

CMP131

Fundamentals of Programming (Python)

Overview

This is a fundamental course in problem solving and programming. This course introduces concepts such as how to solve problems by designing and implementing algorithms using a popular programming language. Topics include: pseudocode, algorithms, variables, constants, using decisions and loop structures to construct effective code, using built-in functions, creating functions and modules, and simple debugging techniques for detecting errors. Use of real-world problems in Web Development, Cybersecurity and Data Science are explored. No prior programming experience is required.

Goals

The following outcomes are from the County College Morris Master Syllabus for CMP131 at the conclusion of this course, you should be able to:

- Demonstrate how to define and use local and global variables in program design.
- Create a program that incorporates functions, modules, selection, and loop control structures.
- Create a user-friendly Graphical User Interface (GUI).
- Practice programming by performing tasks, involving encryption, data science and/or web development.
- Design an appropriate program to solve the problem given, using programming design techniques.
- Interpret and develop pseudocode and algorithms.

Requirements

1. Commitment to attend our weekly in-class sessions;
2. Ability to allocate time to mastery of the material – we will be covering material in both textbooks.
3. Commitment to attend class and log-on periodically to the Blackboard to check for announcements, check calendar, post, read and respond to messages in the discussion area, and submit assignments (you will have time before class to submit;)
4. Commitment to complete all assignments on time – **no late work**.
5. Ability to work independently and collaboratively;
6. Ability to seek help when needed;
7. Ability to follow the NDQ Rule – there are no dumb questions. All questions are welcome.

Fall, 2020 Section: 86526 (Hybrid)
Thursday 2:00pm – 4:45pm, EH210

Instructor: Professor Colleen Bamford
E-Mail: cbamford@ccm.edu
Phone: 973-328-5669
Office: EH 227
Office Hours: Posted in Blackboard

Materials

Textbooks: Python Programming: An Introduction to Computer Science, 3rd edition by John Zelle, Franklin, Beedle & Associates, ISBN: 9781590282755
How to Think like a Computer Scientist
<https://runestone.academy/runestone/books/published/thinkcspy/index.html>

Prerequisite(s): none

Software:

IDLE: <https://www.python.org/>

Anaconda:

<https://www.anaconda.com/>

Trinket:

<https://trinket.io/embed/python/33e5c3b81b#.X0vgDshKhPY>

Blackboard: supplemental course site

Memory Stick: Must bring to every class to store all projects or access to cloud drive.

CCM email account should be used for all communication with professor.

HYBRID coursework: You are expected to spend a minimum of 5 – 8 hours a week outside of class time viewing lectures and completing assignments associated with the material presented. All lab work can be completed during class time.

Topics Covered

Topics	Python Programming
Introduction to problem solving	Chapter 1
Pseudocode and Algorithms	Online resources
Program design techniques	Online resources
Introduction to Programming: Variables and arithmetic operations	Chapter 2, Chapter 3 (3.1 & 3.2)
Strings	Chapter 5 (5.1 – 5.8)
Functions and Modules	Chapter 6
Decision structures	Chapter 7
Loop structures: For and While	Chapter 8
Data Collections: List, Dictionaries	Chapter 11 (11.1 – 11.2, 11.7)
Graphical User Interface (GUI)	Online resources

Attendance Policy

Students are expected to attend all class sessions of courses in which they are enrolled and are responsible for all material presented in class and all homework assignments. Grades are based on completing and meeting the requirements for a particular course, as stated in this course outline. Two or more absences could result in a letter grade deduction off of your final grade.

Grades are based on several factors, such as: quality of work, completion of requirements, participation and attendance. The student should realize that work missed because of absences would affect their grade. A portion of your grade is based on your attendance and participation. This includes *virtual meetings* as well as on campus meetings. If you arrive late for class, you are responsible to verify your attendance with me. If inclement weather occurs, check college website for closings, late openings and postponements.

Class Participation

It is expected that when the lesson material is being presented, students are participating in the learning process. When the lesson material is focused on 'hands-on' learning students are engaged in lessons based on the given assignment or as directed by the professor. Lessons are usually presented using a projector to enable you to follow along with the lesson material being presented. You are encouraged to ask questions, obtain assistance, and participate in the learning process. **Cell phones should be turned off while in class. No ear buds in ears. No hoods or hats on in class. You will be asked to leave if non-compliant.**

Class Communication

All communication among participants should be done with respect. We will also remember that communication when written should reflect college level work, not informal texting.

Ideas and interaction are encouraged, and required if we are to stay ahead of the technological curve. In order to participate, you must be part of the conversation.

How to ask. For private conversation with the professor, use CCM email or speak to me in person. For questions about the course, dates, assignments, general bafflement, ask in class. Often others will have the same question, so asking is appreciated.

Academic Integrity

I expect you to master the material independently. Unless specifically stated, all work submitted for instructor evaluation should be your own. If I suspect you have cheated, you will fail the assignment. For specific CCM policy, please refer to academic policies

<http://www.ccm.edu/academics/policies.aspx>.

Again, to master the learning outcomes for this course, you must do the activities.

Not doing assignments will only make it harder for you to meet your course goals.

Lab Equipment

Use of lab equipment is a privilege and is only permitted during lab time. Monitors will be disabled during lecture and class discussions. During lab time computers should only be used for classwork. Classroom monitoring software will be used.

