

Operating Systems I – CSCI 3271

Fall 2018

Quick Facts

- Class meets MW, 11:30 AM–12:45 PM in [Hull McKnight GA Cyber Center](#) (a.k.a. “Riverfront Campus”) 2201.
- The instructor can be reached at caubert@augusta.edu, his office (AH E-128) hours are TR 8:20 AM–9:50 AM.
- You can [download this syllabus](#).

Quick Links

[Homeworks](#) • [Planned schedule](#) • [Snippets of code](#)

1 Presentation

1.1 Course Description

This course is a study of computer operating systems and related computer architecture topics. We will answer questions such as “What is an operating system?”, “What does an operating system do?”, “How does it do it?”, or “What are the tradeoffs of particular operating system design decisions and implementation?”. Topics include basic networking, process management, scheduling, synchronization, deadlock, memory management, virtual memory, disk management, file systems, I/O, and protection.

1.2 Learning Outcomes

Upon successful completion of this class, the student will:

- Know the basic services provided by an operating system to the users, processes and other systems, and understand the basic structures and functions of operating systems.
- Understand the methods and tools to manage and synchronize process, including multithreading concepts and CPU scheduling.
- Be able to explain the basics of memory management, including virtual memory, and the structure of the most common file-systems, as well as to describe the basic security issues in operating system design and implementation.

1.3 Format and Procedures

Lectures are devoted to general explanations of the concepts and ideas underlying the topic at stake. All practical work, coding, programming, testing, etc. will be carried at home.

1.4 Teaching Philosophy

It is our mutual interest for you to succeed: I love to share knowledge and to expand it by helping students, and students want to gain a useful and agreeable experience that will prove valuable in their future endeavors. To this end, here is:

1.4.1 What I'm expecting from you

- Check the announcements periodically on the class website.
- Read this entire syllabus carefully.
- Participate actively in all class discussions.
- Do the homework assignments and projects wisely: read your notes before starting, make sure you understand it completely before considering it done.
- Come prepared and on time to classes, laboratory, exams and quizzes.

1.4.2 What you should expect from me:

- Clear and accessible lectures.
- Fair and impartial grading.
- Availability, during office hours, by appointment, and by email.
- Open hear to your suggestions to improve this class.
- Dedication to your success!

1.5 Course Requirements

The following rules, inspired by my experience and dictated by the size of our group, will be enforced:

1.5.1 General Rules

- Attendance is not mandatory.
- You are responsible for all course material, whether or not you attend lectures or do the assigned reading or coursework.
- It is the student's responsibility to [initiate a withdrawal](#) before [midterm](#), but I reserve the right to [withdraw](#) a student that missed 10% of class time and half of the quizzes and tests.
- A student not withdrawn from a course who stops attending class (or who never attends class) is subject to receiving a grade of **WF** or **F**.
- All coursework is individual coursework.
- Any student missing the final exam without an documented excuse (brought to me or to [the dean of Student Life](#)) or who has not taken action to withdraw will receive a grade of **F**. In case of an documented emergency at the time of the final, the student may be allowed to receive a grade of **I**.
- No make up quizzes or exam will be allowed. In case of a documented excuse (cf. previous item), the weight of the missed exam or quiz will be placed onto the final's weight.
- No laptop or similar electronic device is allowed during the lectures. This policy will help you to [improve your grades](#), [increase memorization](#) and [to be more respectful of your fellow students](#).
- Late arrival and early departure are **not** allowed: arrange your schedule around this, or don't come at all. This includes class sessions where quizzes are taken, but not class period where exams are taken. I

know the situation can be challenging due to the need to [take the shuttle](#) from one campus to another, but that’s something we all have to live with.

2 Practical Information

2.1 Time and Place

Monday and Wednesday, 11:30 AM–12:45 PM in [Hull McKnight GA Cyber Center](#) (a.k.a. “Riverfront Campus”) 2201.

2.2 Instructor

<i>Name</i>	Dr. Clément Aubert
<i>Office</i>	Algood Hall E-128
<i>Phone</i>	706-737-1566
<i>Email</i>	caubert@augusta.edu
<i>Office Hours</i>	Tuesday and Thursday, 8:20 AM–9:50 AM and by appointment
<i>Institute</i>	School of Computer and Cyber Sciences

Feel free to drop by when I’m in my office, but be aware that I may be busy, too: if you have multiple questions or if your question requires more than 5 minutes to be exposed and answered, please arrange an appointment with me.

2.3 Getting Help

I am committed to follow the [principles of Universal design](#) and try to construct a welcoming environment for every student. I should be your first point of entry, but getting help from other persons is perfectly acceptable and encouraged if you feel the need to.

- For tutoring resources, consult [the tutoring center](#).
- The [Testing & Disability Services](#) can help you—and me!—accommodate this class.
- The [Student Counseling & Psychological Services](#) (or “SCAPS”) is here to “assist students with a variety of personal, developmental, and mental health concerns.”

2.4 Grades

Students will be evaluated using three different types of evaluation:

1. Seven [homework assignments](#) will be given during the course of the semester: they are not expected to be handed back, and won’t be graded, but seven quizzes (closed book and timed (5–20 min.)) with questions taken from those assignments will be given.
2. There will be two in-class exams, held during the regular class periods.
3. The final exam will take place during the [exam period](#).

