Instructor: Dr. Ricardo Carretero
Lectures: Mo + We: 4:00 - 5:45 @ GMCS-328
Office Hours: Mo + We: 12:00 - 1:00 @ GMCS-577 (or by appointment)
E-mail: carreter@math.sdsu.edu

Important dates:
Thu, Jan. 22: First lecture.
Tue, Feb. 04: Last day to adjust schedule (adds, drops, etc.)

Description:
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.

This course forms part of the MS in Applied Mathematics with concentration in Dynamical Systems offered by the Nonlinear Dynamical Systems (NLDS) group. For detailed information about this program visit: http://nlds.sdsu.edu/ [Graduate Programs] [MS]

Textbooks:

- Additional material will be drawn from several reference books and journal articles.

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.

Grading:
Weights:

<table>
<thead>
<tr>
<th>Weight</th>
<th>Percentage</th>
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<tbody>
<tr>
<td>Homework</td>
<td>45%</td>
</tr>
<tr>
<td>Take home exams (2)</td>
<td>30%</td>
</tr>
<tr>
<td>Final project</td>
<td>25%</td>
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</tbody>
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Scale:

- A: 90% and above
- B: 80% and above
- C: 70% and above
- D: 60% and above
- F: Otherwise
**Homework/Take home exams:**
Homework/Take home exams assignments are posted [HERE].
Homework/Take home exams are assigned each week or so.
The homework/Take home exams are to be handed in each Wednesday.
Late homework/Take home exams are never accepted!

**Rules of Engagement:**

**Rescheduling:**
Late homework will not be accepted.
No make-up tests.

**Personal Conflicts:**
No special arrangements will be made for personal conflicts such as:
+ Family related issues (weddings, visiting relatives, etc.).
+ Work related conflicts: schedule, traveling, traffic, etc.
+ Vacations planned during regular class meetings.
+ Personal problems with roommates. Etc...
Special arrangements can be made, however, only in the most compelling and verifiable circumstances such as disabilities.

**Disabilities:**
If you are a student with a disability and believe you will need accommodations for this class, it is your responsibility to contact Student Disability Services at (619) 594-6473. To avoid any delay in the receipt of your accommodations, you should contact Student Disability Services as soon as possible. Please note that accommodations are not retroactive, and that I cannot provide accommodations based upon disability until I have received an accommodation letter from Student Disability Services. Your cooperation is appreciated.

**Attendance:**
Attendance will not be recorded. It is your responsibility, however, to be up to date in the progress of the course, dates for: homework, exams, and any possible changes made to this syllabus.
Miscellaneous Only University approved excuses for absences will be accepted. Each student will be responsible for knowledge of a scheduling and announcements made in class.
Please visit regularly this webpage since class information will be posted throughout the semester.

Lateness or leaving class early is unacceptable.
If lateness becomes a common problem, the instructor reserves the right to lock the doors.

**Academic Integrity/honesty:**
All work that you complete in this class should be your own.
Any form of cheating will result in an "F" and a referral to the Dean for further action.
All students admitted to SDSU have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a student at SDSU and to be honest in all work submitted and exams taken in this class and all others.

**General:**
Disrespectful behavior such as eating or reading material not related to the course will not be tolerated.
Any behavior considered a distraction to those around you, including the instructor, will not be tolerated.
Cellular phones should be powered off before entering the classroom.

**Participation:**
Participation in class is encouraged. If you have a question, ask it! If you do not understand something, say so! Any question that will help you to better understand the material is not stupid. Because of this, I expect you to be patient and respectful of others who ask questions in an effort to do well.

**Addenda:**
The instructor reserves the right to make modifications to the syllabus. Any addendum will be announced in class (you are responsible for attending class during such announcements).