Coastal Engineering & Nature-Based Solutions Short Course

Texas A&M University • Galveston, Texas • September 8-11, 2026

Description:
This course is administered by the Coastal & Dredging Laboratory, Department of Ocean Engineering, with organizational assistance from the Texas A&M Engineering Experiment Station, and includes a mixture of lectures, laboratory exercises, and field site visits. Electronic (PDF) versions of the USACE publications "Coastal Engineering Manual" and the "Natural and Nature-Based Features International Guidelines for Flood Risk Management" are the primary course textbooks and will be provided along with PDF files of all lecture slides. A certificate and continuing education units (~2.0 CEUs) are earned at the successful completion of the course.

Course Directors:

- Dr. Jens Figlus, Associate Professor, Texas A&M University, figlusj@tamu.edu
- Dr. Vijay Panchang, Professor, Texas A&M University, vpanchang@tamu.edu

Registration Questions:
TEES Edge @ teesedge@tamu.edu

Course Fee: $1,500

Please see the last page of this document for additional information on logistics and planning your trip to Galveston.

Day 1: Tuesday, September 8, 2026

TIME	TOPIC	LECTURER
MODULE 1: COURSE INTRODUCTION AND BACKGROUND		
8:00	1 - Welcome to TAMU Aggie Marine Campus and CE & NBS Course	Dr. Jens Figlus, TAMU
8:15	2 - Introduction to Coastal Engineering	Dr. Jens Figlus, TAMU
9:15	*Coffee Break*	
MODULE 2: WAVES AND COASTAL HYDRODYNAMICS		
9:30	3 - Wave Theory and Wave Mechanics	Dr. Vijay Panchang, TAMU
10:15	4 - Wave Spectra, Wave Transformations, and Numerical Modeling	Dr. Vijay Panchang, TAMU
11:15	5 - Inlet and Harbor Hydrodynamics	Dr. Jens Figlus, TAMU
12:15	*Lunch*	
MODULE 3: COASTAL SEDIMENT TRANSPORT		
1:15	6 - Planning and Engineering Design Considerations	Rob Thomas, GCPD
2:15	7 - Sediment Transport (Cross- and Long-Shore) and Sediment Budgets	Dr. Jens Figlus, TAMU
3:15	*Coffee Break*	
3:30	Hands-On Learning Activity on Coastal Systems: Morphodynamic Flow and Wave Table (ECRB Wet Lab)	Dr. Jens Figlus, TAMU and Dr. Vijay Panchang, TAMU
5:00	*Evening Ice Breaker and student poster display at TAMU-Galveston (ASEC)*	

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(Continued)

Day 2: Wednesday, September 9, 2026

TIME	TOPIC	LECTURER
MODULE 4: COASTAL PROJECTS AND STRUCTURES		
8:00	8 - Coastal Project Types (Navigation and Inlet Management)	Coraggio Maglio, DCCM
8:45	9 - Coastal Processes, Geomorphological Units and Morphodynamics	Dr. Orencio Duran Vinent, TAMU
9:45	*Coffee Break*	
10:00	10 - Coastal Protection: Structure Types and Considerations	Dr. Jens Figlus, TAMU
11:00	11 - Coastal Storm Surge Barriers and Considerations	Dr. Himangshu Das, USACE Galv.
12:00	*Lunch*	
MODULE 5: NATURE-BASED SOLUTIONS: PLANNING CONSIDERATIONS		
1:00	12 - Introduction to NBS and Planning Considerations	Dr. Safra Altman, USACE ERDC
1:45	13 - NBS Principles and Framework	Dr. Burton Suedel, USACE ERDC
2:45	*Coffee Break*	
3:00	14 - Measuring NBS Performance	Dr. Thomas Huff, USACE ERDC
3:45	15 - NBS Benefits and Costs	Dr. Thomas Huff, USACE ERDC
4:45	16 - NBS for Structural Enhancement & Fluvial Concepts	Dr. Burton Suedel, USACE ERDC
5:30	*Adjourn*	

