

Syllabus of CISP300

2011 Fall Section 12208

Class information

- Class code 12208
- Course Title: Algorithm Design/Problem Solving
- Course Description: This course introduces methods for solving typical computer problems through algorithm design. Topics include assessing and analyzing computer problems in a top-down, divide-and-conquer approach that leads to a programming solution. It also covers programming plans and detailed design documents from which source code versions of programs are created.
- Student Learning Outcome:
 - define operators, including arithmetic, comparison, and logical operators.
 - differentiate control structures, including branches (conditional statements) and loops (pre-checking and post-checking loops).
 - deduce post condition from pre condition for control structures, including assignment statements, branches, and loops.
 - construct a trace table to emulate the execution of a program that utilizes variables, various control structures, data organizations, subroutines, and parameters.
 - contrast the lifespan limits and behaviors of local variables, by-value parameters, and by-reference parameters.
 - compare the two methods of passing results: by-reference parameters and return value.
 - compare in-line copy-and-paste coding with structured subroutines in terms of maintainability, defect containment, testability, and other metrics.
 - synthesize a subroutine to abstract one or more similar blocks of in-line code using local variables, parameters, and return values.
 - differentiate roles involved in software development, including developers, analysts, and test engineers.
- Time and place: F 0800-1105 Room Liberal Arts 121
- Number of units: 3
- Lecture hours: 54
- Lab hours: 0
- Final exam: 12/10/2010 0800-1000

- Additional information: check the Moodle course site at <http://www.someprofs.org/moodle> or <https://www.someprofs.org/moodle> (the https link will warn about a certificate not signed by a CA)

Professor information

- Name: Tak [Auyeung](#)
- Office: Rm 7 of Liberal Arts 133
- Phone number: 916-484-8250
- Email: auyeunt@arc.losrios.edu or tauyeung@drtak.org
- Office hours: Mon/Wed: 1700-1800, Tue/Thu: 0930-1030, Fri: 1300-1400 (online)

Behavioral expectations

- Universal
 - No disruptive behavior is tolerated
 - People who want to chat will chat outside
 - People who want to talk on the phone will talk outside
 - Report disruptive students to me if I cannot see
 - No disrespectful behavior is tolerated
 - People who want to text in class will text outside
 - People who want to play games in class will play games outside
 - No (academic) dishonesty is tolerated
 - What is academic dishonesty?
 - See [this link](#) for a more complete explanation
 - What happens when it occurs?
 - The occurrence will be documented
 - The documentation will be sent to the discipline officer
 - The discipline officer will determine the appropriate action in addition to the following:
 - The involved submission (assignment, quiz, exam or etc.) will receive a maximum score of 0 (zero) points.
 - A discovery of academic dishonesty may trigger re-investigations of prior submitted work. Any prior work newly discovered/confirmed as results of academic dishonesty will be retroactively processed. This means points of such work will be deducted.
- In class (face-to-face)

- No phone, no drink, no food and no kid
- Raise hand and wait for acknowledgment before asking and answering questions
- Attendance
 - R-2222: I will drop students who miss the first class session.
 - R-2222: I will drop students with 6% or more unexcused absence.
 - R-2222: I will drop students who do not attend *all* of the first two (for classes that meet once per week) or three (for classes that meet more than once per week) class sessions.
 - I am only required to accept *verified* military duty, jury duty and medical reasons as excused absences. All other absences may or may not be excused at my discretion.
 - The campus health center can verify medical excuses, and it is free.
- Online
 - All students are expected to check email at least once per day
 - Email should be sent with the following information:
 - Subject line
 - Course name (e.g., CISP300)
 - Meeting days (e.g., TuTh, online)
 - Nature (e.g., “due date of assignment 4”)
 - Body
 - Details of the question/comment
 - Actual name of student (as registered)

Resources

- iMail (<https://imail.losrios.edu>) is the official point of contact for both face-to-face and online classes.
- [Moodle at someprofs.org](https://moodle.at.someprofs.org) is the course management tool for both face-to-face and online classes.

Grading

- No make up submitted work unless it is excused.
- *Definitely* no make up work once the solution is disclosed.
- Letter grades
 - < 12.5%: F
 - \geq 12.5% and < 37.5%: D

- $\geq 37.5\%$ and $< 62.5\%$: C
- $\geq 62.5\%$ and $< 87.5\%$: B
- $\geq 87.5\%$: A
- Categories and weights
 - Homework: 20%
 - First exam/project: 20%
 - Second exam/project: 20%
 - Final exam/project: 40%
- Score is assigned based on specific set of criteria of observable learning objectives, not effort or

Schedule

Topic	begin date
Introduction to algorithms. Explain the role of algorithms in computer science and programming.	08/23/11
Present types of statements: sequences, conditional statements, loops. Represent control statements as pseudo code as well as graphical form. Nesting statements. Discuss basic properties of each type of statement.	08/23/11
Discuss the use of variables in an algorithm. Present methods to track variables during the execution of an algorithm.	08/30/11
Logical expressions and how they are used in various kinds of statements. The difference between a condition and a statement. Identify the pre and post conditions of a statement.	09/06/11
Top-down design: reasons and techniques. Relate top-down design to control structure selection.	09/13/11
First exam	09/20/11
Introduction to arrays and array indexing. Explain the limitations of the lack of arrays.	09/22/11
Basic algorithms involving arrays, such as searching in an unsorted and sorted array.	09/29/11
Rationale of subroutines. Kinds of parameters and local variables. The invocation of subroutines.	10/06/11
Records and user defined types. Nested aggregate types.	10/18/11
Second exam	10/20/11
Abstract data type: rationale, example and definitions.	10/25/11
Limitations of ADT. Introduction to object orientation concepts. Classes and	11/01/11

Topic	begin date
objects.	
Inheritance and extension. Abstract classes.	11/08/11
Complexity of algorithms. The big-O notation. Estimate of execution time.	11/17/11
File operations and algorithms that work with files, such as merge sort.	11/29/11
Syntax of a language, and how syntax is described by a meta language, such as BNF.	12/06/11