Reedley College

Spring 2022
CSCI-1
Introduction to Computer Science
Syllabus

Instructor: Simon Sultana, Ph.D.	**Unit(s):** 3
Department: Computer Science	**Dates:** 1/10/2022 – 5/20/2022
E-mail: simon.sultana@reedleycollege.edu	**Class Meeting:** Friday 9-10:50am
Phone: (559) 638-0300 x3192	**Location:** Hybrid: On Campus/Zoom
Response time: < 24 hours	**Classroom:** FEM-3/Zoom
Office Hours: Tues, Thurs 2pm-4pm (FEM-4a), or by appt	https://scccd.zoom.us/j/92545802190?pwd=bFhDdWR3Zjc4ODFSQ0FNRjFDVy80UT09
Section Number: 50585	

Prerequisites: MATH 103 – Intermediate Algebra
Advisory: ENGL-125 – Writing Skills for College and ENGL-126 Reading Skills for College

Course Description: This course is an introduction to computer science with emphases on critical thinking skills and programming concepts. Topics include deductive reasoning, social and ethical implications, computer hardware and software, programming concepts and methodology. The course is designed to prepare students with little or no programming experience for Computer Science 40.

Note: this course is offered in a hybrid format. There will be a recorded lecture available at the beginning of the week. Students are expected to work on zyBooks activities before our class meeting on Friday. The meeting will be used to work on class activities in small teams. The Friday meeting is offered in a two-way interactive format, meaning that students have the choice of joining the Friday meeting at 9am on campus or via Zoom. Please note that live attendance is required each week (in person or online). It is up to each student how they would like to attend each week. Note we will be working on labs in small groups and we will combine students who are in person and online. Note also that students are required to attend the midterm exam (Friday, March 18, 2022) and the final exam (Friday, May 20, 2022) on campus. Please let me know if you have any questions.

Course Goals and Student Learning Outcomes:
Upon completion of this course, students will be able to:
- Apply critical thinking skills in solving problems.
- Carry out computer-related tasks with professional ethics.
- Demonstrate understanding of computer-related topics through writing.
- Solve simple mathematical problems (such as addition, subtraction, multiplication and division) using computers.
- Use pseudocode or a programming language to implement, test, and debug algorithms for solving simple problems.

Objectives:
In the process of completing this course, students will:
- Apply critical thinking skills to the design and development of algorithms and programs.
- Avoid common fallacies of reasoning.

- 🐾 Demonstrate the knowledge of professional ethics and responsibilities.
- 🐾 Determine argument validity.
- 🐾 Develop programming flowchart and pseudo code.
- 🐾 Distinguish between deductive and inductive arguments.
- 🐾 Recognize the impact of computers on privacy issues.
- 🐾 Recognize the logical structure of sentences.
- 🐾 Summarize the history of computing.
- 🐾 Understand government policy on encryption.
- 🐾 Understand machine architecture.
- 🐾 Understand protection of intellectual property.
- 🐾 Use condition and repetition programming structures.
- 🐾 Write simple sequential programs.

Student Learning Outcomes are statements about what the discipline faculty hope you will be able to do at the end of the course. This is NOT a guarantee: the ultimate responsibility for whether you will be able to do these things lies with you, the student. In addition, the assessment of Student Learning Outcomes is done by the department in order to evaluate the program as a whole, and not to evaluate individual faculty performance.

Required or Recommended Textbooks and Materials:
Textbooks:

Required: zyBooks, register and connect via Canvas before first meeting (cost: $58).
   1. Click on your zyBooks link in your learning management system
   (Do **not** go to the zyBooks website and create a new account)
   2. Subscribe

Optional Supplemental Textbooks:
   Computer Science: An Overview, 13th Ed., by J. Glenn Brookshear & Dennis Brylow, Pearson
   An Invitation to Computer Science, 8th Ed., by Michael Schneider & Judith Gersting, Cengage

   These optional texts are not necessary but will be good supplementary resources for those interested. Older versions are useful.

Learning Management System: CANVAS:

Canvas (https://scccd.instructure.com/) is used to post announcements, course information, programming assignments, and grade. You will submit your programming assignments on Canvas.
To log-in Reedley College CANVAS:
   Username: Your 7-digit student ID number.
   Password: If you have not previously changed your password, it is:

   First name initial (upper case) + *last name initial* (lowercase) + *date of birth* (mmddyy)
   Example: John Smith born on July 9th of 1988   Password = Js070988

Computer Lab:

Scratch (scratch.mit.edu), repl.it, Notepad++, Python IDLE 3.9, Thonny, Microsoft Office/Google Sheets are used for this class.

