

CIS 115 - Introduction to Computing Science

Fall 2017 Syllabus

Instructor: Nathan Bean nhbean@ksu.edu

Office: 2216 Engineering Hall (DUE)

Phone: Office - (785) 532-7942

Office Hours: T 1:40pm – 4:30pm in 2216 Engineering Hall or by appointment

Classroom: 1116 Engineering Hall (DUE)

Class UTA: Albert Snow ajsnow@ksu.edu

Undergraduate Teaching Assistants

Calvin Bauer	nivlac12@ksu.edu	Lauren Lynch	lklynch@ksu.edu
Haley Canfield	haleycanfield@ksu.edu	Caleb Holland	dakweezy@ksu.edu
Eujin Chin	eujun@ksu.edu	Albert Snow	dakweezy@ksu.edu
Luis Dias	happystep@ksu.edu	Joseph Webster	jwebster7@ksu.edu
Catherine (Caleb) Logan	catiел@ksu.edu	Jie Zheng	jayie21@ksu.edu

Required Texts

- “The Pattern on the Stone: The Simple Ideas that Make Computers Work” by W. Daniel Hillis. **ISBN 046502596X**, newer version is also available and will work fine
- “Nine Algorithms That Changed the Future: The Ingenious Ideas That Drive Today’s Computers” by John MacCormick. **ISBN 0691158193**
- “Tubes: A Journey to the Center of the Internet” by Andrew Blum. **ISBN 0061994952**

Optional Reading

- These are books we’ve found to be interesting and/or useful:

- “Blown to Bits: Your Life, Liberty, and Happiness After the Digital Explosion” by Hal Abelson, Ken Ledeen, and Harry Lewis. **ISBN 013713559**, Creative Commons digital edition available **FREE** at <http://www.bitsbook.com/>
- “Code: The Hidden Language of Computer Hardware and Software” by Charles Petzold. **ISBN 0735611319**
- “How Not to be Wrong: The Power of Mathematical Thinking” by Jordan Ellenberg. **ISBN 0143127535**
- “The Innovators: How a Group of Hackers, Geniuses and Geeks Created the Digital Revolution” by Walter Isaacson. **ISBN 1476708703**

Software

We will be using Python 3 as the language for the programming assignments this year. It can be found at python.org. We will also be using Jupyter interactive notebooks for note-taking and assignments. This can be found at jupyter.org. Both Python and Jupyter come bundled with

the [Anaconda](#) package manager; for students wishing an easy-to-install graphical interface, this is a good fit. Blog entries will be published on students' personal web space on the CS department servers.

How to Get Help in this Course

CIS 115 can be an interesting course due to the large amount of material covered and much of the material is brand new to students. Therefore, you are encouraged to seek help whenever you feel you are being overwhelmed or don't understand a topic. **You are not alone!** Most students in CIS 115 have never studied anything relating to Computing Science before, so it is new to everyone. The instructors and TAs are **always** willing to help students with **any** questions you may have about the class or other issues related to Computing Science. So please, don't be afraid to ask questions.

Here are the 5 **recommended ways to get help** on CIS 115:

- Review the course materials posted on K-State Canvas and the course website
- Ask your teammates for help or advice on assignments or projects
- Send assignment questions to your teaching assistant (TA) or instructor via email
- Visit your instructor's office hours, or the office hours for your TA if available
- Schedule a one-on-one meeting with your instructor

Course Description

This course is an introduction to the history, fundamental theories, and research areas within Computing Science and its related disciplines. Although we will be learning a bit of computer programming to help understand many of these topics, it is **NOT** intended to be an introductory programming course. Computing Science has a direct impact on many facets of daily life, but very few of us ever take the time to wonder how it all works. This course aims to fill that void.

To accomplish this goal, we will do several hands-on learning activities, have meaningful in-class discussions, write about our own thoughts and opinions on various subjects, and research topics that are central to Computing Science. While doing so, we will try to relate the concepts we are learning to real-world problems and ideas.

Course Objectives

By the end of this course, each student will be able to:

- Describe the history of Computing Science and list some of the important devices, innovations, and people that got us to where we are today.
- Relate Computing Science to a variety of other disciplines and describe how they are interconnected with each other.
- Apply and use Computing Science tools and techniques to solve real-world problems.

- Research and learn about new ideas and areas in Computing Science and share those ideas with others, all without direct guidance.
- Develop a personal understanding of how Computing Science affects his or her own life.
- Understand many different subject areas within Computing Science and how they are changing our understanding of the field.

