Department of Computer Science
College of Engineering
University of the Philippines
Diliman, Quezon City

COURSE NO.	:	CS 130
COURSE TITLE	:	Mathematical Methods in Computer Science
COURSE CREDIT	:	3 units
SEMESTER	:	Second Semester, AY 2015-2016
INSTRUCTOR	:	Jan Michael C. Yap
EMAIL ADDRESS	:	janmichaelyap@gmail.com

COURSE DESCRIPTION

Vector spaces. Linear transformations. Matrices and determinants. Ordinary differential equations and systems of ordinary differential equations; Fourier series; Laplace transforms.

CLASS SCHEDULE

(THQ) Tuesdays and Thursdays, 7:00 - 8:30 AM
(THR) Tuesdays and Thursdays, 8:30 - 10:00 AM

COURSE OUTLINE

0. Introduction to the Course

1. Linear Algebra

   (a) Introduction to Matrices and Vectors

   (b) Solving Linear Systems

   (c) Vector Spaces

   (d) Eigenvectors and Eigenvalues

   (e) Linear Transformations

   (f) Matrix Factorization

2. Differential Equations

   (a) Ordinary Differential Equations

      - First Order Differential Equations
      - Higher Order Differential Equations
      - System of Differential Equations

   (b) Laplace Transforms

   (c) Fourier Series

GRADING SYSTEM

Requirements:

3 Exams	60%
2 Problem Sets	40%

$92 \leq \text{FG} \leq 100$	1.00
$88 \leq \text{FG} < 92$	1.25
$84 \leq \text{FG} < 88$	1.50
$80 \leq \text{FG} < 84$	1.75
$76 \leq \text{FG} < 80$	2.00
$72 \leq \text{FG} < 76$	2.25
$68 \leq \text{FG} < 72$	2.50
$64 \leq \text{FG} < 68$	2.75
$59 < \text{FG} < 64$	3.00
$\text{FG} \leq 59$	5.00

CLASS POLICIES

CONSULTATIONS. Schedule of the instructor's free times for the semester would be **Tuesdays and Thursdays, 10:00am-11:30am, Wednesdays and Fridays, 1:30pm-4:30pm**. Due to other commitments apart from teaching and to ensure proper queueing of multiple requests for consultations, students who wish to schedule a consultation must first send an e-mail to the e-mail address mentioned in the first part of the syllabus setting an appointment **at least 24 hours before** the requested date and time of consultation. Note however that a rescheduling of the consultation may be done subject to the availability of instructor.

WEBSITE. Materials pertinent to our course can be downloaded here: http://bit.ly/CS130NiJan. Announcements will also be posted there. Pertinent announcements will be posted **Mondays and Wednesdays, 8:00pm at latest**. If there are no announcements posted by that time, then classes are assumed to proceed as usual.

EXAMS. Exams, including the finals, are usually held during class hours. Answer sheets would be provided on the date of the examination. Use a ballpoint, gel, or sign pen with black or blue ink when taking exams. **No make-up exam will be given unless a valid excuse is given**. Complaints regarding exam results will be entertained only within a period of **one calendar week after the release of the results**. Otherwise, no complaints regarding the examination results will be accepted.

PROBLEM SETS. Submission of problem sets should be done on or before the designated deadlines (to be announced in future sessions), which are scheduled a few days before a exam. Late submissions would incur a 20% deduction per day late, and can incur a maximum of 100% deduction. Additionally, **no problem set submission would render a student ineligible to take the next subsequent exams**. For example, if Problem Set 1 was not submitted, then s/he will not be eligible to take Exam 2 and Exam 3. Note though that even if the problem set will no longer merit any points, it is considered a requirement, and non-submission of the deliverable on or before the deadline of submission of grades would mean a grade of INC assuming FG is passing. Unlike exams, complaints regarding problem sets have no prescription period.

FINAL EXAM. If the pre-final grade (PFG) incurred from the long exams and machine problems is below 72, the student must take the final exam. Those with at least 72 as PFG may opt to take the final exam, but are not required to do so. In the event that a student takes the final exam (FE), the computation of the final grade (FG) is as follows:

$$FG = (0.7 \times PFG) + (0.3 \times FE)$$

If the student's PFG is below the minimum required to at least get a passing grade even after getting a perfect score in the final exam, then the final exam would serve as a "removal" exam *provided that s/he has submitted all the machine problems and taken all the exams prior to taking the final exam.* The student must then get a perfect score for the final exam to get a passing final grade. **No make-up/special final exam will be given, regardless of the excuse**.

INTELLECTUAL DISHONESTY. Intellectual dishonesty of any form will be subjected to proper disciplinary action as per Article V, Section 2 of the Code of Student Conduct (a copy is downloadble from our website). If found guilty, results of the requirement/s in question will be nullified, final grade will be recomputed, and a corresponding change of grade will be filed if warranted.

CLASS HOURS. The official designated hours for the class is from 7:00am until 8:30am / 8:30am until 10:00am. However, to take into consideration possible classes enrolled by some of the students before and after our class, the session will normally start at 7:10am / 8:40am and will end at 8:15am / 9:45am. In the event of unforeseen cancellation of classes (e.g. natural disasters) and/or when needed, we will adjust the start and end times to the official designated hours for a number of future sessions to cover lost time and avoid holding additional make-up classes.

ATTENDANCE. A student whose absence exceeds six days will be forcibly dropped from the course and may be given a grade of 5.0 if the excuse for the majority of the absences are not excused/valid. Absence is defined as not being in class at least 30 minutes after the official start time of the class.

DROPPING THE COURSE. A student is considered dropped upon completion of the dropping procedure (see https://crs.upd.edu.ph/downloads/OnlineDroppingFlowchart.pdf). A student may officially drop the course on or before April 20, 2016.

REFERENCES

- B. Kolman, **Introduction to Linear Algebra with Applications**

- R. Larson, **Elementary Linear Algebra**

- E. Rainville, P. Bedient, and R. Bedient, **Elementary Differential Equations**

- A.J. Hobson, **Just The Maths**, https://www.uea.ac.uk/jtm/contents.htm

- P. Dawkins, **Paul's Online Math Notes**, http://tutorial.math.lamar.edu/

- **Google**, http://www.google.com