Would you like to understand the science behind a TSUNAMI wave?

The study of nonlinear systems has quietly and steadily revolutionized the realm of science over recent years. It is known that for nonlinear systems new structures emerge that have their features and peculiar ways of interacting. Examples of such structures abound in nature and include: vortices (like tornadoes or eddies in water tanks), solitons (bits of information used in optical fiber communications, water waves, tsunamis, humps of coherent matter waves, etc ...), spirals (biological aggregates and chemical reactions). This course is intended as an introduction to the theory and of Nonlinear Waves and their applications.

The course is intended for senior undergraduate and graduate students in Applied Mathematics, Computational Science, Engineering, Physics, Chemistry, Biology, etc. Examples from interdisciplinary areas will be covered. Most of the concepts and examples will be supplemented with Matlab-based codes. As part of the course, students will be given access to a computer laboratory to complete the computer-based coursework.

A final project, based on individual interests, accompanied with an oral presentation will be required.

Prerequisites:
Math-531, 537, 538, 635, 636, or 638; or equivalent; or Instructor’s permission. Good knowledge of Calculus and familiarity with Differential Equations and Linear Algebra are the minimum requirements. Some computer experience is also desirable.

Textbook:
*Solitons: an Introduction.*
P.G. Drazin and R.S. Johnson.
Publisher: Cambridge University Press.
In addition, material will be drawn from several reference books and a number of journal articles.

More Information:
For more information contact: Ricardo Carretero or visit [http://www.rohan.sdsu.edu/~rcarrete](http://www.rohan.sdsu.edu/~rcarrete) [teaching] [M696]
This course is part of the MS in Applied Mathematics with concentration in Dynamical Systems offered by the Nonlinear Dynamical Systems group. For detailed information about this program visit: [http://nlds.sdsu.edu/](http://nlds.sdsu.edu/)