

ICS 211

Intro to Computer Science II – Data Abstraction & Problem Solving Syllabus

CLASS REGISTRATION

CRN: 34152

Room: Mamane 104

Meeting time: Tuesday and Thursday, 3:15pm-4:30pm

Course Web Community at <http://laulima.hawaii.edu>

INSTRUCTOR

Dr. David J. Nickles

Office: Kōpiko 219

CONTACT METHODS

Email address: nickles@hawaii.edu

Email response time is 24 hours, excluding weekends and holidays.

Office hours (Kōpiko 219): 11:00-12:00 Tuesdays

Office phone: (808) 734-9019

Office fax: (808) 734-9147 (To my attention on the cover sheet)

REQUIRED MATERIALS

TEXTBOOKS AND COURSE MATERIALS

- Title: Data Structures and Algorithms in Java, 2nd Edition, Author: Adam Drozdek, Publisher: Cengage (2005), Textbook ISBN-13: 978-0-534-49252-6. Also available as **eText**.
- A classic composition notebook

ADDITIONAL TECHNOLOGY

- Access to a personal computer (Recommended)
- USB Thumb Drive (Recommended)

COURSE DESCRIPTION

ICS 211 provides an introduction to data structuring as a problem solving approach. This course emphasizes design techniques in order to understand the concepts of algorithms and their complexity, basic software engineering methods, searching and sorting algorithms, and numerical error issues. This course covers abstraction, modularization, and object oriented design and programming methods.

COURSE CONTENT

The operating and development environment for this course is the Java 6 VM and SDK.

- <http://download.oracle.com/javase/6/docs/api/>
- Introductory concepts --- computer hardware, operating system, compiler,

- text editor, and the programming environment.
- Java Fundamentals – programming syntax, comments, identifiers, keywords, variables, primitive and user defined types, and control flow.
 - o Create, edit, and format Java programs
 - o Utilize Java to process and display required data.
 - Software development and software engineering strategies.
 - Recursive Solutions
 - Abstract Data Types
 - o Linked Lists
 - o Stacks
 - o Queues
 - § Priority Queues
 - o Trees
 - § Balanced Search Trees
 - o Tables
 - § Hashing
 - o Graphs
 - Java Class Library and the Collections Library

COURSE COMPETENCIES

Upon successful completion of ICS 211, the student should be able to:

- To be prepared to argue effectively that an algorithm works, using invariants, pre-conditions, and post-conditions
- To recognize the efficiency trade-offs of using arrays, hash tables, linked lists, heaps, and trees
- For each data structure presented, to state in big O notation the running times associated with the standard algorithms discussed
- To recognize when a general collection, stack, queue, priority queue, or graph structure is required to solve a problem
- To be prepared to code the insert, delete, and search operations on all the structures presented
- To be ready to use the concepts presented here and to code sufficiently well to do the work required in the subsequent computer science courses.

LAB PROJECTS

Instructor provides outside of class assignments to demonstrate and reinforce material covered in the lectures. Students will submit lab projects throughout the semester that will demonstrate their abilities to critically think, design and implement solutions. These projects should also demonstrate an understanding of the various concepts/issues of software development presented in class. Specific assignment details will be distributed later when appropriate.

QUIZZES

There will be short timed quizzes given at the beginning of some classes to assess student knowledge of readings in the chapters of the textbook. Reading and studying the concepts before class is an important part of your studies and the quizzes will emphasize this.

EXAMS

There will be three examinations. An exam will be given approximately every 6 weeks. The last exam of the 3 will be the final exam during examination week.

GRADING

Evaluation is based on your own performance on homework assignments and exams. The UH Lualima course webspace will enable easy tracking of progress and grades. There will be homework exercises per topic and three major quizzes.

The following grading scale will be used:

Percentage of Possible Points	Grade
90-100%	A
80-89%	B
70-79%	C
60-69%	D
Below 60%	F

The following weighting of assignments and examinations will be used:

Assessment/Assignment	Weight
Lab Projects	30%
Midterm Exam 1	20%
Midterm Exam 2	20%
Final Exam	20%
Quizzes	10%

OPEN COMPUTER LAB

BLTEd Computing Center
 Location: Mamane 103
 Contact: 808-734-9142
 Hours posted at the lab.

MISCELLANEOUS

Lualima (<http://lualima.hawaii.edu>)

In Lualima, if you want to have a picture avatar to personalize your discussion log postings, you can upload a tasteful picture of yourself in the profile area.

Kapi'olani First-Year Experience (FYE)

Are you a first- or second-semester student with questions about campus services available to you? Do you need to know who to contact for advising about courses for your major? If so, you are invited to contact the First-Year Experience (FYE) initiative at kapstart@hawaii.edu or call 808-734-9245.

