

CS 101: Introduction to Computer Science

James Madison University, Fall 2019 Semester, 3 Credits

Home Page:

<http://w3.cs.jmu.edu/cs101>

Classroom:

EnGeo 2210 on Mon/Wed/Fri

Section 1: 10:10 AM – 11:00 AM

Section 2: 11:15 AM – 12:05 PM

Section 3: 1:25 PM – 2:15 PM

Section 4: 2:30 PM – 3:20 PM



Course Instructors

Dr. Chris Mayfield

mayfiecs@jmu.edu

Office: ISAT/CS 208

Phone: 540-568-3314

Office Hours:

M/W/F 1:20–2:20

and by appointment

Dr. Sharon Simmons

simmonsj@jmu.edu

Office: ISAT/CS 221

Phone: 540-568-4196

Office Hours:

M/W/F 1:20–2:20

and by appointment

Dr. Michael Stewart

stewarmc@jmu.edu

Office: ISAT/CS 212

Phone: 540-568-5018

Office Hours:

Tu/Th 11:00–12:15

Wed 9:30–12:00

and by appointment

Catalog Description

How to think like a computer scientist. Topics include an overview of the context of computing, computational operations, computational devices, algorithms and data structures, the storage and transmission of data, the presentation of information, and the limits of computing. Students learn about the design and implementation of computational systems, the value of abstraction, problem solving, and the ways in which computation impacts society. There are no prerequisites.

Required Textbook



Glenn Brookshear and Dennis Brylow (2015). *Computer Science: An Overview, 12th Edition*. Pearson Education, Upper Saddle River, NJ.

ISBN: 0133760065

<http://www.pearsonhighered.com/brookshear/>

Other editions such as the 11th or 13th are acceptable. However, you will be responsible for any material presented in class that may only appear in the 12th edition. You will NOT need an access code.

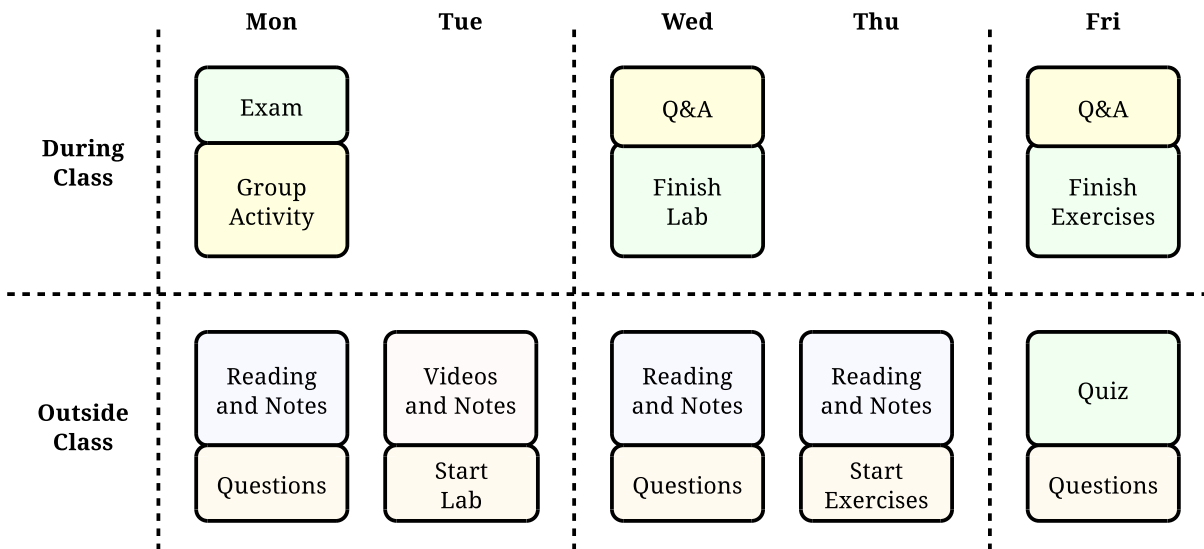
Learning Objectives

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

- Explain how data are represented, stored, and manipulated by computer hardware.
- Use abstraction and decomposition when reasoning about complex systems and problems.
- Describe how data can be transmitted over networks and the security concerns that arise.
- Apply computing tools and techniques to solve problems at multiple levels of abstraction.
- Connect the concern of cybersecurity with the Internet and systems built on it.
- Discuss the impact of computing within economic, social, and cultural contexts.
- Implement an algorithm that uses repetition and conditionals in a high-level language.
- Collaborate with others to gain insight, interpret data, and solve problems using computation.
- Summarize the role of algorithms, data structures, and languages in computer programming.
- Use metacognitive strategies (e.g., the study cycle) to make your learning more effective.

Methods of Instruction

This course uses a “flipped classroom” approach. Instead of listening to long lectures during class time and doing homework individually, you will learn some content on your own and complete assignments during class. You may not be accustomed to this approach, but if you *trust in the process* you will learn so much! Most weeks will focus on a single chapter from the textbook and follow this schedule:



We will begin each Monday with an exam on the previous week’s material, followed by a group activity that introduces the next chapter. To prepare for Wednesday’s lab, you will read one or more sections of the textbook, watch one or more short video clips, and work through an online

tutorial. The labs will be due Wednesday at 11:59pm, so it's important to get started early in order to get sufficient help during class time.

