



## Graduate Assistants for course material development Visualizations, Data and Simulations

Duke Math and the Information initiative at Duke (iiD) are sponsor the a number of visualization and simulation projects to be used in a course setting to supplement instruction.

There are a number of different projects. Different projects require different mathematical backgrounds. Graduate students from many mathematical STEM departments would have the needed background for a number of the projects.

Most, but not all projects require the ability to program. More than one person might work on the same project splitting the time between different people.

- **Class: Math 490-Mathematics+Disease.**  
**Instructor:** Jim Nolen

**Goals:** Develop some computational exercises to explore epidemiological models and the use of data to calibrate those models. Identify useful data sets for use in such exercises.

**Skills:** Knowledge of basic ODEs and probability, Python and Matlab

**Time:** Around 3-4 weeks of work. Could be spread out over the summer.

- **Class Math 212 - Multivariable Calc**  
**Instructor:** Ingrid Daubechies

**Goals:** Develop visualizations in 3d (rotating the object or graph on the screen) of concepts and operations in Multivariable calculus. Prof Daubechies has a number of examples she wants to expand on in MATLAB. She also wished to translation to Python.

**Skills:** Knowledge of vector calculus, Python, Matlab and some experience with graphics

**Time:** Around 4-5 weeks of work. Could be spread out over the summer.

- **Class: Math 230/340-Intro to probability**  
**Instructor:** Jonathan Mattingly & Rann Bar-On

**Goals:** Develop some computational exercises and experiments to explore basic to intermediate probability and some ideas from statistics.

**Skills:** Knowledge of basic probability, Python. R and Statistics also desirable

**Time:** Around 3-8 weeks of work. Could be spread out over the summer.

Additional project are likely as faculty are still proposing projects. We are also open to course development projects proposed by graduate students.

For more information or to apply contact:

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