CS-101 Fundamentals of Computing
Fall 2019 - Syllabus and Information

Contact Your Instructor

Name: *Luke May*

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Office: Root Hall (RO), *A-138D* (ground floor, near west entrance, on north side of the hallway).

Course Website: http://cs.indstate.edu/~lmay1/courses/#/courses/cs101-fa19/home

Instructor/class Directories (cs.indstate.edu):
/u1/h5/lmay1
/u1/class/cs101

Lecture:
Class Section 002: MWF 9:00am - 9:50pm Root Hall A017
Class Section 301: Online - No Physical Meeting - See Course Website

Final Exam:
ISU Fall 2019 Final Exam Schedule
Class Section 002: W 12/11/2019 8:00am
Class Section 301: Online - No Physical Meeting - See Course Website

Instructor Office Hours (RO A-138D):
W 10:00am - 12:00pm (noon)
W 1:45pm - 3:45pm

The above are my official office hours. If those times will not work for you, you may contact me so we can set up alternative time to meet.

Computer Resources:
CS Unix Lab: Root Hall (RO), *A-015* (basement, just west of west stairwell, first door on the left).
Graduate Assistant Tutoring: See http://cs.indstate.edu/info/labs.html

Prerequisites:
None.

Required Texts
Free Python e-books and resources:
https://automatetheboringstuff.com/

Recommended Texts (not required)
Free Python e-books and resources:
https://learnxinyminutes.com/docs/python/
http://greenteapress.com/thinkpython/html/index.html

Course Announcements

Announcements regarding the course will be made both during class (if applicable), via Mattermost Chat, and via email to your @sycamores.indstate.edu email address. You should regularly check this email account or have it forwarded to an account that you check regularly.

Classroom conduct

You may not use cell phones, iPods/music players, etc. during class. If I can hear your headphones that means you are being disruptive, and if I have to ask you to turn down a device more than once, you may be asked to leave that day's lecture. You should be civil and respectful to both the instructor and your classmates, and you should arrive to class a few minutes before the scheduled lecture so you are ready for lecture to begin on time. You may use your computer during class if you are using it to follow along with the examples that are being discussed. You may not check social media or work on other courses, etc. during class. Do not consume or share any inappropriate material at any time. Be professional, so that you may become a professional.

Mattermost Chat

The CS Department makes use of a collaboration tool called Mattermost that allows CS students to communicate with each other via chat messages. This software is an enterprise grade collaboration tool, and most organizations you encounter during the duration of your career will utilize something similar. It is a requirement for this course to use this software. Mattermost chat is an extension of the classroom, so all of the above policies on classroom conduct apply. Be courteous and professional. If you break the the conduct policies, your Mattermost user can be removed from the system even though some assignments require its use. In that case, you will automatically forfeit those points, and, depending on the severity, you may be removed from the course with an F grade.

Course Information

Course Number: CS-101

Course Name: Fundamentals of Computing

Course CRN:

On-Campus: 53835
Online: 51837

Course Section:

On-Campus: 002
Online: 301

Credit Hours: 3.0

Course Catalog Description:

The main focus of the course is to give students a practical understanding of computing to become well-informed citizens and professionals in the computing age. Topics may include a basic study of - computational thinking, computer security, big data, artificial intelligence, and current trends in computing.

Course Outline

- **How Computers Work:** Binary number systems, protocols, and basic circuits

- **What is inside a computer**: CPU, RAM, hard drive, etc.
- **Internet 101**: how data is moved around the internet
- **Computer and internet security**: how do you know your data is secure?
- **Servers and such**: logging into a server, transferring files
- **Python basics**: Learning the python language
- **Computational problems**: things computers can do really well, and things that are impossible for computers to solve
- **Artificial intelligence**: different meanings of the term, examples

