Basic Course Information

Semester	**Spring 2017**	Instructor Name	**Rick Castrapel**
Course Title & #	**CS 231 Intro to Data Structures**	Email	**rick.castrapel@imperial.edu**
CRN #	**21126**	Webpage (optional)	**spaces.imperial.edu/rick.castrapel**
Room	**3109**	Office	**2766**
Class Dates	**Feb 14 to Jun 8, 2017** **Drop deadline: May 13, 2017**	Office Hours	**4:30-5:30pm MW, 8:30-9:30am TR, or By Appointment**
Class Days	**Tuesdays and Thursdays**	Office Phone #	**760-355-6505**
Class Times Units	**2:00pm-4:40pm** **3 units**	Office contact if student will be out or emergency	**Silvia Murray 760-355-6201 or Ofelia Duarte 760-355-6155**

Course Description

Design and implementation of larger projects using object-oriented software engineering principles with emphasis on definition and use of data structures including: arrays, stacks, queues, linked lists, trees, hash tables, dictionaries, sets and graphs using JAVA. Standard methods are used for sorting, searching and analyzing the relative efficiency of algorithms (Big-O notation).

Student Learning Outcomes

Upon course completion, the successful student will have acquired new skills, knowledge, and or attitudes as demonstrated by being able to:

1. Correctly determine the relative runtimes of different sort algorithms on arrays of different sizes. (ILO2, ILO4)
2. Correctly implement an abstract data type (ADT) as a Java class. (ILO2, ILO4)
3. Correctly use recursion to solve a problem with a data structure. (ILO2, ILO4)

Course Objectives

Upon satisfactory completion of the course, students will be able to:

1. Analyze unstructured problems and design computer solutions
2. Apply or create appropriate data structures to solve a particular problem.
3. Apply or a create suitable algorithm to solve a particular problem.
4. Analyze the relative efficiency of a particular algorithm.
5. Implement and test the efficiency of a particular algorithm.
6. Design and implement a stack Abstract Data Type (ADT) and queue ADT.
7. Define and implement a binary tree ADT.
8. Perform a runtime analysis of sorting algorithms.
9. Design and code a complete program of 500 lines or more.

.

Textbooks & Other Resources or Links

Big Java, Early Objects 6th Ed., Horstmann, Wiley 2015
loose-leaf ISBN: 978-1-119-05644-7
online ISBN: 978-1-119-14159-4

Course Requirements and Instructional Methods

1. **Midterm Exam:** There will be one midterm exam and there will be no makeup exams given. Please refer to calendar for dates.
2. **Final Exam:** The final will be given during the last day of classes. A score of 0 will be given if the final is missed. Please refer to calendar for dates.
3. **Programming Assignments:** Java programming assignments are the core learning tool of this class. Programming assignments will be given after each lecture to reinforce the new material introduced in the lecture. Each programming assignment is due within one week. Ample lab time is included in the course to complete the labs. You are encouraged to work together and share ideas, but each student must turn on their own programming assignment. Programming assignments are submitted through **Canvas**. Please use the first part of your IVC Email Address in the username field. For the password field, please use your WebSTAR/Student Portal PIN.
4. **There will be no extra credit.** Students must learn the material to pass this course.
5. It is utmost important that students review the material to do well on exams. Students are encouraged to form study groups to meet regularly to keep up with labs and homework and to study for tests.
6. Students will not be allowed to make up an exam or final exam unless you have a powerful reason to miss a test (e.g. hospitalization, jury duty, and bring the corresponding paperwork).

Course Grading Based on Course Objectives

The student's grade will depend on the following areas (not on total points):

Midterm Test	**25%**	There will be one midterm test and there will be no makeup exams given. Zeros will be given for all missed tests.
Final Exam:	**25%**	The final will be given on the last day of the semester. A score of 0 will be given if the final is missed.
Labs	**50%**	Approximately 23 programming assignments.
Extra Credit:	**0%**	There is no extra credit. Students must learn the material to pass this course.

All grades are calculated by using the standard scale of: A = 100---90% B = 89---80% C = 79---70% D = 69---60% F = 59% and below

Attendance

- A student who fails to attend the first meeting of a class or does not complete the first mandatory activity of an online class will be dropped by the instructor as of the first official meeting of that class. Should readmission be desired, the student's status will be the same as that of any other student who desires to add a class. It is the student's responsibility to drop or officially withdraw from the class. See General Catalog for details.
- Regular attendance in all classes is expected of all students. A student whose continuous, unexcused absences exceed the number of hours the class is scheduled to meet per week may be dropped. For online courses, students who fail to complete required activities for two consecutive weeks may be considered to have excessive absences and may be dropped.
- Absences attributed to the representation of the college at officially approved events (conferences, contests, and field trips) will be counted as 'excused' absences.

