Math 218L - Labs for Linear Algebra
Fall 2019

Credit: 0.5 credits
Pre-Req: Any Calc I class (Math 21L/106L/111L)
Recommended, but not required: CompSci 101
Committment: Two 75 minute labs per week (TTh 10:05-11:20am)
Assessment: Weekly homework

Math 218L will provide hands-on experience in applications of linear algebra in a variety of fields. By giving students an opportunity to practice and apply concepts learned in Math 218 using elementary Python coding methods in the NumPy library, students will gain a deeper understanding of linear algebra and its theoretical and real-world applications. In between understanding matrix algebra and vector spaces, students will:

- See how Britain could have foiled the American revolution with linear algebra;

- Understand Google's PageRank algorithm used for web searches;

- Code their own elementary handwriting recognition;

- Implement matrix reduction and decomposition algorithms;

- Fit data to linear and polynomial models;

- Learn Python and NumPy methods to work with matrix and array objects;

- Gain hands-on experience with algorithm timing;

- Understand basic machine learning;

- Deepen understanding of fundamental spaces, bases, and other concepts from Math 218;

- Learn how faces can be decomposed and recognized by computers;

No prior coding experience is required, though CompSci 101 is recommended to be taken at the same time for students without coding experience. Students with little or no coding expeience will be paired with students with prior experience.

Questions? Contact Rann Bar-On at

`rann@math.duke.edu`.