



Introduction to Computing Principles

CS 1090 · Spring 2020

Instructor

 Leo C Ureel II
 ureel+cs1090@mtu.edu
 Rekhi 209
 Mon Wed Fri 12pm - 1pm
or by appointment.



GTAs

 Marissa Walther
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 Rekhi 118
 Monday 1pm-2pm
Wednesday 12pm - 2pm



Course Information

Description: Intro to fundamentals of computing using Python for students with no prior programming experience. Students develop computational thinking skills vital for success. Course uses programming to introduce algorithms, abstraction, data, global impact, and internet technologies. Not open to students with credit for CS1111, CS1121, CS1131, MIS2100.

Prerequisites: Permission of instructor required.

Objectives:

- Students will develop computational thinking skills vital for success across all disciplines.
- To become familiar with and develop programs in an high-level programming language.
- Students will develop effective communication and collaboration skills by working individually and collaboratively to solve problems.
- Students will develop a rich understanding of the key principles of computer science.
- Students will be able to write small programs, speak intelligently about how computers work and how they enable us to become better problem-solvers, and will be able to communicate that knowledge to others.

Lecture: Lecture meets at the following times:
• R01 : Rekhi 117 : 3pm - 4pm : Monday Wednesday Friday.

Course Materials

Required: Python Programming in Context
Bradley N. Mill
David L. Ranum
Julie Anderson
ISBN 978-1-284-17555-4
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Computer: Bring a laptop to class if you have one.
Install the following software:

- Chrome web browser (<http://chrome.google.com>)
- Python 3.8 (<https://www.python.org/downloads/>)

Course Policies

- EMail:**
- Send email to ureel+cs1090@mtu.edu.
 - State your question clearly and simply.
 - Provide relevant background information.
 - Describe the problem.
 - Explain what you have done to solve the problem.
 - Attach all source code files to the email.
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- Legibility:**
- Your full name must appear at the top of every assignment.
 - All assigned work must be typed.
 - All work must utilize correct, non-colloquial English. Graders will deduct arbitrary points off assignments they cannot read, understand, or that contains offensive content.
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- Absences:**
- A letter from the Dean of Students Office (deanofstudents@mtu.edu) is required to be granted an excused absence. Instructors will then work closely with you to make-up missed assignments.
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- Deadlines:**
- All assignments are due at the date and time specified unless an extension is granted by the instructor prior to the deadline.
 - Without a confirmed extension, late assignments receive no credit.
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Grading Policies

- Regrade Policy:**
- You have 7 days after a grade is returned to request a grade correction. Requests should be made first to your lab instructor then, if no resolution has been reached, to the lecturer. After 7 days, we will only regrade assignments where a miscalculation occurred when determining the grade.
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- Points System:**
- All assignments provide an opportunity to earn a specified number of points. Other than points, no additional weights are used. Students who go above-and-beyond on any assignment may negotiate the point value of the assignment with their lab instructor.
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Grade Scale: This tentatively maps the total points earned over a semester to the final letter grades

Points	Grade
16,100+	A
15,400 - 16,099	AB
14,000 - 15,399	B
13,650 - 13,999	BC
12,250 - 13,649	C
11,900 - 12,249	CD
10,500 - 11,899	D
0 - 10,499	F

Academic Integrity

- The University Code of Academic Integrity is central to the ideals of this course. Students are expected to be independently familiar with the Code. Violations of the Code are most serious and all cases will be referred to the Dean of Students.
- *Cheating and plagiarism will not be tolerated.* Student work in the course is to be their own original work that truthfully represents their knowledge, time, and effort applied. Students may discuss homework assignments, but may not copy from or do the work for others. Unless specified otherwise, any and all submitted work is expected to be worked/written/solved by the student. Students utilizing outside resources (people, books, articles, internet, etc.) are required to cite their sources.
- *Use of solution sharing internet sites is prohibited* (i.e. Chegg, Study Soup, Course Hero, etc.). Other sources should be approved by your lab instructor prior to use. Use of any internet resources should be appropriately cited. However, you will receive a zero if the work is not your own and/or the source is not approved.
- *Posting of course materials and assignments is prohibited.* All course materials are copyrighted by Michigan Technological University. Posting or distribution of course materials will result in a zero for the course.
- *Sharing of solutions is prohibited.* All course materials are copyrighted by Michigan Technological University. Posting or distribution of solutions will result in a zero for the course.
- Because it is important to everyone at Michigan Tech that academic standards be maintained, academic misconduct may result in an appropriate conduct sanction / educational condition(s) imposed by the Office of Academic and Community Conduct and/or in an academic penalty (lower grade/failing grade) imposed by the faculty.
- For more details on academic integrity, please review the Academic Integrity Policy of Michigan Tech <http://www.admin.mtu.edu/us1.htm>

Accommodations for Students with Disabilities

- If you are a student with learning needs that require special accommodation, contact Student Disability Services at 487-1494 or email Dr. Christy Oslund at cmoslund@mtu.edu, as soon as possible, to make an appointment to discuss your special needs and to obtain approved accommodations. Please e-mail me as soon as possible in order to set up a time to discuss your learning needs.
- Students who have been granted accommodations must inform the instructor of their intent to exercise the accommodations one week prior to the scheduled start of the assignment, activity, or exam.

