CONCORD UNIVERSITY

The mission of Concord University is to provide quality, liberal arts based education, to foster scholarly and creative activities and to serve the regional community (http://www.concord.edu/academics/).

CS 201 – Introduction to Computer Programming I

20151, Section 01

Semester Taught: Spring 2019	**Professor:** Lonnie Bowe
	(Mr. Bowe or Professor)
Credit Hours: 3	**Office Location:** Science 100E
Prerequisites: None	**Office Hours:** MWF 7:30 am – 8 am, MWF 3pm-4pm
Course Time: MWF 2:00 pm – 2:50 pm	TR 1:30pm – 2:00pm
Building and Room Number: Science 103	Other Times by Appointment

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College/Department Website: http://math.concord.edu

Course Description/Rationale: An introduction to the field of Computer Science and algorithmic problem solving. Topics include: Variables, Data Types, Decision and Repetition Statements, Functions, File Manipulation, Arrays and Lists.

Course Management System: https://moodle.concord.edu

Hardware/Software Needed: https://www.concord.edu/technology/node/23

Text requirements: Understanding the Digital World: What You Need to Know about Computers, the Internet, Privacy, and Security
by Brian Kernighan
ISBN 9780691176543

Concord University Educational Goal(s):

Skills: (1) Effective inter-communication skills and literacy adapted as needed for the demands of various kinds of discourse.
(2) An ability to employ appropriate observational, logical, analytical, computational, creative, and critical thinking skills within and across academic disciplines; and to apply these skills in problem-solving.

National Standards: CS 201 comprises most of the topics recommended by the ACM in its 2013 Curriculum Guidelines for Undergraduate Degree Programs in Computer Science (See page 167: "Software Development Fundamentals"). The ACM report can be found here: http://www.acm.org/education/curricula-recommendations

Specific Learning Outcomes:

1. Discuss the importance of algorithms in the problem-solving process.

2. Create algorithms for solving simple problems.

3. Discuss how a problem may be solved by multiple algorithms, each with different properties.

4. Use a programming language to implement, test, and debug algorithms for solving simple problems.

5. Design, implement, test, and debug a program that uses each of the following fundamental programming constructs: basic computation, simple I/O, standard conditional and iterative structures, the definition of functions, and parameter passing.

6. Analyze and explain the behavior of simple programs involving the fundamental programming constructs variables, expressions, assignments, I/O, control constructs, functions, parameter passing, and recursion.

7. Identify and describe uses of primitive data types.

8. Write programs that use primitive data types.

9. Modify and expand short programs that use standard conditional and iterative control structures and functions.

10. Write a program that uses file I/O to provide persistence across multiple executions.

11. Choose appropriate conditional and iteration constructs for a given programming task.

12. Apply the techniques of decomposition to break a program into smaller pieces.

13. Discuss the appropriate use of built-in data structures.

14. Describe common applications for each of the following data structures: stack, queue, priority queue, set, and map.

15. Write programs that use each of the following data structures: arrays, records/structs, strings, linked lists, stacks, queues, sets, and maps.

