

# EAS 596 Course Syllabus

## Introduction to Numerical Mathematics for Data Scientists

### Fall 2019

#### Instructors

Dr. Gary Dargush Bell 223 <a href="mailto:gdargush@buffalo.edu">gdargush@buffalo.edu</a> 716-645-2315 Office Hours: W 4:00-6:00 PM	Dr. David Salac Jarvis 326 <a href="mailto:davidsal@buffalo.edu">davidsal@buffalo.edu</a> 716-645-1460 Office Hours: MW 2:15-3:30 PM
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#### Teaching Assistants

Betsy McCall Bell 250 <a href="mailto:betsymcc@buffalo.edu">betsymcc@buffalo.edu</a> Office Hours: T/Th 3:30-5:30 PM	Tong Wu Bell 250 <a href="mailto:tongwu@buffalo.edu">tongwu@buffalo.edu</a> Office Hours: Fr 12:00-4:00 PM
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#### Course Meeting Times

MW, 11:00 AM – 12:30 PM (Dargush), Bell 250  
MW, 12:30 PM – 2:00 PM (Salac), Norton 218

#### Course Description

- To develop the ability to formulate and solve problems using mathematical methods and tools
- To apply knowledge gained in lower level mathematics courses
- To introduce concepts and methods of linear algebra
- To introduce a broad range of numerical methods
- To develop the ability to identify, understand, and solve algebraic equations
- To develop the ability to identify, understand, and solve differential equations
- To develop experience with numerical and symbolic mathematical software and their use in problem solving

#### Prerequisites

 Calculus

#### Textbooks & Other Course Materials

 There are three required texts:

- G. Strang, Introduction to Linear Algebra, 5th ed., Wellesley-Cambridge Press, 2016.
- L. N. Trefethen, D. Bau, Numerical Linear Algebra, SIAM, 2017.
- L. V. Fausett, Applied Numerical Analysis Using MATLAB, 2nd Ed., Prentice Hall, 2008.

You may find the following other references useful, but they will not be used in the course and you are not required to purchase them.

- S. C. Chapra, Applied Numerical Methods with Matlab for Engineers & Scientists, 4rd Ed., McGraw-Hill, 2018.

- S. S. Rao, Applied Numerical Methods for Engineers and Scientists, Prentice Hall, 2002.
- H. Moore, MATLAB for Engineers, 4th Ed., Pearson, 2015. This book is recommended to enhance your MATLAB programming skills.
- S. J. Chapman, Essentials of MATLAB Programming, Cengage Learning, 2009.
- W. H. Press, S. A. Teukolsky, W. T. Vetterling, B. P. Flannery, Numerical Recipes: The Art of Scientific Computing, Cambridge University Press, 2007.

### Important Dates

- Last Day to Add/Drop — Tuesday, September 3, 2019
- Last Day to Resign — Friday, November 8, 2019
- Midterm Exam — TBD
- Final Exam — 11:45 AM – 2:45 PM, Wednesday, December 11, 2019

**Grading Policy** Grades will be based on points accumulated from the course requirements.

Course Requirement	Percent of Final Grade
Exams (2)	60% (25/35% Each)
Homework Assignments (Approx. 10)	40% (4% Each)

You will be able to drop 1 homework assignment.

Exact cutoffs for specific grades will depend on the level of difficulty of exams and assignments. These cutoffs will be determined once the final exam has been graded. **All sections of EAS 596 will be assigned the same cutoffs.** However, the cutoffs will not exceed the following:

Percentage	Final Grade
92	A
82	B
72	C
62	D

In certain cases, students may be eligible to receive a temporary incomplete (“I”) grade. Students may only be given an “I” grade if they have a passing average in coursework that has been completed and establish well-defined parameters to complete course requirements. Prior to the end of the semester, students must initiate the request for an “I” grade and receive the instructor’s approval. Detailed information is available from the Undergraduate Course Catalog: <http://undergrad-catalog.buffalo.edu/policies/grading/explanation.shtml#incomplete>.

**Computing/MATLAB** Most assignments will have a computing component. MATLAB will be used throughout the course. MATLAB is available on all PCs in the SENS labs and is available through the “My Virtual Computing Lab” available to all students.

**Course Requirements** The following table summarizes the requirements of the course.

Requirement	Quantity	Material Covered	Date
Exams	2	(1) Through numerical linear algebra (2) Through Integration/Comprehensive	(1) Week 8 (2) Finals Week
Homework	≈ 10	Variable; related to material covered in lecture	Submitted in-class

### Expectations of Students

- Students are expected to act in a professional manner. A student’s grade may be reduced due to unprofessional or disruptive behavior. Examples include coming to class late, texting (or otherwise using your cell phone) during class, your cell phone ringing during class and/or exams, etc.
- Homework assignments will be assigned approximately weekly. Homework assignments are due **at the assigned date and time**.
- Homework assignments will be graded and returned to students.
- **Late submission of assignments will receive a grade of zero.**
- Students are encouraged to discuss assignments and share ideas, but each student must independently write and submit their own solution.
- Makeup exams will be given in the following circumstances only:
  1. You contact the instructor prior to the exam
  2. You have a valid and documented reason to miss the exam
    - Serious illness or family emergency are acceptable reasons
    - Sleeping in, lack of preparation, ennui, grogginess, etc. are not acceptable excuses

**Accessibility Services and Special Needs** If you have a disability and may require some type of instructional and/or examination accommodation, please inform me early in the semester so that we can coordinate the accommodations you may need. If you have not already done so, please contact the Office of Accessibility Services (formerly the Office of Disability Services) University at Buffalo, 25 Capen Hall, Buffalo, NY 14260-1632; email: [stu-accessibility@buffalo.edu](mailto:stu-accessibility@buffalo.edu) Phone: 716-645-2608 (voice); 716-645-2616 (TTY); Fax: 716-645-3116; and on the web at <http://www.buffalo.edu/accessibility/>. All information and documentation is confidential. The University at Buffalo and the School of Engineering and Applied Sciences are committed to ensuring equal opportunity for persons with special needs to participate in and benefit from all of its programs, services and activities.

**Academic Integrity** This course will operate with a zero-tolerance policy regarding cheating and other forms of academic dishonesty. Any act of academic dishonesty will subject the student to penalty, including the high probability of failure of the course (i.e., assignment of a grade of “F”). It is expected that you will behave in an honorable and respectful way as you learn and share ideas. Therefore, recycled papers, work submitted to other courses, and major assistance in preparation of assignments without identifying and acknowledging such assistance are not acceptable. All work for this course must be original for this course. Please be familiar with the University and the School policies regarding plagiarism. Read the Academic Integrity Policy and Procedure for more information: <http://undergrad-catalog.buffalo.edu/policies/>

[course/integrity.shtml](#) Visit the Senior Vice Provost for Academic Affairs web page for the latest information at <http://vpue.buffalo.edu/policies/>