CSCI 170-01/02 Computer Science I

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CSCI 170 Computer Science I

MW 4:30-5:45 pm, Location: Cintas 204 (section 1)
TR 4-5:15 pm, Location: Smith G28 (section 2)

Instructor: Liz Johnson
Office: Hinkle 109
Phone: 745-3667 (has voice mail also)
Email: johnsone@xavier.edu
Office Hours: MWF 10 am – noon, T 1-3:30 and by appt
Textbook: 9 Algorithms that Changed the Future – MacCormick - 2012
Home Page: On Canvas (access via canvas.xavier.edu)

Course Objectives

This course is an introduction to computer science and computation. We will study:

• Computational Principles – information about computers and computer science that everyone should know, and
• Computational Thinking – thinking approaches you can use to solve (your) problems with computers.

The course objectives are that students will be able to:

• explain key notions of computer science, particularly algorithm, abstraction, computability, and efficiency in non-technical terms.
• read articles about technology or computer science and relate them to the notions of computer science discussed in class.
• explain the basic components of algorithms and use them to describe algorithms for simple tasks, demonstrating algorithmic problem solving skills. (The environment for the algorithms will vary and students will be expected to demonstrate skills in each environment.)
• design abstractions for a variety of problems.
• analyze some simple algorithms in terms of their efficiency.
• reflect on the ethical issues raised by activities facilitated by technology related to computer science.

Grading

Grades on all assigned work and exams will be based on correctness, clarity and style; presentation counts. Your grade will be based on 4 components:

• 40% Exams (Exam 1=10%, Exam 2=10%, Cumulative Final Exam=20%)
• 40% Homework
• 15% Project
• 5% Quizzes

In addition to the above components, you will be required to participate in a service opportunity working with elementary schoolchildren. This will either take the form of 1 Saturday morning at Breakthrough Cincinnati on campus or 2 sessions at the Academy of World Languages (AWL). We will have a sign-up sheet soon so that you can choose your date(s). If you cannot make these sessions due to your schedule, talk to the instructor so that we can come up with an alternative service opportunity for you.

The Department of Mathematics and Computer Science follows the following grading standard:

• A: Exceptional - The student's attainments are out of the normal course, unusual and special.
• B: Good - The student's performance is done rightfully or skillfully and is commendable.
• C: Satisfactory - The student's accomplishments are sufficient for the needs of the course.
• D: Minimal passing
• F: Failure

Plus/minus modifiers on the grades will be used to distinguish efforts within a particular category as deemed appropriate by the instructor. Note that there is no A+ or D- grade. See http://www.xavier.edu/mathematics/Grading-Policy.cfm for further clarification of the departmental grading policy.

Letter grades are based on your average and will, in general, will be determined by the following scale:

• A: > 93
• A-: >= 90 and < 93
• B+: >= 87 and < 90
• B: >= 83 and < 87
• B-: >= 80 and < 83
• Etc. (C+, C, C-, D+, D, F according to the above pattern)

Grades on individual assignments will be posted to Canvas as they are available and a running calculation of your current grade will be included. Keep in mind that the current grade may sometimes exaggerate or downplay certain components. For example, if no exams have occurred, the effect of the homework is magnified in your grade.

**Learning Assessment Components**

Over the course of the semester, you will be assigned homework at least weekly and given several days to complete the assignment. You are
permitted to discuss the homework openly with others in your class. This
does not mean that you may copy each other’s work, however. Students
should write homework independently after these discussions. On your
completed assignment, you must note the names of students with whom you
discussed the homework. Late homework will be penalized 10% for every
day it is late. Once homework has been discussed in class (usually the class
session immediately after it is due), it can no longer be turned in for
credit. Note that late hours are rounded up. So, for example, if you turn in a
homework 1 hour late, it is as if you turned it in 1 day late.

Keep in mind that some homework will require you to apply concepts
discussed in class to new areas and the connection might not always be
apparent as you begin work on assignment. There wouldn’t be much point to
the assignments if they simply repeated what was done in the
classroom. That said, ask for help from your instructor early and often when
working on the assignments. Grades on most homework will be based on
correctness, clarity, and style; presentation counts. As in any college-level
course, you are expected to use correct grammar and spelling in any work
you turn in. Incorrect grammar or misspellings will result in a grade
reduction.

**Quizzes** will be individual work. The purpose of quizzes are to help you
reflect on class material and to assess your understanding. You may take
each quiz twice before the due date but you may not discuss the quiz with
other students or compare answers. You may use class notes or assigned
reading material when completed a quiz. Quizzes will be posted on Canvas
immediately after each class session and will be closed 15 minutes before the
next class session starts. The lowest two quiz grades will be dropped.

The **Project** will be individual and group work. The project will be explained
later in the semester but will consist of both an individual reflection and a
group in-class presentation.

**Exams** will be individual work. Approximate Exam 1 and Exam 2 dates are
listed in the calendar at the end of this syllabus. Exact exam dates will be
announced at least 10 days before the exam. The final exam will be Monday,
May 5 from 4:30-6:20 pm (section 1) and Tuesday, May 6 from 4 to 5:50 pm
(section 2). Exams must be taken at the date and time specified except in
the case of emergencies. In general, the instructor must be notified about
an emergency before the time of the exam so that permission for

**Student Responsibilities**

You should set up Canvas so that you are alerted when messages are sent
and assignments or announcements are posted. You are responsible for
knowing due dates. Missing a due date because you did not check Canvas
will not be excused.
You are expected to prepare for class, attend class, participate in class
discussions, work on in-class activities as assigned, treat others in the class
with respect and generally promote a positive, learning community.
Activities which detract from this in the classroom include tardiness, use of
cell phones, use of computers other than for the class activities or
notetaking, sleeping, doing work not related to class during class time,
inattention during class discussions, etc. These activities are disrespectful to
your instructor and your fellow students and are a waste of your tuition
dollars. Making class valuable for students is a shared responsibility between
students and the instructor. Do your part.

Any student who feels she or he may need an accommodation based on the
impact of a documented disability should contact the Learning Assistance
Center at 513-745-3280 on the Fifth Floor of the Conaton Learning
Commons, Room 514, to coordinate reasonable accommodations.

### Academic Honesty

The work you submit **must** be your own. In this class, this means that even
if you are permitted to work with someone else (as on homework), you
understand everything that you turn in. On quizzes, the work is your own but
you may use your class notes and reading material as reference. On exams,
all work is only yours. You also have a responsibility to ensure that another
student does not violate this policy with your work. For example, you must
not allow another student to copy your exam.

I take the preceding paragraph seriously and expect students to take it
seriously. See section 2.3.9.1 of the Xavier Student Handbook for a fuller
discussion of the Academic Honesty policy at Xavier. Failure to exhibit
academic honesty may result in a 0 on an assignment, exam, or quiz or could
result in an F in the course.

### Schedule

This is an approximate schedule for major topics and will be adjusted as
needed during the semester.

- **Week 1:** Introduction to algorithms
- **Week 2:** Processing (computer language) basics
- **Week 3:** Selection and iteration
- **Week 4:** Pictures
- **Week 5:** Collections and searching
- **Week 6:** Review and Exam 1 (approx. 2/17 or 18)
- **Week 7:** Sorting
- **Week 8:** Computational Complexity
- **Week 9:** App Development
- **Week 10:** Representation
Week 11: Circuits
Week 12: Review and Exam 2 (approx. 4/7 or 8)
Weeks 13-15: Projects