16. Trace the execution of a variety of code segments and write summaries of their computations.

17. Implement basic numerical algorithms.

18. Perform computations involving modular arithmetic.

19. Construct a simple user interface using a standard API.

20. Discuss why human-centered software development is important.

21. Classify common input validation errors, and write correct input validation code.
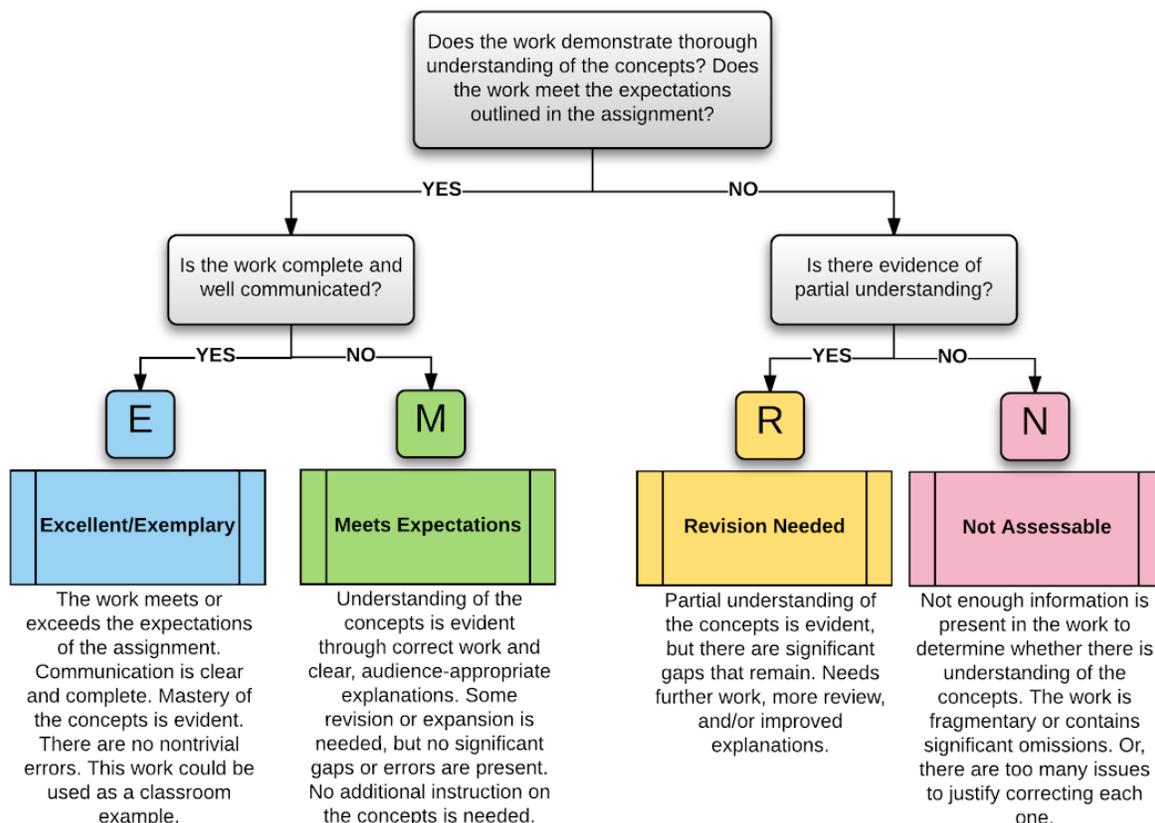
22. Demonstrate the identification and graceful handling of error conditions.

23. Design and implement a class.

24. Compare and contrast (1) the procedural/functional approach—defining a function for each operation with the function body providing a case for each data variant—and (2) the object-oriented approach—defining a class for each data variant with the class definition providing a method for each operation Understand both as defining a matrix of operations and variants.

25. For both a primitive and a compound type, informally describe the values that have that type.

26. Implement, test, and debug simple recursive functions and procedures.

27. Determine whether a recursive or iterative solution is most appropriate for a problem.

28. Describe the concept of recursion and give examples of its use.

29. Identify the base case and the general case of a recursively-defined problem.

30. Refactor a program by identifying opportunities to apply procedural abstraction.

31. Apply a variety of strategies to the testing and debugging of simple programs.

32. Explain the concept of modeling and the use of abstraction that allows the use of a machine to solve a problem.

33. Describe the relationship between modeling and simulation, ie, thinking of simulation as dynamic modeling.

34. Create a simple, formal mathematical model of a real-world situation and use that model in a simulation.

35. Differentiate among the different types of simulations, including physical simulations, human-guided simulations, and virtual reality.

36. Describe several approaches to validating models.

37. Create a simple display of the results of a simulation.

Course Requirements:

7 Mini-Projects:	To ensure that you have an understanding of syntax and concepts presented in class, there will be regular assignments for you to complete on an individual basis.
14 Guided Exercises:	These short exercises are intended to reinforce and expand on lecture material.
14 Reading Responses:	Communication is an important but neglected skill for students. You will regularly receive assignments where you must read, explain or present new information.
14 Quizzes:	There will be short, weekly quizzes. You may have to design algorithms, read code, correct mistakes, and write small snippets of code.
1 Final Exam:	A cumulative exam. You must earn a passing grade on the final exam to pass the course.

Grading Policy

All coursework, other than the Final Exam, will be graded on the EMRN system (http://rtalbert.org/specs-grading-iteration-winner/).

Does the work demonstrate thorough understanding of the concepts? Does the work meet the expectations outlined in the assignment?

—YES— —NO—

Is the work complete and well communicated?