Major Course Topics

- The history of Computing Science and early computing machines
- The basics of binary representation, boolean logic, data encoding, encryption and error checking
- Computational thinking, programming, and algorithm design
- The history and technology behind the internet and how it affects our world
- Traditional Computing Science areas such as artificial intelligence, human-computer interaction, high performance computing, big data, robotics, and more
- Cybersecurity in a modern, interconnected world
- Other disciplines and how they relate to Computing Science.

Course Structure

This course will be drastically different from the “traditional” lecture-based college courses you are likely familiar with. Instead, it will focus on several hands-on learning activities designed to engage and interest students in a variety of topics while helping them think more deeply about each topic and why it is important in Computing Science. While there will be some bits of lecture material to introduce topics, it will be kept to a minimum and designed to be interactive to encourage discussion and analysis.

In short, this class will require a considerable, but reasonable, amount of effort, not only from the students but the instructors and TAs as well. In addition to the in-class exercises and activities, there will be several assignments and group projects to be completed outside of class.

Therefore, in this course there will be:

- *No Midterm Examinations*
- *No Final Examinations*
- *No Multiple Choice Quizzes*
- *No Lists of Facts to Memorize*

Assignments

Assignments are to be completed without any collaboration with classmates or other outside help unless otherwise stated. Any unauthorized aid may result in a 0 for the assignment and/or report submitted to the Academic Honor Council.

Grading

- 15% - Topic Research*
- 15% - Wiki Article*
- 30% - Class Attendance and Participation
 - *You can miss two classes without it affecting your grade*
- 20% - Individual Programming & Written Assignments (*drop lowest score*)
- 20% - Online Blog Assignments (*drop lowest score*)

* All group work will include a **REQUIRED** peer evaluation component which can adjust that portion of the individual's grade up to 50%. If a student should fail to contribute to a group assignment at all, their grade for that assignment will be reduced to a zero. **Failure to complete the peer evaluation will result in a 10% grade deduction for that assignment.**

Letter grades will be assigned following the standard scale:

90% - 100% - A; 80% - 89.99% - B; 70% - 79.99% - C; 60% - 69.99% - D; 00% - 59.99% - F

Late Work

Every student should strive to turn in work on time. **Late work will receive penalty of 10% of the possible points for each day it is late.** Missed class attendance cannot be made up, though as mentioned above some areas will drop the lowest two scores. If you are getting behind in the class, you are encouraged to speak to the instructor for options to make up missed work.

Attendance and Participation in Class Activities

Each class period will include many hands-on activities to be completed in class that will help illustrate the topic of the day. Collaborating and communicating with others in the class is a large part of these activities and is encouraged. Participating in each of these activities is key to learning, so failing to attend class or participate in the in-class activities will result in a grade of zero for that day's work. **Simply attending class does not guarantee that you will receive points**, especially if you are not actively engaged in learning. This means that if you are on your mobile device, chatting with other students, or using a computer without engaging in the lecture and activities, you may not receive your attendance points for that day.

Excused absences will only be given in 2 situations:

- You are absent due to a **university activity** and have given the instructor **prior notice** of the absence. Excuses after the absence will not be accepted, even for university activities
- You have a "major life event" that prevents you from attending class, such as an illness or family emergency. These events must be verified through the K-State Office of Student Life. Contact them **AS SOON AS YOU CAN** once you know you will be away from class. They will work with your instructors while you are gone. Contact your instructor once you return to discuss make-up work and absences.

Programming & Written Assignments

There may be some programming or written assignments given from time to time that must be completed outside of class. It is acceptable to communicate with other students about the concepts in the assignment if you do not understand it, but you should not discuss the details of how the assignment should be completed. Your submission should be your own work, or the work of your small group if allowed by the instructor. ***When in doubt, ask!***

Online Blog

Each student is responsible for publishing blog articles based on topics or prompts given in class. These blog articles will give the student a chance to articulate his or her own opinions about a topic or learn more about a particular area that wasn't covered very deeply in class. Each blog article should be original work and clearly show independent thought and opinions wherever appropriate.

Team Assignments

Students will be assigned to a team at the beginning of the semester. Each team will be responsible for completing two major projects during the course of the semester.

Topic Research

Each team will be given a topic to research. The team will locate and organize materials to use when presenting the topic to the class. The materials should include both online and offline resources. The team will then create a presentation to share the information about their topic with the class. That research will then be used to write the wiki article.

Wiki Article

Each team will use the material collected for the topic research project, as well as information from the resulting class discussions, to create an article to be added to the final course wiki. The article is expected to be a thorough examination of the topic and should be written in such a way that others taking this course can read it and understand the material. The class as a whole will be responsible for finalizing the entire draft of the wiki and making sure it has a consistent design and feel to it.

