CS-101 Fundamentals of Computing
Spring 2021 - Syllabus and Information

Instructor: *Luke May*
- **Email:** *Luke.May@indstate.edu*
- **Office:** Root Hall (RO), *A-138D* (ground floor, near west entrance, on north side of the hallway).
    - My office location may change during the term, and if so, I will add it to the course website announcements and update this document.
    - Locate my office in this Root Hall Map

Graduate Assistant and Lecturer: *Sana Ebrahimi*
- **Email:** *sebrahimi@sycamores.indstate.edu*

Course Website (bookmark it): https://cs.indstate.edu/~lmay1/courses/#/courses/cs101/home

MS Teams Group: cs101lm *(cs101 for the course number, then a lowercase LM for Luke May)*

CS Server (cs.indstate.edu)
- **Instructor Usernames**
    - *cs101* *Sana (cs101 for the course number)*
    - *cs101lm* *Luke (cs101 for the course number, then a lowercase LM for Luke May)*
- **Instructor/Class Directories**
    - */u1/h5/lmay1*
    - */u1/class/cs101* *Sana (cs101 for the course number)*
    - */u1/class/cs101lm* *Luke (cs101 for the course number, then a lowercase LM for Luke May)*

Lecture:
- Class Section 001:
    - M/W/F 9:00am - 9:45am Root Hall (RO) A017
    - Lecturer: Sana Ebrahimi
- Class Section 301:
    - N/A Online Only
    - Lecturer: Luke May

Final Exam: Spring 2021 Final Exam Schedule
- Class Section 001:
    - Multiple Choice: In Class (Wednesday, May 5 @ 8:00am)
    - Lab Portion: Online - multiple days to complete (Due Wednesday, May 5 @ 11:59pm)
- Class Section 301:
    - Multiple Choice: Online (Due Wednesday, May 5 @ 11:59pm)
    - Lab Portion: Online - multiple days to complete (Due Wednesday, May 5 @ 11:59pm)

Instructor Office Hours (Luke Online, Sana Online):
- Office hours will be online via MS Teams Chat or Video Conferencing, or with Zoom. Exceptions can be made in certain cases and those will be by appointment only.
- Luke W/F 11:00am - 1:00pm
- Sana T/Th 2:00pm - 3:00pm

Covid-19 Resources and Impact on CS Courses: https://cs.indstate.edu/wiki/index.php/Covid-19

- This is r**equired** reading. There will be a quiz.

Computer Resources:

- CS Unix Lab and Help: https://cs.indstate.edu/wiki/index.php/Unix_Lab_and_Help
    - Location: Root Hall (RO), *A-015* (basement, just west of west stairwell, first door on the left).
- Graduate Assistant Tutoring: http://cs.indstate.edu/info/labs.html

Prerequisites: None.

Required Texts:

- Free Python e-books *Automate the Boring Stuff* by Al Sweigart: https://automatetheboringstuff.com/

Additional Resources:

- Learn X in Y minutes - Python 3: https://learnxinyminutes.com/docs/python3/
- *Think Python* by Allen B. Downey: http://greenteapress.com/thinkpython/html/index.html

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Course Website

The majority of this course will be run through the course website linked at the top of this document. **Bookmark that page**. The course website contains announcements, a schedule of due dates, course assignments, lecture materials, and even links to exams and projects. You should check this site daily to ensure that you do not miss assignments or content.

Course Announcements

Announcements regarding the course will be posted under the *Announcements* section of the course website. Announcements may also be made during class (if applicable), via MS Teams, or via your ISU sycamores email account. You should regularly check your email account or have it forwarded to an account that you check regularly. The *Announcements* section of the course website should be the most comprehensive list of any and all course activity, so check it regularly.

Classroom Conduct

You may not use cell phones, iPods/music players, etc. during class unless otherwise stated. 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. I encourage you to use your computer during class if you are using it to follow along with the examples that are being discussed. You should not check social media or work on other courses, other projects, etc. during class. Do not consume or share any inappropriate material at any time. Be professional so that you may become a professional.

Ethics

The intentional or malicious use of systems, software, or application settings, to undermine another student's educational experience will not be tolerated and may warrant extreme academic consequences **on par with plagiarism**. Malicious tampering with user accounts, settings, or systems of students, instructors, or any other group or individual will be penalized similarly.

