IC210: Introduction to Computer Science

Course Policy v1.0, Fall AY2023

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Course Description: This course provides an introduction to algorithmic development, problem solving and software design. In particular, students develop the ability to solve problems using the procedural programming paradigm and the C++ language. These principles and concepts provide foundational knowledge and experience upon which later computing courses will build. This is the first course for computer science majors.

Credits: 3-2-4

Pre-requisites: None

Learning Objectives:
1. Solve problems using the procedural programming paradigm.
2. Design, develop, debug, and document computer programs using structured programming techniques.
3. Select and implement the most appropriate data structure for a solution and justify your selection.

Student Outcomes:
Graduates of the program will have an ability to:
1. Analysis. Analyze a complex computing problem and to apply principles of computing and other relevant disciplines to identify solutions.
2. Implementation. Design, implement, and evaluate a computing-based solution to meet a given set of computing requirements in the context of the program’s discipline.
3. Communication. Communicate effectively in a variety of professional contexts.
4. Ethics. Recognize professional responsibilities and make informed judgments in computing practice based on legal and ethical principles.
5. Teamwork. Function effectively as a member or leader of a team engaged in activities appropriate to the program’s discipline.

CS-6. Theory. Apply computer science theory and software development fundamentals to produce computing-based solutions.

IT-6. Requirements. Identify and analyze user needs and to take them into account in the selection, creation, integration, evaluation, and administration of computing based systems.

Textbook(s): No required text. Optional textbook: “Problem Solving with C++” by Walter Savitch (6th edition of newer)

Syllabus:
0. Input and output with the C++ programming language
1. If statements
2. While loops and for loops
3. Functions
4. Pointers and arrays
5. Strings
6. Sorting and searching
7. Linked lists
8. Recursion
9. Structs
10. Using the C programming language

Extra Instruction: Extra instruction (EI) is strongly encouraged and should be scheduled by email with the instructor. EI is not a substitute lecture; students should come prepared with specific questions or problems.

Collaboration: The guidance in the Honor Concept of the Brigade of Midshipmen and the Computer Science Department Honor Policy must be followed at all times. See www.usna.edu/CS/resources/honor.php.

Specific instructions for this course:

- Collaboration or assistance from any person other than the IC210 instructors, MGSP leaders, and those enrolled in IC210 this semester is not permitted unless specifically approved by your instructor. This includes any written or electronic materials from previous semesters. We allow the following exception: for homeworks and labs only, you may also have discussions with former SI204/IC210 students (but not look at written or electronic materials).

- On all exams, quizzes and practica, you may neither give nor receive help from anyone.

- Honor quiz: Every student must complete and score 100% on an electronic quiz on this policy and the department’s honor policy linked above. The quiz may be attempted multiple times with no penalty. Any student who has not yet completed the honor quiz with a 100% score will receive an F on interim or final course grades.

- Homework and Labs: Collaborative conversations with regard to solving written problems, of syntax and strategies for accomplishing homework or lab (i.e. non-project!) programming assignments are allowed. However, design and implementation must be the work of the individual student submitting their work. Thus, the actual pencil-to-paper or fingers-to-keyboard work must be your own. Copying a file or parts of a file from anyone as a basis for your own submission is prohibited. Midshipmen must clearly state on their assignment whom they collaborated with or received help from. This includes help received from an instructor in EI or from an MGSP leader.

  Note: Although labs are treated as “routine” in this class, so that collaboration is allowed to the same extent as for homework, other courses in the department will treat them differently! So do not assume this is standard!

- Written Exams: All written exams will be closed books/closed notes. You may not give or receive help from anyone.

- Practicum Exams: Practicum exams will typically be given during a lab period. You may only use your paper-based notes, your own code stored on your CS Department home directory, and the official class notes from the course website. You may not give or receive help from anyone.

- Projects: All projects MUST be submitted in order to pass this class. You must do your own work in designing, implementing, and testing your projects without assistance from anyone except for your instructor or, if properly documented, the other IC210 instructors and IC210 MGSP leaders for this semester. The Department Policy Concerning Programming Projects provides detailed guidance.
Any collaboration or outside source must be cited. The same rules apply for giving and receiving assistance. If you are unsure whether a certain kind of assistance or collaboration is permitted, you should assume it is not, work individually, and seek clarification from your instructor.

Classroom Conduct: The section leader will record attendance and bring the class to attention at the beginning and end of each class. If the instructor is late more than 5 minutes, the section leader will keep the class in place and report to the Computer Science department office. If the instructor is absent, the section leader will direct the class. Drinks are permitted, but they must be in reclosable containers. Food, alcohol, smoking, smokeless tobacco products, and electronic cigarettes are all prohibited. Cell phones must be silent during class. All discussions will be civil, and both faculty and midshipmen will be treated with dignity and respect at all times.

Late Policy: Penalties for late submission of graded work may vary among courses or from semester to semester, but they will be the same for all sections of a given course. For this course, nothing will be accepted late without extenuating circumstances, which are discussed with the instructor in advance. Assignments are due at 0755 on the listed due date.

Grading:
Final grades are out of 100 using the weights shown below. 6/12/16-week grades use the same weights, but out of a total of 79.

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<th>Final</th>
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<tr>
<td>Homework</td>
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<tr>
<td>Labs</td>
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<td>Projects</td>
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<td>Midterm exams</td>
<td>20%</td>
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<td>Practica</td>
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<td>Final exam</td>
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<td>Total</td>
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Note on the purpose of assignments: Homeworks and labs are frequent, allow more collaboration, and are worth comparatively little for your final grade. Projects and Exams are infrequent, with no collaboration, and are worth comparatively more. Most of your learning in this class will happen through homeworks and labs, so you should view them primarily as opportunities to learn, not assessments you must get correct for your grade. A student who abuses the collaboration system, and gets perfect homework and lab scores primarily through the work of others, may not have committed an honor offense, but will have little hope of doing well on projects and exams. This student will get a poor grade. On the other hand, a student who struggles themselves on smaller assignments, seeking help only when necessary, even perhaps at the cost of occasionally turning in less-than-perfect homeworks and labs, will likely find themselves better prepared for exams and projects.

Submitted: Assoc. Prof. Gavin Taylor