



NASSAU COMMUNITY COLLEGE

Department of Mathematics / Computer Science / Information Technology

Course Syllabus for CSC104 Programming Logic and Problem Solving

Course Information

- Title Programming Logic and Problem Solving
- Credit Hours 3 Credits
- Number CSC 104
- Section RA
- CRN 81923
- Semester Summer II 2021
- Meeting time Monday - Thursday 8:00 am - 9:55 pm
- Location Remote Online

Instructor/Contact Information

- Name Franklin Graham
- Office location B3041
- Office hours By Appt.
- Office telephone 572-7383 ext 26807 (*not in use*)
- Email address Franklin.Graham@ncc.edu
- Blackboard link <https://ncc.sln.suny.edu>
- Website <http://matcmp.ncc.edu/grahamf/csc104.html>
- Student email <http://www.ncc.edu/studentemail>
- Zoom Link: <https://ncc-zoom.zoom.us/j/92908484766?pwd=V3RwRU1yQU1yNURJSFQ4eWlvQlc5dz09>

Course Description

The course is an introduction to programming logic and problem solving including programming concepts and terminology. The focus of the course is on critical thinking skills necessary to write computer programs and provides students with an introduction to programming without focusing on the details of programming syntax. This course is intended for students with little or no object-oriented programming experience. Students who have completed CMP 104 will not get credit for CSC 104. (3 lecture hours) Laboratory fee applies.

Course Pre-requisite

Students must have satisfied all MAT, ENG 001 and RDG 001 remediation requirements prior to starting the course (3 Contact Hours).



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Learning Outcomes and Objectives

To introduce the student to programming concepts and terminology.

SUNY General Education Goals & Outcomes

1. Terminology

Introduce the student to the terminology associated with object oriented programming.

Outcome

1.1 Terminology

Students should be able to identify parts of a program using appropriate terminology.

2. Sequencing

Develop the students' understanding of sequencing.

Outcome

2.1 Sequencing

Students should be able to correctly sequence program statements.

3. Conditional Statements

Develop the students' understanding of conditional statements.

Outcome

3.1 Conditional Statements

Students should be able to write the correct conditional statement to determine the outcome of a particular scenario.

4. Iterative Statements

Develop the students' understanding of the use of iterative statements.

Outcome

4.1 Iterative Statements

Students should be able to correctly trace through a program containing iterative statements.

Instructional Methods

This course is taught using a variety of instructional methods including lecture, class discussion and hand-on computer instruction.

Textbook and Materials

Programming with Python 3 with ZyLabs, ZyBooks **(see Blackboard Welcome page for more info)**

zyBook: CSC 104: Programming Logic and Problem Solving

zyBook code: **NCCCSC104GrahamSummerII2021**

1. Click on the Textbook (zyBooks) link in Blackboard

2. Subscribe

A subscription is \$69. The cutoff to subscribe is Aug 08, 2021. Subscriptions will last until Aug 19, 2021.



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Student Responsibilities/Course Policies

Exams:

There will be **2 exams (20% each)** and a **final exam (25%) on camera**. If a scheduled exam conflicts with your religious observances, please notify me at least a week in advance so that I can change the scheduled date. **Generally, make-up exams will not be given, and you will receive a grade of zero if you miss an exam.** However, consideration will be given to those students who contact me before the exam (via e-mail or Zoom) and provide a valid, documented reason for missing the exam. Note: a make-up exam might be more difficult than the original exam.

Unit 1, Building Problem Solving Skills

Exam 1: 7/15

Unit 2, Understanding Programming basics

Exam 2: 7/28

Unit 3, Programming in Python

Final: 8/05

Note: Dates for exams 1 and 2 are tentative and may be adjusted by 1 or 2 days.

Assignments:

- Homework assignments will count for **35% of your final grade**, 5% of which will come from zyBooks readings and activities. Due dates are listed on Blackboard and zyBooks. **There will be an extra credit assignment as well.**
- Assignments must be submitted via Blackboard by 11:59 pm of the due date.
- All assignments must be submitted on time; you will lose considerable points if you submit assignments after the due date.
- Unless specifically stated otherwise, assignments are to be completed individually. Collaboration, for the purpose of understanding course material, is encouraged. However, you are expected to submit individual work. If you copy and submit someone else's work, you will receive zero for the assignment and may be given an F for the course.

Attendance

Attendance is a critical aspect of this course. As such, attendance will be taken every day. Students are expected to be in class every session, on time, and stay for the duration of the scheduled time. Students are responsible for all material missed due to absence and should contact me or another student prior to the next scheduled class meeting to determine what was covered and/or assigned. Any student absent on the day an assignment is due is still responsible for submitting the assignment electronically before the specified deadline.