Course Revisions

Should a change in this syllabus or the course schedule be deemed necessary, the instructor will announce and publish such changes in the course forums.

Important Student Information (Business, Legal & Technology (BLT) Department)

STUDENT RIGHTS AND RESPONSIBILITIES

In instructional activities, students are responsible for meeting all of the instructor's attendance and assignment requirements. Failure to do so may affect their final grade. In all college related activities, including instruction, they must abide by the college's codes and regulations, refraining from behavior that interferes with the rights and safety of others in the learning environment. Finally, if they decide to file a grievance, they are fully responsible for providing proof that they have been wronged.

ELECTRONIC COMMUNICATION

For the consideration of classmates, beepers must be turned to vibrate during class sessions and cell phones must be turned off. Check your messages between classes or during the break.

EMAIL--University of Hawai'i Policy on Email Communication

The electronic communications policy adopted in December 2005 establishes the University of Hawai'i internet service as an official medium for communication among students, faculty, and staff. Every member of the system has an @hawaii.edu address, and the associated username and password provide access to essential web announcements and email. You are hereby informed of the need to regularly log in to UH email and web services for announcements and mail. Failing to do so will mean missing critical information from academic and program advisors, instructors, registration and business office staff, classmates, student organizations, and others. For more information go to the MyUH website at myuh.hawaii.edu.

WORK AREA/WORKSTATIONS

In consideration of other classroom users, please restart computers, clear workstation area of all rubbish, and return chairs to their proper position at the end of each class session.

WITHDRAWAL

The last day to withdraw from this class is noted on the academic calendar and deadlines at the Kapi'olani CC website, www.kcc.hawaii.edu. Please check this site for the latest updates. It is your responsibility to withdraw via the web or obtain the withdrawal form from the Kekaulike Information and Service Center (KISC), formerly Admission, Records, and Financial Aid offices, or from your counselor. It is to your advantage to consult with your counselor for available options. Note: If you are enrolled in only one course at the College, withdrawing from that course also withdraws you from the College.

STUDENT CONDUCT CODE

The University expects students to maintain standards of personal integrity that are in harmony with the educational goals of the institution; to respect the rights, privileges, and property of others; and to observe national, state, and local laws and University regulations. For more information, please refer to "Student Conduct Code," Kapi'olani Community College General Catalog.

AUDIO AND VISUAL RECORDINGS

Prior permission of the instructor is required for audio and/or visual recordings of lectures or class presentations. Student initiated recording(s) and use of any electronic means of capturing or transmitting lectures or class presentations are prohibited and may be subject to disciplinary action by the College. For more information, please refer to "Student Conduct Code," Kapi'olani Community College General Catalog.

PLAGIARISM/CHEATING

Any student, including collaborators, who cheats or plagiarizes on any quiz, exam, or assignment will receive a "zero score" and will be asked to withdraw from class. If you turn in someone else's work or reformat another person's work as your own, it is cheating. You may not share disks, files, or printouts. Be honest with yourself and with others. If you have concerns, please discuss them with your instructor. For more information, please refer to "Student Conduct Code," Kapi'olani Community College General Catalog.

DISRUPTIVE BEHAVIOR

Any student whose speech or actions intentionally are disrespectful, offensive, and/or threatening; interferes with the learning activities of other students; impedes the delivery of College services; or has a negative impact in any learning environment may be subject to disciplinary action by the College. For more information, please refer to "Student Conduct Code," Kapi'olani Community College General Catalog.

Course Plan

Week	Dates	Description / Topics
	Tuesday & Thursday	
1	1/10, 1/12	Object Oriented Programming
•	1/16	MLK Day Holiday (M)
2	1/17, 1/19	Complexity Analysis
3	1/24, 1/26	Linked Lists
•	1/30	Last day to Drop (M)
4	1/31, 2/2	Stacks, Queues
5	2/7, 2/9	Priority Queues
6	2/14, 2/16	Recursion
•	2/20	Presidents' Day Holiday (M)
7	2/21, 2/23	Midterm #1 (2/21) , Trees
8	2/28, 3/1	Trees
9	3/6, 3/8	Multiway Trees
10	3/13, 3/15	Multiway Trees
11	3/20, 3/22	Midterm #2 (3/20) , Graphs
•	3/26 – 3/30	Spring Break (Campus Closed)
•	4/2	Last day to Withdraw (M)
12	4/3, 4/5	Graphs
•	4/6	Good Friday Holiday (F)
13	4/10, 4/12	Sorting
14	4/17, 4/19	Hashing
15	4/24, 4/26	Data Compression
16	5/1	String Matching
•	5/3	Reading/Study Day (R). No classes.
17	5/10	Final Exam Period: (Exam Slot D-17) Tuesday, May 8, 2012, 2:30pm – 4:30pm