Instructor Introduction & Contact Information

Dr. Robert A. Walker received his Ph.D. in Electrical and Computer Engineering from Carnegie-Mellon University. He has served as a faculty member in the Computer Science Department at Kent State University for the past 21 years, including five years as Chair. In 2010, Dr. Walker led the team that formed Kent State’s interdisciplinary School of Digital Sciences, and he served as its founding Director for five years. He has been very active in the Association for Computing Machinery (ACM) at the national level, where he currently serves on the Publications Board, and is an ACM Distinguished Scientist and Lifetime Member.

Dr. Walker originally developed the CS 33211 Operating Systems (under another course number) in early 1997 and has taught the course ten times over the past two decades. He also developed the graduate Advanced Operating Systems course and taught that course seven times.

rawalke1@kent.edu
(330) 672-9050 – live discussions only; please do not leave messages to be returned
256 Mathematical Sciences Building — office hours are MW 1:30-3:00pm

Course Description from the University Catalog

CS 33211 Operating Systems: Introduction to operating systems, processes and threads, CPU scheduling, mutual exclusion and synchronization, deadlock, memory management, file systems, networking and distributed systems.

Prerequisite: CS 23001 Computer Science II: Data Structures and Abstraction with a minimum grade of C (2.000). Prerequisite or Corequisite: CS 35101 Computer Architecture. 3.000 credit hours.

Course Learning Outcomes

By the end of this course, students should be able to:

- Explain the primary services the operating systems provide, the basic organization of computer systems, the major components of operating systems, and various ways of structuring an operating system.
- Explain the features of processes, including inter-process communication, and the features of threads, including user-level and kernel-level threads.
- Compare / contrast common software and hardware solutions to the critical-section problem, and common algorithms for CPU scheduling.
- Compare / contrast various techniques for allocating memory to processes, including segmentation, paging, and demand paging.
- Explain the physical structure of secondary storage devices (e.g., disk drives) and how they are managed, and the implementation of file systems and directory structures.
Required Textbook

The required textbook for this course is:

*Operating System Concepts, Ninth Edition*
Abraham Silberschatz, Peter B. Galvin, Greg Gagne
Wiley, 2013
ISBN: 978-1-118-06333-0

*Note that I am not using the newer 10th edition of the textbook, but instead, will be using the 9th edition.* Older editions are more or less sufficient, but if you are using an older edition you may want to borrow a copy of the ninth edition occasionally to see what you are missing. Note that the Preface summarizes the major changes from the previous edition.

You should skim each chapter in this textbook in advance of the lecture, and then read the chapter in detail afterward. I will use the author’s PowerPoint slides in class, but they are usually missing important detail and are not sufficient on their own.

Blackboard Learn Site

The course Blackboard Learn site will contain the syllabus and course schedule, lecture slides, exams and solutions, etc. You should check the Blackboard site on a regular basis, in particular when an exam is imminent.

Lectures

You are expected to attend each lecture, pay attention, and take notes as necessary. You are welcome to use a laptop or other electronic device to take notes; other uses are permitted as long as they do not distract other students. I will not call roll, but from past experience, students who do not attend class or spend the bulk of the class using their laptop for activities other than taking notes generally perform poorly on exams.

In my lectures, I will use the “official” slides provided by the textbook authors, occasionally augmented by some slides of my own. The required text provides most of the material that I will be presenting, although this supplemental material may be drawn from other books on operating systems or online resources.

The "official" slides will be posted to the Blackboard Learn page as 4-up handouts in PDF format in advance of the lecture. The "augmented" slides with any of my supplemental content (shown in red text to clearly distinguish it from the official slide content) will also be posted, usually before each lecture.

Exams

There will be four exams (held during class) and a final exam (held during finals week). The dates for the four in-class exams and the final exam are listed in the Course Schedule (posted on the Blackboard Learn site).

All exams are closed book and closed notes, and must be individual work. Electronic devices are not permitted during exams. Any act of academic dishonesty during an exam will result in a final course grade of F (see Academic Integrity, below).

It is expected that you take each exam at the scheduled time, unless you make prior arrangements with me or have a documented illness (e.g., a signed note from a doctor). In the latter case, I expect you to contact me as soon as possible afterward, ideally not waiting until the next class. Early exams will not be given to accommodate students who want to leave early in final exam week.

Grades

Each of the four exams comprises 20% of your course grade, as does the final exam.
This course will be graded under the Plus / Minus Grading System, which at Kent State does not support grades of A+ or D–. Grade ranges are as follows: \( \text{grade} \geq 93 = \text{A}, \geq 90 = \text{A–}, \geq 87 = \text{B+}, \geq 83 = \text{B}, \geq 80 = \text{B–}, \geq 77 = \text{C+}, \geq 73 = \text{C}, \geq 70 = \text{C–}, \geq 67 = \text{D+}, \geq 60 = \text{D}, < 60 = \text{F} \).