Withdrawal Policy

Withdrawals can be made prior to the day of the final. It is your responsibility to make a formal request if you wish to withdraw from this class. This option is available in the NCC Portal. *If you stop attending and do not officially withdraw from the course, you will receive a 'UW' grade.*



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Academic Dishonesty & Plagiarism

Academic dishonesty, which includes plagiarism and cheating, will result in some form of disciplinary action that may lead to suspension or expulsion under the rules of the Student Code of Conduct. Cheating can take many forms including but not limited to copying from another student on an examination, using improper forms of assistance, or receiving unauthorized aid when preparing an independent item of work to be submitted for a grade, be it in written, verbal or electronic form. Anyone who assists or conspires to assist another in an act of plagiarism or any other form of academic dishonesty may also be subject to disciplinary action.

Plagiarism is a particular type of academic dishonesty that involves taking the words, phrases or ideas of another person and presenting them as one's own. This can include using whole papers and paragraphs or even sentences or phrases. Plagiarized work may also involve statistics, lab assignments, art work, graphics, photographs, computer programs and other materials. The sources of plagiarized materials include but are not limited to books, magazines, encyclopedias or journals; electronic retrieval sources such as materials on the Internet; other individuals; or paper writing services.

A student may be judged guilty of plagiarism if the student:

- (a) Submits as one's own an assignment produced by another, in whole or in part.
- (b) Submits the exact words of another, paraphrases the words of another or presents statistics, lab assignments, art work, graphics, photographs, computer programs and other materials without attributing the work to the source, suggesting that this work is the student's own.

Allegations of student plagiarism and academic dishonesty will be dealt with by the appropriate academic department personnel. It is the policy of Nassau Community College that, at the discretion of the faculty member, serious acts will be reported in writing to the Office of the Dean of Students, where such records will be kept for a period of five years beyond the student's last semester of attendance at the College. These records will remain internal to the College and will not be used in any evaluation made for an outside individual or agency unless there is a disciplinary action determined by a formal ruling under the Student Code of Conduct, in which case only those records pertaining to the disciplinary action may apply. A student whose alleged action is reported to the Office of the Dean of Students will be notified by that office and will have the right to submit a letter of denial or explanation. The Dean will use his/her discretion in determining whether the alleged violation(s) could warrant disciplinary action under the Student Code of Conduct. In that case the procedures governing the Code of Conduct will be initiated.



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Copyright Statement

The Higher Education Opportunity Act of 2008 (HEOA) requires the College to address unauthorized distribution of copyrighted materials, including unauthorized peer-to-peer file sharing.

Thus, the College strictly prohibits the users of its networks from engaging in unauthorized distribution of copyrighted materials, including unauthorized peer-to-peer file sharing. Anyone who engages in such illegal file sharing is violating the United States Copyright law, and may be subject to criminal and civil penalties. Under federal law, a person found to have infringed upon a copyrighted work may be liable for actual damages and lost profits attributable to the infringement, and statutory damages of up to \$150,000. The copyright owner also has the right to permanently enjoin an infringer from further infringing activities, and the infringing copies and equipment used in the infringement can be impounded and destroyed. If a copyright owner elected to bring a civil lawsuit against the copyright infringer and ultimately prevailed in the claim, the infringer may also become liable to the copyright owner for their attorney's fees and court costs. Finally, criminal penalties may be assessed against the infringer and could include jail time, depending upon the severity of the violation. Students should be aware that unauthorized or illegal use of College computers (such as engaging in illegal file sharing and distribution of copyrighted materials), is an infraction of the Student Code of Conduct and may subject them to disciplinary measures. To explore legal alternatives to unauthorized downloading, please consult the following website: <http://www.educause.edu/legalcontent>.

Course Resources

Suggested websites:

- | | |
|---------------------|---|
| Library services: | Course textbook is not available at the reference desk at the NCC library. |
| Learning Center: | As part of this course, students should avail themselves to further study and/or educational assistance that is available from faculty in the Computer Center via Zoom. |
| Extra help options: | My daily Zoom sessions after 10AM (Mon - Thurs) and the Computer Center faculty. |



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Assessments and Grading Methods

- Assignments will be listed on Blackboard and my website.
- Assignments must be well documented with your name and a description of the assignment.
- To receive full points, assignments must be submitted via Blackboard by 11:59 pm on the due date and must be neat, complete, and accurate.
- Directions and specifications required to complete each assignment will be stated along with the grading rubric used to assign each point.
- Point values will vary based on the difficulty of the assignment.
- Grades will be assigned based on [the grading system specified in the NCC catalog](http://collegecatalog.ncc.edu/current/index.pdf#page=30).
<http://collegecatalog.ncc.edu/current/index.pdf#page=30>

Additional Information

- The summer session is an intensive session requiring a major commitment from you to be successful. All department course outline topics will be covered within the 20-day semester. Since the course is not abbreviated, you can expect the pace to be faster and the amount of material taught in one class lesson to be more than that taught during a regular 15-week semester's class lesson.
- As required by the college, I will check the official roster on Banner. If your name is not on the roster, you will not be permitted to stay in the class. ~~Banner also provides photo rosters; you are required to have an NCC ID card, even if you are only attending for the summer.~~
- Participation, while not required, is important to fully appreciate the course content. If you do not understand or you are having difficulty with any of the subject matter, ask questions. You can also get help from the computer center faculty and/or come to my daily Zoom session for additional help.
- Do your best, learn as much as you can, and enjoy the course. If it isn't already your major, you might just realize computer science is in your future.

