Catalog Description for CE 520 a,b: Linear and nonlinear wave theories with engineering applications; wind waves; wave spectra; wave interactions with marine structures; ship mooring; harbor resonance; sediment transport; diffusion processes.

Prerequisites: Graduate standing, CE 309 or CE 451

Reference Books:

1. Lecture notes provided by Professor Jiin-Jen Lee
2. Handbook of Coastal and Ocean Engineering (Edited by Young C. Kim) Published by World Scientific, 2010

Topics Covered for CE 520a:

1. Linear wave theory and engineering applications
2. Nonlinear wave theories and engineering applications
3. Wave transformation, wave reflections, wave refractions, and wave diffractions
4. Response of bays and harbors to incident waves, harbor resonances
5. Long waves; tsunamis, swells tides and storm surges
6. Interaction of waves and marine structures
7. Mixing and dispersion in marine environments
8. Presentations of term papers by students (30 minute per student)

Home Work: 1-2 problems each week, due two weeks from the assigned date.
Term paper: One term paper due the end of semester (15 pages + reference list)

Exams and Grading:

One Mid-term Exam   (25%)
One Final            (40%)
Home Work           (20%)
Term Paper          (15%)

Instructor:

Name: J. J. Lee
Office: KAP 200
Phone: 213-740-7865 or 740-2032
E-Mail: jjlee@usc.edu