

## SYLLABUS SUMMER II 2015

### CSCI532 – Algorithm Design

**SECTION: 532.(01E & 02E), Room: (JOUR234)**

**Day and Time: 4:30p-8:30p, 01E Monday and Wednesday, 02E Tuesday and Thursday**

**Meets 7/13/2015 through 8/13/2015**

**Instructor:** Dr. Stephen T. Ha

**Office Hour:** After each class lecture.

Additional by appointment

Please when you e-mail include

532 in the subject of your message

**Office:** By appointment or after each class lecture

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### COURSE DESCRIPTION

**Recommended Text:** "Introduction to Algorithms", second edition by Thomas H. Cormen, Charles E. Leiserson, Ronald L. Rivest and Clifford Stein, Second Edition, Mc Graw-Hill

**Pre-requisite:** CSCI515, CSCI520

**Course Content:** Chapters: 1, 2, 3, 4, 12, 15 (.1, .2, .4), 16.1, 16.2, 24.3, 30.2, 30.3.

If time permits some additional selected topics may also be covered.

**Main Objective:** To teach students how to analyze practical problems in order to identify and develop best algorithms (in terms of time complexity and memory usage) for their solutions.

### STUDENT LEARNING OUTCOMES (SLO)

- 1) To teach students how to analyze algorithms in order to determine their calculation complexity in the terms of Big Oh, Big theta and Omega. Recursions.
- 2) To teach sorting algorithms (such as mergesort) and their applications.
- 3) Binary search trees and optimal binary search trees, and their applications.
- 4) Dynamic programming algorithms for problems such as line scheduling, matrix chain multiplication, longest common subsequence, and their practical applications.
- 5) Greedy algorithms for problems such as the activity selection problem and its application to resource planning.
- 6) If time permits, Graph Algorithms such as Dijkstra's shortest path algorithm, FFT.

Some additional topics (such as Chinese Remainder Theorem) may be covered if time permits.

Quizzes, and tests will include questions on each of the student learning outcome listed above.

### TOPICS BY WEEKS

WEEK	TOPIC
1-2	Time complexity analysis, algorithm correctness, sorting algorithm (ch 1-2)
3	Asymptotic functions, recursion, recurrences (ch 3-4)
4	Binary search trees and review (ch 12)
5	Exam 1
6-7	Dynamic programming algorithms (ch 16)
8	Review
9	Exam 2
10-11	Greedy algorithms, graph algorithms, Dijkstra's algorithm (ch 16, 24)
12	FFT implementation (ch 30)
13	Review
14	Final Exam

## COURSE EVALUATION

### Basis for Evaluation:

Two midterm exams	50%
Assignments and quizzes	25%
Comprehensive final test	25%

### Grading Policy:

<b>A:</b>	100% - 90%
<b>B:</b>	89% - 80%
<b>C:</b>	79% - 70%
<b>D:</b>	69% - 60%
<b>F:</b>	Less than 59 %

The professor reserves the rights to reward students for continuous hard work or for an exceptional novel scientific work (as judged by the instructor) relevant to the topics covered.

## CHEATING WILL NOT BE TOLERATED

### COURSE POLICIES

**Quizzes:** are to be solved independently during the class period. The quizzes will usually be administered at the beginning of each class (except for the very first class) pertaining to materials covered in the previous class(es). Makeup quizzes will not be given. However, the lowest quiz grade will be dropped. Any class material missed by the student is the student's responsibility to acquire.

**Tests:** The two in-class tests will be given roughly at regular intervals. Students will be informed of the test dates around a week in advance. The test will take no more than one class period and will be given at the scheduled times only. No opportunity will be given to take the test at earlier or later times except in extreme cases as judged by the instructor.

**Makeup:** Except extreme cases (as judged by the instructor), no individual makeup test will be permitted.

**Assignments:** Two assignments will be given. These must be students' own work. The student is supposed to explain his/her work and to answer all questions about the work.

All quizzes and tests are closed book.

**During the lectures and exams phones must be switched off all the time.**

**Attendance:**

From the Students' Handbook: *"Students are expected to be present for all class meetings of any course for which they are enrolled. Per University Procedure A13.02, effective September 1, 1996, students are responsible for learning about and complying with the attendance policy stated in the catalog, Student's Guidebook, and/or faculty syllabus. It is the prerogative of the faculty to drop students from courses in which they have accrued excessive absences as defined in the course syllabus."*

**The instructor will take the attendance at the beginning of each lecture and only once.**

**If a student misses 3 or more lectures without legitimate reasons, the instructor will make the student drop the course. If this is not possible, the letter grade of 'F' will be assigned to the student.**

Lateness and leaving class early may count as an absence and are not acceptable unless you are ill or a family emergency exists. If you miss a lecture, it is your responsibility to obtain notes from a fellow student. Office hours are not meant for individual lectures. Any class material missed by the student is the student's responsibility to acquire.

**Academic Dishonesty:** Academic integrity is the pursuit of scholarly activity free from fraud and deception and is an educational objective of this institution. Academic dishonesty includes, but is not limited to, **cheating, plagiarizing**, fabricating of information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students. If you are caught in an academic dishonesty situation on **any** course work, you will be given a grade of **F** for the course and referred to the Dean of Students for further disciplinary action.

*"All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment."* (See **Student's Guide Handbook, Polices and Procedures, Conduct**).

**Withdrawal Policy:**

There are deadlines for withdrawing from this course. It is the student's responsibility to follow these deadlines.

**Students with Disabilities:**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

**Office of Student Disability Resources and Services**

**Texas A&M University-Commerce**

**Gee Library**

**Room 132**

**Phone (903) 886-5150 or (903) 886-5835**

**Fax (903) 468-8148**

StudentDisabilityServices@tamuc.edu

**Smoke, Vapor & Tobacco Free Environment:** Procedure 34.05.99.R1 now prohibits the use of vapor/electronic cigarettes, smokeless tobacco, snuff and chewing tobacco inside and adjacent to any building owned, leased, or operated by A&M – Commerce.

The professor may make supplementary information for the course available online. These include class notes, assignments, PowerPoint slides, class announcements, the course syllabus, test dates, etc. The professor will announce in class when such information becomes available online. It is the student's responsibility to follow these announcements.

**We will finalize this course syllabus in the first few lectures. There may be slight changes.**