Topics:

A. Social Issues and Professional Practice (SP)
   a. Social Context (3 hours)
      i. Social implications of computing
      ii. Impact of social media
      iii. Growth and control of the Internet
      iv. Digital divide
   b. Analytical Tools (0.5 hour)
      i. Ethical argumentation
      ii. Stakeholder analysis
   c. Professional Ethics (1.5 hours)
      i. Professionalism
      ii. Codes of ethics
      iii. Accountability, responsibility, and liability
      iv. Maintaining awareness of consequences
   d. Intellectual Property (0.5 hour)
      i. Digital rights management
      ii. Software piracy
   e. Privacy (2 hours)
      i. Implications of widespread data collection
   f. Professional Communication (1.5 hours)
      i. Reading, understanding, and summarizing technical material
      ii. Writing effective technical documentation and materials
      iii. Dynamics of oral, written, and electronica team and group communication
      iv. Utilizing collaboration tools
   g. History (2 hours)
      i. History of computer hardware, software, networking
      ii. Pioneers of computing
      iii. History of the Internet

B. Architecture and Organization (AR)
   a. Digital Logic and Digital systems (0.5 hour)
      i. Overview of computer architecture
      ii. Multiple representations/layers of interpretation
   b. Machine Level Representation of Data (1 hour)
      i. Bits, bytes, and words
      ii. Numeric data representation and number bases
      iii. Representation of non-numeric data
   c. Assembly Level Machine Organization (1 hour)
      i. Basic organization of the von Neumann machine
      ii. Assembly/machine language programming
   d. Memory System Organization and Architecture (0.5 hour)
      i. Storage systems and their technology
      ii. Main memory organization and operations

C. Information Assurance and Security (IAS)
   a. Foundational Concepts in Security (0.5 hour)
      i. Concepts of risk, threats, vulnerabilities, and attack vectors
      ii. Authentication and authorization, access control
      iii. Concept of trust and trustworthiness

  b. Threats and Attacks (0.5 hour)
    i. Examples of malware
    ii. Denial of Service (DoS) and Distributed Denial of Service (DDoS)
  c. Network Security (0.5 hour)
    i. Network specific threats and attack types
    ii. Use of cryptography for data and network security
  d. Cryptography (1.5 hour)
    i. Mathematical preliminaries
    ii. Cryptographic primitives
    iii. Symmetric key cryptography
    iv. Public key cryptography
  e. Information Management Concepts (0.5 hour)
    i. Information systems as socio-technical systems
    ii. Basic information storage and retrieval concepts
  f. Database Systems (0.5 hour)
    i. Approaches to and evolution of database systems
    ii. Components of database systems

D. Operating Systems (OS)
  a. Overview of Operating Systems (2 hours)
    i. Role and purpose of the operating system
    ii. Functionality of a typical operating system

E. Programming Languages (PL)
  a. Introduction (1 hour)

F. Software Development Fundamentals
  a. Algorithms and Design (4 hours)
    i. The concept and properties of algorithms
    ii. The role of algorithms in the problem-solving process
  b. Fundamental Programming Concepts (12 hours)
    i. Basic syntax and semantics of a higher-level language
    ii. Variables and primitive data types
    iii. Expressions and assignments
    iv. Conditional and iterative control structures

Tentative Schedule:

	Assignment Points	Date
Week 1: Intro to Computer Science & Algorithms	**32**	**1/10/2022**
Read Seven Big Ideas of Computer Science		
zyBooks Participation Activities	7	1/15/2022
Lecture Video Available		1/10/2022
Class Meeting		1/14/2022
Class Activity: PBJ Challenge	10	1/16/2022
Schedule One-on-One	15	1/16/2022
Week 2: More on Algorithms	**39**	**1/17/2022**
zyBooks Participation Activities	14	1/22/2022
Lecture Video Available		1/17/2022
Class Meeting		1/21/2022