—YES— —NO—

E

Excellent/Exemplary

The work meets or exceeds the expectations of the assignment. Communication is clear and complete. Mastery of the concepts is evident. There are no nontrivial errors. This work could be used as a classroom example.

M

Meets Expectations

Understanding of the concepts is evident through correct work and clear, audience-appropriate explanations. Some revision or expansion is needed, but no significant gaps or errors are present. No additional instruction on the concepts is needed.

Is there evidence of partial understanding?

—YES— —NO—

R

Revision Needed

Partial understanding of the concepts is evident, but there are significant gaps that remain. Needs further work, more review, and/or improved explanations.

N

Not Assessable

Not enough information is present in the work to determine whether there is understanding of the concepts. The work is fragmentary or contains significant omissions. Or, there are too many issues to justify correcting each one.

EMRN rubric based on the EMRF rubric, due to Rodney Stutzman and Kimberly Race: http://eric.ed.gov/?id=EJ717675

Each assignment will come with a revision policy and timeline.

The Final Exam will be graded as Pass / Fail.

Grading Scale

To Earn a D: You must earn a grade of M or better on 8 Guided Exercises, 8 Reading Responses, 8 Quizzes, and 3 Mini-Projects. You must also earn a passing grade on the Final Exam.

To Earn a C: You must earn a grade of M or better on 9 Guided Exercises, 9 Reading Responses, 9 Quizzes, and 4 Mini-Projects. You must also earn a passing grade on the Final Exam.

To Earn a B: You must earn a grade of M or better on 11 Guided Exercises, 11 Reading Responses, 11 Quizzes, and 5 Mini-Projects. You must also earn a passing grade on the Final Exam.

To Earn an A: You must earn a grade of M or better on 13 Guided Exercises, 13 Reading Responses, 13 Quizzes, and 6 Mini-Projects. You must also earn a passing grade on the Final Exam.

Late Assignments: Late assignment policies vary with the type of assignment. Each assignment will detail the late policy.

Missed Quizzes: You have 36 hours from the start time of the quiz to contact the instructor about a makeup exam. You must have a valid reason for missing the quiz. Makeup quizzes may have different questions covering the same content as the regular quiz. Makeup quizzes must be taken within four week days of the original quiz.

Grade Disputes: If you disagree with a grade or believe it is inaccurate, you may contest your grade within 7 calendar days from when the grade was released. After the 7 day **period, the grade becomes final.**

Course Timeline: Students should expect at least one reading assignment per week, with frequent programming assignments. A full, tentative schedule will be posted to Moodle.

Attendance: You need to come to class. Attendance is encouraged. Participation exercises will be given regularly and are worth a portion of your final grade. Attendance and participation are important factors in all classes. This class, in particular, moves at a good pace and it is better for you to be there, even if you are half asleep. If you are sick, it is recommended that you stay home rather than infect the entire class.
Participation exercises will often involve working in small groups and therefore cannot be completed at a later date. Note that this policy does not distinguish "excused" from "unexcused" absences – such a distinction puts me in a role I don't want to play. University approved activities are exempt from this distinction. As always, exceptions will be made for extraordinary circumstances.

Attendance policy influenced by Brian Croxall, Emory Unitversity

The instructor follows the official University policy on student safety. Inclement weather conditions will be taken into consideration in regard to the attendance policy. http://www.concord.edu/emergency-alerts

Contact Policy: The instructor uses e-mail for class announcements. Please check your Concord e-mail at least once a day. You are responsible for the content of the e-mails.

The instructor is here to assist you. Remember that you can stop by during office hours, make an appointment, post on the course forum or send an e-mail! Please email from you MyCU email address.

When e-mailing the instructor, please allow for plenty of time to get a response as the instructor isn't always online.

Feedback Policy: It is my goal to give you timely, constructive feedback on your performance in this class. However, I cannot know how I am performing without feedback from you. I encourage you to let me know how I am doing, what you like and dislike about the course.

This feedback will in no way impact your grade. Do not suffer in silence. If speaking to me in person makes you uncomfortable, I will also periodically provided anonymous surveys on Moodle for you to express your opinions.

Cell Phone, Tablet, Laptop, work from other classes, etc. Policy:	It is best if you are engaged in the class, if I feel that you are not, then I reserve the right to remove you from the classroom.

Other policies may be distributed in class or on Moodle. Students will be held responsible for these policies.

