University of Computer Studies

B.C.Sc./B.C.Tech (Forth Year)

402 First Semester

COURSE DESCRIPTION

Course code number	**CST-402 First Semester**	**Course Title**	**Mathematics of Computing IV**
Semester hours	4 hours	**No. of Credit Units**	3
		Course Coordinator	

Course Description

CST-402. **Mathematics of Computing IV**

First part of the course covers numerical methods for differential equations.
Second part of the course covers graphical methods of displaying data, descriptive statistics, binomial and other discrete distributions, normal and other continuous distributions, point and interval estimation, hypothesis tests based on one and (time permitting) two samples, simple linear regression and correlation, applications to health-related fields, business, social science, and daily life, contingency tables (time permitting).

Textbook

Mathematics of Computing (Volume IV)

Course Outcomes

After completing the course, students will be able to:

1. Apply the fundamental concepts of Ordinary Differential Equations and Partial Differential Equations and the basic numerical methods for their resolution.

2. Solve the problems choosing the most suitable method.

3. Understand the difficulty of solving problems analytically and the need to use numerical approximations for their resolution.

Assessment Plan for the Course

Class Attendance and Participation	-	10%
Quizzes	-	10%
Assignment	-	10 %
Test	-	10%
Final Exam	-	60%

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Class Attendance and Participation Policy:

- **Attendance**

Class attendance is **mandatory**. Most of the material you will learn will be covered in the lectures, so it is important that you not miss any of them. You are expected to show up on time for class, and stay for the whole lecture. Students are expected to attend each class, to complete any required preparatory work (including assigned reading) and to participate actively in lectures, discussions and exercises.

• Mobile phones **must** be silenced and put away for the entire lecture unless use is specified by the instructor. You may not make or receive calls on your cell phone, or send or receive text messages during lectures.

• You are responsible for all material sent as email. Ignorance of such material is no excuse. You are responsible for all materials presented in the lectures.

• Your conduct in class should be conducive towards a positive learning environment for your class mates as well as yourself.

- **Quizzes, assignments, tests and Exam**

Your performance in this class will be evaluated using your scores for attendance, quizzes, homework assignments, two tests and one final examination. There are no planned extra credit projects or assignments to improve your grade.

We will take a short quiz for every lecture.

There will be 12 homework assignments, roughly one per week. Please show all your work and write or type your assignments neatly. Credit cannot be given for answers without work (except on true-false, always-sometimes-never, or other multiple choice questions).

Test will start after two or three chapters finished and the coordinator will announce the date for the test.

Any assignment or quiz or test is simply missed, regardless of the reason why (e.g. illness, work, traffic, car trouble, computer problems, death, etc.), and **earns a grade of zero**. You are strongly encouraged to complete all assignments and attend all quizzes so that you can check that you understand the material and can throw out bad grades, or grades for which you had to miss an assignment or quiz for a valid reason. **Late submissions will not be accepted for any graded activity for any reason.**

- **There are no extra credit opportunities.**

Students may not do additional work nor resubmit any graded activity to raise a final grade.

- **Exam**

The exam will be conducted on-campus, in a classroom. The dates/times/locations will be posted on Board as soon as possible.

For this course, the following additional requirements are specified:

All work submitted for a grade must have been prepared by the individual student. Students are expressly prohibited from sharing any work that has been or will be submitted for a grade, in progress or completed, for this course in any manner with a person other than the instructor and teaching assistant(s) assigned to this course). Specifically, students may not do the following, including but not limited to:

- Discuss questions, example problems, or example work with another person that leads to a similar solution to work submitted for a grade.
- Give to, show, or receive from another person (intentionally, or accidentally because the work was not protected) a partial, completed, or graded solution.
- Ask another person about the completion or correctness of an assignment.
- Post questions or a partial, completed, or graded solution electronically (e.g. a Web site).
- All work must be newly created by the individual student for this course. Any usage of work developed for another course, or for this course in a prior semester, is strictly prohibited without prior approval from the instructor.
- Posting or sharing course content (e.g. instructor provided lecture notes, assignment directions, assignment questions, or anything not created solely by the student), using any non-electronic or electronic medium (e.g. web site, FTP site, any location where it is accessible to someone other than the individual student, instructor and/or teaching assistant(s)) constitutes copyright infringement and is strictly prohibited without prior approval from the instructor.

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Tentative Lesson

No	Topics	Week	Remark
I	**Chapter 21 Numerics for ODEs and PDEs**		
1	21.1 Methods for First-Order ODEs	Week 1-2	Assignment 1, 2
2	21.2 Multistep Methods	Week 3-4	Assignment 3,4
3	21.3 Methods for Systems and Higher Order ODEs	Week 5	Assignment 5
	Test I		
II	**Chapter 25 Mathematical Statistics**		
4	25.1 Introduction. Random Sampling	Week 6-8	
5	25.2 Point Estimation of Parameters		Assignment 6
6	25.3 Confidence Intervals		Assignment 7
7	25.4 Testing of Hypotheses. Decisions	Week 9-10	Assignment 8
	25.5 Quality Control	Week 11	Assignment 9
	25.6 Acceptance Sampling	Week 12	Assignment 10
	25.7 Goodness of Fi[redacted]Test	Week 13	Assignment 11
	25.8 Nonparametric Tests	Week 14	Assignment 12
	25.9 Regression. Fitting Straight Lines. Correlation	Week 15	
	Test II		
	Revision		