

# Math Tools for Neuroscience

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## General Information :

This class is student taught by Lane McIntosh and Kiah Hardcastle. This course was started many years ago by Greg Corrado and Marlene Cohen, two students in the Neuroscience PhD program, but ceased being taught 9 years ago. Lane and Kiah decided to restart the class 2 years ago, and create the material from scratch based on feedback from neuroscientists who wanted a better intuition for many of the mathematical tools that have become ubiquitous in neuroscience.

The goal of the class is to provide students with an intuitive grasp for some of the mathematical techniques commonly employed in neuroscience through a fun and relaxed environnoment.

As we learn more about the brain, the field of neuroscience is becoming increasingly mathematically oriented. Systems neurocience, fMRI, and microarrays are a few of the fields in neuroscience that are based on sophisticated mathematical analysis. We believe that even neuroscients who aren't planning on working on mathematical questions or using mathematically oriented techniques will benefit from being conversant with mathematical terms. This will allow for more collaboration and perhaps a broader understanding of the field.

By the end of the quarter, words like "PCA", "fourier transform", "linear transformation", and "convolution" should feel familiar. And most importantly, the weekly class should be painless, and hopefully even enjoyable, for people who don't normally like math classes. Because the best way to learn math is by *doing* rather than *watching*, there is a problem set or two associated with the class, but we recognize Stanford students have a lot of stuff on their plates, and so we work hard to minimize the amount of work you have to do, while maximizing the amount you can gain from the class.

When: Thursdays, 12:30-2:30pm, Winter 2017

Where: Fairchild D202

Contacts: Lane ([lmcintosh at stanford](#)) and Kiah ([khardcas at stanford](#))

Office Hours: TBD