

CS 401: Introduction to Advanced Studies I

Department of Computer Science
Illinois Institute of Technology

This course explores the implementation and application of fundamental data structures and algorithms, with an emphasis on object-oriented programming. During the semester, we will examine the relationship between these elements and the mathematical structures that form the foundation of computer science. By the end of the semester, the student should be able to determine which class of data structures is appropriate for a given problem and be able to describe the performance characteristics and limitations of their choice.

The course uses Java as a programming language. It is expected that enrolled students know programming in general and Java in particular. While we will cover some aspects of the Java programming language, the aspects covered are those that form a foundation for the rest of the semester, such as Java Generics and Java interfaces. The student is expected to know the Java programming language, including object-oriented concepts such as inheritance, abstractions, and encapsulation and the language constructs that provide for such concepts, as well as other Java artifacts such as exception handling and packages.

Prerequisites of the class are CS201 or a CS401 placement test. Students can enroll if they know C++ and have passed the CS401 placement test and are willing to self-learn Java during the first four weeks of the semester.

Instructor: Dr. Vijay K. Gurbani <vgurbani@iit.edu>

Office hours: By appointment.

Course home page: <http://www.cs.iit.edu/~cs401> and resources on the Blackboard system.

TA and lab instructor: Di Ma <dma2@iit.edu>

TA office hours: TBD

Lecture and Labs

Tue 6:25p – 8:05p – Lecture

Thu 6:25p – 8:05p – Laboratory (SB-112E)

Textbooks

1. Data Structures and the Java Collections Framework, 3e, William J. Collins. John Wiley and Sons, 2011.

Expectations

Students are expected to adhere to IIT's academic integrity policy. Inter-personal discussion is encouraged, however, while inter-personal discussions can help in better understanding the subject matter, such discussions are not to be used as a substitute for sharing solutions on individual homework and laboratory assignments. Homework assignments or laboratory assignments that are the work of one individual and shared with others will result in all affected students receiving a zero (0) grade for that particular assignment.

There will be laboratory assignments throughout the semester. The assignments would occur on a Tuesday and will be due on the **Tuesday** of the following week for Sections 01 and 02. Students in Section 03 and 04 can submit the laboratory assignment on the **Thursday** of the week that the lab is due. Assignments are expected to be completed by the due date and submitted using Blackboard. The time stamp on the assignments is expected to be no later than **11:59:59 PM local time on the day that the assignment is**

due. Each day that the assignment is submitted late will result in a penalty of 8 points; an assignment that is submitted more than 7 days late will not be accepted.

You can do the laboratory assignment on any operating system (Linux, Unix, Windows), using any IDE (Eclipse) or no IDE (command line compilation). The TA will provide further instructions during the first laboratory period on using Eclipse and compiling Java programs. It is expected that the student has spent substantial amount of time attempting to solve a laboratory assignment before arriving for the laboratory session each Thursday. Attendance at the laboratory session is mandatory as this is the time the TA will be available for extra help if you are struggling with the material (in Sections 01 and 02.)

The lecture is simulcasted to the Main campus from the Rice campus and also provided as a streaming web resource for overseas students. Attendance in lectures for Main campus students is mandatory in order to keep up with the subject material of the class.

There will be a mid-term exam and a final exam. These are closed book and individual effort assignments. Any sharing of resources or subject matter during the exams will result in a penalty for all affected students. Attendance to these exams is mandatory and there are no provisions for make-up exams.

That is it. Have fun; programming is an immensely enjoyable and creative activity. I wish you are able to be creative and have fun while doing so.

Schedule

Week/ Lecture date	Chapter	Laboratory	Notes
1/Aug 23	Ch. 0-2	Lab 1: Warm up lab	
2/ Aug 30	Ch. 2,3	Lab 2	
3/ Sep 6	Ch. 4,5	Lab 3	
4/ Sep 13	Ch. 6	Lab 4	
5/ Sep 20	Ch. 7	Lab 5	
6/ Sep 27	Ch. 8	Lab 6	
7/ Oct 4	Ch. 8,9	Lab 7	
8/ Oct 11	Ch. 9	Lab 7 (cont.)	
9/Oct 18	MID-TERM EXAM	NO LAB	
10/Oct 25	Ch 10	Lab 8	
11/Nov 1	Ch. 11	Lab 9	
12/ Nov 8	Ch. 13	Lab 10	
13/Nov 15	Ch. 14	Lab 11	

14/Nov 22	Ch. 15	Lab 12	
15/Nov 29	Ch. 15	NO LAB	
16/Dec 6	FINAL EXAM		

Performance Assessment

Standard grading scale applies:

90-100 – A, 80-89 – B, 70-79 – C, 60-69 – D, 0 ≤ F ≤ 59.

Grade distribution

Laboratory assignments 45%

Mid-term 20%

Final exam 25%

Blackboard Discussion 10%