Activity	Points	Date
Class Activity: Algorithms	10	1/23/2022
Week 1 & 2 zyBooks Challenge Activities	15	1/23/2022
Week 3: Computer Science History, Numbering Systems	**36**	1/24/2022
zyBooks Participation Activities	6	1/28/2022
Lecture Video Available		1/24/2022
Class Meeting		1/28/2022
Class Activity: Bits Bytes	10	1/30/2022
Project 1a: Flowchart/Pseudocode of Scratch Project	20	1/30/2022
Week 4: Computer Hardware	**18**	1/31/2022
zyBooks Participation Activities	8	2/4/2022
Lecture Video Available		1/31/2022
Class Meeting		2/4/2022
Class Activity: Hardware	10	2/6/2022
Week 5: Operating Systems	**54**	2/7/2022
zyBooks Participation Activities	4	2/11/2022
Lecture Video Available		2/7/2022
Class Meeting		2/11/2022
Class Activity: Operating Systems	10	2/13/2022
Project 1b: Scratch Project	40	2/13/2022
Week 6: The Internet and Web	**58**	2/14/2022
zyBooks Participation Activities	8	2/18/2022
Lecture Video Available		2/14/2022
No Class Meeting		2/18/2022
Class Activity: Internet (ONLINE THIS WEEK)	10	2/21/2022
Project 2: Basic Website	40	3/13/2022
Week 7: Privacy	**15**	2/21/2022
zyBooks Participation Activities	5	2/25/2022
Lecture Video Available		2/21/2022
No Class Meeting		2/25/2022
Class Activity: Privacy (ONLINE THIS WEEK)	10	2/27/2022
Week 8: Data & Information Security	**17**	2/28/2022
zyBooks Participation Activities	7	3/4/2022
Lecture Video Available		2/28/2022
Class Meeting		3/4/2022
Class Activity: Encryption	10	3/6/2022
Week 9: Societal Impact & Ethics	**19**	3/7/2022
zyBooks Participation Activities	9	3/11/2022
Lecture Video Available		3/7/2022
Class Meeting		3/11/2022
Class Activity: Copyright and Open Source	10	3/13/2022
Week 10: Midterm Exam	**50**	3/14/2022
Optional Questions & Answers Session		3/16/2022
Midterm Exam	50	3/18/2022
Week 11: Application Software	**49**	3/21/2022
zyBooks Participation Activities	9	3/25/2022
Lecture Video Available		3/21/2022

Item	Points	Date
Class Meeting		3/25/2022
Class Activity: Copyright and Open Source	10	3/27/2022
Weeks 11 & 12 Challenge Activities	30	4/3/2022
Week 12: Logic and Deductive Reasoning	**14**	3/28/2022
zyBooks Participation Activities	4	4/1/2022
Lecture Video Available		3/28/2022
Class Meeting		4/1/2022
Class Activity: Reasoning	10	4/3/2022
Week 13: Introduction to Python	**28**	4/4/2022
zyBooks Participation Activities	3	4/8/2022
Lecture Video Available		4/4/2022
No Class Meeting		4/8/2022
Class Activity: Intro to Python (ONLINE THIS WEEK)	10	4/10/2022
Project Idea/Team Formation Discussion Forum	15	4/10/2022
Week 14: Python Arithmetic Expressions & Data Types	**38**	4/18/2022
zyBooks Participation Activities	8	4/22/2022
Lecture Video Available		4/18/2022
Class Meeting		4/22/2022
Class Activity: Expressions, Data Types (ONLINE THIS WEEK)	10	4/24/2022
zyBooks Challenge Activities	20	4/24/2022
Week 15: Branching	**39**	4/25/2022
zyBooks Participation Activities	9	4/29/2022
Lecture Video Available		4/25/2022
Class Meeting		4/29/2022
Class Activity: Conditionals	10	5/1/2022
Project 4a: Design for Python Project	20	5/1/2022
Week 16: Loops	**47**	5/2/2022
zyBooks Participation Activities	7	5/6/2022
Lecture Video Available		5/2/2022
Class Meeting		5/6/2022
Class Activity: Loops	10	5/8/2022
zyBooks Challenge Activities	30	5/8/2022
Week 17: Programming Languages & Software Development	**4**	5/9/2022
zyBooks Participation Activities	4	5/13/2022
Lecture Video Available		5/9/2022
Class Meeting		5/13/2022
Class Activity: Languages (lowest dropped)	-	5/15/2022
Week 18: Finals Week	**143**	5/16/2022
Professionalism	18	
Project 4b: Python Project	50	5/16/2022
Final Exam	**75**	5/20/2022
TOTAL	700	

Subject to Change:
This syllabus and schedule are subject to change. If a student is absent from class meeting, it is the student's responsibility to check on any changes made while you were absent.

Evaluation:
Students will be evaluated on the basis of their performance on various assignments according to the following scale. The instructor reserves the right to adjust scores as it may be required throughout the semester.