Refer to the [planned schedule](#) for precise dates.

Your grade will be computed as follows:

Quizzes ($\times 7$)	20%
In-class Tests ($\times 2$)	40%
Final Exam	40%

using the following course grade scale:

Below 65	65–70	70–79	80–89	90–100
F	D	C	B	A

2.5 Planned Course Schedule

Week	Date	Topic	Chapter	Note
1	08/13	Syllabus	N/A	-
2	08/20	Introduction to Operating System & Set-up	1 – 2.2	Homework #1 released
3	08/27	Continued	-	-
4	09/03	System Calls	2.3 – 2.4	09/03 is Labor Day, Homework #2 released, Wed. quiz #1
5	09/10	OS design, Implementation and Structure	2.5 – 2.11	-
6	09/17	Process, Schedulers, and Interprocess Communication	3.1 – 3.4	Homework #3 released, Wed. quiz #2
7	09/24	Networking Basic & Review session	3.6 – 3.7	Wed. Exam #1
8	10/01	Threads, Multithreading, Thread Libraries	4	Homework #4 released, Wed. quiz #3
9	10/08	Process Synchronization	5	10/08 is midterm, 10/11 – 10/12 is Student Fall Pause
10	10/15	Continued	-	Homework #5 released, Wed. quiz #4
11	10/22	CPU Scheduling	6	-
12	10/29	Continued	-	Homework #6 released, Wed. quiz #5
13	11/05	Review Session	-	Wed. Exam #2
14	11/12	Memory Management	7	Homework #7 released, Wed. quiz #6
15	11/19	Virtual Memory	8	11/21 – 11/23 is Thanksgiving
16	11/26	File System	9 – 12	Wed. quiz #7
17	12/03	Wrapping up & Review Session	-	12/05 is end of class
18	12/10	-	-	Tues. 12/11, 11am-1pm: final

This schedule is subject to change and enhancements, but provide an indication of the pace, assignments, and major deadlines that you will need to plan for the semester.

3 Additional Material and Resources

3.1 Textbook

Textbook is optional. In the past, *Operating System Concepts Essentials*, (2nd Edition) by Siberschatz and Galvin, Wiley, 2013, ISBN: 978-1-118-80492-6 was used for this class. The chapters in the planned course schedule above refer to this textbook.

I will be using:

- *Operating Systems: Three Easy Pieces* by Remzi H. Arpaci-Dusseau and Andrea C. Arpaci-Dusseau (which is free of charge!).
- *Operating Systems: Internals and Design Principles* (9th Edition) by William Stallings, Wiley, 2018, ISBN: 978-0-134-70006-9
- *Modern Operating Systems* (4th Edition) by Andrew S. Tanenbaum and Herbert Bos, Pearson, 2015, ISBN: 978-0133591620

The first edition of *Operating System Concepts Essentials*, the 8th edition of *Operating System Concepts*, and the second edition of *How Linux Works* can be accessed [through the university subscription](#). Find more information at <https://guides.augusta.edu/cyber>.

3.2 Online Resources

- *Operating System Concepts Essentials's* webpage
- Reese Library's Cyber Resource Center
- The past exams of the Department of Computer Science and Technology of the University of Cambridge, and the ones from The School of Computer Science at the University of Nottingham

3.3 Homework Assignments

Check the [schedule](#) for more information.

- Homework #1
- Homework #2
- Homework #3
- Homework #4
- Homework #5
- Homework #6

No seventh homework!

3.4 Snippets of Code

- 2018/09/19, [Code for Homework 3](#)
- 2018/09/19, [Fork archive](#).
- 2018/10/01, [Code for pipe](#)

- 2018/10/06, [Code for threads](#)
- 2018/10/06, [Code for Homework 4](#)
- 2018/10/18, [Code for Homework 5](#)

3.5 Documents Shared in Class

None at the moment.

4 Legal and Recommendations

4.1 Academic Integrity

The University's [Student Code of Conduct](#), the [student's manual](#), as well as the [academic regulations](#) and all [applicable policies](#) are supposed to be known by the students and will be enforced.

Section 5.2, Academic Conduct of the [student's manual](#) defines precisely what kind of collaborations are acceptable. As long as you don't lie, cheat, plagiarize, assist others or being assisted by others without authorization, we should not need any of that. If you are unsure about whether or not certain kinds of collaboration are permissible, please ask me.

4.2 Universal Design

I am committed to the founding principles of [Universal Design](#), and to make [my lecture accessible to every one](#). Concretely, that means that I'm not requiring you to use a particular Operating System, that I always try to give the information repeatedly, and using multiple channels, that I am available over the phone, email, or in my office. If you are registered with [Testing and Disability Services](#), please see me at your earlier convenience to discuss accommodations.

4.3 Campus Carry Legislation

Please be aware of the [USG guidance on House Bill 280](#).

5 Miscellaneous

- Reservation of rights: I reserve the right to change this syllabus without limitation and without prior notice. If I do substantially modify any item or policy, I will notify you during a lecture, or send an e-mail to your [augusta.edu](#) e-mail account.
- Download a [pdf version](#) of this page.
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