MS Teams Chat and Digital Collaboration Tools

We will be making use of a collaboration platform called **Microsoft Teams**. Primarily we will be using the chat functionality for distance learning. This software is an enterprise grade collaboration tool, and most organizations you encounter over the duration of your career will utilize something similar. It is a requirement for this course to use this software. MS Teams is an extension of the classroom, so all of the above policies on classroom conduct apply. Be courteous and professional. If you break the conduct policies, your MS Teams user can be removed from the course 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.

Specific Course Information:

- **Course Number:** CS-101
- **Course Name:** Fundamentals of Computing
- **Course Section(s):**
    - Section **001**
        - Type: In-person
        - Lecturer: Sana Ebrahimi
        - CRN: 13416
    - Section **301**
        - Type: Online Asynchronous
        - Lecturer: Luke May
        - CRN: 13206
- **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 3 programming language
- **Computational problems**: things computers can do really well, and things that are impossible for computers to solve
- **Current Topics in Computer Science**: Basic understanding of some of the latest trends in Computer Science

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. Name the connection ports on a computer.
   c. 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).
   d. 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.
   c. Should be able to effectively use at least one GUI-based text editor.
7. **Computational problems**
   a. Basic skills in evaluating the efficiency of an algorithm.
   b. Explain some examples of computational problems that either cannot be solved, or require an inordinate amount of time to solve (e.g., halting problem).
8. **Current Topics in Computer Science**
   a. Simple Ciphers and Encryption
      i. Understand what a simple cipher is and be able to describe one.
      ii. Be able to calculate how difficult is would be to break a simple cipher given the implementation rules.
   b. Artificial Intelligence
      i. Understand the concept of the "Turing test" as a test of artificial intelligence.
      ii. Know the history of some famous examples of "artificial intelligence" (e.g., chess playing, Jeopardy playing, chat-bots).
   c. Machine Learning
      i. Understand how machine learning is different than Artificial Intelligence
      ii. Be able to describe the basic components of a Neural Network.

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 ***3-6* 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 (if in-person or hybrid class), submit quizzes, complete labs, and take the exams. Quizzes and/or labs will occur near weekley. **Start work early!**

- **Quizzes:** 30% of total grade
  - A quiz or a lab will usually occur once a week, depending on the speed at which we cover the material. Each quiz will be multiple choice, and if not otherwise indicated, each question will be worth one point. Quizzes are timed and randomized, and you may complete them at your leisure over a given 48-hour period. **Individual quizzes are not equally weighted.** The sum of all quiz points will be your final quiz score.
  - **Late Work:** Late or make-up quizzes are not permitted because we go over the answers after the quiz. If you complete most of your quizzes the bonus should compensate for a missed quiz. The multiple choice portions of the exams are based entirely on previous quiz questions, so you have an opportunity to make up for a missed quiz on the exam as well.

- **Labs:** 30% of total grade
  - Labs are activities that require the interaction with the computer system and result in the creation of digital media. All labs will be turned in by submitting your work in a specific location specified in your home directory on the CS Server. Some examples of lab content may include:
    - Creating files and directories within the file-system of the CS Server.
    - Reading articles and summarizing them in a text file.
    - Writing scripts or computer programs to solve specific problems.

    Individual lab assignments are not equally weighted. The sum of all lab points will be your final lab score.
  - **Late Work:** If you miss a lab you will have the opportunity to make it up by completing a more challenging assignment at the end of the year that takes into account all of the skills you have learned over the duration of the course.

- **Exams:** 40% of total grade (**Midterm:** 20%, **Final:** 20%)
  - There will be 2 Exams, a midterm and a final. Each exam is worth 20% of your overall grade. The exams consist of two parts:
    - **Multiple Choice Portion**: A timed multiple choice section based on your quiz questions.
    - **Lab Section:** A programming assignment based on what you have learned by doing your labs.
  - **Late Work:** Late work on exams is not accepted without **prior notice**, or unless there is a justifiable reason like medical absence with supporting documentation. Making up an exam will result in a harder lab portion. Making up the final exam is generally not possible due to the length of time from when it is assigned to when final grades are due.

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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. Showing effort on the labs can often help you when I grade, so do not just skip one 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. This of course depends on personal characteristics and differs from one person to the next.

