

CS 4080/5080 Spring 2017 – Advanced Operating Systems

BGSU Computer Science

Class Meeting Time

Tuesdays/Thursdays, 6:00-7:15pm, HAYES 117

Textbook

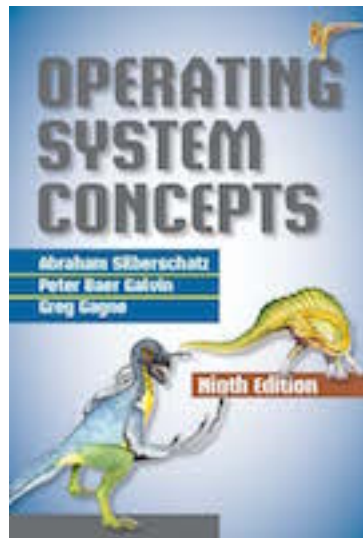


Figure 1: Book

“*Operating System Concepts*,” 9th Edition (2012), Silberschatz, Galvin, and Gagne, ISBN: 978-1-118-06333-0.

Contact Information

Instructor	Dr. Robert Dyer
Office Hours	MW 3–5pm, TR 4-5pm OR by appointment
E-mail	rdyer@bgsu.edu
Office	HAYES 244
Phone	(419) 372–3469

Outcomes for the course

After successfully completing CS 4080/5080, students will be able to say:

- I can understand the features of processes, including scheduling (e.g., short-term process vs long-term process), creation and termination, and communication (e.g., using shared memory and using message passing).
- I know the differences between user threads and kernel threads.
- I can describe various CPU-scheduling algorithms.
- I know both software and hardware solutions of the critical-section problem.
- I can describe a deadlock situation and explain how to prevent or avoid deadlocks.
- I know different memory-management techniques (e.g., paging).

- I know what demand paging, page fault, and thrashing are, related to virtual memory.

Grading

The final grade will be composed of the following points. (The instructor reserves the right to make changes at any time.)

Assessments

Item	Points Each	Total
Exams (2)	75	150
Final Exam	100	100
Assignments (5+)	10-25	100
Projects (4)	25	100
In-class activities	5-10	50
Total		500

Grading Scale (4080)

Point Range	Percentage	Grade
450 - 500	90 - 100%	A
400 - 449	80 - 89%	B
350 - 399	70 - 79%	C
300 - 349	60 - 69%	D
0 - 299	below 60%	F

Grading Scale (5080)

Point Range	Percentage	Grade
460 - 500	92 - 100%	A
410 - 459	82 - 91%	B
360 - 409	72 - 81%	C
310 - 359	62 - 71%	D
0 - 309	below 62%	F

Assessments

Exams

There are a total of 2 exams throughout the semester and a final exam during finals week. Exams consist of a variety of question types, including multiple choice, true/false, short answer, short programming questions, and interpreting code.

Assignments

There will be several assignments completed outside of class individually. To receive credit for your assignments, they must be submitted on Canvas by the due time. **There are no late submissions allowed.**

Projects

There will be several small programming projects during the semester. The goal of the projects is to give you hands on experience with the technologies we are studying. To receive credit for your assignments, they must be on BGUnix in the cs4080 class directory (see below) to be automatically collected by the due time. **There are no late submissions allowed.** Partial credit will be given for any completed portion of the assignment, so be sure to submit on time even if you are not finished with the assignment!

Technology

BGUnix

We will use BGUnix, a mainframe computer on campus, to type in, debug and run our C++ programming assignments. It can be accessed from any lab computer on campus or from a personal/home computer using PuTTY with Windows (PC) or Terminal on a Mac.

Other documentation about BGUnix (getting a BGUnix account, using editors on BGUnix, etc.) are available at: <http://www.bgsu.edu/arts-and-sciences/computer-science/cs-documentation.html>

Specifically, make sure you run the commands `cs-config` (only once ever, not once per course) and `class -join cs4080` on BGUnix to get the class directory set up.

Canvas

The syllabus, all assignments, and due dates are posted on Canvas. Your grades will also be available on Canvas throughout the semester. Canvas is used for some in-class activities and submitting assignments.

Course Policies

Withdrawal Deadline

Friday, April 7, 2017. University policy states that after this date, anybody withdrawing from the course will have the grade automatically turn into an F.

