MTH 309T
Introduction to Linear Algebra
Fall 2019

Class Times:

- Lectures: Tue Th 9:30-10:50 PM, NSC 205
- Recitations:
  - T1: Tue 8:00-8:50 AM, Talbert 111
  - T2: Tue 1:00-1:50 PM, Clemens 102
  - T3: Thu 8:00-8:50 AM, Park 146

Note: Recitations will start the first week of classes.

Instructor: Bernard Badzioch
108 Mathematics Building
badzioch@buffalo.edu
Office Hours: Thu 5:00-6:30 PM and by appointment.

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Office Hours: TBA

Course Resources:

- **UBx MTH 309 website** (learning.buffalo.edu) will be used for homework assignments, for posting lectures notes and all other course information.
- **Lecture notes.** Skeletal lecture notes for each week will be posted on the UBx website under the Lecture Notes tab. Please print the notes and bring them to class to follow the lectures along.
- **Anaconda Distribution of Python 3.7.** This course will often rely on computer-based calculations. We will be using the Anaconda distribution of Python 3.7. This is free software available for Mac, Linux, and Windows. It can be downloaded at www.anaconda.com/distribution/. Even if you have Python already installed on your computer you should install this distribution since it includes Jupyter notebook and some Python modules we will need. It will be convenient if you install the software on a laptop, if you have one, since then you will be able to bring it to recitations or office hours if needed.
- **Piazza** (piazza.com/buffalo/fall2019/mth309t)**.** This website will be used as a message board for questions concerning this course. If you have such a question please post it on Piazza instead of e-mailing me. In this way other students who may have the same problem will benefit. If you know the answer to a question somebody else posted on Piazza please answer it. Do not use Piazza for personal matters (concerning your grade etc.), e-mail me directly with such issues.
- **Textbook.** D. Lay, S. Lay, J. McDonald Linear Algebra and its Applications, 3rd custom UB edition. Note: 3rd custom UB edition is the same at the regular 5th edition.
  While we will cover almost all material of this book, we will not follow it too closely. Also, we will not use it for homework. It will be useful to have some textbook for a reference, but you will be fine using a different edition of this book, or even some other linear algebra text.
- **UBLearns** (ublearns.buffalo.edu)**.** We will use UBLearns rarely. It may be of use for some homework assignments.

Homework: All homework assignments will be posted on the UBx website, under the Course tab. Homework will be assigned each Thursday and will be due on Friday the following week.

Exams: There will be three midterm exams:

- **Exam 1:** Thursday, October 3, 9:30-10:50 AM, NSC 205
- **Exam 2:** Thursday, October 31, 9:30-10:50 AM, NSC 205
- **Exam 3:** Tuesday, December 12, 8:00-11:00 PM, NSC 205

Grading:

- Homework: 19%
- Exam 1, 2, 3 : 27% each

In addition you can get up to 5% extra credit for class participation. Class participation includes asking or answering question in class or on Piazza, office hours attendance etc.

What to expect from this course:

- **What is it good for.** Linear algebra is a major area of mathematics with a lot of applications to computer science, engineering, data analysis, business etc. I will explain several of such applications during this course.
- **What should be easy.** One reason behind usefulness of linear algebra is that computations involved in many of its problems are fairly easy to perform. For example, during the first week of classes you will learn a procedure for row reduction of a matrix. As you will see row reduction is straightforward, but majority of computational problems we will deal with later on will boil down to performing row reduction of some matrix. Overall, computations in this course should be easier than the ones you saw in calculus classes.
- **What may be harder.** This course will mix computational parts with some theory. Understanding of linear algebra concepts is necessary for any serious applications (e.g. you won't have any use of eigenvectors unless you understand what an eigenvector is). This is usually a more difficult facet of linear algebra courses: there are quite a few new notions that you will need to learn and understand how they relate to one another. Both computational and theoretical problems will appear in homework assignments and exams.
- **Why we will use computers in this course.** Manual calculations are useful when one is learning linear algebra, since they show how linear algebra works. However, in almost all applications the amount of data is far too large to compute anything by hand. Typically one uses conceptual knowledge of linear algebra to set up a problem and to understand its solution, but computations are handled by a computer. Computer-based components of this course are intended to reflect this. Computing tools we will use (Python, Jupter notebook) are free and used in many industries, so there is a good chance that you will find them of use in other courses and in your professional career.

Math Help Center is an additional place (beside lectures, recitations, and office hours) where you can seek help with questions related to this course. The Math Help Center is open Monday-Friday 9:00 AM-4:00 PM in 110 Mathematics Building. It is staffed by math graduate students.

Learning Outcomes: See the MTH 309 Sample Syllabus posted on the Math Department website (www.buffalo.edu/cas/math/ug/ug-courses/syllabi.html) for a description of learning outcomes of this course.

Incomplete Grades. See the UB Catalog for the UB Incomplete Policy: https://catalog.buffalo.edu/policies/explanation.html.

Academic Integrity. See the UB Catalog for the UB Academic Integrity Policy: https://catalog.buffalo.edu/policies/academic_integrity_2019-20.html.

Accessibility Resources. If you need accommodations due to a physical or learning disability please contact the UB Accessibility Resources Office to make appropriate arrangements: https://www.buffalo.edu/studentlife/who-we-are/departments/accessibility.html.