

**CS 3513: Numerical Methods for Digital Computers**  
**Term Spring 2020**  
**Meetings** Wednesday 4.30 -7.10 pm, NCB 244

**Instructor Contact Information**

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**TA Contact Information**

**Name:**  
**Office Phone:**  
**Office Location:**  
**Email:**  
**Office Hours:**

**General Course**

**Prerequisites:** MATH 2153; MATH 3013 or concurrent enrollment; or MATH 3263 and knowledge of programming.

**Course Description:**

Errors, floating point numbers and operations, interpolation and approximation, solution of nonlinear equations and linear systems, condition and stability, acceleration methods, numerical differentiation and integration.

**Required Text:**

J. Solomon: *Numerical Algorithms- Methods for Computer Vision, Machine Learning and Graphics*. 2015 CRC Press, ISBN: 978-1-4822-5188-3

**Reference:**

K. Atkinson, W. Han: *Elementary Numerical Analysis*. Third Edition, Wiley, ISBN: 978-0-471-43337-8

Autar Kau, E. E, Kalu: *Numerical Methods with Applications: Abridged*. Second Edition, ISBN: 978-0-578-05765-1

## Assignments & Tentative Academic Calendar

Week #	Date	Material to be Covered	Reading
1	Jan 15	Introductory Material Numerics and Error Analysis 2.1 Storing Numbers with Fractional Parts 2.2 Understanding Error	Chap 2
2	Jan 22	Numerics and Error Analysis 2.2 Storing Numbers with Fractional Parts 2.2 Understanding Error	Chap 2
3	Jan 29	Linear Systems 3.4 Gaussian Elimination 3.5 LU Factorization	Chap 3
4	Feb 5	Linear Systems 3.4 Gaussian Elimination 3.5 LU Factorization <b>Quiz 1</b>	Chap 3
5	Feb 12	Taylor Series	
6	Feb 19	Taylor Series	
7	Feb 26	<b>Test 1</b>	
8	Mar 4	Nonlinear Systems 8.1 Root-Finding 8.1.3 Bisection Method 8.1.4 Newton's Method 8.1.5 Secant Method	Chap 8
9	Mar 11	Nonlinear Systems 8.1 Root-Finding 8.1.3 Bisection Method 8.1.4 Newton's Method 8.1.5 Secant Method	Chap 8
<b>10</b>	<b>Mar 16- Mar 20</b>	<b>Spring Break</b>	
11	Mar 25	Accelerating Convergence	
12	Apr 1	<b>Test 2</b>	
13	Apr 8	Interpolation 13.1 Polynomial Interpolation	Chap 13
14	Apr 15	Interpolation 13.1 Polynomial Interpolation <b>Quiz 2</b>	Chap 13
15	Apr 22	Integration 14.2 Quadrature 14.3 Differentiation	Chap 14
16	Apr 29	Integration	Chap 14
	<b>May 6</b>	<b>Final Exam</b>	

## Exams

There will be two Quizzes, two Tests, as well as a Final Exam.

Quiz #1:	Feb 5, 2020
Quiz #2:	Apr 15, 2020
Test #1:	Feb 26, 2020
Test #2:	Apr 1, 2020
Final Exam:	May 6, 2020

<b>Grading (credit) Criteria</b>	<p>There will be <u>eight</u> assignments. The grade will be determined as described below.</p> <table><tr><td>Quizzes:</td><td>10%</td></tr><tr><td>Test #1:</td><td>15%</td></tr><tr><td>Test #2:</td><td>20%</td></tr><tr><td>Final Exam:</td><td>15%</td></tr><tr><td>Homework</td><td>35%</td></tr><tr><td>Attendance:</td><td>5%</td></tr></table> <p>Grades are assigned according to the following scale:</p> <table><tr><td>[&gt;= 90%]</td><td>A</td></tr><tr><td>[80-90%]</td><td>B</td></tr><tr><td>[70-80%]</td><td>C</td></tr><tr><td>[60-70%]</td><td>D</td></tr><tr><td>[0-60% ]</td><td>F</td></tr></table>	Quizzes:	10%	Test #1:	15%	Test #2:	20%	Final Exam:	15%	Homework	35%	Attendance:	5%	[>= 90%]	A	[80-90%]	B	[70-80%]	C	[60-70%]	D	[0-60% ]	F
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[80-90%]	B																						
[70-80%]	C																						
[60-70%]	D																						
[0-60% ]	F																						
<b>Make-up Exams</b>	Make-up exams are only given to those students who coordinate the missing of an exam prior to the originally scheduled exam date and time.																						
<b>Extra Credit</b>																							
<b>Late Work</b>	Assignments are due in class/ online on the dates given. If a student submits an assignment after the due date without having made arrangements with the instructor, a minimum of 15 points (based on an assignment grading scale of 100 points) or 15 percent of the total points will be deducted for each day, or part thereof, that the assignment is late.																						
<b>Class Attendance</b>	Class attendance will be documented																						

## OSU Academic Integrity Policy:

OSU is committed to maintaining the highest standards of integrity and ethical conduct. This level of ethical behavior and integrity will be maintained in this course. Participating in a behavior that violates academic integrity (e.g., unauthorized collaboration, plagiarism, multiple submissions, cheating on examinations, fabricating information, helping another person cheat, unauthorized advance access to examinations, altering or destroying the work of others, and altering academic records) will result in an official academic sanction. Violations may subject you to disciplinary action including the following: receiving a failing grade on an assignment, examination or course, receiving a notation of a violation of academic integrity on your transcript, and being suspended from the University. You have the right to appeal the charge. Go to <http://academicintegrity.okstate.edu/> for a video on OSU's academic integrity policy and additional information.