College of Computing Learning Center

- The College of Computing Learning Center (CCLC) is located in Rekhi 118. The CCLC is staffed by upper level undergraduate students, and supported by Michigan Tech's Provost. These coaches are here to help you succeed in your computer science studies.
- CCLC Coaches can help you when you have problems with a programming assignment, but they will not write your program for you. Please think through your problem before going to the learning center. Be able to explain specifically what your program should do, and what you think it is doing. When you are prepared a coach can better assist you, making your visit more productive.

Assessment Statement

- Student work products (exams, essays, projects, etc.) may be used for purposes of university, program, or course assessment. All work used for assessment purposes will not include any individual student identification.

Diversity and Inclusivity Statement

- The classroom is a place where all will be treated with respect. Individuals of all ages, backgrounds, beliefs, ethnicities, genders, gender identities, gender expressions, national origins, religious affiliations, sexual orientations, ability - and other visible and non-visible differences are welcome and encouraged to engage in this course. All members of this course are expected to contribute to a respectful, welcoming and inclusive environment for every other member of the course.

Child Presence and Infant Feeding Policy

- Students who are parents or primary caretakers for children are welcome to bring them to class, at your discretion. I reserve the right to ask a student to leave in the unlikely event that a child's presence distracts from our work as a class.

ABET Outcomes

ABET provides accreditation to university programs. This course supports the following ABET Student Outcomes:

- (a) An ability to apply knowledge of computing and mathematics appropriate to the program's student outcomes and to the discipline
- (b) An ability to analyze a problem, and identify and define the computing requirements appropriate to its solution
- (c) An ability to design, implement, and evaluate a computer-based system, process, component, or program to meet desired needs
- (d) An ability to function effectively on teams to accomplish a common goal
- (i) An ability to use current techniques, skills, and tools necessary for computing practice.
- (k) An ability to apply design and development principles in the construction of software systems of varying complexity.

This course supports the following ABET Curriculum points specified by the Computing Accreditation Commission:

- 2. An exposure to a variety of programming languages and system.

University Learning Goals

During this course, we will address the following MTU Learning Goals through activities and discussion.

- **Critical and Creative Thinking:** Students will be able to think critically and creatively, as demonstrated by their broad, adaptable and versatile use of reasoning, logic, and evidence, to access and evaluate information and solve complex problems both independently and in groups.
- **Communication:** Students will be able to communicate effectively, orally, in writing and in new media, to a wide variety of audiences.
- **Technology:** Students will demonstrate knowledge of technology and its implications in society, and be able to design and/or use technology for creative activities or innovative solutions to problems.

University Policy

Academic regulations and procedures are governed by University policy. You are responsible for reading, understanding, and conforming with all University Student Policies including, but not limited to, those listed here.

Michigan Technological University complies with all federal and state laws and regulations regarding discrimination, including the Americans with Disabilities Act of 1990. If you have a disability and need a reasonable accommodation for equal access to education or services at Michigan Tech, please call the Dean of Students Office, at 487-2212. For other concerns about discrimination, you may contact your advisor, Chair/Dean of your academic unit or the Affirmative Programs Office, at 487-3310.

Relevant University Policies and Procedures:

Academic Integrity:	http://www.admin.mtu.edu/usenate/policies/p109-1.htm
Student Conduct:	http://www.mtu.edu/conduct/policies/student-conduct/
Affirmative Action:	http://www.mtu.edu/equity/definitions/policies/
Disability Services:	http://www.mtu.edu/deanofstudents/students/disability/
Computer Use:	http://www.admin.mtu.edu/admin/policy/gen/1006.htm

Tentative Class Schedule

Week 1	A Model of the Computer	Read Chapter 1 Take Chapter 1 Quiz	No Program
Week 2	Introduction to Python	Read Chapter 2 Take Chapter 2 Quiz	Program 1
Week 3	Monte Carlo Algorithms	Read Chapter 3 Take Chapter 3 Quiz	Program 2
Week 4	Cipher Algorithms	Read Chapter 4 Take Chapter 4 Quiz	Program 3
Week 5	Python Collections	Read Chapter 5 Take Chapter 5 Quiz	Program 4
Week 6	Big Data Sets	Read Chapter 6 Take Chapter 6 Quiz	Exam 1
Week 7	Image Processing	Read Chapter 7 Take Chapter 7 Quiz	Program 5
Week 8	Data Mining	Read Chapter 8 Take Chapter 8 Quiz	Program 6
Week 9	Cryptanalysis	Read Chapter 9 Take Chapter 9 Quiz	Program 7
Week 10	Fractals	Read Chapter 10 Take Chapter 10 Quiz	Exam 2
Week 11	Object-Oriented Design	Read Chapter 11 Take Chapter 11 Quiz	Program 8
Week 12	Simulation	Read Chapter 12 Take Chapter 12 Quiz	Program 9
Week 13	Designing Code Libraries	Read Chapter 13 Take Chapter 13 Quiz	Program 10
Week 14	Impact of Global Computing	Review for Final	
Finals Week: Comprehensive Exam			