湖北工業大學
HUBEI UNIVERSITY OF TECHNOLOGY

Course Title	Introduction to Computer Science
Course Code	CMPT 1011
Semester	Spring 2027
Course Length	4 Weeks, 60 Contact Hours
Credits	4
Instructor	TBA
Office	TBA
Email	TBA
Prerequisite	N/A

Course Description:

This course presents an overview of computer science with an emphasis on problem-solving and computational thinking through computer programming. The programming language used in this course is Python.

Course Goals:

Students who successfully complete this course will demonstrate competency in the following general education core goals:

- **Critical Thinking Skills** – Students will engage in analytical thinking, demonstrating the ability to critically evaluate, synthesize, and apply knowledge to complex problems, and construct well-reasoned solutions and arguments.
- **Independent Research and Inquiry** – Students will conduct independent research, utilizing academic resources to explore relevant topics, formulating research questions, analyzing data, and presenting findings in a coherent, scholarly manner.
- **Problem-Solving and Application** – Students will apply theoretical concepts and methodologies learned in the course to real-world problems, demonstrating the ability to develop practical solutions informed by academic inquiry.
- **Global and Cultural Awareness** – Students will gain awareness of the global and cultural contexts relevant to the course, appreciating diverse perspectives and considering the implications of their studies in a broader, international context.

Student Learning Outcomes:

Upon completion of this course, students will be able to:

- develop algorithms and write Python programs to solve computational problems;
- understand and apply control structures such as loops and conditionals;
- utilize functions and modular programming for efficient code development;
- work with fundamental data structures including lists, dictionaries, and tuples;

- read and write data to files and handle exceptions effectively;
- implement object-oriented programming concepts in Python;
- gain familiarity with basic data visualization and automation techniques.

Textbooks/Supplies/Materials/Equipment/ Technology or Technical Requirements:
Python Programming: An Introduction to Computer Science 3rd edition, by John Zelle. Franklin, Beedle & Associates.
Think Python: How to Think Like a Computer Scientist 3rd edition by Allen B. Downey. O'Reilly Media.

Course Requirements:

Programming Assignments (20%):
Students will complete multiple coding assignments that reinforce lecture topics. Assignments will be designed to enhance problem-solving skills and ensure students gain hands-on programming experience. Each assignment will be graded on correctness, efficiency, documentation, and coding style.

Laboratory Work (15%):
Lab exercises will require students to write, test, and refine programs. These sessions provide structured practice with guided instructor support. Lab assessments will include short coding quizzes and practical programming challenges.

Midterm Exam (15%):
The midterm will be a combination of written and coding-based assessments, evaluating students' grasp of fundamental programming concepts. It will include multiple-choice questions, short answer questions, and hands-on coding exercises.

Final Exam (20%):
The final exam will assess students' overall understanding of the course through both theoretical and practical coding questions.

Final Project (30%):
Students will work on a comprehensive programming project, applying all the concepts learned throughout the course. This project will require students to design, implement, document, and test a Python application that solves a real-world problem. The project must include:

- **Project Proposal (5%):** A written document outlining the problem being addressed, the scope of the project, and the key functionalities planned for implementation. Proposals should be approved by the instructor.
- **Software Development (5%):** A fully functional Python program demonstrating effective use of control structures, data structures, file handling, and, where applicable, object-oriented programming.
- **Code Documentation and Readability (5%):** The project should follow best coding practices, including meaningful variable names, proper indentation, comments, and function documentation.
- **Testing and Debugging (5%):** Students must provide test cases demonstrating that their project functions correctly under various conditions.

- **Presentation and Demonstration (10%):** Each student will present their project during the final week, explaining their design choices, functionality, and challenges encountered.

Assessments: Activity	**Percent Contribution**
Programming Assignments	20%
Laboratory Work	15%
Midterm Exam	15%
Final Exam	20%
Final Project	30%

Grading:

Final grades will be based on the sum of all possible course points as noted above.

Grade	**Percentage of available points**
A	94-100
A-	90-93
B+	87-89
B	84-86
B-	80-83
C+	77-79
C	74-76
C-	70-73
D	64-69
D-	60-63
F	0-59

Course Schedule:
The schedule of activities is subject to change at the reasonable discretion of the instructor. Minor changes will be announced in class, major ones provided in writing.