Office Hours and Help

Please check your Canvas course site, Canvas messages, and your BGSU email regularly. [You may have your Canvas messages forwarded to your BGSU/other email, and have your BGSU email forwarded to another favorite email address, if necessary, but do check it (multiple times) daily.] I do forward my own Canvas messages to my BGSU email and check my BGSU email multiple times everyday (with rare exceptions). I check BGSU email more often than I access Canvas, so if you need to contact me urgently, use both Canvas and BGSU email, if necessary multiple times. I will do my best to accommodate you ASAP, even if outside my posted office hours and without appointment. In general, if you need to see me in my office outside of my regular office hours, please make an appointment.

Attendance

Students are expected to attend each class and be on time. I take attendance at the start of each lecture. I typically use good attendance as a factor when considering final grades. I reserve the right to penalize students up to 1% (per absence) of their final grade for more than 3 un-excused absences.

Make-up policy

If you cannot take an RAA as scheduled, you (or an authorized person, only in case you are unable to do so) must contact me ahead of time with the reason. Note however that any make-up RAA will count 100% toward your score (there will be no averaging with the team RAA score). Make-ups are considered typically for health emergencies only.

Academic honesty

All coursework for this class is expected to be YOUR OWN work. The MINIMUM penalty for copying someone's work (including current classmates, students from a previous offering of the course, or postings found on the web) or knowingly allowing someone to copy your work is a zero for the homework/project/exam/paper/presentation. The offense is also reported to the dean of your college. Turnitin and Moss, plagiarism detection tools, will be used in this course. I will follow the Department's policies and the University's code of academic conduct as defined in the BGSU Student Handbook. For details refer to:

1. [Department of Computer Science Academic Honesty Policy](#)
2. [BGSU Code of Academic Conduct](#)
3. [The Academic Charter, section B-I.G](#)

Disability Policy

In accordance with the University policy, students with disabilities must verify their eligibility through the Office of Disability Services, 38 College Park Office Building, 419-372-8495 (<http://www.bgsu.edu/disability-services.html>). Contact me as soon as possible this semester to arrange any accommodations needed to assist with your success in this course.

Religious Holidays

It is the policy of the University to make every reasonable effort allowing students to observe their religious holidays without academic penalty. In such cases, it is the obligation of the student to provide the instructor with reasonable notice of the dates of religious holidays on which he or she will be absent. Absence from classes or examinations for religious reasons does not relieve the student of responsibility for completing required work missed. Following the necessary notification, the student should consult with the instructor to determine what appropriate alternative opportunity will be provided, allowing the student to fully complete his or her academic responsibilities ([The Academic Charter, section B-I.F-4.b](#)).

Tentative Course Schedule

(The instructor reserves the right to make changes at any time.)

Week	Day	Date	Topics
1	T	Jan 10	Introduction (ch 1)
	R	Jan 12	OS Structures (ch 2)
2	T	Jan 17	Processes (ch 3)
	R	Jan 19	Threads (ch 4)
3	T	Jan 24	Process Synchronization (ch 5)
	R	Jan 26	Process Synchronization (ch 5)
4	T	Jan 31	CPU Scheduling (ch 6)
	R	Feb 2	CPU Scheduling (ch 6)
5	T	Feb 7	Deadlocks (ch 7)
	R	Feb 9	Exam 1
6	T	Feb 14	Main Memory (ch 8)
	R	Feb 16	Main Memory (ch 8)
7	T	Feb 21	Virtual Memory (ch 9)
	R	Feb 23	Virtual Memory (ch 9)
8	T	Feb 28	Mass-Storage Structure (ch 10)
	R	Mar 2	File-System Interface (ch 11)
9	T	Mar 7	No class - Spring Break
	R	Mar 9	No class - Spring Break
10	T	Mar 14	File-System Implementation (ch 12)
	R	Mar 16	File-System Implementation (ch 12)
11	T	Mar 21	Exam 2
	R	Mar 23	I/O Systems (ch 13)
12	T	Mar 28	I/O Systems (ch 13)
	R	Mar 30	Protection (ch 14)
13	T	Apr 4	Protection (ch 14)
	R	Apr 6	Security (ch 15)
14	T	Apr 11	Security (ch 15)
	R	Apr 13	Virtual Machines (ch 16)
15	T	Apr 18	Virtual Machines (ch 16)
	R	Apr 20	Linux System (ch 18)
16	T	Apr 25	Windows 7 (ch 19)
	R	Apr 27	Final Review
17	T	May 2	6:00-8:00pm Final Exam