

Syllabus

Computer Science Principles – COMP 101
3:00 – 4:15, Science 213
Fall 2018

Instructor: Dr. Frank McCown
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Office Hours: Science 208: 2-3 pm MW, 2-5 pm TRF, or by appointment

Course Description

CS Principles is an entry-level course that introduces students to the foundation of modern computing. Topics include: The Internet, digital information, intro to programming, big data and privacy, and building mobile apps.

Student Learning Outcomes

The student will be able to...

1. Describe the structure and design of the Internet.
2. Describe how digital information is encoded, represented, and manipulated.
3. Formulate algorithmic solutions to problems using block coding and JavaScript.
4. Articulate the negative and positive consequences of collecting and using big data.
5. Describe how modern encryption works.
6. Design and develop event-driven mobile apps using block coding and JavaScript.

Attendance

Students will be asked to participate frequently in small groups and in-class discussions, so you are expected to be in class *every day*. You may have two “free skips,” but each unexcused absence after that will result in **1%** being subtracted from your final grade. Absences that are excused (illness, school sponsored trips, etc.) will not be held against you. After missing a class, it is your responsibility to determine what you missed and what homework might be due the following day. Normally you will want to watch the class video on Echo360 and check code.org.

Attendance will be taken daily at the beginning of class. If you are late, you must check with me to be sure I recorded your late attendance. Three late arrivals is equivalent to one unexcused absence.

Exams

Four exams will be given along with a cumulative final exam. Exams will be taken in the Testing Lab, which is located in Ezell 211. Use the Online Test Scheduler (available on Pipeline) to sign up for a time to take the exam.

You may not speak to any of your classmates about the exam after you have taken it. Violation of this policy is considered academic misconduct.

Code Studio

You will need to create an account on <https://code.org/> in order to use Code Studio, an online learning environment that gives periodic assessments and allows you to participate in in-class activities. Code Studio also allows you to write programs that run in a web browser.

The curriculum in Code Studio is divided into 5 units:

1. The Internet
2. Digital information
3. Intro to programming
4. Big data and privacy
5. Building mobile apps

Each unit is divided into multiple lessons. Each class period will cover 2-3 lessons so each unit is covered in about 3 weeks.

You may work independently on your projects or in pairs (with your lab partner or someone else). Just like the labs, both people must work together on a single computer, and both must write approximately half of the code. *No code can be written without their partner present and watching.* Both people should understand completely what is being written. When you submit a program that has been written in pairs, you must document at the top of the program the names of both individuals who worked on the program. Only one student should submit the program.

Homework

You will need to complete all assessments in Code Studio that are not completed in class. Homework assignments will be assigned each week to help reinforce the lessons. The homework may be completed individually or in pairs (2 people only). When working in pairs, make sure that both people understand and contribute to the solutions. **Important:** Write both individual's names at the top of the homework assignment when working in pairs.

Extra Credit

A maximum of 2% extra credit can be earned and applied to your final grade.

1. **Computing Seminar:** You will receive **0.1%** points extra credit for each Computer Seminar that you attend. Seminar meets every Friday at 7:00 am in Science 113, beginning around the 4th week of the semester. There will be approximately 10 seminars, thus allowing you to increase your final grade by 1%. See <http://www.harding.edu/academics/colleges-departments/sciences/computer-science> for the complete schedule.
2. **Giving Blood:** Donating at the Red Cross blood drives will earn you **0.2%** added to your final grade each time you donate. Donate as many times as you'd like, and give me a signed note confirming your donation each time you donate.
3. **The McChallenge:** **1%** will be added to your final grade for the completion of a program which will be made available to you later in the semester. The program will be due the Friday before final exams. You can skip the program and still get the 1% added to your final grade if you beat me in a game of basketball, tennis, racquetball, Halo, chess, Trivia Pursuit, or any other sport/game that I know how to play. If you lose, you still may complete the program to get your 1%. Only one challenge per semester, and all challenges must be made *before* the final week of class. Come by my office to schedule a time to play.

Grades

Final grades are computed with the following weights: Letter grades: A = 90-100%, B = 80-89% C = 70-79%,
D = 60-69%, F = 0-59%

Exams:	40%	
Code.org Assessments:	15%	Late work: A maximum of 10% will be taken off each day a program or assignment is late, up to 50%. Every day is counted, including weekends. Nothing more than one week late will be accepted.
Homework:	30%	
Final Exam:	15%	

Final grades are not rounded unless the student has given significant effort, which is evidenced by regular attendance, completion of nearly all homework assignments, working well with partners, etc.

