Course Syllabus for
CSC104 Programming Logic and Problem Solving

Course Information

- Title   Programming Logic and Problem Solving
- Course Number   CSC 104
- Credit Hours   3 Credits
- Section   MA
- CRN   16417
- Semester/Term   Fall 2019
- Meeting time   Mondays/Wednesdays 2:00 – 3:15
- Location   B113

Instructor/Contact Information

- Professor Name   Marc Zucker
- Office location   B3052
- Office hours   Mondays & Wednesdays 3:30 – 4:45
- Office telephone   516-572-7383 ext.26884
- Email address   Marc.Zucker@ncc.edu
- Website   http://www.matcmp.ncc.edu/~zuckerm

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.

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Course Pre-requisite

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

Learning Goals and Objectives

To introduce the student to programming concepts and terminology.

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.

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

Textbook and Materials
Programming in Python 3 with zyLabs, ZyBook

Student Responsibilities/Course Policies
Instructors need to complete the following for their specific policies. It is recommended that in class exams are required.

Participation:	Students are expected to participate in class discussions and individual and group work.
Homework:	Homework is assigned about once a week and should be worked on as soon as possible so that any questions that arise may be addressed.
Exams / Quizzes:	There will be two in-class exams plus a cumulative final.
Attendance / Lateness Policy:	Students are expected to attend all classes, arrive on time and stay until class is dismissed. It is the student's responsibility to find out what was covered in class and makeup any work missed as a result of an absence or lateness prior to the next class meeting. Students are expected to hand in all assignments by the due date regardless of attendance
Missed Exam / Quiz Policy:	Makeup exams will be not given and missing an exam will result in a grade of zero. Consideration will be given to those students who contact me prior to missing the class and provide a valid, documented reason for missing an exam or assignment. Any student absent on the day an assignment is due is still responsible for handing in the assignment electronically before the deadline.
Withdrawals	The only way to get a W in this class is to file the proper paperwork and have it preprinted in Banner. Withdrawal requests must be made prior to the day of the final. *If you disappear for any reason and do not get my signature to file the paperwork before the above date, you will receive a UW.*

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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

Labs and learning centers:	As part of this course, students should avail themselves to further study and/or educational assistance that is available in the Computer Center in B225.
Extra help options:	Office hours if available and the Computer Center in B225.

Assessments and Grading Methods

- Exams (2 exams) 40% (20% each)
- Final Exam   25%
- Homework   35% (assignments not handed in by the due date will receive a grade of **zero**)

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Americans with Disabilities Statement & Non-discrimination Statement

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.

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, puzzles and games 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 programs for the computer.

Week Number	Date	Topic

Week 1		• Introduction
		  Syllabus, class policies
		• Operating system basics
		  Drives, folders, files, file types
		• Problem solving exercises that focus on writing & debugging algorithms/instructions
		• Programming terminology
		Homework 1 – Introductory Topics

Week 2		• 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)

Week 3		• Binary numbers (understanding the binary number system, converting binary numbers to decimal numbers and decimal numbers to binary numbers) • Understanding the significance of the number of bits used for storage, how memory is allocated • 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 (<, <=, >, >=, ==, <>) **Homework 2 - Binary**
Week 4		• Complex conditions • Problem solving logic exercises using logical operators (OR, AND) • Problem solving logic exercises requiring the student to nest conditionals • Writing efficient conditionals should be stressed. Students should nest when appropriate and ensure there are no unnecessary conditions. **Homework 3 - Conditionals**
Week 5		Review **Exam #1**
Week 6		• Introduction to Python • Python Errors and zyLabs
Week 7		• Variables and Expressions • Modules **Homework 4**
Week 8		• Strings and Numeric Types • Writing a First Python Script • Tracing a Python Program **Homework 5**

Week 9		• The graphics.py Module • User input • Simple conditionals (review relational and logical operators) • Writing efficient conditionals should continue to be stressed. Students should nest when appropriate and ensure there are no unnecessary conditions. **Homework 6**
Week 10		Review **Exam #2**
Week 11		• Python Conditionals • Writing an interactive graphics program **Homework 7**
Week 12		• Python functions • Tracing function calls **Homework 8**
Week 13		• Validating user input • Indefinite loops • Coding exercises using if, while, graphics **Homework 9**
Week 14		• Finite loops and collections • Traffic light activity
Week 15		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 ElseIf 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)	