

COURSE NUMBER	SET 280
COURSE NAME	Marine Surveying
COURSE DESCRIPTION	<p>Develop an understanding of the basic principles of hydrographic surveying including the measurements and representations as well as such modern acoustic measurements for depth determination, principles of multi-sensor integration for offshore mapping, as well as the fundamentals of Coastal GIS.</p> <p>Topics in acoustics include definitions of the SONAR equation, effects of signal strength and attenuation, wavelength, frequency and effects of the speed of sound in marine environments. Hydrographic surveying include topics hydrographic surveying equipment and calibration, traditional and GPS-aided offshore positioning techniques, depth measurement and corrections. Topics on tides include definitions, vertical datums, datum computations and tidal datum transfers from control; and subordinate tide gauge station measurements. Topics on coastal GIS include geospatial data types, data integration, elements of database design, and GIS analysis.</p>
COURSE STRUCTURE	(3-1-4) (lecture hr/wk - lab hr/wk – course credits)
PREREQUISITE(S)	CE 200 or equivalent
CO REQUISITE(S)	
TEXTBOOK(S)/ REQUIRED MATERIALS	<ol style="list-style-type: none"> 1. None Required – Instructor provided notes 2. Elements of Hydrographic Surveying I By George Wood Logan - Books LLC (2009) - Paperback - 122 pages - ISBN 021771000X
COMPUTER USAGE	HYPACK, Word, Excel
CLASS TOPICS	<p>Introduction to oceanography. Definitions of geodetic and tidal datums. Charts production. Attribute of transducers and properties of acoustic measurements in various aqueous environments. Design elements of hydrographic surveys. Survey measurements characteristics and instrument calibration. Tides and tidal datums for civil coastal projects. Elements of Marine and Coastal GIS, elements of Altimetry for sea level measurements.</p>
COURSE LEARNING OUTCOMES (CLO)	<p>By the end of the course students should be able to:</p> <ol style="list-style-type: none"> 1. Demonstrate the proper use of geodetic and Tidal datums 2. Demonstrate understanding on the theory of acoustic measurements and chart preparation 3. Demonstrate the ability to carry out a simple hydrographic survey from the proposal phase to the final chart production. 4. Demonstrate knowledge of tide behaviour for near shore surveys. 5. Compute various tidal quantities from tide-gauge observations. 6. Demonstrate knowledge of issues relating to data integration for CGIS 7. Download and upload files with Moodle, as well as utilize other aspects of this learning management application 8. Understand the theoretical principles of satellite altimetry for topography missions and sea level determination.
MODIFICATION TO COURSE	The Course Outline may be modified at the discretion of the instructor or in the event of extenuating circumstances. Students will be notified in class of any changes to the Course Outline.
COURSE COORDINATED BY	Dr. L. Potts