Americans with Disabilities Statement & Non-discrimination Statement (NCC Required)

If you have a physical, psychological, medical, or learning disability that may have an impact on your ability to carry out the assigned coursework, I urge you to contact the staff at the Center for Students with Disabilities (CSD), Building U, (516) 572 – 7241, TTY (516) 572 – 7617. The counselors at CSD will review your concerns and determine to what reasonable accommodations you are entitled as covered by the Americans with Disabilities Act and section 504 of the Rehabilitation Act of 1973. All information and documentation pertaining to personal disability will be kept confidential.



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Course Schedule and Important Dates

Computer programming is problem solving. A computer program is a set of instructions that tells the computer how to solve a problem using the limited tools and vocabulary that it understands. The first step in learning how to program is to understand the problem being posed and figure out how it can be solved. Therefore, the focus of the first third of this course will be on building problem solving skills. You will be presented with a variety of problems which you will solve without a computer. This is to prepare you for the rest of the course during which you will use the problem-solving skills you have developed to create (design and write) computer code to produce computer programs.

Week Number (Approximate)	Topic
Week 1 July 6, 2021 To July 9, 2021	• Introduction Syllabus, class policies • Operating system basics Drives, folders, files, file types • Problem solving exercises that focus on writing & debugging algorithms/instructions • Programming terminology (computer program, computer programming, algorithm, source code, machine language, compiler, interpreter, syntax errors, logic errors, sequence, selection, iteration) Homework 1 – Introductory Topics
	• Understanding sequencing • Problem solving logic exercises that use matrices to organize information and eliminate possibilities • Problem solving exercises that require the student to determine all possible outcomes for a given scenario (systematic lists) • Binary numbers (understanding the binary number system, converting binary numbers to decimal numbers and decimal numbers to binary numbers) (zyBooks chapter 1) • Understanding the significance of the number of bits used for storage, how memory is allocated Homework 2 - Binary
	• Problem solving exercises that require students to determine the proper condition (simple, complex) and whether an if or if/else is appropriate • Simple if statements, simple if else statements • Relational operators (<, <=, >, >=, ==, !=)



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Week 2 July 12, 2021 To July 15, 2021	• Complex conditions • Problem solving logic exercises using logical operators (OR, AND) • Problem solving logic exercises requiring the student to nest conditionals • Writing efficient conditionals will be stressed. Students should nest when appropriate and ensure there are no unnecessary conditions. Homework 3 - Conditionals
	Review Exam #1
	• Introduction to Python (zyBooks chapter 2) • Python Errors and zyLabs • Basic Input and Output, Comments
Week 3 July 19, 2021 To July 22, 2021	• Variables, Expressions, Data Types (zyBooks chapter 3) • Importing Modules, Math Module • Strings and Numeric Types (zyBooks chapter 4, 10) • User input • Writing a First Python Script • Tracing a Python Program Homework 4
	• The graphics.py Module • Simple conditionals (review relational and logical operators) (zyBooks chapter 5) • Nested if statements - writing efficient conditionals should continue to be stressed. Students should nest when appropriate and ensure there are no unnecessary conditions. • Homework 5



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Week 4 July 26, 2021 To July 29, 2021	Review Exam #2 • Writing efficient conditionals continued. <i>Use nested statement when appropriate and ensure there are no unnecessary conditions.</i> • Writing an interactive graphics program using conditionals and the graphics.py module Homework 6
	• Python functions (zyBooks chapter 6) • Tracing function calls • Loops (zyBooks chapter 7, 9) • Iterators/loop control variable
Week 5 August 2, 2021 To August 5, 2021	• Validating user input • Indefinite loops using while (zyBooks chapter 7) Homework 7 • Capstone activities using if, while, functions, graphics Extra credit assignment
	Review Final Exam



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The below charts detail the level at which topics should be covered.

Problem Solving Concepts Assessment

Writing Instructions	Write instructions using English like statements with and without a limited vocabulary
Matrix	Solve matrix logic problems with no larger than a 2x3 matrix
Binary	Convert a decimal number to binary number and a binary number to its decimal equivalent for decimal numbers 0-255 (8 bits)
Sequencing	Trace statements given by the instructor
Systematic Lists	Solve logic problems using systematic lists
Conditions	Write conditional statements for a variety of scenarios using Simple If, Simple If/Else, Nested If/Else and Complex conditions

Programming Concepts Assessment

Topic	Identify & Define	Read and Understand (Tracing)	Write
Declaration Statements	X	X	X
Assignment Statements	X	X	X
Conditionals: Simple If, Simple If/Else Nested If/Else elif clause Complex conditions	X	X	X
Indefinite and definite loops	X	X	X (Homework only, not on exam)
Function	X	X (In class, not on homework/exam)	

Terminology:

Students should be able to define the terms below and identify each in sample code:

argument, assignment statement, comment, condition, declaration statement, variable, parameter, syntax error, logical operator, relational operator, function, function call, expression, arithmetic operator, string literal, output statement