Syllabus of CISP300

2010 Fall Section 12516

Class information

- Class code 12516
- 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: TuTh 10:30 am-11:50 am Room Liberal Arts 121
- Number of units: 3
- Lecture hours: 54
- Lab hours: 0
- Final exam:12/16/2010 1015-1215

- 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

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Behavioral expectations

- Universal
  - No disruptive behavior is tolerated
  - 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
- Attendence
  - 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 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
  - ≥ 12.5% and < 37.5%: D
  - ≥ 37.5% and < 62.5%: C
  - ≥ 62.5% and < 87.5%: B
  - ≥ 87.5% : A
- Categories and weights
  - Homework: 20%

- First exam: 20%
- Second exam: 20%
- Final exam: 40%

Schedule

Topic	begin date
Introduction to algorithms. Explain the role of algorithms in computer science and programming.	08/24/10
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.	08/24/10
Discuss the use of variables in an algorithm. Present methods to track variables during the execution of an algorithm.	08/31/10
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.	09/07/10
Top-down design: reasons and techniques. Relate top-down design to control structure selection.	09/14/10
First exam	09/21/10
Introduction to arrays and array indexing. Explain the limitations of the lack of arrays.	09/23/10
Basic algorithms involving arrays, such as searching in an unsorted and sorted array.	09/30/10
Rationale of subroutines. Kinds of parameters and local variables. The invocation of subroutines.	10/07/10
Records and user defined types. Nested aggregate types.	10/19/10
Second exam	10/21/10
Abstract data type: rationale, example and definitions.	10/26/10
Limitations of ADT. Introduction to object orientation concepts. Classes and objects.	11/02/10
Inheritance and extension. Abstract classes.	11/09/10
Complexity of algorithms. The big-O notation. Estimate of execution time.	11/18/10
File operations and algorithms that work with files, such as merge sort.	11/30/10
Syntax of a language, and how syntax is described by a meta language, such as BNF.	12/07/10