Evaluation Criteria

Please notice the weight of component in the course.

Activity	% of Grade
Programming projects	36%
Exams	24%
Participation Activities	24%
Labs / Attendance	16%
TOTAL	100%

Instructor's Syllabus Statement:

This syllabus is subject to change due to student interests, special needs, cancellations, or instructor's decision. You have read over three pages' worth of course detail and many expectations. However, you should have some expectations too. What should you expect from the professor?

- Knowledge of the material
- Assignments that reinforce what we are learning
- Preparation for each topic
- Clearly stated requirements

Finally, Welcome. Explore your text options, make sure you have reliable technology, explore the online technology we will be using, and enjoy the adventure.

Programming Projects and in class labs have individual documents found in Blackboard. I will not hand out these documents in class. Please let me know if you have difficulties with Blackboard access.

I have the right to change the content and timing based on class input and my judgment – Professor Colleen Bamford 9/10/2020

Students Seeking Disability Accommodations:

In accordance with the policies underlying Section 504 of the Rehabilitation Act of 1973, the American with Disabilities Act (ADA) of 1990, the ADA Amended Acts (ADAA) of 2008 and County College of Morris policy, no qualified individual with a disability shall, solely on the basis of that disability, be excluded from participation to County College of Morris programs or activities. Students may seek reasonable accommodations for their documented disability by self-identifying and registering with the Office of Accessibility Services. Students who are approved through Accessibility Services for classroom accommodations are encouraged to meet with faculty members on an individual basis to discuss their specific needs. To register or learn about services, students may contact the Office of Accessibility Services at 973-328-5284 or disabilityservices@ccm.edu

Course Considerations

Since exploring Fundamentals of Programming requires mastery of numerous items, this course builds on previous sessions. Our course meets once weekly. Some content is available at the start of the semester on Blackboard; assignments, and professor PowerPoints are posted weekly. All due dates are posted with the assignments, and projects. **Note:** All assignments from the textbook are given a deadline of the class session prior to the test, since I will go over the answers in class for review of the material for the test. I will not accept this assignment after this date no exceptions. Assignments will be posted weekly that will vary in its content: text assignments, and programming projects are all components. *Extra Credit is not offered in this course. Be sure to block out adequate time to master this material.*

Course Schedule

The course schedule is on last page of syllabus and will be posted in Blackboard.

You are expected to submit work on time. Since there is so much to master, you cannot dawdle with your work. Therefore, late work is an unacceptable practice, it holds up the whole class receiving a grade. You may always hand in work early. Assignments should be submitted through the designated assignment area in Blackboard. A "plan B" is always advised with technology. Keep copies of everything you create.

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9/9/2020 – 12/17/2020

General Course Schedule

Date	Topics	Assignments & Reading	Labs and Projects
Week 1: 9/10	Introduction to Problem Solving Chapter 1: Computers and Programs	Read article at this link: Think like a Programmer Read Chapter 1 pages 1 - 9 Participation activity 1	Introduction Forum
Week 2: 9/17	Introduction Pseudocode/Algorithms Chapter 1: Computers and Programs Program Design Techniques	Read article at this link: Algorithmic Thinking Read Chapter 1 pages 9 - 21 Participation activity 2	Lab 1: Algorithms
Week 3: 9/24	Introduction to programming: Variables & Data Types	Read Chapter 2 pages 27 – 51 Read Chapter 3: Sections 3.1 - 3.3 only	Lab 2: Simple Programs
Week 4: 10/1	Chapter 2: Writing Simple Programs Chapter 3: Computing with Numbers	pages 57 – 68 Participation activity 3	Project 1
Week 5: 10/8	EXAM 1: Chapters 1 – 3, Problem solving, Pseudocode and Algorithms Python Turtles		Lab 3: Turtles Lab
Week 6: 10/15	Strings Cyber – Ciphers Chapter 5: Sequences: Strings, Lists and Files	Read Chapter 5: Sections 5.1 – 5.8 only pages 129 – 158 Participation activity 4	Lab 4: Strings & Lists Project 2: Secret Message
Week 7: 10/22	Functions / Modules Chapter 6: Defining Functions	Read Chapter 6 pages 175 – 203 Participation activity 5	Lab 5: Functions Project 3
Week 8: 10/29	Decision: if	Read Chapter 7 pages 209 – 235	Lab 6: Decision Structures
Week 9: 11/5	Chapter 7: Decision Structures	Participation activity 6	Project 4
	EXAM 2: Chapters 5 – 7		
Week 10: 11/12	Loops: for, while	Read Chapter 8 pages 243 – 276	Lab 67 Loops
Week 11: 11/19	Chapter 8: Loop Structures and Booleans	Participation activity 7	Project 5
Week 12: 11/26 <i>(no class: Thanksgiving)</i>	Data Collections: Lists / Dictionary basics	Read Chapter 11: Sections 11.1 – 11.2 & 11.7 pages 363 – 375, 401 – 409	Lab 8: Data Collections
Week 13: 12/3	Chapter 11: Data Collections	Participation activity 8	Project 6: Turtle Race
Week 14: 12/10	Graphics – GUI		
Week 15: 12/17	EXAM 3: Chapters 8 & 11.1 – 11.2, 11.7, GUI		