Mandatory Syllabus Statements that apply to all CU courses:

Accessibility/Accommodations:

Concord University is committed to responding to the needs of students with disabilities as defined by the Americans with Disabilities Act. Please inform your instructor at the beginning of the class semester if you have a disability and are requesting accommodations. It is your responsibility to self-disclose that you are requesting accommodations. The University and instructor will provide you with a reasonable accommodation. You should register with CU's Disability Services Office, located in the Athens campus Jerry and Jean Beasley Student Center, Bottom Floor, across from the Campus Post Office. The Disability Services Office phone is 304-384-6086 or you can email the Director, Nancy Ellison, at nellison@concord.edu for assistance.

Academic Dishonesty

Academic dishonesty is morally unacceptable as well as destructive to the learning and teaching atmosphere. Academic dishonesty includes the giving or receiving of improper help on examinations or assignments, falsifying documents, and plagiarism (the act of stealing and using, as one's own, the ideas or the expression of the ideas of another). Such dishonesty can lead to a variety of penalties — including but not limited to failure of assignment, failure of course, loss of institutional privileges, or dismissal from the University. (See University Catalog Academic Policies and Procedures.)

Concord University Honor Code

A Concord University Honor Code was approved by students, staff, faculty, administration, and the CU Board of Governors. The Code states:

"As a member of the Concord University Community I will act with honesty and integrity in accordance with our fundamental principles and I will respect myself and others while challenging them to do the same."

The Honor Code is intended to unite the Concord community behind a culture of honesty, integrity, and civility.

Class/Online Attendance Policy

Regular class attendance is part of a student's academic obligation at Concord. Irregular attendance may affect academic performance adversely and is detrimental to the atmosphere of a class. (See University Catalog Academic Policies and Procedures.)

Emergency Alert System

In an effort to increase safety and security on our campus, Concord University encourages everyone to register for instant text message alerts. Alerts will only be used for security and safety notices. All students, faculty, and staff are eligible to receive text message alerts on their cell phones or email alerts. Please contact the IT Help Desk for further assistance (304-384-5291).

Emergency Information

Emergency/courtesy telephones are located at the main entrance of each residence hall and at various other locations on campus. Emergency telephones can be identified by the flashing blue light and will provide the user with a direct link to Public Safety at the press of a button. To report an on-campus emergency, call 304-384-5357 or 911. The Office of Public Safety is located on the bottom floor of the Rahall Technology Center. For further emergency information go to: http://www.concord.edu/administration/office-public-safety.

Inclement Weather Policy

As a general policy, the University will remain in normal operations during adverse weather conditions. In the event of severe weather conditions, the following may occur:

> University Closure
> No students or employees are to report.
>
> Classes Cancelled
> Students do NOT report BUT employees are expected to report to work at their normal time.
>
> Operating on an Inclement Weather Delay
> Under this schedule, all 8 a.m. classes will start at 10 a.m. Students and faculty will follow the Inclement Weather Schedule. (See http://www.concord.edu/emergency-alerts for Athens/Beckley Inclement Weather Schedules.)
>
> *Announcements invoking the late schedule or other options referenced above are aired on area radio and television stations and are sent as text and email messages to those enrolled for this service.*

Student Conduct

In classrooms, online, laboratories, and during any activities that are part of course requirements, students are expected to observe reasonable rules of conduct.

Sexual Harassment & Assault

 Federal law, Title IX, and Concord University policy prohibits discrimination, harassment, and violence based on sex and gender (Including sexual harassment, sexual assault, domestic/dating violence, stalking, sexual exploitation, and retaliation). If you or someone you know has been harassed or assaulted, you can receive confidential counseling support through the Concord University Counseling Center (304-384-5290). Alleged Violations can be reported non-confidentially to the Concord University Title IX Coordinator at 304-384-6327 or titleix@concord.edu. Reports to Campus Security can be made at (304-384-5357). As an employee at Concord University, I am a mandatory reporter which means I must report any sexual misconduct I am made aware of. This includes verbal or written (such as in an assignment) disclosures of sexual harassment or sexual assault.

Technology Services

Contact the CU Help Desk at extension 5291 from campus or 304-384-5291 off campus. You may also e-mail cuhelpdesk@concord.edu.

Syllabus Disclaimer

"This syllabus is subject to change based on the needs of the class. Please check it regularly."