CSE 101: Computer Science Principles

Stony Brook University
Spring 2022

Course Overview

Catalog Description

Introduces central ideas of computing and computer science, instills practices of computational thinking, and engages students in the creative aspects of the field. Also introduces appropriate computing technology as a means for solving computational problems and exploring creative endeavors. Requires some programming.

Prerequisite: Level 3 or higher on the mathematics placement examination

Major Topics Covered

- Computational thinking and problem-solving
- Basics of algorithms and data structures
- Fundamentals of programming in the Python language
- Data management, processing and analysis
- Applications of computing in data science, natural language processing and artificial intelligence

Course Learning Outcomes

- An ability to use computing tools and techniques to create computer program artifacts
- An ability to use multiple levels of abstraction, models, and simulation in computation
- An ability to use algorithms to develop and express solutions to computational problems

The 7 Big Ideas of Computer Science

CSE 101 touches on all seven of the "Big Ideas" in computer science:

- Creativity
- Abstraction
- Data and Information
- Algorithms
- Programming
- The Internet
- Global Impact

SBC Learning Outcomes

(Stony Brook Curriculum TECH: Understand Technology)

- Demonstrate an ability to apply technical tools and knowledge to practical systems and problem solving.

- Design, understand, build, or analyze selected aspects of the human-made world. The "human-made world" is defined for this purpose as "artifacts of our surroundings that are conceived, designed, and/or constructed using technological tools and methods."

Brightspace

This course will be using a pilot version of Brightspace for our course materials and resources in place of Blackboard. You will find access to Brightspace at https://sbupilot.brightspace.com/.

Meeting Times

Lectures

Mondays, Wednesdays and Fridays from 11:45 am - 12:40 pm in Frey Hall 102.

Lecture meetings will be recorded via Echo360 and will be posted on the course website. Please note that attendance at lecture is still expected. Your active participation during class time will make the course that much more engaging!

Lab Sessions

Lab sessions take place in the Computer Science Building. This is the older, brown-brick CS building, not the newer, red-brick building. Although attendance at lab meetings is not required, extra credit will be awarded to students who attend the entire lab meeting and participate actively. During lab sessions, TAs will review material from lecture and solve programming problems. There will be no lab meetings during the first week of the semester.

- L01: Mondays 2:40 pm - 3:35 pm in CS 2129
  - TA: Daniel Wu, daniel.wu.1@stonybrook.edu
- L02: Mondays 1:00 pm - 1:55 pm in CS 2114
  - TA: Sydney Walker, sydney.walker@stonybrook.edu
- L03: Tuesdays 4:45 pm - 5:40 pm in CS 2114
  - TA: Mayisha Delwar, mayisha.delwar@stonybrook.edu
- L04: Tuesdays 6:30 pm - 7:25 pm in CS 2129
  - TA: Peter Walsh, peter.t.walsh@stonybrook.edu
- L05: Wednesdays 2:40 pm - 3:35 pm in CS 2129
  - TA: Kenneth Chin, kenneth.chin.1@stonybrook.edu
- L06: Wednesdays 4:25 pm - 5:20 pm in CS 2129
  - TA: Mo Abedin, mohidul.abedin@stonybrook.edu
- L07: Thursdays 4:45 pm - 5:40 pm in CS 2114
  - TA: Ricky Lu, ricky.lu@stonybrook.edu

If you miss a lab meeting for a valid reason (e.g., illness) and want to make it up during the same week, you must obtain permission from the instructor before doing so.

Textbooks

There is no required textbook. Some materials are drawn from How to Think Like a Computer Scientist and other online resources.

Communication with the Course Staff

Instructor Info

- Prof. Kevin McDonnell
- Email: ktm@cs.stonybrook.edu
- Office: 212 New Computer Science Building
- Office Hours: Tuesdays and Thursdays from 9:30 - 11:00 am

Undergraduate Teaching Assistants

Some TA office hours are in-person, and others are conducted via Zoom. See the office hours grid on Brightspace for more details. SBU students must login via Net ID to access the Zoom meetings.

Brightspace Discussion Boards

The Brightspace discussion boards should be used for all communication with the teaching staff for questions about the course assignments and material. Email should be sent to individual instructors or teaching assistants only to schedule appointments. Brightspace is a system for teaching and learning. The following are not appropriate uses of the discussion boards:

- cyber-bullying
- posting memes
- complaining about a grade
- airing concerns/comments/criticisms about the course
- posting more than a few lines of source code from an attempt at a homework problem
- posting the solution to a homework problem or a link to a website containing the solution
- in general, anything unrelated to the course material and student learning

Therefore, students are expected to use Brightspace for all non-personal, course-related communication. Questions about what a homework problem is asking, technical problems that need troubleshooting, or other questions that might be of interest to other students must be posted to Brightspace and not emailed to the instructor or a TA. If code is relevant to a student's question, the student may post only short code snippets. For more extensive help with reviewing or debugging code, students must attend office hours.

Email Etiquette

A student should email the instructor under the following circumstances:

- Brightspace is not properly displaying a grade.
- One cannot come to office hours and would like to set up an appointment to meet at another time. In this case, the student should include his/her availability for the upcoming week.
- If a student needs to contact the instructor or TA about a private matter. Examples include:
    - Making arrangements for disability-related accommodations.

- To discuss private, personal matters that are impacting one's coursework such as physical or mental illness, death in the family, etc.