Before Friday, you will finish reading the assigned textbook sections and get started on the chapter exercises. These exercises are intended to be completed in small groups, and they are due at the end of class. The week concludes with an online quiz (taken individually) to help you prepare for the next exam.

How to Succeed

Part of each assignment grade will be based on your individual preparation. You will occasionally be asked to show evidence and/or results of your studying. To help you improve, the instructor will provide feedback and suggestions.

- *When you read the book:* For each paragraph, write a short sentence that explains the main idea in your own words.
- *When you watch videos:* Pause, rewind, and take notes about the main concepts; make connections to the reading.
- *When you start the lab:* Read through all of the instructions and make a list of questions to ask at the beginning of class.
- *Before you start the exercises:* Review the questions at the end of each section. The answers are in the back of the book.
- *After you start the exercises:* Skip the ones you don't know how to do, but read through everything before class.
- *When you prepare for the exam:* Teach the material to someone else. Review the textbook slides and sample solutions.

Textbook Readings

We will maintain a detailed schedule with assigned readings, video lectures, and other resources on the [course home page](#) as the semester progresses. You are strongly encouraged to *study* (i.e., understand well enough to teach) the designated textbook sections, even if some material is not “covered” in class. It is not expected that you read every single word, although in many sections that will be most effective. The textbook will be a valuable resource for succeeding in the course—otherwise, we wouldn't have required you to get a copy.

Online Interactions

We will use Canvas to facilitate online discussion, make announcements, answer your questions, submit assignments, and manage grades. All class-related materials (e.g., syllabus, schedule, videos, tutorials, labs) will be posted on the [course home page](#) and linked from Canvas for convenience.

Assessment and Grading

Letter grades will be assigned on the scale A=90–100, B=80–89, C=70–79, D=60–69, F=0–59, with potential minor adjustments after considering the overall performance of the class and actual distribution of numeric scores. The instructors will use “+” and “-” grades at their discretion.

Activities (18%)

During class, you will participate in a variety of group activities to help you learn. Monday's activity will focus on exploring new concepts, and Friday's activity will apply what you have learned throughout the week. Activity worksheets are due Friday at the end of class.

Labs (12%)

Each week includes a lab experience that helps you apply what you have learned in fun and practical ways. The labs will take about 60–90 minutes to complete. We encourage you to get a head start before class so that you can ask questions and make the most of our 50-minute lab period. You will be required to submit the results of each lab electronically by Wednesday at 11:59 PM.

Quizzes (10%)

We will have an online quiz at the end of each week, due Sunday at 11:59 PM. The quizzes include vocabulary matching, multiple choice, and fill in the blank questions. Many of these questions will be similar to ones at the end of the chapter, so it pays off to practice them during your study time.

Exams (40%)

Each exam will be 15–20 minutes long and consist of several free response questions. Missed exams may not be made up, and you will not receive extra time to complete the exam if you arrive late to class. We understand that things happen (e.g., illness, unexpected travel, personal issues) and will drop your lowest two exam scores when calculating your final grade.

Projects (20%)

During the middle and end of the semester, you will be required to complete a substantial project. Both of these “performance tasks” will be collaborative in nature and done in groups. You should view them as a take-home midterm and final exam. The first task will explore a computing innovation of your choice and include a written paper and poster presentation. The second task will be a programming project of your choice and require a live demonstration, polished source code, and individual reflection.

University Policies

Academic Honesty

If you violate the University's Honor Code (<http://www.jmu.edu/honorcode/code.shtml>), you will receive a reduced or failing grade *in the course*, other penalties may be imposed, and the violation will be reported to the Honor Council. Automated tools may be used on any assignment, at any time, to detect inappropriate collaboration and to determine the originality of submissions.

Adding/Dropping

You are responsible for enrolling in courses and verifying your schedule on MyMadison. The deadline for adding a semester course is Thursday, 09/12/2019 (signatures required after Tuesday, 09/03/2019). The last day to withdraw from a course with a W grade is Thursday, 10/24/2019.

Disability Services

If you have a documented disability and need accommodations in this course, please register with the Office of Disability Services (<http://www.jmu.edu/ods>, Student Success Center, Room 1202, 540-568-6705). They will provide you with an Access Plan Letter to verify your need for services and make recommendations for the course. We will be happy to discuss your access plan with you.

Excused Absences

Students who are unable to attend class due to JMU sponsored activities (such as sports, band, academic competition, field trips, etc) or personal religious observances may request reasonable accommodations. Please notify the instructor during the first week of class regarding potential absences so that we can determine alternative methods for you to complete the required work.

Late Work Policy

Late work will not be accepted for unexcused absences. There will be no make-up opportunities and no extra credit assignments. In extreme, documented circumstances (e.g., hospitalization), the instructor will make reasonable accommodations after consulting with the student.

University Closings

For severe weather and other unexpected circumstances, watch for announcements relating to make-up work. See <http://www.jmu.edu/JMUpolicy/1309.shtml> for JMU's cancellation policy. Although the schedule may adapt to canceled classes, assignment deadlines generally do not change.

Your Well-Being

As a college student, there may be times when personal stressors interfere with your academic performance and/or negatively impact your daily life. If you or someone you know is experiencing mental health challenges at James Madison University, please connect with the Counseling Center located within the Student Success Center on the 3rd floor. You can learn more about available services by visiting <https://www.jmu.edu/counselingctr> or calling 540-568-6552. Their services are free and confidential. Other available support resources to consider include, but are not limited to, the Office of the Dean of Students, the Health Center, and Learning Strategies Instruction.