Day 3: Thursday, September 10, 2026

TIME	TOPIC	LECTURER
MODULE 6: NBS IN COASTAL FLOOD RISK MANAGEMENT		
8:00	17 - Beaches and Dunes	Dr. Orencio Duran Vinent, TAMU
9:00	18 - Coastal Wetlands and Living Shorelines	Renee Robertson, Anchor QEA
10:00	*Coffee Break*	
10:15	19 - Islands and Reefs	Dr. Safra Altman, USACE ERDC
11:15	20 - Coastal and Hydrographic Surveying	Jim Naismith, Conrad Blucher Institute; TAMU-CC
12:15	*Lunch*	
1:30	Field Visit to Galveston Coastal Project Sites & Boat Trip	Dr. Jens Figlus, TAMU and Andrew Murphy, GLO
5:30	*Adjourn*	
6:00	*Dinner at TAMU-Galveston Waterfront Pavilion*	

Day 4: Friday, September 11, 2026

TIME	TOPIC	LECTURER
MODULE 7: ALTERNATE CONSIDERATIONS FOR NBS		
8:00	21 - Permitting Considerations for Coastal/NBS Projects	Thomas Dixon, Freese and Nichols
9:00	22 - Stakeholder and Outreach Considerations	Christine Hale, Texas Sea Grant
10:00	*Coffee Break*	
10:15	Coastal Laboratory, Instrumentation, and Hands-On Measurements Experience	
12:30	*Adjourn*	

Lecturer Profiles (in alphabetical order)

Dr. Safra Altman is a senior research ecologist at the Army Engineer Research & Development Center's Environmental Laboratory and serves as the lead for ERDC's Coastal Ecology team. The team uses creative scientific approaches and quantitative methods to develop tools for environmental restoration, environmentally sound dredging practices and use of dredged material, dune management, and management of threatened and endangered species. Dr. Altman has helped to develop landscape ecology models that incorporate habitat changes, landscape level changes and changes in ecological processes in barrier islands and has been involved in an international EWN initiatives to develop engineering guidelines for Natural and Nature Based Features such as submerged aquatic vegetation, oyster and coral reefs, and coastal upland plant communities. Dr. Altman has experience with monitoring and adaptive management of coastal restoration and natural infrastructure projects and serves as a subject matter expert to support USACE Headquarters on coral reef ecology. Dr. Altman and the Coastal Team conduct research to support civil and military needs in planning, regulatory, operations and maintenance and construction and design.

- Ph.D., University of Maryland
- M.S., University of Connecticut
- B.A., Brown University

Dr. Himangshu Das is the Chief, Coastal Engineering Section and a subject matter expert at the U.S. Army Corps of Engineers, Galveston District. He was formerly an Associate Professor at Jackson State University. His professional and research interests include sediment transport, environmental hydraulics, computational fluid mechanics, storm surge modeling, geohazard analyses, watershed and water quality modeling.

- Ph.D., University of South Carolina
- M.S., Asian Institute of Technology
- B.S., Bangladesh University of Engineering and Technology

Thomas Dixon is and Associate with the consulting company Freese and Nichols, Inc. where he manages the Environmental Group for the Western Gulf Coast region. His primary work pertains to project planning and regulatory compliance with NEPA, Endangered Species Act, Coastal Zone Management Act, Clean Water Act, Rivers and Harbor Act, and Migratory Bird Treaty Act, for example. His projects include coastal restoration efforts, water supply and infrastructure, transportation planning (roads, rail, marine navigation channels), and mitigation design. Typical duties include endangered species surveys, project management, NEPA document development, marketing, vegetation surveys, jurisdictional determinations and delineations, and performing ecological functional assessments.

- M.S., Texas A&M University College Station, TX
- B.S., Texas A&M University College Station, TX

Dr. Orencio Duran Vinent is an Associate Professor at the Department of Ocean Engineering at Texas A&M University. His research interests include eco geomorphology, morphodynamics, coastal processes, ecological engineering, and sediment transport. Dr. Vinent leads the Eco-Morphodynamics Modeling Laboratory at Texas A&M University, where he investigates the formation and stability of accretional sedimentary landforms and landscapes.

