TEXAS A&M UNIVERSITY – CORPUS CHRISTI
COLLEGE OF SCIENCE AND TECHNOLOGY

GEOL 4324 – Field Introduction to Modern Shoreline Depositional Systems
FALL SEMESTER 2008

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Lecture Day and Time: Friday 2:00 p.m. to 3:40 p.m. CS 110

Course Description

This class is intended for upper senior-level and/or graduate-level course is for geology majors, environmental science majors, and education majors who would like a better understanding of the basic principles of modern depositional systems and sedimentology. The course will examine modern depositional systems exposed along the Texas Gulf coast. This course will provide a brief field introduction to the basic concepts of clastic sedimentology, neoichnology, and sequence stratigraphy for those new to the subject and a comprehensive review for those familiar with the basic ideas of sedimentology and sequence stratigraphy. The class will consist of 4-6 2 hour lectures and 5-6 days of field excursions in the area between Galveston, Texas and North Padre Island near Corpus Christi, Texas.

Participants should be prepared to make short hikes, travel in boats, and occasionally enter the waters of the Gulf and the back barrier bays and lagoons. Proper clothing and footwear for these types of excursions are essential and required.

Prerequisites: Physical Geology (or equivalent), Sedimentation and Stratigraphy (or equivalent) or permission of the instructor

Course Goals and Objectives

Upon completion of this course, the participant should:

(1) understand the basic principles of clastic sediment transport and deposition,
(2) understand the facies concept of deposition systems,
(3) understand the basic concepts and models of modern clastic aeolian, fluvial, deltaic, and shoreline depositional systems.
(4) be able to identify the basic bedforms and sedimentary structures in the field.
(5) understand the factors controlling clastic sediment deposition.
(6) be able to describe and interpret clastic sedimentary structures in the field
(7) understand the preservation potential of shoreline deposits in the rock record, and
(8) understand the basic principles of depositional sequence stratigraphy

(9) understand the basic principles of ichnology and shoreline ecology

Evaluation and Grade Assignment

Grades will be based on:

A) Performance in the field (10% of grade), i.e. how effectively you work in the field, address and interpret the sedimentological systems, etc., as assessed through your interaction with the instructor
B) A research paper on a topic relevant to the course (25% of grade).
C) Evaluation of field notes generated during the course (20%). (Based on the completeness, observational skills, and documentation of field trip stops in a field notebook).
D) Participants will design a virtual field trip or conduct a field research project (40% of grade) to be submitted one week before the conclusion of the course. (These assignments can be submitted to the instructor as a 30 minute PowerPoint presentation or as a html web-ready document (virtual field trips) or as a pdf file (research projects).)
E) Participants will make a ten minute summary presentation of their virtual field trip or research project (10% of grade)

Class Policies

Attendance of all field days and the introductory lecture session is mandatory. While group discussion and collaboration is encouraged during the trip, unless work is explicitly specified to be a team project, the work you hand in is expected to be yours. Please note that alcohol and drug policies are strictly enforced. Violations will result in immediate expulsion and a failing grade.

Textbook

Sandstone Depositional Environments (Required)
Author: Scholle and Spearing (eds.)
Publisher: AAPG Memoir 31
ISBN: 0-89181-307-1

Facies Models (Required)
Author: Walker and James (eds.)
Publisher: Geological Association of Canada
ISBN: 0-919216-49-8

The Sedimentology, Neoichnology, and Preservation Potential of Primary Deltaic and Associated Secondary Shoreline Beach and Barrier Island Depositional Facies (Field Trip Guidebook) (Required)
Author: Garrison (ed) (downloadable from website)

Supplies

Field notebook, pencils, camera, camping equipment

Lectures

Fluid Transport of Sediments
Fluvial Depositional Systems
Deltaic and Associated Shoreline Depositional Systems
Depositional Sequence Stratigraphy
Basics of Ichnology and Benthic Ecology

Field Excursions:

North Padre Island Aeolian Systems
North Padre and Mustang Barrier Islands
Ingleside Barrier, Nueces Bayhead, and Indian Point
Brazos River Delta
Cedar Lakes and San Luis Pass Tidal Deltas