



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
Course Number: CSC104
CRN: 50119
Credit Hours: 3
Section: JA
Semester / Term: Spring 2020
Meeting Times: Monday and Wednesday 12:30-1:45pm
Location: B111

Professor Name: Darci Burdge
Office Location: B3047
Office Hours: Tuesday 1:00-2:15pm and Thursday 10:00-11:15am or by appointment
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Website URL: <http://matcmp.ncc.edu/~burdged/>
Blackboard link: <https://mybcc.ncc.edu>

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.

Course Objectives & Philosophy:

This course is designed to introduce students to programming concepts and terminology as well as the problem solving and logic skills needed to write computer programs. 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 remainder of the course during which you will use the problem solving skills you have developed to create programs for the computer. An in-depth understanding of the computer programs presented in class is an important first step to being able to solve other similar problems.

Background Knowledge/Materials:

Students:

- Will find having a prior knowledge of navigating through a Windows environment, saving and locating files helpful
- Will find having prior knowledge of email, using attachments and browsing the web helpful
- Will need a USB external storage device (such as a flash drive) to save their work
- Who wish to work at home will need to install the following software: Python and a web browser

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 hands-on computerized instruction.

Textbook and Materials

- Programming in Python 3 with zyLabs, ZyBook – information regarding access to the zyBook will be provided on day 9.

Student Responsibilities/Course Policies

- Attendance:
Students are expected to attend all classes, arrive on time, and stay until class is dismissed. Attendance will be taken every day at the beginning of class. 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. Students are expected to hand in all assignments by the due date regardless of attendance. Any student absent on the day an assignment is due is still responsible for handing in the assignment electronically before the deadline.
- Withdrawal policy:
I will grant a grade of "W" any time through March 27th. You must decide by March 27th whether you wish to withdraw from this class. It is the student's responsibility to file a signed, drop/add form with the registrar if you wish to withdraw from this class. If a student stops attending and does not file an official withdrawal form, a grade of "UW" (Unofficial Withdrawal) will be assigned. A grade of "UW" will count toward your GPA as an F. Consideration will be given to students who request a "W" after the withdrawal date.
- Citation/Cheating:
Collaboration among students to understand the course material is highly encouraged. However, each student is expected to submit individual work. Cheating includes (but is not limited to) turning in someone else's work as your own (with or without his/her knowledge), allowing someone else to turn in your work, copying from the textbook or a web site, and using unauthorized material on exams (including other people). Cheating will be suspected if an assignment results in multiple similar submissions or if a student cannot completely explain his/her submission. Any student who does cheat will receive a **zero** for that assignment/exam and may be given an F for the course.

College Policies

- 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.

- 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>.

- Classroom Disruption Policy

Faculty has a right and responsibility to maintain a proper learning environment in the classroom. As integral members of this partnership, students are expected to participate actively in the learning experience and must do so in an appropriate manner.

Disruptive conduct in the classroom that interferes with the instructor's performance of his/her professional functions or that undermines the integrity of student learning will not be tolerated. Disruptive conduct includes, but is not limited to:

- Students who routinely enter class late or depart early,
- Students who repeatedly talk in class without being called upon;
- Students who continually interrupt lectures;
- Students whose cell phones repeatedly ring and/or emit an audible sound during class or students who repeatedly text during class;
- Students who intimidate or harass a professor/classmate;
- Students who threaten a professor/classmate, participate in a physical display of anger, or verbally abuse a faculty member/classmate;
- Students whose classroom behavior otherwise violates the College's Student Code of
- Conduct and (or) Sexual Harassment and Sexual Violence Policy.

This negative behavior will incur faculty intervention and may result in disciplinary action. Additional information can be found at the following website:

https://collegecatalog.ncc.edu/current/policiesandprocedures/academic_info/classroom_disruption_policy.html.

Course Resources

- Web Sites

Students will use email and Blackboard (an online course management tool) throughout this course. Students are expected to read their NCC email accounts (<https://mync.ncc.edu>) daily and to check Blackboard (<https://mync.ncc.edu>) for notification of assignments and to submit their work for grading.

- Computer Center Requirement

As part of this course, students should avail themselves of further study and/or educational assistance available in the B225 Computer Learning Center. Use of the resources in the Computer Learning Center is deemed an integral part of the course and will help the student master necessary knowledge and skills. **NOTE: In order to use the Learning Center you must present a valid NCC identification card.**

Assessments and Grading Methods

- Final grades will be determined by the following:

- Exams – 40% (20% each)
- Final Exam – 25%
- Homework – 20%
- zyBook Readings/Participation Activities/Challenge Activities – 10%
- Preparation/Attendance/Engagement – 5%

- Exams:

There will be 2 exams given during the semester in addition to a final exam. Make-up exams will not be given. Consideration will be given to those students who contact me before the exam (via e-mail or phone) and provide a valid, documented reason for missing the exam.

- Homework:

There will be 9 homework assignments given throughout the semester. All assignments are expected to be handed in on time. On the day an assignment is due you must submit the appropriate files **by** the specified deadline.

- Extra Credit:

An extra credit assignment will be distributed toward the end of the semester. The grade for this assignment can be used to replace the lowest homework grade. If the grade for this assignment is lower than any other homework grade, then the student's homework average will not be affected.