Classroom Etiquette

- Electronic Devices: Cell phones and electronic devices must be turned off and put away during class, unless otherwise directed by the instructor.
- Food and Drink are prohibited in all classrooms. Water bottles with lids/caps are the only exception. Additional restrictions will apply in labs. Please comply as directed.
- Disruptive Students: Students who disrupt or interfere with a class may be sent out of the room and told to meet with the Campus Disciplinary Officer before returning to continue with coursework. Disciplinary procedures will be followed as outlined in the General Catalog.
- Children in the classroom: Due to college rules and state laws, no one who is not enrolled in the class may attend, including children.

Academic Honesty

- Plagiarism is taking and presenting as one's own the writings or ideas of others, without citing the source. You should understand the concept of plagiarism and keep it in mind when taking exams and preparing written materials. If you do not understand how to 'cite a source' correctly, you must ask for help.
- Cheating is defined as fraud, deceit, or dishonesty in an academic assignment, or using or attempting to use materials, or assisting others in using materials that are prohibited or inappropriate in the context of the academic assignment in question.

  Anyone caught cheating or will receive a zero (0) on the exam or assignment, and the instructor may report the incident to the Campus Disciplinary Officer, who may place related documentation in a file. Repeated acts of cheating may result in an F in the course and/or disciplinary action. Please refer to the General School Catalog for more information on academic dishonesty or other misconduct. Acts of cheating include, but are not limited to, the following: (a) plagiarism; (b) copying or attempting to copy from others during an examination or on an assignment; (c) communicating test information with another person during an examination; (d) allowing others to do an assignment or portion of an assignment; (e) using a commercial term paper service.
- Computer Sciences Code of Conduct. You are in this class and the Computer Science program to learn to be a professional. You will be treated as a professional and held to professional standards. See the attached document: **Imperial Valley College Computer Sciences Code of Conduct**

Additional Help – Discretionary Section and Language

- Canvas support center: Accessible from your Canvas page
- Learning Labs: There are several 'labs' on campus to assist you through the use of computers, tutors, or a combination. Please consult your college map for the Math Lab, Reading & Writing Lab, and Study Skills Center (library). Please speak to the instructor about labs unique to your specific program.
- Library Services: There is more to our library than just books. You have access to tutors in the Study Skills Center, study rooms for small groups, and online access to a wealth of resources.

Disabled Student Programs and Services (DSPS)

Any student with a documented disability who may need educational accommodations should notify the instructor or the Disabled Student Programs and Services (DSP&S) office as soon as possible. The DSP&S office is located in Building 2100, telephone 760-355-6313, if you feel you need to be evaluated for educational accommodations.

Student Counseling and Health Services

Students have counseling and health services available, provided by the pre-paid Student Health Fee. We now also have a fulltime mental health counselor. For information see http://www.imperial.edu/students/student-health-center/. The IVC Student Health Center is located in the Health Science building in Room 2109, telephone 760-355-6310.

Student Rights and Responsibilities

Students have the right to experience a positive learning environment and due process. For further information regarding student rights and responsibilities, please refer to the IVC General Catalog available online at http://www.imperial.edu/index.php?option=com_docman&task=doc_download&gid=4516&Itemid=762

Information Literacy

Imperial Valley College is dedicated to helping students skillfully discover, evaluate, and use information from all sources. Students can access tutorials at http://www.imperial.edu/courses-and-programs/divisions/arts-and-letters/library-department/info-lit-tutorials/

Anticipated Class Schedule / Calendar

CS 231 Spring 2017 Tentative Schedule			
Date	**Text**	**Event**	**Topic**
02/14/17	Ch 20	**Course Introduction**	**Graphical User Interfaces (Chapter 20 and subsections of previous chapters)**
02/16/17			
02/21/17			
02/23/17			
02/28/17	Ch 13		**Recursion**
03/02/17			
03/07/17			
03/09/17	Ch 14		**Sorting and Searching**
03/14/17			
03/16/17			
03/21/17			
03/23/17			
03/28/17	Ch 15		**The Java Collections Framework** Linked Lists, Sets, Maps, Stacks, Queues, Priority Queues
03/30/17			
04/04/17			
04/06/17			
04/11/17			
04/13/17		**Midterm Exam**	**Chapters 20, 13, 14, 15**
04/18/17		**Spring Break**	 
04/20/17			
04/25/17	Ch 16		**Basic Data Structures** Linked Lists, Array Lists, Stacks and Queues, Hash Tables
04/27/17			
05/02/17			
05/04/17			
05/09/17	Ch 17		**Tree Structures** Binary Trees, Red/Black Trees, Heaps
05/11/17			
05/16/17			
05/18/17			
05/23/17			
05/25/17	Ch 18		Generic Classes
05/30/17			
06/01/17	Ch 19		Stream Processing
06/06/17			
06/08/17		**Final Exam**	**Comprehensive Final**

Imperial Valley College Computer Sciences Code of Conduct

We believe that everyone has a right to work in an environment where people treat one another honestly and fairly. Because academic dishonesty can threaten this environment we will pursue abuses of the policies outlined below aggressively.