- Ph.D., University of Stuttgart
- M.S., University of Havana
- B.S., University of Havana

Lecturer Profiles (in alphabetical order)

Dr. Jens Figlus is an Associate Professor and Director of Graduate Programs in the Department of Ocean Engineering at Texas A&M University. He heads the Coastal Engineering Laboratory on the TAMU Galveston Campus and is a faculty fellow with the Institute for a Disaster Resilient Texas (IDRT). Before joining TAMU, Dr. Figlus worked as a senior engineer and director of business development for the consulting firm Gauff Engineering Group. Since joining TAMU in 2012, Dr. Figlus has been conducting engineering research and teaching undergraduate and graduate students about coastal engineering and related subjects. Dr. Figlus' research focuses on improving our understanding of coastal system processes and engineering approaches to reduce the risk of coastal flooding and erosion through field measuring campaigns, laboratory experiments, and numerical modeling.

- Ph.D., University of Delaware
- M.Eng., University of Delaware
- Dipl.-Ing, University of Karlsruhe (TH), Germany

Christine Hale is the Associate Director of Extension for Texas Sea Grant. With a diverse background in coral reef conservation, Ridge-to-Reef ecosystems, fisheries, social science, science communication, and community engagement, her work is centered in the Socio-Ecological Systems (SES) framework. This often involves distilling human perceptions and values to identify the social, cultural, and economic linkages in changing ecosystems for improved decision-making. Her research is solution-oriented, and as an expert in co-production and evaluation, she designs and applies collaborative processes to achieve conservation, restoration, and resilience objectives.

- M.S. University of the Virgin Islands
- B.S. Millersville University of Pennsylvania

Dr. Thomas Huff is a contracted Senior Environmental Data Scientist at the US Army Engineer Research and Development Center (USACE ERDC) and Adjunct Assistant Professor at Texas A&M University in the department of Ecology and Conservation Biology. After his Ph.D. studies, Dr. Huff completed a postdoc with Dr. Rusty Feagin and went on to manage the Coastal Ecology and Management lab in the Department of Ecology and Conservation Biology at TAMU. His past research focused on hydrologic restoration of coastal wetlands and understanding how anthropogenic disturbance influences coastal dynamics. Dr. Huff along with Dr. Feagin received the Texas Environmental Excellence award for their restoration work on the Magnolia Beach marsh. At ERDC Dr. Huff utilizes numerical and spatial data analysis techniques to produce insights relating to ecological and engineering with nature concepts (EWN).

- Ph.D., Texas A&M University
- B.S., Texas A&M University – Commerce

Coraggio Maglio is the Vice President of Water and Coastal Resources at DCCM. He was formerly Branch chief of hydraulics and hydrology at the USACE Galveston District, where he specialized in coastal processes, and freshwater and estuarine systems. Mr. Maglio's hobbies include surfing, gardening, and native landscaping, and he is a strong, sensible environmentalist and lover of nature, especially coastal areas. The diversity of his work experience ranges from storm damage reduction projects, beach and ecosystem restoration, navigation dredging, and flood protection.

- M.S., Florida Institute of Technology
- B.S., New College of Florida

Andrew Murphy is a Coastal Biologist with the Coastal Field Operations Team at the Texas General Land Office. He conducts routine field inspections to evaluate the natural resources on proposed, or existing, projects on coastal state-owned land. Previously, he worked as Hatchery Technician and Park Ranger with the Texas Parks and Wildlife Department.

- B.S., Texas A&M University – Galveston Campus

Lecturer Profiles (in alphabetical order)

James "Jim" Naismith is the CBI Chair for Excellence in Hydrographic and Coastal Surveying at the Conrad Blucher Institute of Texas A&M University, Corpus Christi. He specializes in software and solutions development for hydrographic, land, and geophysical surveying along the Gulf Coast. He is a former owner of Naismith Marine Services, a hydrographic and geophysical surveying and environmental company, which merged with T. Baker Smith in 2020. Mr. Naismith has over 40 years of experience working in hydrographic, land, and coastal surveying.