CMPT 1011 Schedule		
Lecture	Topic	Readings
L1	Introduction to Computing and Programming Languages The Role of Computers and Computational Thinking	*John* Ch. 1
L2	Writing Simple Programs The Software Development Process Elements of Programs: Names, Expressions	*John* Ch. 2 Lab 1
L3	Output Statements Assignment Statements Definite Loops	*John* Ch. 2
L4	Computing with Numbers Numeric Data Types Using the Math Library Limitations of Computer Arithmetic	*John* Ch. 3 Lab 2
L5	Objects and Graphics The Object of Objects Simple Graphics Programming	*John* Ch. 4
L6	Using Graphical Objects Graphing Future Value	*John* Ch. 4 Lab 3

	Interactive Graphics	
	Graphics Module Reference	
L7	Sequences: Strings, Lists, and Files	*John* Ch. 5
	The String Data Type	
	Simple String Processing	
	String Methods	
L8	Lists as Sequences	*John* Ch. 5
	List Methods	Lab 4
L9	Input/Output as String Manipulation	*John* Ch. 5
	File Processing	
L10	Dictionaries	*Allen* Ch. 11
	Looping and Dictionaries	Lab 5
	Dictionaries and Lists	
L11	Tuples	*Allen* Ch. 12
	Tuple Assignment	
	Tuples as Return Values	
	Variable-Length Argument Tuples	
L12	Defining Functions	*John* Ch. 6
	Future Value with a Function	Lab 6
L13	Functions and Parameters	*John* Ch. 6
	Functions and Program Structure	
/	**Midterm Exam**	/
L14	Decision Structures	*John* Ch. 7
	Simple Decisions	
	Two-Way Decisions	
L15	Multi-Way Decisions	*John* Ch. 7
	Study in Design: Max of Three	
L16	Loop Structures	*John* Ch. 8
	Indefinite Loops	Lab 7
	Common Loop Patterns	
L17	Computing with Booleans	*John* Ch. 8
	Other Common Structures	Lab 8
L18	Defining Classes	*John* Ch. 10
	Data Processing with Class	*Allen* Ch. 15
	Classes and Objects	
L19	Data Collections	*John* Ch. 11
	Applying Lists: Lists and Arrays; List Operations; Statistics with Lists	Lab 9
L20	Lists of Records	*John* Ch. 11
	Designing with Lists and Classes	
	Case Studies	
L21	Object-Oriented Design	*John* Ch. 12
	The Process of OOD	
	Case Studies	
L22	Algorithm Design and Recursion	*John* Ch. 13
	Searching	
	Comparing Algorithms	
L23	Recursive Problem Solving	*John* Ch. 13
	Recursive Definitions & Functions	Lab 10
	Recursion vs. Iteration	
L24	Sorting Algorithms	*John* Ch. 13
	Naive Sorting: Selection Sort	
	Comparing Sorts	

L25	Final Review and Project Presentations	*John* Ch. 13
/	**Final Exam**	/

Accommodation Statement:

Academic accommodations may be made for any student who notifies the instructor of the need for an accommodation. It is imperative that you take the initiative to bring such needs to the instructor's attention. Students who may require assistance in emergency evacuations should contact the instructor as to the most appropriate procedures to follow.

Academic Integrity Statement

Each student is expected to maintain the highest standards of honesty and integrity in academic and professional matters. The University reserves the right to take disciplinary action, up to and including dismissal, against any student who is found guilty of academic dishonesty or otherwise fails to meet the standards. Any student judged to have engaged in academic dishonesty in coursework may receive a reduced or failing grade for the work in question and/or for the course.

Academic dishonesty includes, but is not limited to, dishonesty in quizzes, tests, or assignments; claiming credit for work not done or done by others; hindering the academic work of other students; misrepresenting academic or professional qualifications within or without the University; and nondisclosure or misrepresentation in filling out applications or other University records.

Other Items:

Laboratory Sessions:

Students will participate in lab sessions designed to provide hands-on programming experience. Labs will cover practical applications of lecture topics, debugging exercises, and collaborative coding tasks. Attendance is mandatory, and students will be required to submit lab reports summarizing their work. Lab topics include:

- Writing and running Python scripts
- Debugging techniques and best practices
- Data structures and algorithm implementation
- File handling and data manipulation
- Using Python libraries for data visualization and automation

Attendance and Expectations

All students are required to attend every class, except in cases of illness, serious family concerns, or other major problems. We expect that students will arrive on time, be prepared to listen and participate as appropriate, and stay for the duration of a meeting rather than drift in or out casually. In short, we anticipate that students will show professors and fellow students maximum consideration by minimizing the disturbances that cause interruptions in the learning process. This means that punctuality is a must, that cellular phones be turned off, and that courtesy is the guiding principle in all exchanges among students and faculty. You will be responsible for the materials and ideas presented in the lecture.

Assignment Due Dates
All written assignments must be turned in at the time specified. Late assignments will not be accepted unless prior information has been obtained from the instructor. If you believe you have extenuating circumstances, please contact the instructor as soon as possible.

Make-Up Work
The instructor will not provide students with class information or make-up assignments/quizzes/exams missed due to an unexcused absence. Absences will be excused and assignments/quizzes/exams may be made up only with written documentation of an authorized absence. Every effort should be made to avoid scheduling appointments during class. An excused student is responsible for requesting any missed information from the instructor and setting up any necessary appointments outside of class.

Access, Special Needs, and Disabilities
Please notify the instructor at the start of the semester if you have any documented disabilities, a medical issue, or any special circumstances that require attention, and the school will be happy to assist.