Texas A&M University
Department of Computer Science and Engineering,
CSCE 312: Computer Organization
Fall 2015

SYLLABUS
Instructor: Dr. Rabi N Mahapatra (rabi@cse.tamu.edu)
Lectures:

- TR 05:30 pm - 06:45 pm **HRBB 124**

Labs:
Section 501: M 10:00 AM – 12:00 PM RDMC 111C
Section 502: W 10:00 AM – 12:00 PM RDMC 111C
Section 503: M 8:00 AM – 10:00 AM RDMC 111C

Dr. Mahapatra's Office: HRBB 520B Tel: 845-5787
Office Hours: TR 4:00 – 5:00 PM by appointment

Website: http://courses.cs.tamu.edu/CPSC312/rabi/index.htm

Teaching Assistants:
Richa Surbhi
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Office Hours: TBA

Peer Teachers:
1. Devin Carr (Sections 501, 502): Email: devincarr@tamu.edu
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3. Junqi Yang (Section 503): Email: junqiyang@tamu.edu
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 Office Hours: TBD
4. Siyu Lin (Section 503): Email: siyul@tamu.edu
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1 Course Information
1.1 Course Overview

CSCE 312 is an introductory course on computer organization. It provides insights into fundamentals of organization and structure of computer systems. One of the objectives of this course is to teach critical thinking, how to learn, and how to communicate technical concepts in the area of computer system. These objectives will be met through lectures, challenging assignments, regular quizzes, and a final examination. The course consists of materials on the following topics: Introduction to Computer systems, Data representation, Logic design, Machine

language, Processor architecture, Memory hierarchy, Linking, Exception control flow, Virtual memory, and System level I/O.

Several laboratory assignments will provide hands-on experience on some of the above topics. Projects allow students to implement material taught in the lectures and laboratory.

1.2 Course Catalog Description

Introduction to computer systems from programmer's perspective: simple logic design, data representation and processor architecture, programming of processors, memory, control flow, input/output, and performance measurements; hands-on lab assignments.

1.3 Prerequisites

The prerequisite for this course is CSCE 221. To be specific, you should be very clear on data structures including list, stacks, and queues. Your familiarity with recursion and exposure to complexity analysis are desirable. Lab assignments will require basic computer skills in implementing the above topics. Obtain accounts on departmental computing systems to work on your lab assignments and projects.

Textbooks
- TB1: The major textbook: *Computer Systems: A Programmer's Perspective,* Randal E. Bryant and David O'Hallaron, 3rd Ed, Prentice Hall, 2015
- TB2: Text for Logic design: *Digital Design*, 2nd Ed, by Frank Vahid, Wiley publication, 2010

Reference:
- The book *The C Programming Language,* 2nd Ed. (ANSI C version) or later, Kernighan & Ritchie, Prentice Hall,
  will be helpful in learning the operating system and programming environment.

2 Course Topics, Quiz and Assignments

Students are required to read the main textbook and other assigned materials as announced time to time. It is highly recommended to be familiar with the material ahead of the corresponding lecture. This course will focus on the topics shown in table below, which may not be covered in this order, or not at all, if time does not permit it.

Week	Topics
1-2	Computer Systems
2-6	Data representation, Arithmetic, Logic Design
6-7	Machine language
7-10	Processor architecture
10-12	Memory hierarchy
12-13	Virtual memory
14	System level I/O
14-15	Review

3 Grading Scheme and Course Requirements

3.1 Attendance Policy

Class attendance is strongly recommended. The student is responsible for any material missed. Missed exams and quizzes may be made up only when the absence is university sanctioned. Medical reasons or other extenuating conditions beyond the control of the student must be properly documented. In general the student must discuss problems **before** the time of the examination and arrange for approval by the Instructor.

3.2 Grading Scheme

The course consists of lectures, quizzes, home works, lab assignments, projects and final examination. The weights on various components are shown in the following table.

Table 2: Course Requirements and Corresponding Weight (subject to change)		
1	Projects	15%
2	Homework	15%
3	Laboratory Assignments	20%
4	Quizzes	25%
5	Test	25%

Final grades will be assigned as follows:
90-100: A
80-89: B
70-79: C
60-69: D
Below 60: F

The scale may be adjusted by the instructor to reflect score variations.

3.3 Examinations

The quizzes and the test will be held in class with exact dates determined in class. Note that there is no mid-term exam. The quizzes are scheduled after each chapter is completed and these are distributed during the semester. The quizzes will replace midterm examination. The quizzes and test will generally test your knowledge of assignment material, so you are responsible for mastering **all** lab, homework, and project material submitted with other partners, as if you did all the work by yourself. Quizzes/test will be closed book and closed notes (unless otherwise stated). The test shall be comprehensive.

3.4 Assignments

Homework, lab exercises and project are substantial assignments.

Homework Assignments: Homework will be assigned sporadically and will typically consist of end-of-chapter exercises and other problems. Homework exercises can be carried out by one or two people, unless stated otherwise. Those are expected to be completed in one to two weeks.

Lab Exercises: Labs are intended to prepare you to tackle the projects, and you will typically be able to complete labs during the assigned lab period. Written lab work will be accepted up to the beginning of the following lab period. To obtain credit for a lab you typically must obtain a ``check-off'' from your lab instructor (TA), signifying that you completed the work during the scheduled lab time. You are responsible for attending lab and demonstrating to your lab instructor that you completed the work.

Course Project: The course projects will integrate most concepts covered during the semester, but it is more open-ended than regular assignments. A written proposal and a final report will be required. The final report and program source code will be due by the deadline announce in the class. The projects will be carried out by a group of two to four people. You are encouraged to form groups as early as possible.

