CSE 110x Programming for Everyone: Introduction to Programming

I. COURSE OVERVIEW
Computers are all around us. They’re in our pockets, our phones, homes, schools, and offices. Sure, you may know how to use a computer to write a document or send an email, but what if you could take full advantage of the machine you’re sitting at right now, and make people’s lives better and easier? And what if all you needed to do it were some programming basics and a web browser?

Knowing how to program, to understand and control the machines that surround us, is a critical skill in our modern world. And this 15-week, 3-credit class is your first step toward doing just that. You’ll see what a computer scientist does, learn how to think like a programmer, and be able to speak the language of computers to write your own apps and solve today’s problems.

This course is focused on learning by doing in an interactive, minimally technical way; no prior programming experience is needed. You will learn about the operation and capabilities of computers; algorithmic problem-solving; debugging programs and automating basic processes; and how to write basic programs using modern programming languages. You’ll use innovative interactive web technologies, enabling you to write and execute code, view the inner workings of the computer as it processes instructions, and visualize the fundamentals of programming.

The first half of this course uses the approachable Python programming language to teach fundamental programming principles, then switches to the Java language to develop skills in one of the most popular programming languages in the world. Programming projects are based on real-world problems, and automated tools provide you with immediate feedback, which is then augmented by style and structure feedback from expert instructors.

Fluency in programming only comes with experience and practice. In the process, we hope you’ll fall in love with the challenge and excitement of computer science, and set yourself on a path to where you can program all the time!

LEARNING OBJECTIVES AND TOPICS
By the end of this course, students should be able to:

1. Demonstrate problem solving techniques for programming.
2. Develop algorithms to solve problems. Demonstrate effective troubleshooting, testing, and debugging of programs.
3. Apply basic object-oriented analysis and design methods.
4. Describe and apply variables, basic and composite data types, and collections to the development of programs.
5. Develop programs using fundamental structures of sequence, selection, and iteration.
6. Write functions that accept parameters and return results.
7. Implement object oriented programs.
8. Describe the importance and relevance of computing and programming skills in their lives and careers.

**Topics include:**
- Programming with Python and Java Languages
- Algorithmic Problem Solving
- Computers and Representation of Data
- Functions
- Structured Programming
- Classes and Objects
- Arrays and Lists
- Object Oriented Programming

II. WEEKLY ACTIVITIES AND TIME COMMITMENT
Class preparation means reviewing all material required for a given section of the course and completing all assignments by the deadlines indicated. Attendance in an online course means logging into Open edX on a regular basis and participating in all of the activities that are posted.

This 15-week, 3-credit course requires 135 hours of student work. Therefore, expect to spend approximately 9 hours per week preparing for and actively participating in this course.

**COURSE CONTENT AND ASSIGNMENTS**
This is a content-rich course, designed to optimize instruction for all learners; always be sure to scroll down in any given unit to access all material.

In addition to viewing readings and videos, your success in this course will be proportional to your engagement with all the content, including ungraded activities and quizzes.

**Video and Audio**
- *Lectures* from your instructional team on specific topics, designed to help you learn key concepts.
- *Guest lectures* by experts in the field.

**Readings**
Our course makes use of open educational resources (OERs), no purchase necessary.

**Frequent Feedback**
This course employs peer review, self-assessment, instructor assessment, and automated feedback. This helps you measure your learning as you develop your knowledge and skills. Many activities are ungraded; they are an opportunity for you
to test your new skills, risk-free.

- **Peer review:** You will have an incredible diversity of classmates, and this is a great opportunity to learn from each other. In some activities, you will review other students’ ideas and programs, and we’ll include rubrics and guidelines to help you provide meaningful feedback.
- **Self-assessment:** Knowledge checks and practice challenges are ungraded activities that will help you evaluate your own learning progress.
- **Instructor assessment (ID Verified students):** With ID verification, you will receive personalized feedback on your graded assessments from a content expert.

### Graded Assignments

Graded assignments are required, and count toward the final grade for ID Verified students planning to earn credit. Students must submit all assignments via the Open edX platform unless otherwise instructed. Each assessment has submission instructions.

**Skill Challenges - 10%, (5):** Skill Challenges are autograded quizzes and non-coding written assignments.

**Design Reviews - 15% (5):** Design Reviews are assignments that ask you to first think critically, then develop a design for solving a problem, before you write any code. In the latter half of the course, Design Reviews are paired with specific Project Challenges.