Course Culture

1. Shortcuts don't exist.
 - You cannot learn without considerable effort. Be prepared to spend at least **two hours outside of class** for every hour in class (15 hours a week) studying, reading, completing homework and projects, and preparing for exams.
 - Keep up with your reading and homework. Start your homework and projects on time so you can get help from the instructor when needed.
 - Come by during office hours (or we'll arrange a time) for assistance on assignments. Visit the tutor in 201 who is available throughout the week in the evenings. Remember that I'm here to help you.
2. Be considerate of others.
 - Help create an environment where you and your classmates can effectively learn.
 - Be on time. Stay awake. Engage in class discussion. Ask questions.
 - Keep your phone put away.
 - Use your computer for coursework only so you do not distract yourself or those around you. Until the instructor gives you permission, your monitor is to remain **off**.
3. Glorify God in all you do.
 - "Whatever you do... do it all to the glory of God." – 1 Cor 10:31
 - Make the most of the time God has given you to learn and develop a skill.
 - Everyone is expected to hold to the **highest standard** of personal conduct and **integrity**. Cheating in all its forms is inconsistent with Christian faith and practice and will result in sanctions up to and including dismissal from the class with a failing grade. You are cheating when you submit work performed by anyone but yourself and your partner. Never allow someone to view your source code as this often leads to cheating.
4. Miscellaneous
 - Check Canvas **daily** for announcements. This is the primary way I communicate with you outside of class.
 - Please adhere to the dress code as spelled out in the Student Handbook. Do not wear shorts to class. Men should remove caps while in class. Please wear shoes to class (flip flops are OK).
 - **No food** or drink is permitted in the lab. However, I will allow you to bring in a drink with a lid until we have a spill.

Assessment

Harding University, since its charter in 1924, has been strongly committed to providing the best resources and environment for the teaching-learning process. The board, administration, faculty, and staff are wholeheartedly committed to full compliance with all criteria of the Higher Learning Commission of the North Central Association of Colleges and Schools. The university values continuous, rigorous assessment at every level for its potential to improve student learning and achievement and for its centrality in fulfilling the stated mission of Harding. Thus, a comprehensive assessment program has been developed that includes both the Academic units and the Administrative and Educational Support (AES) units. Specifically, all academic units will be assessed in reference to the following Expanded Statement of Institutional Purpose: **The University provides programs that enable students to acquire essential knowledge, skills, and dispositions in their academic disciplines for successful careers, advanced studies, and servant leadership.** Assessment of the knowledge, skills, and dispositions of each student for the purpose of assigning a letter grade at the completion of this course will be based on the projects, homework assignments, and exams that were described previously in this syllabus.

Students with Disabilities

It is the policy for Harding University to accommodate students with disabilities, pursuant to federal and state law. Therefore, any student with a *documented disability* condition (e.g. physical, learning, and psychological) who needs to arrange reasonable accommodations must contact the instructor and the Disabilities Office at the *beginning* of each semester. (If the diagnosis of the disability occurs during the academic year, the student must self-identify with the Disabilities Director *as soon as possible* in order to get academic accommodations in place for the remainder of the semester.) The Disabilities Office is located in Room 205 of the Student Center, telephone, (501) 279-4019.

Schedule

The following schedule is subject to change but gives you an idea of how the class will progress:

Week 1 Aug 20	Introductions Unit 1: The Internet Binary messages	Week 7	Unit 3: Intro to programming Algorithms Turtle commands	Week 13	Unit 5: Building apps Buttons and events Multi-screen apps
Week 2	Numbering systems Binary numbers	Week 8	Functions Looping <i>Fall Break</i>	<i>Thanksgiving Break</i>	
Week 3 Sep 3	Addressing, routers DNS, HTTP Exam 1	Week 9 Oct 15	Random numbers Exam 3	Week 14	Variables Clicker game User input and strings
Week 4	Unit 2: Digital information Bytes and file sizes Text compression	Week 10	Unit 4: Big Data & Privacy Big Data Encryption	Week 15	Binary files Conditional logic Color Sleuth app
Week 5	Encoding images Lossy compression Fileformats	Week 11	Public key crypto Cybercrime	Week 16	Final Exam Dec 10
Week 6 Sep 24	Data Finding trends in viz Creating visualizations Exam 2	Week 12 Nov 5	Security dilemmas Exam 4		



IN CS, IT CAN BE HARD TO EXPLAIN
THE DIFFERENCE BETWEEN THE EASY
AND THE VIRTUALLY IMPOSSIBLE.