Points in the course total 700 and are distributed as follows:

zyBooks participation activities	112
Class activities	150
zyBooks challenge activities	65
Exams	125
Projects	215
Professionalism, 1:1 Meeting	33

Final grade is assigned using following scale:

630-700	points	A
560-629	points	B
490-559	points	C
420-489	points	D
< 420	points	F

Attendance
Attendance for onsite and synchronous online meetings will be taken at beginning of each class. Students who leave before the end of class will be marked tardy. For synchronous online meetings you are expected to have your camera turned on and will have the best experience if you use earbuds/headphones. Please make sure to stay muted until you have a question or something to add so as to cut down on background noise.

Students will be dropped from the class if they fail to attend the first class session of the semester. During the semester up to final drop date, any student who missed two weeks of class meetings (cumulative) will be dropped from this class (i.e. 4 classes).

Make-up tests are limited to students who have made arrangements with the instructor **prior** to the announced testing date or those students who have been excused by High School Attendance Office. Exam material is constructed from class discussions, assigned readings, guest lectures, video presentations, and special assignments. **Unless the student receives prior approval from the instructor, no make-up tests will be allowed.**

Grading Policy
zyBooks Participation Activities:
ZyBooks participation activities must be completed before announced due date (Friday for full credit). These activities allow you to actively engage each week's content. Points will be attributed according to the number of responses required and the percentage of the activities a student completes before class. Reference the following rubric:

Percentage Completed	Before Class Meeting Points Awarded	After Class by End of Week Points Awarded
90%+	100% of points	90% of points
80%+	90% of points	80% of points
70%+	80% of points	70% of points
60%+	70% of points	60% of points
50%+	60% of points	50% of points
25%+	40% of points	30% of points

| 13%+ | 20% of points | 10% of points |

These assignments are linked electronically in Canvas.

zyBooks Challenge Activities:
Three assignments in the course are made up of zyBooks challenge activities, which are distributed in the assigned zyBooks chapters. These activities assess learning of content and students have unlimited attempts to get correct answers. These assignments are linked electronically in Canvas.

Class Activities:
Class activities serve as the lab component of the class. Students will work in pairs or small groups and should usually be able to complete the lab assignment at end of the two-hour lab period. If groups need more time, the lab can be completed outside of the meeting time and are due on Sundays. Turn in the lab assignment on LMS-Canvas. Submit any programs as .py files.

Projects:
There will be three projects that will be completed outside the class sessions. The projects are focused on the topics of algorithms (Scratch), web development (Basic website), and programming (Python). All but the last projects are individual. Students will work on the Python programming projects in pairs and complete a peer evaluation.

Exams:
Exams will be administered during class meeting time in weeks 10 (covers weeks 1-9) and 18 (cumulative, with some emphasis on weeks 11-18). A more difficult late test can only be arranged if you have an excuse verified and request before the exam is administered.

Late Policy
Points will be deducted for late zyBooks challenge activities at 5% per day late, up to one week late (not excepted more than one week late). zyBooks challenge activities are to be submitted electronically from the zyBooks site. Class activities and projects will not be accepted late.

College Policies:

Cheating & Plagiarism, see Cheating and Plagiarism under Campus Policies
Cheating and plagiarism is prohibited in the class. Incidents of cheating and plagiarism will result
a failing grade on the particular assignment in question. Please see Student Conduct Standards at
https://www.reedleycollege.edu/about/about-us/policies-and-procedures/student%20conduct%20standards.html for more information about academic integrity.

Each student is expected to assist in the overall environment of the classroom making it conducive to learning.

Accommodations for Students with Disabilities
If you have a verified need for an academic accommodation or materials in alternate media (i.e., Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact the Reedley College Disabled Students Programs & Services (DSP&S) Department at (559) 638-0332. You can find more information at https://www.reedleycollege.edu/student-services/disabled-student-programs-and-services/index.html.

Reedley College is committed to creating accessible learning environments consistent with federal and state law. To obtain academic adjustments or auxiliary aids, students must be registered with the DSP&S office on campus. DSP&S can be reached at (559) 638-3332. If you are already

registered with the DSP&S office, please provide your Notice of Accommodation form as soon as possible.

Important College Dates Spring 2022

Class begin	Monday	01/10/2022
Last day to drop a full-term class for a full refund	Friday	01/21/2022
Last day to register	Friday	01/28/2022
Last day to drop this class to avoid a "W" in person	Friday	01/28/2022
Last day to drop this class to avoid a "W" on Web	Sunday	01/30/2022
Last date to drop this class	Friday	03/11/2022
No classes, campus is closed		
Martin Luther King Jr. Day	Monday	01/17/2022
Lincoln Day	Friday	02/18/2022
Washington Day	Monday	02/21/2022
Spring Recess, Good Friday	Mon-Fri	04/11-15/2022
Final Exam	**Friday**	**05/20/2022**