When emailing the instructor about the course, students should observe the following guidelines to ensure a timely response:

- use one's official @stonybrook.edu email account
- use a descriptive subject line that includes "CSE 101" and a brief note on the topic (e.g., "CSE 101: Appointment")
- begin with a proper greeting, such as "Hi Prof. McDonnell"
- briefly explain one's question or concern or request
- end with a proper closing that includes one's full name, Net ID and SBU ID number

Assessments

Homework Assignments

Students are required to complete weekly homework assignments, which consist of sets of problems to be solved by writing short Python programs. These assignments often go beyond the material covered in lecture and/or explore new topics. Homework assignments are largely graded on correctness, not effort, which means that student programs must solve the stated problems. A set of test cases are provided with each homework assignment to help students check their work for correctness. Students may work in pairs to complete the homework assignments if they so choose.

Tutorial Exercises

Students are required to complete a set of tutorial exercises each week. These exercises require students to write many, very short Python programs that reinforce lecture topics. Tutorial exercise sets are graded on a 15-point scale:

- 0 points: student's submission is missing or largely incomplete
- 5 points: student's submission is approximately 33% correctly completed
- 10 points: student's submission is approximately 66% correctly completed
- 15 points: student's submission is approximately 100% correctly completed

Note: the final tutorial will be graded out of 20 points.

Homework and Tutorial Lateness Policy

Homework assignments and tutorial exercises are due at fixed dates and times. However, late work is accepted, but is penalized 5% of the maximum score for every full hour that work is late, up to 20 hours. Work that is more than 20 hours late is not accepted for credit. Any applicable lateness penalties will be noted in the Brightspace gradebook.

Examinations

Examination Dates and Times

Students must take four exams, the first three of which will take place during lecture. Exams will be taken in-person unless otherwise announced.

- Exam 1: Monday, February 21 from 11:45 am - 12:40 pm
- Exam 2: Monday, March 21 from 11:45 am - 12:40 pm
- Exam 3: Monday, April 18 from 11:45 am - 12:40 pm
- Exam 4: Friday, May 13 from 11:15 am - 12:15 pm (during Finals Week)

Make-up Examinations

Make-up exams are given only in extenuating circumstances, such as a documented personal illness. In such cases the student must inform the instructor about an anticipated absence before the day of the exam and provide supporting documentation to the Student Support Team (e.g., doctor's note stating that the student was ill and unfit to take the exam). Students who miss an exam for a valid reason may need to take a make-up exam; specific arrangements are made on a case-by-case basis. Make-up exams are not made available to students who miss an exam due to work-related commitments, vacations, etc.

Grading Scheme

- Homework Assignments: 36%
- Tutorial Exercises: 20%
- Exams: 44%, weighted 11% each

To compute a student's course grade, the following values are added together, with a maximum of 1,000 points:

- 11 homework assignment scores (360 points)
- 13 tutorial exercise scores (200 points)
- 4 exam scores (440 points)
- Any applicable extra credit from attending and participating in lab meetings (2 points per lab meeting) and lecture meetings (points vary).

Course Grade Ranges

- A = 930-1,000 points
- A- = 900-929 points
- B+ = 870-899 points
- B = 830-869 points
- B- = 800-829 points
- C+ = 770-799 points
- C = 730-769 points
- C- = 700-729 points
- D+ = 670 - 699 points
- D = 630-669 points
- F = 0-629 points

All scores on assessed items are posted on Brightspace.

Tentative Class Schedule

- Weeks 1-2: Overview of CS and basic coding concepts

- Week 3: if-statements
- Weeks 4-5: Strings
- Week 6-7: Lists
- Week 8: while-loops
- Weeks 9: Random Numbers & Simulation
- Week 10-11: Dictionaries & Files
- Weeks 12-14: Introduction to Data Science

Free Tutoring Services

The College of Engineering and Applied Sciences (CEAS) offers a range of free tutoring services for students in CSE, AMS and other courses. See the CEAS Undergraduate Student Office website for more information. For small group and one-on-one tutoring please inquire also at the Academic Success and Tutoring Center.

Academic Integrity

Every student's homework submission must be his or her own work. You are not permitted to share, borrow or even look at another student's work while completing your own homework. Likewise, copying code from any source other than the textbook or from the instructor's handouts constitutes cheating. Any evidence that source code or solutions have been copied, shared or transmitted in any way, including the use of source code downloaded from the Internet or written by others in previous terms, is regarded as evidence of academic dishonesty. The College of Engineering and Applied Sciences (CEAS) regards academic dishonesty as a very serious matter and provides for substantial penalties in such cases, such as receiving an 'F' grade and/or expulsion from the University. Those involved in academically dishonest behavior will be prosecuted to the fullest extent permitted by the University and College laws. For more information, you can obtain a copy of the CEAS guidelines on academic dishonesty from the CEAS office.

All examinations are closed-notes and closed-book. No electronic devices of any kind may be used during exams. All cell phones must be silenced or turned off during exams. Any use of electronic devices, textbooks, notes or any other materials constitutes cheating. Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty is required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. For more comprehensive information on academic integrity, including categories of academic dishonesty please refer to the academic judiciary website at http://www.stonybrook.edu/commcms/academic_integrity/index.html

Americans with Disabilities Act

If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact the Student Accessibility Support Center, Stony Brook Union Suite 107, (631) 632-6748, or at sasc@stonybrook.edu. They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential. Students who require assistance during

emergency evacuation are encouraged to discuss their needs with their professors and the Student Accessibility Support Center. For procedures and information go to the following website: https://ehs.stonybrook.edu/programs/fire-safety/emergency-evacuation/evacuation-guide-disabilities and search Fire Safety and Evacuation and Disabilities.

Critical Incident Management

Critical Incident Management: Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Student Conduct and Community Standards any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, or inhibits students' ability to learn. Until/unless the latest COVID guidance is explicitly amended by SBU, during Spring 2022 "disruptive behavior" will include refusal to wear a mask during classes.