Learning Outcomes

1. **How Computers Work**
    a. Binary number system
    b. Protocols and how systems communicate
    c. Boolean logic
    d. Basic circuitry
2. **What is inside a computer**
    a. Name the different components that make up a computer.
    b. Describe what the terminology associated with a component means (e.g., Ghz for CPU's is the speed of the CPU, GB for the size of a hard drive).
    c. Evaluate the tradeoffs between different components (e.g., one CPU versus another)
3. **Internet 101**
    a. Explain the basic infrastructure of the internet and associated terminology.
    b. Explain the infrastructure of a home network, and be able to configure a home network.
    c. Explain how web browsing and email works, in terms of which parties are involved (e.g., server and client), where data is stored, and what communication is involved.
4. **Computer and internet security**
    a. Explain the concepts of encryption/decryption, digital signing, and the difference between public-key and private-key encryption.
    b. For given situations, be able to say whether a given interaction is secure or not.
    c. Know the key terminology of internet security (e.g., rsa, sha, https, etc.).
5. **Servers and such**
    a. Explain what servers are used for
    b. Be able to log in to a server to transfer files to a server, and login via ssh to issue commands to the server
    c. How is data stored on a server, and how do we access data
6. **Python basics**
    a. Explain the basic structure of a python program
    b. Be able to create and run simple python programs.
7. **Computational problems**
    a. Explain some examples of computational problems, and understand how problems are framed (input to the problem, correct output, running time of finding the solution).
    b. Basic skills in evaluating efficiency of an algorithm.
    c. Explain some examples of computational problems that either cannot be solved, or require inordinate amount of time to solve (e.g., halting problem).
8. **Artificial intelligence**
    a. Understand the concept of the "Turing test" as a test of artificial intelligence.
    b. Know the history of some famous examples of "artificial intelligence" (e.g., chess playing, Jeopardy playing, chat-bots).

c. Explain some examples of artificial intelligence techniques (e.g., spam filtering, facial recognition, expert medical systems).

Expected Amount of Work

If you take this class seriously and get what you should out of it, some weeks you will likely be spending around ***4-8* hours/week** or more on the class work (outside of lecture time). The students who get A's in their CS courses and have an easy time finding jobs do spend this much time on this course. Not everyone would need to spend this much time and not all weeks will be the same, but you should plan on putting in whatever time it takes.

Note - your classes should be more important than your part-time job.

Grading and Assignments

The students of this course have the following responsibilities: read assigned readings before lecture, attend lecture, complete homework assignments, take in-class quizzes, take exams, and complete the final exam/project.

- **Homeworks, Labs, and Quizzes:** 40% of total grade

Homeworks, labs, and quizzes are equally weighted and averaged to calculate that portion of your grade. Your lowest score from this category will be dropped, which means if you have any unusual circumstances arise and cannot complete an assignment, then that assignment will be dropped. Do not waste your one dropped assignment; save it for when you need it.

- **Exams:** 30% of total grade

Exams are weighted equally and will be averaged to calculate the exam portion of your grade.

- **Attendance/Participation:** 15% of total grade

For the on-campus classes, attendance will account for this portion of your grade. For the online classes, very small participation assignments will periodically be sent out for you to complete to verify that you are following along with the content.

- **Final:** 15% of total grade

The final will likely be a final project (this will be announced as we get further into the semester). If it is a project, it will be assigned before or near the beginning of study week to give you plenty of time to complete it. It will be **due by 11:59pm on the Wednesday of finals week**
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CS Course Policies

Note that this course follows all standard CS course policies. In particular check the CS course policies related to - cheating/plagiarism, attendance, missing exams. See http://cs.indstate.edu/info/policies.html for details.

Late Work

Late homeworks and labs will not be allowed to be turned in for credit, mainly because they will be used as a learning tool, and the answers will be given out shortly after the assignments are collected. If you do miss an assignment, I highly recommend you still attempt to complete it on your own because the material builds on itself. The assignment with the lowest percent value will be dropped from the grade calculation. Dropping an assignment grade allows you some leeway in case you have an emergency and cannot complete an assignment. Do not waste it; you only get one. Showing effort on the assignments goes a long way when I grade, so do not just skip them if you are confused. Contact me via email or chat if you need help. **If you begin to struggle or fall behind, contact me as soon as possible. Do not wait until the end of the semester; that will be far too late!**

Start Homeworks Early

We suggest attempting a homework assignment the day it is given, or the day after, so that if you have a problem you can ask early. If you continue to have problems in trying to complete the assignment, you will have time to ask again. Many of the homework assignments require thought and problem solving, which takes "time on the calendar" not just "time on the clock". By that we mean that spending two hours on 3 consecutive days may be more productive than trying to spend 6 hours at once on the assignment.