**Project Challenges - 25%, (10):** Project Challenges are applied problem solving projects where the solution is an algorithm written in a programming language like Python or Java. **Note:** There will be 12 Project Challenges total, and the best 10 will count toward your grade. (The two lowest-scoring Project Challenges will be dropped.)

**Midterm (25%) and Final Exam (25%):** All students are invited to take the midterm and final exams. ID Verified students who wish to pursue ASU credit must opt in for proctoring.

(ID Verified Students must take the midterm and final exam in a proctored environment in order to be credit-eligible. Please take the practice proctored exam in the “Before the Course Begins” section to familiarize yourself with the process and ensure your computer meets the technical requirements.)

### Ungraded Activities

Many activities in this course do not directly contribute to your grade. These activities develop your knowledge and skill without penalty and are critical to your learning success and progress throughout the course.

**Knowledge Checks and Code Reviews:** As you read course content and watch videos, you’ll encounter short quizzes
that will help you check your knowledge and provide feedback.

**Practice Challenges:** Practice Challenges are ungraded, applied problem-solving challenges where the solution is an algorithm written in a programming language such as Python or Java.

**Play, Create, Share:** These discussion activities, included throughout the course, are opportunities to apply what you have learned, share the results with your classmates, and receive their feedback. (Remember to keep the conversation civil, and free of harsh judgement.) The course team may also comment, to provide additional insight and expertise.

**Live Code Examples:** Live Code Examples are interactive, executable code that allows you to explore programming concepts. You will be asked to execute the code, observe the results, and oftentimes to make changes or analyze the code behavior.

**Point(s) of Interest:** Points of Interest are things that we think you might find enriching, but are not strictly necessary. By visiting Points of Interest, you can take a more “scenic route” as you progress through the course.

**Introductions:** Please visit the “Introduce Yourself!” subsection, located in “Your First Hour as a Computer Scientist,” to tell the course team and your classmates a little bit about yourself, your community, and how you expect to change as a result of this course in the “Introduce Yourself!” discussion forum.

**Course Readiness Quiz:** This quiz is designed to ensure you are familiar with the information covered in “Your First Hour” section. While this quiz does not count toward your grade, you must successfully complete it to access week 1, and the rest of the course.

**III. COURSE REQUIREMENTS AND COMMUNICATION**

**Course Requirements**

**Recommended Prior Knowledge:** To be successful in this course, we recommend English language fluency and computer literacy, as well as high school algebra and understanding of basic mathematical concepts.

**Online Course Requirements:** You will find all content and learning activities within the Open edX platform. All course interactions use Internet technologies. It is your responsibility to watch all required videos and assigned readings, and complete all graded assessments according to the course schedule provided. You are encouraged to interact with your peers and course team in the discussion forums, and ask questions there as well.

**Course Communication**

All written communication will take place in discussion boards, course updates, and on the course home page. Office hours
will be held regularly through YouTube Live. Live sessions are recorded, and students can watch after the initial broadcast. Office hour sessions will be announced ahead of time, and a link will be provided to join.

Each week, there will be a dedicated discussion board called “General Questions,” where you can post general questions and comments about the subject matter, as well as any direct inquiries for the instructor and course team. Please use this forum to ensure timely response.

**IV. STUDENT EVALUATION**

Here is the breakdown of your grade:

<table>
<thead>
<tr>
<th>Item (number of assignments)</th>
<th>Weight</th>
<th>Proctored</th>
<th>Graded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Skill Challenges (5)</td>
<td>10%</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Project Challenges (10)</td>
<td>25%</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Design Reviews (5)</td>
<td>15%</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Midterm Exam</td>
<td>25%</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Final Exam</td>
<td>25%</td>
<td>Yes</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Final grades are based on the number of points you earn on the course activities listed above. There is no extra credit available. You can see your percentage of the total points to date on your Open edX progress page. Final scores will be absolute as follows: 90% or better will receive an A, 80% or better a B, 70% or better a C, below 70% is a failing grade. There will be no + or - added to grades.

You must pass the course with a grade of C (70%) or higher and be on the ID verified track, in order to be eligible for credit from Arizona State University. Please note that exams that fail the proctoring review will result in an assignment grade of 0. If your proctored exam is marked suspicious, you have up to 75 days from when you completed the exam to appeal the decision. After that time, appeals will not be accepted or reviewed.