- M.S., Texas A&M University
- B.S., Texas A&M University

Dr. Vijay Panchang is the Regents Professor and Associate Head of the Ocean Engineering Department at Texas A&M University. Prior to TAMU, he served as Program Director for physical sciences and engineering at National Oceanic and Atmospheric Administration's (NOAA's) National Sea Grant College Program and as Professor in the Department of Civil and Environmental Engineering and in the School of Marine Sciences at the University of Maine. Dr. Panchang is a Fellow of ASCE and has served as Editor of ASCE's *Journal of Waterway, Port, Coastal, and Ocean Engineering*. He is the recipient of the ASCE's Torrens Award and the Moffat-Nichol Award. Currently, he also serves on Editorial Advisory Panel of the *Journal of Maritime Engineering*.

- Ph.D., University of Maine
- M.S., University of Maine
- M.Tech., Indian Institute of Technology
- B.E., University of Poona, India

Renee Robertson is a Principal Engineer at Anchor QEA with over 21 years of coastal and aquatic restoration experience. She is working on some of the nation's largest living shoreline programs including the Mississippi Department of Environmental Quality's Hancock County Marsh Living Shoreline (8 miles of Living Shorelines, 46 acres of marsh and 46 acres of subtidal reef), as well as the Nueces Delta and the Dagger Point shoreline protection projects for the Texas Coastal Bend Bays & Estuaries Program. A civil/coastal engineer grounded in engineering design and field construction experience Ms. Robertson brings decades of practical NBS experience to her lectures.

- M.S., University of Alabama at Birmingham
- B.S., University of Alabama at Birmingham

Dr. Burton Suedel is a Research Biologist with the USACE ERDC Environmental Laboratory. Since 2005, Dr. Suedel has served as the Team Leader of the Risk Integration Team, where he focuses on risk assessment and management of dredged material and invasive species, incorporating uncertainty into ecosystem restoration projects and investigating ways in which sustainable engineering, environmental, social, and economic benefits can be incorporated into waterborne transport infrastructure planning. He has received international awards and recognition for applying EWN principles in practice at multiple USACE freshwater and marine coastal projects. Dr. Suedel also manages the USACE Dredging Operations Technical Support program that facilitates transfer of existing and new navigation and dredging technology to stakeholders in the USACE's navigation mission. Dr. Suedel also serves as the Principal U.S. Representative to the PIANC Environmental Commission.

- Ph.D., University of Mississippi
- M.S., University of North Texas
- B.S., University of North Texas

Rob Thomas is the Chief Program Manager with the Gulf Coast Protection District (GCPD). Mr. Thomas' fascination with the coast began at 20 years of age when he earned his Professional Association of Diving Instructors open-water scuba diving certification. Eventually, his love of the water led him to pursue a career in coastal protection and restoration with the U.S. Army Corps of Engineers Galveston District. In his current position, he oversees work on planning and designing the world's largest coastal storm risk management project.

- M.S., Texas A&M University
- B.S., Texas A&M University

Supplemental Information

Short Course Location:

This short course will be held on the Second Floor of the Aggie Special Events Center (ASEC) on the Texas A&M University Campus in Galveston (Mitchell Campus). The field visit on Day 3 includes a boat trip. Please wear closed-toed shoes on the boat. Hat, sunglasses, and sunscreen will also be helpful.

Getting Around Campus:

For directions to TAMU Galveston (Mitchell Campus), building location, and visitor parking go to: https://www.tamug.edu/directions.html

Note, you will need a rental car or personal vehicle to commute to the TAMU Galveston campus. Free on-campus parking will be made available to short course participants.

Airports:

The closest airports are Houston Hobby (HOU; 45min) and Bush Intercontinental (IAH; 1hr 10min).

Hotel/Lodging:

For hotels, Galveston is stacked with options for all price points. Harbor House and Tremont are good choices for proximity to campus, but there are plenty of other options as well.

Reserve early to ensure you get a room for the duration of the course: Details on lodging and hotels can be found here: https://www.visitgalveston.com/where-to-stay/hotels/

Local Activities:

There are many activities to explore while in Galveston, including leisurely walks along the beach.
Check them out at: https://www.visitgalveston.com/