



Computer Science (COMP) 314

Operating Systems (Revision 7)

Status:

Replaced with new revision, see the [course listing](#) for the current revision

Delivery mode:

Individualized study online with eText

Credits:

3

Area of study:

Science

Prerequisites:

COMP 206 or COMP 268, or an equivalent university-level programming course

Precluded:

None

Challenge:

COMP 314 has a challenge for credit option.

Faculty:

[Faculty of Science and Technology](#)

Notes:

Students who are concerned about not meeting the prerequisites for this course are encouraged to contact the [course coordinator](#) before registering.

Overview

COMP 314 introduces the fundamental concepts, principles, and structures of operating systems. An operating system is the software on a computer that orchestrates the hardware components of the computer. The operating system provides the user/programmer with efficient and convenient service and a high degree of machine independence in writing programs, executing programs, and managing system resources.

It is assumed that students taking this course are familiar with the basic structure and the main hardware components of a computer.

The following topics are covered:

- overview of computer-system structures and operating-system structures
- process management: processes and interprocess communication, threads, CPU scheduling, process synchronization, deadlocks
- storage management: memory management, virtual memory, mass-storage structure, I/O systems, file-system management and implementation
- security and protection issues: threats and attacks (e.g., viruses and other intruders), encryption, authentication, access matrix and implementations
- overview of virtualization, virtual machines, networks, distributed systems

Outline

- Unit 1: Overview of Computer Organization and Operating Systems
- Unit 2: Process Management
- Unit 3: Storage Management
- Unit 4: Security and Protection
- Unit 5: Virtualization, Networks, and Distributed Systems

Learning outcomes

Upon successful completion of this course, you should be able to

- describe the overall structure and components of operating systems.
- explain the key concepts and mechanisms of process management, memory management, and storage management, as well as security and protection of operating systems.
- apply the appropriate principles and methods to practical tasks such as analysis, diagnosis, and development of functions and components that are associated with modern operating systems.

Evaluation

To [receive credit](#) for COMP 314, you must achieve a course composite grade of at least **D (50 percent)**, including a grade of at least 50 percent on the final examination, an average grade of 50 percent on Assignments 1–3, and at least 50 percent on Assignment 4. The weighting of the composite grade is as follows:


Activity	Weight
Assignment 1 (Unit 1)	10%
Assignment 2 (Unit 2)	10%
Assignment 3 (Unit 3)	10%
Assignment 4 (Units 1–5)	15%
Final Exam	55%
Total	100%

The **final examination** for this course must be requested in advance and

written under the supervision of an AU-approved exam invigilator. Invigilators include either ProctorU or an approved in-person invigilation centre that can accommodate online exams. Students are responsible for payment of any invigilation fees. Information on exam request deadlines, invigilators, and other exam-related questions, can be found at the [Exams and grades](#) section of the Calendar.

To learn more about assignments and examinations, please refer to Athabasca University's [online Calendar](#).

Materials

Silberschatz, A., Gagne, G., & Galvin, P. B. (2021). *Operating system concepts* (10th ed.). John Wiley & Sons.  (eText)

eText

Registration in this course includes an electronic textbook. For more information on [electronic textbooks](#), please refer to our [eText Initiative site](#).

Challenge for credit

Overview

The challenge for credit process allows you to demonstrate that you have acquired a command of the general subject matter, knowledge, intellectual and/or other skills that would normally be found in a university-level course.





Full information about [challenge for credit](#) can be found in the Undergraduate Calendar.

Evaluation

To [receive credit](#) for the COMP 314 challenge, you must achieve a grade of at least **D (50 percent)** on the challenge examination.

 [Challenge for credit course registration form](#)

Important links

- › [Academic advising](#) 
- › [Program planning](#) 
- › [Request assistance](#) 
- › [Support services](#) 

Athabasca University reserves the right to amend course outlines occasionally and without notice. Courses offered by other delivery methods may vary from their individualized study counterparts.

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View [previous revision](#) 