Note: You have **up to one year to purchase credit** after you become eligible. Please see Section IX, below, “Taking this Course for ASU Credit” for specifics on deadlines.

**V. POLICIES**

**Assignment Deadlines:** This is an online course. Your instructional team will provide all content and learning activities on our Open edX platform. All course interactions will use Internet technologies; it is your responsibility to review all
content, fulfill all assignments on time, and ask any questions you have in our designated discussion area. All deadlines are listed in UTC time. For more information, please see section VI, “UTC Time Zone” below.

Late assignments will not be accepted at any point during the course. We recommend that you establish your time management schedule for this course within the first two days after it opens.

Subject to Change Notice: This syllabus is to be used as a guide only. Information contained here, such as assignments, grading scales, deadlines, and other materials are subject to change. It is your responsibility to read the course announcements regularly to be aware of any changes or updates in the course.

Academic Integrity: Academic honesty is expected of all students in all coursework and exams. The possible sanctions include, but are not limited to, appropriate grade penalties, course failure (indicated on the transcript as a grade of E), course failure due to academic dishonesty (indicated on the transcript as a grade of XE), loss of registration privileges, disqualification, and dismissal. For more information, review ASU’s Academic Integrity Policy and edX’s Terms of Service.

Prohibition of Commercial Note Taking Services: In accordance with ACD 304-06 Commercial Note Taking Services, written permission must be secured from the official instructor of the class in order to sell the instructor’s oral communication in the form of notes. Notes must have the notetaker’s name as well as the instructor’s name, the course number, and the date.

Title IX: As a mandated reporter, I am obligated to report any information I become aware of regarding alleged acts of sexual discrimination, including sexual violence and dating violence. An individual who believes they have been subjected to sexual violence or harassed on the basis of sex can obtain information about support, including counseling and academic support, from the university at https://sexualviolenceprevention.asu.edu/faqs.

VI. UTC TIME ZONE
To accommodate students from across the globe, all deadlines are posted in UTC time, the global standard. Please see the “Course Information and Support” subsection in “Your First Hour as a Computer Scientist” for a detailed explanation.

Remember, it is your responsibility to understand UTC and determine the due dates and times for your time zone. Make sure you address this, ideally before the first set of assignments is due, and definitely before the midterm, to avoid any unnecessary stress. Deadline extensions will NOT be granted for misunderstanding UTC time.

VII. GENERAL AND TECHNICAL REQUIREMENTS
This course is best accessed by a reasonably modern browser on a laptop or desktop computer. You can also access
course videos via a browser on your mobile device.

Students who are interested in taking the course for credit will need additional computer requirements and skills to access the remote proctor service. Please see the Software Secure site, which details Proctor Now’s requirements.

If you are not certain about your system, it is highly recommended that you complete the practice proctored exam to confirm system compatibility.

VIII. GENERAL AND TECHNICAL ASSISTANCE

Student Support and Accessibility: Please access the Open edX Learner’s Guide for solutions to common problems, and review the “Student Support” page in the “Start Here: Your First Hour as a Computer Scientist” section for further information.

IX. TAKING THIS COURSE FOR ASU CREDIT

ASU Credit: Students wishing to take this course for ASU credit are required to do the following:

- ID Verify by March 23, 06:59 UTC
- Opt in for proctoring for the midterm and final exams
- Pass the course with a C or better (70% or higher)

Please note that exams that fail the proctoring review will result in an assignment grade of 0. If your proctored exam is marked suspicious, you have up to 75 days from when you completed the exam to appeal the decision. After that time, appeals will not be accepted or reviewed.

ID Verification Status

When you verify your identity for an Open edX course, that verification is effective for one year. Your dashboard provides the status of your ID Verification.

You must be ID Verified in order to complete proctored exams. Please check your verification status regularly.

It will take a few days for the ID Verification process to be completed, so please plan accordingly. Deadlines will not be extended due to re-verification issues.

Purchasing Credit

Important: Provided you have met all requirements for this course, you can purchase credit from ASU for up to one year after you become credit eligible.
Your date of eligibility **may differ** from the course end date. Please visit your course progress page, specifically the “Requirements for Course Credit” section, to see the status of your credit eligibility.

Please review “Earn University Credit / Proctoring Requirements” in your “First Hour” section for additional details.

**Note:** Potential limitations of internet connectivity by some countries may limit the ability of an ID Verified student residing in those countries to complete all the assessments, and therefore potentially impede the eligibility to earn college credit.