- zyBook Readings/Participation Activities (PAs)/Challenge Activities (CAs)

The required textbook for this course is an online resource. You will be given information about how to access this resource on day 9. The textbook will not be used during the first third of the semester. Each reading is associated with participation activities where you will be asked to answer questions that assess your understanding of the reading. There will sometimes be challenge activities as well. These are less guided, but also designed to assess your understanding of the material. Each of these assignments will have an associated due date and must be completed by the due date in order to receive credit.

- Preparation/Attendance/Engagement (PAE)

To be successful in this class, you must actively engage with the material, prepare carefully and come to class ready to participate in the activities and discussions. PAE is assessed for each individual during each class period. Preparation includes completing reading, exercises and activities before class. Attendance is being on-time and in class.

Engagement combines participation in activities and discussions and a demonstrated investment in the class.

PAE scores will be assigned according to the rubric below. The standard score in each category, and what you should generally expect to receive, is a \checkmark . Something exceptionally notable is required to move either up to a $\checkmark++$ or down to a $\checkmark-$.

Score	Preparation	Attendance	Engagement
0	Did not complete the reading assignment/zyBook homework needed to participate in class.	Did not attend class or was not present for significant portions of class.	Consistently inattentive, distracted, disconnected and/or demonstrating disinterest in the class/activities.
$\checkmark-$	Does not demonstrate sufficient familiarity with assigned materials.	Attended class but may have been late and/or left the room with unusual frequency or duration and/or left class early.	Frequent periods of distraction, inattention, or disinterest in the class/activities.
\checkmark	Demonstrates expected familiarity with the assigned materials.	Attended class, was on time and present throughout the entire class.	Engagement in class/activities is consistent, helpful, on topic and at the expected level.
$\checkmark+$	Same as \checkmark	Same as \checkmark	Engagement in class/activities is consistent, helpful, and on topic. Engagement with partner/class clearly enhances individual learning.
$\checkmark++$	Demonstrates exceptional insight and draws on assigned and other material to enhance the class in unique and creative ways.	Same as \checkmark	Engagement in class/activities is exceptional in a way that enhances the class for everyone.

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.

Campus Services

NCC offers many free resources and services to our students. For an overview the support and counseling services available please visit:

<https://www.ncc.edu/campuservices/counselingservices/>

Food Insecurity

If you are having difficulty affording groceries or accessing sufficient food to eat every day or if you lack basic necessities and believe this may affect your performance in the course, I urge you to visit The NEST @ NCC Food Pantry in North Hall (N Bldg) Basement. **The NEST provides free groceries and personal care items to all NCC students and their families and can assist you in accessing other necessary resources.** The NEST is open 6 days a week. Hours can be found on the NCC Portal and posted on the door of the pantry. Please visit The NEST’s website for further information: <http://nestncc.weebly.com>

Course Schedule and Important Dates

Week Number	Date	Topic
Week 1		<ul style="list-style-type: none"> • Introduction Syllabus, class policies • Operating system basics Drives, folders, files, file types • Problem solving exercises that focus on writing & debugging algorithms/instructions <p>Homework 1 – Introductory Topics</p>
Week 2		<ul style="list-style-type: none"> • Understanding sequencing • Problem solving logic exercises that use matrices to organize information and eliminate possibilities • 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 <p>Homework 2 - Binary</p>
Week 3		<ul style="list-style-type: none"> • Problem solving exercises that require the student to determine all possible outcomes for a given scenario (systematic lists) • Problem solving exercises that require students to determine the proper condition (simple, complex) and whether an if or if/else is appropriate

		<ul style="list-style-type: none"> • Simple if statements, simple if else statements • Relational operators (<, <=, >, >=, ==, <>) Homework 3 - Conditionals
Week 4		<ul style="list-style-type: none"> • Complex conditions • Problem solving logic exercises using logical operators (OR, AND) • Problem solving logic exercises requiring the student to nest conditionals <p>Writing efficient conditionals should be stressed. Students should nest when appropriate and ensure there are no unnecessary conditions.</p>
Week 5		Review Exam #1
Week 6		<ul style="list-style-type: none"> • Introduction to Python • Python Errors and zyLabs
Week 7		<ul style="list-style-type: none"> • Variables and Expressions • Modules Homework 4
Week 8		<ul style="list-style-type: none"> • Strings and Numeric Types • Writing a First Python Script • Tracing a Python Program Homework 5
Week 9		<ul style="list-style-type: none"> • 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		<ul style="list-style-type: none"> • Python Conditionals • Writing an interactive graphics program Homework 7
Week 12		<ul style="list-style-type: none"> • Python functions • Tracing function calls Homework 8
Week 13		<ul style="list-style-type: none"> • Validating user input • Indefinite loops • Coding exercises using if, while, graphics • Homework 9

Week 14		<ul style="list-style-type: none"> • Finite loops and collections • Traffic light activity
Week 15		Review Final Exam

Important Dates:

Monday, February 17 – Friday, February 21 – Winter Break – day classes do not meet

Monday, April 6 – Friday, April 10 – Spring Break – day classes do not meet

Monday, May 18 – Day classes end

Tuesday, May 19 – Thursday, May 21 – Makeup days – if necessary, day classes will meet on one or more of these days

The below charts detail the level at which topics will 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)	