Grade Cutoffs

We try to design homework assignments and exams so that a standard cutoff for grades will be close to what you deserve. After the first exam a grade will be created in Blackboard called "Letter Grade" that is what your letter grade would be if the semester ended today. Initially, I will likely assign the following grades: 93-100 A, 90-93 A-, 87-90 B+, 83-87 B, 80-83 B-, 77-80 C+, 73-77 C, 70-73 C-, 67-70 D+, 63-67 D, 60-63 D-, 0-60 F

Our goal is that the different grades have the following rough meaning.

A+/A
You can do *all* the assignments *on your own*.

B+/A-
You understand nearly everything, and should be all set to use this knowledge in other courses or in a job.

B-/B
Most things you understand very well and a few you might not (more towards the former for a B and more towards the latter for a C).

C/C+
Learned enough and have the minimum skills to move on in the subject.

D+/C-
You did put some effort in, and understand many things at a high level, but you haven't mastered the details well enough to be able to use this knowledge in the future.

D-
Students will normally *not* get an F if - you attend 80% of the lectures, complete some of the assignments up through the end of the course, and get nearly half of the problems on the final exam correct.

F
Normally, students that get an F simply stopped doing the required work at some point.

Blackboard

The course has a blackboard site. Click here to go to blackboard. You should see this course listed under your courses for the current term. The blackboard site is only used for giving you your grades (go to the course in blackboard, then click “My Tools”, and then “My Grades”). All course content, schedule, etc. is kept in this google doc (which you are currently viewing).

Academic Integrity

Follow the standard CS course policies in terms of what is and is not allowed on assignments: http://cs.indstate.edu/info/policies.html

Please ask the instructor if you have doubts about what is considered cheating in this course.

Special Needs / Student Disabilities

Standard language included in the syllabi for ISU courses.

Indiana State University recognizes that students with disabilities may have special needs that must be met to give them equal access to college programs and facilities. If you need course adaptations or accommodations because of a disability, please contact us as soon as possible in a confidential setting either after class or in my office. All conversations regarding your disability will be kept in strict confidence. Indiana State University's Student Support Services (SSS) office coordinates services for students with disabilities: documentation of a disability needs to be on file in that office before any accommodations can be provided. Student Support Services is located on the lower level of Normal Hall in the Center for Student Success and can be contacted at 812-237-2700, or you can visit the ISU website under A-Z, Disability Student Services and submit a Contact Form. Appointments to discuss accommodations with SSS staff members are encouraged.

Once a faculty member is notified by Student Support Services that a student is qualified to receive academic accommodations, a faculty member is obligated to provide or allow a reasonable classroom accommodation under ADA.

Disclosures Regarding Sexual Misconduct

Standard language included in the syllabi for ISU courses.

Indiana State University fosters a campus free of sexual misconduct including sexual harassment, sexual violence, intimate partner violence, and stalking and/or any form of sex or gender discrimination. If you disclose a potential violation of the sexual misconduct policy I will need to notify the Title IX Coordinator. Students who have experienced sexual misconduct are encouraged to contact confidential resources listed below. To make a report or the Title IX Coordinator, visit the Equal Opportunity and Title IX website: http://www.indstate.edu/equalopportunity-titleix/titleix.

The ISU Student Counseling Center – HMSU 7th Floor | 812-237-3939 | www.indstate.edu/cns

The ISU Victim Advocate – Trista Gibbons, trista.gibbons@indstate.edu

HMSU 7th Floor | 812-237-3939 (office) | 812-230-3803 (cell)

Campus Ministries - United Campus Ministries | 812-232-0186

http://www2.indstate.edu/sao/campusinistries.htm

www.unitedcampusministries.org | ucmminister2@gmail.com

321 N 7th St., Terre Haute, IN 47807

For more information on your rights and available resources

http://www.indstate.edu/equalopportunity-titleix/titleix