When you submit any piece of work for grading or other evaluation, the reader will assume that you are the sole author of all aspects of it. The expectation is that you are the originator of every idea and author of every sentence in an essay, help file, or other document, that you wrote every line of code, that you designed every data structure and created every piece of data. In practice, you will often have good reason to use other people's work or to collaborate with others in creating a work that you will submit. In these cases, it is your responsibility to make the reader clearly aware of what has come from other sources. If a reasonable reader would assume, on reading your work, that some part was created by you alone when in fact it was created by someone else or by you in partnership with someone else, that reader has been misled. It is your responsibility to prevent such misimpressions, and the department will hold students accountable both for intentionally misleading readers and for failing to prevent reasonable misimpressions.

Code Plagiarism.

Computer science is a discipline where it is difficult to draw a precise line between acceptable and unacceptable collaboration. On the one hand we want to encourage you to try out other peoples' code; code reuse is an area of active research within computer science. On the other hand you will learn to write code only if you do it yourself. You are not learning and have crossed the line of acceptable behavior if you do not understand the solution you have submitted. We have the right to ask students to explain the code they submit. If you have "reused" someone else's code to an extent that you feel a need to change variable names or slightly rearrange the order of statements, then you have also violated the honor code. We also reserve the right to use electronic tools to check code for plagiarism. By submitting code for grading in any computer science course, you grant the instructor a license to send a copy of that code for plagiarism analysis to a research service, such as MOSS. The instructor, or their service, may compare your code against other students' code, or compare their code to yours. Give credit to someone else's ideas with a citation rather than turning in their work as your own.

Text Plagiarism.

When you hand in an essay or other writing assignment, you must give credit to your sources. You must provide a reference for any idea, conclusion, information or data that you got from another source (such as a book, an article on the Net, or a person). If you use someone's words, you must show that you are quoting them (use quotation marks or indent long quotes) and your reference should show your exact source (such as the page number of the article or book). If you quote someone, you must quote them accurately, word for word. To avoid plagiarizing, you might find the following articles useful:
Cheating and Plagiarism in Regulations section of IVC General Catalog
How Not to Plagiarize at `http://www.utoronto.ca/writing/plagsep.html`.
Citing Sources and Avoiding Plagiarism at `http://www.lib.duke.edu/libguide/cite/works_cited.htm`.

By submitting a writing assignment for grading in any computer science course, you grant the instructor a license to send a copy of that assignment for plagiarism analysis to a research service, such as TurnItIn. The instructor, or their service, may compare your paper against other students' papers, or compare their papers to yours.

Social Responsibility.

Many people use our machines: students, faculty, staff, and outside visitors. Our machines affect other machines on and off campus and they affect the users of these machines. It is not hard to abuse others by mailing ``spam," ``flaming" to newsgroups, being a ``cracker," displaying digital pornography, bogging down the CPU with processes, or hogging the printer. We expect your use of computer resources will be based on the Golden Rule: do unto others as you would have them do unto you. Poor social responsibility because you are new is one thing, but malicious practices are another matter and will not be tolerated. Do not use BitTorrent or messenger services on IVC Computer Science computers, as these are a common source of computer viruses.

Right to Privacy.

You are encouraged to store *electronic property* on computers provided for your use by Computer Sciences, and you have a privacy right to this information. Others also have a right of privacy to the property they store on our computers. You should not search other's file systems, read their mail, scan or remove their files, try to crack their password, login as someone else, intercept other's network traffic, install viruses, or otherwise violate the right to privacy of others. We will not intentionally abuse your right to privacy. However, to administer our machines we may need to do things you should not, for example, we may need to try to crack your password to verify that it is secure, or kill your processes, or remove your files, or read your email, or otherwise invade your privacy when we suspect you are an abuser of our systems.

Discrimination:

It is the policy of the university that all students, faculty, staff, and guests enjoy an environment free from all forms of discrimination, including ethnic, racial, religious, and sexual harassment.

Disclaimers.

The Imperial Valley College Catalog, and the Student Handbook have additional guidelines on campus standards, behavior, discipline, complaint resolution, etc. The Computer Science Honor Code does not replace or supersede these polices. Faculty teaching computer science courses may establish other *honor* criteria for their classes.

As our machines are part of a larger international network, we assume certain responsibilities as a member of a growing electronic community. Exercising this responsibility may require us to search for suspected abusers of our or others computers. If you suspect that someone has violated your rights as a user of our machines, inform the systems administrator; do not attempt to track them down yourself.

Ideas for this code of honor have been collected from other universities, most notably, Stanford University and the University of Florida.