Subject to Change

The details in this syllabus are not set in stone. Due to the flexible nature of this class, adjustments may need to be made as the semester progresses, though they will be kept to a minimum. If any changes occur, the changes will be posted on the K-State Canvas page for this course and emailed to all students.

Academic Honesty

Kansas State University has an Honor and Integrity System based on personal integrity, which

is presumed to be sufficient assurance that, in academic matters, one's work is performed honestly and without unauthorized assistance. Undergraduate and graduate students, by registration, acknowledge the jurisdiction of the Honor and Integrity System. The policies and procedures of the Honor and Integrity System apply to all full and part-time students enrolled in undergraduate and graduate courses on-campus, off-campus, and via distance learning. The Honor and Integrity System website can be reached via the following URL: www.k-state.edu/honor. A component vital to the Honor and Integrity System is the inclusion of the Honor Pledge which applies to all assignments, examinations, or other course work undertaken by students. The Honor Pledge is implied, whether or not it is stated: "On my honor, as a student, I have neither given nor received unauthorized aid on this academic work." A grade of XF can result from a breach of academic honesty. The F indicates failure in the course; the X indicates the reason is an Honor Pledge violation.

For this course, a violation of the Honor Pledge will result in an automatic 0 for the assignment and the violation will be reported to the Honor System. A second violation will result in an XF in the course.

Students with Disabilities

Students with disabilities who need classroom accommodations, access to technology, or information about emergency building/campus evacuation processes should contact the Student Access Center and/or their instructor. Services are available to students with a wide range of disabilities including, but not limited to, physical disabilities, medical conditions, learning disabilities, attention deficit disorder, depression, and anxiety. If you are a student enrolled in campus/online courses through the Manhattan or Olathe campuses, contact the Student Access Center at accesscenter@k-state.edu, 785-532-6441; for K-State Polytechnic campus, contact Academic and Student Services at polytechnicadvising@ksu.edu or call 785-826-2974.

Expectations for Classroom Conduct

All student activities in the University, including this course, are governed by the [Student Judicial Conduct Code](#) as outlined in the Student Governing Association [By Laws](#), Article V, Section 3, number 2. Students who engage in behavior that disrupts the learning environment may be asked to leave the class.

Academic Freedom Statement

Kansas State University is a community of students, faculty, and staff who work together to discover new knowledge, create new ideas, and share the results of their scholarly inquiry with the wider public. Although new ideas or research results may be controversial or challenge established views, the health and growth of any society requires frank intellectual exchange. Academic freedom protects this type of free exchange and is thus essential to any university's mission.

Moreover, academic freedom supports collaborative work in the pursuit of truth and the dissemination of knowledge in an environment of inquiry, respectful debate, and professionalism. Academic freedom is not limited to the classroom or to scientific and scholarly research, but extends to the life of the university as well as to larger social and political questions. It is the right and responsibility of the university community to engage with such issues.

Campus Safety

Kansas State University is committed to providing a safe teaching and learning environment for faculty members and students. In order to enhance your safety in the unlikely case of a campus emergency make sure that you know where and how to quickly exit your classroom and how to follow any emergency directives. To view additional campus emergency information go to the University's main page (<http://www.ksu.edu>) and click on the Emergency Information button.

Weapons Policy Statement

Kansas State University prohibits the possession and use of firearms, explosives, and other weapons on any University campus, with certain limited exceptions, which include use of weapons as part of approved University Programs, use of weapons by law enforcement personnel, and the lawful concealed carrying of handguns, as provided in the weapons policy, which may be found at: <http://www.k-state.edu/police/weapons/index.html>

Concealed Carry Statement

Under the Weapons Policy, individuals who carry a concealed handgun must have the handgun on or about their person at all times. Backpacks are appropriate for carrying a handgun as long as the backpack remains within the exclusive and uninterrupted control of the individual. A backpack or other bag used to carry a handgun must be within the immediate reach of the individual. Before bringing a concealed carry handgun into a University building, individuals who choose to carry a concealed handgun in a backpack, bag, etc., should consider whether or not they may be required to be separated from their handgun, such as being asked to go to the front of a classroom or to store bags in a particular area in a lab or exam room. In this course, the instructor may require students to place backpacks or other bags out of reach for safety or other reasons. The instructor will notify students in advance of this requirement so a student who carries a concealed handgun in a backpack or a bag may take steps to conceal the handgun on his or her person before arriving, or otherwise plan accordingly.

In this class, students will be asked on a regular basis to participate in activities, such as engaging in group work, using the board, etc. These activities may require students to either be separated from their bags or be prepared to keep their bags with them at all times during such activities. Students are encouraged to take the online weapons policy education module (<http://www.k-state.edu/police/weapons/index.html>) to ensure they understand the requirements related to concealed carry.