Course labs and projects will involve programming and solving problems in computer organization in the C programming language. All tools will be run on departmental UNIX/Linux and Windows-PC systems.

Assignment handouts will be placed on the course web page ahead of time. The correct approach is to start working on assignments as early as possible and contact us when you encounter difficulties. In general, the closer to the deadline you request our assistance the harder it might be to obtain our help.

3.5 Deadline Policy

Turn in all work by the established deadline. In case you have difficulties finishing an assignment contact the TA or the Instructor <u>before</u> the deadline. Late work can be accepted only under circumstances beyond the student's control and after arrangement with the Instructor, prior to the deadline. **Note**: work turned-in on time is eligible for partial credit. It will always be better to turn work in by the deadline, as trying to 'perfect' it and turning it in late will give you no points at all.

3.6 Submission of Work and Late Submission policy

All assignments / deliverables must be submitted electronically, by the due date and time, using the CSNET portal. Late submission beyond the cutoff will not be accepted in general, unless a University sanctioned excuse is provided ahead of time. A student will earn points when he/she submits the assignment on time, by the partial credit policy. Note that email submissions will not be accepted (they will be ignored without notice). You have to follow the submission and media policies and guidelines published on the web.

In general, late submission will be penalized with a loss of 25% of the total points earned per day late. Partial credit will be given based on the work submitted.

3.7 Re-grading Policy
A student can request re-grading of assignments and exams, if he/she believes that the points assigned are inconsistent with the quality and merits of the submitted work. To request re-grading you have to follow the guidelines below.

1. Re-grading requests must be submitted <u>AT MOST ONE WEEK AFTER</u> the item has been graded and returned to the student and solutions have been made public. After this time limit NO re-grading requests will be honored.
2. Re-grading requests must be as specific as possible and must be accompanied by a reasonable amount of justification and documentation. Requests must be in written form for major assignments and exams.
3. E-mails must be sent to TAs and the instructor within the one week time limit.

3.8 Excused Absences and Make-up Policy

Make-ups for assignments and exams will be given only under circumstances beyond student's control (*a university sanctioned excuse*). Prior arrangements with the instructor must be made when feasible and official verification of circumstances necessitating the absence will be required.

3.9 Course Conduct and Academic Integrity

Each assignment will state the number of people who can work together in a group. Some assignments will be done by students individually. Partners will turn in a single assignment paper (with each partner's name and section number on it) and each partner will receive the same grade. You are also free to work individually. *Acceptable collaboration* with students not on your team (or for an individual assignment) includes: (1) discussing the assigned problems to understand their meaning, (2) discussing possible approaches to assigned problems, or (3) discussing general programming principles in the solution of programming problems or UNIX system features that will help solve the problem. However, you must explicitly acknowledge any and all substantive help received from someone during the course of the preparation of your solution.

Unacceptable collaboration on homework includes: (1) copying (verbatim use) of physical papers or computer files, or (2) submission of solutions that are jointly authored, or authored either wholly or in part by other individuals not on your team.

In general, the strategy and approach of solutions may be developed jointly but all actual solutions must be constructed and written up by individual teams. No code may be shared between teams. For written assignments, solutions may *sketched* out with other teams, however each team must construct the final form of their solution individually and write-up their own solution. You should make sure all of your files are properly secured since you may be responsible if some one copies your files.

Should questions arise during the course of working on a problem, please feel free to immediately contact the instructor either by telephone, electronic mail, or by an office visit. In principle, if you work with others in good faith and are honest and generous with your attributions of credit you will have no problems.

4 Teaching Personnel and Resources

The Instructor, the Teaching Assistants and peer teachers are your most valuable resources. We are available during our published office hours or at other times <u>by appointment</u>. Walk in any time during the office hours to see the instructor or the TA. We can meet at other times but students need to arrange for an appointment. Unannounced visits outside office hours can be honored if the instructor is available. Make it a habit of yours to discuss with your TA/peer teacher or the Instructor homework problems and other assignments. Contact the TA or the Instructor to collect your scores of all graded items. Observe the re-grade period mentioned above.

The Instructor and the TAs will provide all necessary resources for the course to progress smoothly, including, handouts, notes, and programming code files, among others. Most items will be posted to the web page for the students to download.

People having difficulties with either the material or finishing assignments, are strongly encouraged to discuss the problems with the Instructor and the TA *as early as possible*. Things can be corrected when problems are addressed early. The Instructor will propose a recovery plan for the student. The recovery plan will be a course of action that will assist the student boost his/her understanding of the material and perform better. As a rule of thumb, the more a student delays to contact the Instructor concerning problems with the material, the more intense effort will be required of the student in order to recover.

5 Scholastic Dishonesty

This course is governed by the Aggie Code of Honor and Texas A&M University Student Rules (http://student-rules.tamu.edu). Scholastic dishonesty will be treated very strictly as per Texas A&M University rules. Unacceptable collaboration will be considered a violation of the Student Code of Conduct, and will result in a failing grade for the course. In other words: if you cheat, you will fail. Typically, the given incident has to be reported to the Department Head. The Department Head will then determine the type of punitive actions, ranging from 0 points for the assignment, an F grade in the course, academic suspension, or even expulsion from Texas A&M University.

6 Americans with Disabilities Act (ADA) Policy Statement

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 believe you have a disability requiring an accommodation, please contact Disability Services, in Cain Hall, Room B118, or call 845-1637. For additional information visit http://disability.tamu.edu.

7 Academic Integrity Statement and Policy

"An Aggie does not lie, cheat or steal, or tolerate those who do."
For additional information, please visit: http://www.tamu.edu/aggiehonor