**Instructor Absences**

Over the course of the semester, I may have to miss a few classes to attend a conference or other professional meeting. This is a normal occurrence at research-oriented university with a flourishing graduate program, where professors are expected to regularly attend conferences and professional meetings to remain current in their fields. Presumably, they bring their insights from those events into the classroom, which benefits you as a student. Further, by attending those meetings, they make other professionals aware of Kent State, which increases your visibility and the value of your degree.

**Student Responsibilities**

Each Kent State University student is expected to be familiar with the current academic calendar and to know their own academic record and class schedule. They are expected to read their Kent State email and respond promptly to all communications from the university. Students are also required to be familiar with, and adhere to, the university’s rules, regulations and policies as published in the University Catalog and University Policy Register.

For more information, see [http://catalog.kent.edu/academic-policies/student-responsibilities](http://catalog.kent.edu/academic-policies/student-responsibilities).

**Registration Requirement**

University Policy says that only officially registered students are permitted to attend courses. Students who are not officially registered within the appropriate time period will not receive a grade or earn credit for the course even if they attend the entire course and complete all required work.

Registration and schedule adjustment deadlines for courses can be found in the Detailed Class Search, available on the Registrar's web site or in FlashLine. Students must finalize and verify their registration within the proper timeframe. After the published deadlines, adjustments in registration will require faculty and Office of the University Registrar approval.

**Accommodation for Students with Disabilities**

University Policy 3342-3-01.3 requires that students with disabilities be provided reasonable accommodations to ensure their equal access to course content. If you have a documented disability and require accommodations, please contact the instructor at the beginning of the semester to make arrangements for necessary classroom adjustments. **Please note, you must first verify your eligibility for these through Student Accessibility Services** (contact 330-672-3391 or visit [http://www.kent.edu/sas](http://www.kent.edu/sas) for more information on registration procedures).

**Respectful Student Conduct**

Kent State University’s Code of Student Conduct requires students to behave in a respectful manner to their instructors as well as their classmates. Some examples of disruptive behavior that obstruct classroom teaching are rudeness toward the instructor or classmates, excessive interruptions, tardiness, distracting use of laptops, and talking on cell phones. Students who violate the conduct policy may be subject to university sanctions.

For more information, see [http://www.kent.edu/studentconduct/code-student-conduct](http://www.kent.edu/studentconduct/code-student-conduct).

**Academic Integrity**

University Policy 3342-3-01.8 addresses the problem of academic dishonesty, cheating, and plagiarism. In this course, the penalty for **any** act of academic dishonesty, including cheating on an exam, is a final course grade of F.

For more information, see [http://www.kent.edu/plagiarism/information-students](http://www.kent.edu/plagiarism/information-students).
# CS 33211 Operating Systems
## Course Schedule (Subject to Change)

**Dr. Robert A. Walker**

Fall 2019 Semester  
Kent Campus, Section 1001, CRN 12620  
TR 12:30-1:45pm, 228 Mathematical Sciences Building

<table>
<thead>
<tr>
<th>WEEK</th>
<th>TUESDAY</th>
<th>THURSDAY</th>
<th>FRI</th>
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<tbody>
<tr>
<td>0</td>
<td>22 August</td>
<td>Course Introduction, Chapter 1</td>
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<tr>
<td>1</td>
<td>27 August</td>
<td>Chapter 1 (cont.)</td>
<td>29 August</td>
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<td>2</td>
<td>3 September</td>
<td>Chapter 2</td>
<td>5 September</td>
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<tr>
<td>3</td>
<td>10 September</td>
<td>Exam 1 Review</td>
<td>12 September</td>
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<tr>
<td>4</td>
<td>17 September</td>
<td>Chapter 3</td>
<td>19 September</td>
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<tr>
<td>5</td>
<td>24 September</td>
<td>Chapter 3 (cont.)</td>
<td>26 September</td>
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<tr>
<td>6</td>
<td>1 October</td>
<td>Class Cancelled</td>
<td>3 October</td>
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<tr>
<td>7</td>
<td>8 October</td>
<td>Chapter 5</td>
<td>10 October</td>
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<td>8</td>
<td>15 October</td>
<td>Chapter 5 (cont.)</td>
<td>17 October</td>
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<tr>
<td>9</td>
<td>22 October</td>
<td>Chapter 6 (cont.)</td>
<td>24 October</td>
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<tr>
<td>10</td>
<td>29 October</td>
<td>Exam 3 (covers Chapters 5, 6)</td>
<td>31 October</td>
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<tr>
<td>11</td>
<td>5 November</td>
<td>Chapter 8</td>
<td>7 November</td>
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<td>12</td>
<td>12 November</td>
<td>Chapter 8 (cont.)</td>
<td>14 November</td>
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<tr>
<td>13</td>
<td>19 November</td>
<td>Chapter 9 (cont.)</td>
<td>21 November</td>
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<tr>
<td>14</td>
<td>26 November</td>
<td>Chapter 10</td>
<td>28 November</td>
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<tr>
<td>15</td>
<td>3 December</td>
<td>Chapter 12</td>
<td>5 December</td>
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Optional Exam Review sessions will be held on Friday afternoons as noted, time / location TBD

Final Exam is Wednesday, 11 December, 12:45-3:00pm in 228 MSB (covers Chapters 9, 10, 12, 15)