2	10%
Final Exam	15%

Grading Scale

A standard grading scale will be used:

Percentage Lower Bound	Letter Grade
93%	A
90%	A-
87%	B+

Percentage Lower Bound	Letter Grade
83%	B
80%	B-
77%	C+
73%	C
70%	C-
67%	D+
60%	D
0%	F

Description of Assignments

Ungraded Work

Students are expected to watch the recorded lectures, as well as complete the assigned readings, practice exercises, and other ungraded work. However, since this work is assessed through the application of this learning to other assignments, completion of this work is not directly graded.

Module Quizzes

Weekly quizzes are designed to assess learning for weekly modules. These are generally multiple choice or short answer questions.

Projects

These assignments are designed to let students see and practice what they learned in lectures “in action”. They include creating multi-threaded applications and applications that can communicate over the network. Projects will often have different due dates than the weekly quizzes, allowing for more time to be spent on development.

Exams and Final Exam

Two exams will be given during the semester, plus a comprehensive final exam at the conclusion of the course. These exams will be completed online using Coursera. The exams will be released with the weekly module, and learners will have a time limit to answer the questions once the exam is started.

Exam	Due Date
Exam 1	Week 5
Exam 2	Week 10
Final Exam	Week 16

Participation Policy

- This course is designed with weekly activities, discussion, and other activities designed to build a scaffold and improve your understanding over time. In addition to watching the lectures, the best way to learn the course material is to carefully study the assigned readings, complete practice exercises, so be sure to keep up with the assignment schedule as much as possible.
- Be sure to log into Coursera frequently. Each module is expected to be completed in one week. Continuous participation throughout the week is much better for learning than trying to “cram” the whole week’s assignments in one sitting. Please try to spread out your work over a few days, to give your brain time to digest what it has learned.

University Policies and Statements

University Statement

We are committed to ensuring that all members of the community are welcome, through valuing the various experiences and worldviews represented at Ball State and among those we serve. We promote a culture of respect and civil discourse.

Disability Statement

If you need course adaptations or accommodations because of a disability, please contact Disability Services as soon as possible. The [Office of Disability Services](#) coordinates services for students with disabilities; documentation of a disability needs to be on file in that office before any accommodations can be provided. Disability Services can be contacted at 765-285-5293 or dsd@bsu.edu.

Attendance Policies

Faculty are required to establish attendance policies for their courses and ensure that they communicate these policies through their course syllabi. In some cases, faculty may be asked to provide the last date of attendance for a student in association with financial aid requirement.

Students are expected to review course syllabi regarding absence guidelines and follow those guidelines. Course attendance policies must be consistent with University policy. The University has several specific policies regarding student absences that are housed within different areas. [Explore Ball State course attendance policies](#). For CS 619, attendance is defined as regularly participating in the weekly module activities.

Ball State Academic Ethics Policy

Honesty, trust, and personal responsibility are fundamental attributes of the university community. Academic dishonesty and other forms of academic misconduct threaten the foundation of an institution dedicated to the pursuit of knowledge and will not be tolerated. To

maintain its credibility and reputation, and to equitably assign evaluations of scholastic and creative performance, Ball State University is committed to maintaining a climate that upholds and values the highest standards of academic integrity. Visit the VPAA's [academic integrity website](#) (Students tab) for resources on understanding academic integrity, citing sources properly, and avoiding inadvertent academic dishonesty. To learn about BSU's academic integrity expectations and students' rights, please read the University [Student Academic Ethics Policy](#).

Academic integrity violations include giving or receiving an unfair academic advantage (cheating), presenting someone else's ideas or work as your own (plagiarism), and falsifying academic records. Unless otherwise indicated, you must work independently by yourself. Check with me if you are unsure whether something constitutes academic dishonesty. Examples of academic integrity violations include but are not limited to:

- Using resources not authorized by the faculty member (including devices, AI tools, hidden notes, and open books)
- Using commercial study websites to find answers to graded assignments (Chegg, Course Hero, StudyPool, OneClass, etc.).
- Without the instructor's written permission, giving away, buying, or selling graded assignments class notes, exams, study guides, or other course materials to other students or to third-party vendors (Course Hero, Chegg, 24HourAnswers, etc.).
- Working with another person on any assignment other than authorized group projects.
- Sharing or allowing others to access your files, whether done with permission or not.
- Reusing your own work from another semester, course, or section.
- Sharing answers with others during exams (passing notes, texting, whispering, gesturing)
- Discussing exam questions and answers with students who have not taken the exam.
- Soliciting others to complete work for you.

Generative AI Statement

All work conducted and/or submitted in this course should reflect your own ideas and demonstrate your current knowledge, abilities, and skills. Therefore, generative AI should not be used to complete any portion of the assignment(s). Doing so constitutes a violation of Ball State University's [Student Academic Ethics Policy](#).

Subject to Change Statement

This syllabus and schedule are subject to change in the event of extenuating circumstances.