Grade Cutoffs

We try to design homework assignments and exams so that a standard cutoff for grades will be close to what you deserve. I make use of the generally accepted ISU grading scale used on blackboard:

- A 93-100
- A- 90-93
- B+ 87-90
- B 83-87
- B- 80-83
- C+ 77-80
- C 73-77
- C- 70-73
- D+ 67-70
- D 63-67
- D- 60-63
- F 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 on the course website (linked on the first page of this document).

Academic Integrity

Follow the standard CS Course Policies to determine what is and is not allowed on assignments. Please **ask the instructor** if you have doubts about what is considered cheating in this course. Copying work from external websites or tutorial videos is not acceptable without explicit permission from the instructor, or unless the assignment specifically instructs you to do so. For undergrads, a first offense will result in a **zero grade** on the assignment, and a second offense will result in **failure of the course**, and potential expulsion. For grad students, it’s an automatic course failure, and potential expulsion.

COVID-19 Information

Information specific to all CS courses: https://cs.indstate.edu/wiki/index.php/Covid-19#Course_Policies.

Information specific to this course

Standard ISU language required in all syllabi (read this all once, then skim for your other courses)...

Illness: Students who are ill, under quarantine or isolation for COVID-19, or suspect they are ill will report that to the Indiana State University Office of the Dean of Students’ Contact Tracing Team via the Sycamore Symptom Assessment, which each member of the ISU community receives daily by email. The Contact Tracing Team will work with the student to verify and gather necessary information. Students are required to respond to and comply with the Contact Tracing Team. The Office of the Dean of Students will supply documentation for faculty. Once notification is made, all faculty will make every reasonable effort to accommodate the student’s absence and will communicate that accommodation directly to the student. Students who need to report an illness or a change in their COVID-19 status (either positive test result or a close-contact exposure) must complete the Sycamore Symptom Assessment and may contact Office of the Dean of Student with questions by calling **812-237-3829**.

Masks/Shields: Masks/Shields will be worn by all students and faculty in classrooms as well as in buildings (unless you are alone in an office). What is said/printed on a mask will be held to the same Student Code of Conduct standard as if it were printed on a shirt or hat. As a result, a political statement such as MAGA, BIDEN2020, or BLM is not grounds for demanding that it be removed/replaced. In judging what constitutes an offensive statement on a mask, the determination will be made by Student Affairs using the Student Code of Conduct. If there is a question about a mask, the faculty member will refer the matter to Student Affairs and only insist upon its immediate removal if there is no doubt that it violates the Code. Medical waivers will be made through Student Affairs and students with such a waiver are expected to carry the documentation with them and present it when asked.

Laptops/Technology: It is the responsibility of all students to have equipment sufficient to participate in all their classes. All students must have a computer/tablet with audio and video capability. Students will follow the appropriate instructions of their faculty regarding the muting (or unmuting) of audio and video as they would in any classroom setting.

Traffic flow and social distance: Students and faculty will respect the need for social distancing to the degree possible by the setting. Faculty and students will move in and out of the classroom as per the appropriate

instructions of the faculty/administration. They are expected to follow printed traffic flow statements posted in all rooms and buildings.

In-class seating: Faculty are asked to assign students seats in the classroom, using social distancing when possible. The assigned seating chart is to be used all semester and kept by faculty as to facilitate contact tracing and help limit any secondary quarantines.

Cleaning of Space: Students are encouraged to clean the surfaces of the chairs/tables/desks they occupy before they sit down and as they prepare to leave. Faculty should advise students to bring cleaning wipes to clean their own personal space. To be safe, students should use hand sanitizer on the way in and on the way out of the classroom.

Refusal: Refusal to comply with any appropriate request will be treated as would any classroom disruption (request to change the behavior; request to leave the class; dismissal of the class and referral to Student Affairs.)

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 ISU language required in all syllabi...
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.

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

The ISU Victim Advocate
Trista Gibbons, trista.gibbons@indstate.edu
HMSU 7 th Floor
812-237-3939 (office)

812-230-3803 (cell)

Campus Ministries United
Campus Ministries
812-232-0186
321 N 7 th St., Terre Haute, IN 47807
http://www2.indstate.edu/sao/campusinistries.htm
https://thunitedcampusministries.org/
ucmminister2@gmail.com

For more information on your rights and available resources
http://www.indstate.edu/equalopportunitytitleix/titleix