

# Syllabus of CISP300

*2012 Spring Section 10960*

## Class information

- Class code 10960
- 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 1030-1150 Room Liberal Arts 121
- Number of units: 3
- Lecture hours: 54
- Lab hours: 0
- Final exam: 5/10/2012 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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- Office hours: Mon/Wed: 1200-1300, Tue/Thu: 1800-1900, Fri: 0900-1000 (online)

## Behavioral expectations

- Universal
  - No disruptive behavior is tolerated
    - People who want to chat/game/text/talk/eat/drink will do so outside
    - This is not an exhaustive list of disruptive behavior!
    - Report disruptive students to me if I cannot see
  - No disrespectful behavior is tolerated
  - No (academic) dishonesty is tolerated
    - What is academic dishonesty?
      - See [this link](#) for a more complete explanation
      - In summary, cheating is any deceptive attempt to make any enrolled student's grade/score appear higher than what should be earned according to the said student's own capabilities. I do not give an exhaustive list of ways to cheat here.
    - 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 (considered excessive) 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://www.someprofs.org/moodle) (<https://www.someprofs.org/moodle>) is the course management tool for both face-to-face and online classes.

## Grading

- No make up submitted work unless it is excused *and* before 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.	01/17/12
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.	01/17/12
Discuss the use of variables in an algorithm. Present methods to track variables during the execution of an algorithm.	01/24/12
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.	01/31/12
Top-down design: reasons and techniques. Relate top-down design to control structure selection.	02/07/12
First exam	02/14/12
Introduction to arrays and array indexing. Explain the limitations of the lack of arrays.	02/16/12
Basic algorithms involving arrays, such as searching in an unsorted and sorted array.	02/23/12
Rationale of subroutines. Kinds of parameters and local variables. The invocation of subroutines.	03/01/12
Records and user defined types. Nested aggregate types.	03/13/12
Second exam	03/15/12
Abstract data type: rationale, example and definitions.	03/20/12

<b>Topic</b>	<b>begin date</b>
Limitations of ADT. Introduction to object orientation concepts. Classes and objects.	03/27/12
Inheritance and extension. Abstract classes.	04/10/12
Complexity of algorithms. The big-O notation. Estimate of execution time.	04/19/12
File operations and algorithms that work with files, such as merge sort.	04/26/12
Syntax of a language, and how syntax is described by a meta language, such as BNF.	05/03/12