OIL SPILL MANAGEMENT
ESCI 6330.002/102        CRN 202001.22848/22850
Department of Physical and Environmental Science
Spring Break 2020

A. COURSE INFORMATION

Course number/section: ESCI 6330.002/6330.103 – Oil Spill Management
Class meeting time: 8:00 am-5:00 pm M-F, March 9-13, 2020
Class locations: NRC 1101, Boat Barn # 11, CC Marina, Packery Channel

Official Room Assignment: TBD – The class will meet at the NSCS in NRC 1101 to train, prepare for, and mobilize for field exercises. Most field deployments will originate at TAMU-CC Boat Barn Unit # 11. Some field exercises will be held at the Corpus Christi Marina. Boat launching will occur at the Cooper’s Alley L Head boat ramp. Other alternative field locations may be chosen (weather permitting) for oil spill response equipment deployment.

Course Website: None

B. INSTRUCTOR INFORMATION

Instructor: H.A. Tony Wood
Office location: 6300 Ocean Drive, NRC Ste. 1100, Corpus Christi, TX 78412
Office hours: This is a 40-hour OSHA certification course from 8 am until 5 pm over 5 days M-F. Available office hours are during hourly course breaks and over the one-hour lunch break each day. Exact lunch break times may fluctuate slightly. Students wanting to meet privately with the instructor should indicate that prior to the breaks.
Telephone: (w) 361-825-3335
e-mail: tony.wood@tamucc.edu
Appointments: call above phone number

C. COURSE DESCRIPTION

Catalog Course Description
This course meets the training requirements for U.S. OSHA HAZWOPER regulations. It provides oil spill response safety training as specified in 29 CFR 1910.120 and qualifies students to support oil spill response operations at the local, state, and federal level. Attendees must participate in 40 hours of instruction. This intense short course is offered on five 8-hour class days.

This course includes studies of: the laws and regulations governing oil spill prevention and response from a historical perspective; the physical, chemical, and biological processes related to oil in the environment; and the established strategies and tactics for preventing and managing oil spills.
Graduate students will prepare a Geographic Response Plan GRP for a section of Texas coastal waters and present it to the class.

**Extended Course Description**
This course is designed to provide professional certification and initial oil spill response safety training for environmental science or emergency response students. It meets the off-site training requirements for U.S. OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations as specified in 29 CFR 1910.120 and qualifies students to support oil spill response operations at the local, state, and federal level. Material covered in this course includes the training described in the Occupational Safety and Health Administration (OSHA) publication OSHA 3172: “Training Marine Oil Spill Responders.” Under OSHA’s Hazardous Waste Operations and Emergency Response Standard (HAZWOPER) in 29 CFR 1910.120 attendees must participate in 40 hours of instruction. Students seeking certification for this OSHA training MUST attend all class sessions and participate in demonstrations and field exercises during the lab sessions – including a tabletop exercise.

This intense short course includes the same course topics as previously offered during full semesters, but the content is consolidated into five 8-hour class days. Three separate professional certifications will be achieved in this course including ICS 100, ICS 700, (or ICS 200 and 800), and 40-Hour HAZWOPER for Oil Spill Response. ICS 100 & 700 (or ICS 200 and 800) may be taken at any time online through the FEMA.gov website. Certificates for the ICS courses must be presented to the instructor for credit.

This course is recommended for students expecting to enter the environmental workforce or internships within the next year. This course includes studies of the laws and regulations governing oil spill prevention and response from a historical perspective; the physical, chemical, and biological processes related to oil in the environment; and the established strategies and tactics for managing oil spills. Extensive field work is required. Students with physical limitations should advise the instructor.

Graduate students will prepare a Geographic Response Plan GRP for a section of Texas coastal waters and present it to the class.

**D. PREREQUISITES, COREQUISITES, and EXCLUSIONS**

**Prerequisites:** All students registered for this course must complete a TAMUS ESCI lab online safety course (SMTE-0096) each semester.

**Co-requisites**
- Each student will be required to complete required documentation and sign appropriate waivers for field trip participation.
- Students must complete the web-based FEMA NIMS and ICS training programs (ICS 700 and 100) online. If the student already completed 100 and 700 for another course then ICS 200 and 700 are required. The certificates of completion must be shown to the instructor. These may be completed at any time before or as homework during the week of the course.
• Attendance is mandatory. This is an OSHA certification course requiring 40 hours of attendance. Students who must miss any portion of a class are responsible for making up the time prior to award of the certification. Any course hours not completed prior to the end of the semester will be given an incomplete (I) grade. If the time is not made up during the following semester the grade will be converted to an “F”.

• Take-home assignments may be given during the course. These assignments will be due during the next class period. Late assignments will receive less than full credit for the assignments. Assignments will not be accepted after one week from the due date and a grade of “0” will be assigned for that assignment.

• Field Exercises are an integral part of this course. These exercises involve working with small watercraft in the Corpus Christi Marina and other nearby waters. Note: The class may run overtime on field exercise days.

• Student participation in equipment staging, cleanup, and inventory management is required.

• One major examination will be given during the course. A minimum score of 70% is required for NSCS certification.

• The course may include guest speakers representing industrial, regulatory, or spill response organizations or specialized environmental issues. Students will be responsible for material covered by these speakers and it will be included on exams.

Exclusions
Students who have taken the undergraduate version of this course (ESCI 4330) may not take ESCI 6330 for graduate credit.

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES
The books and resources required for this course are all available online and electronically:

- Oil Spill Response Field Manual. 2014. ExxonMobil Research and Engineering, Houston, TX.

Supplies
Boats, motors, boom, skimmers, pumps, PFDs, rope, anchors, chain, shackles, clips, etc. are provided by TAMU-CC and the NSCS. Students should provide their own drinks, snacks, lunches, and sunscreen. Closed-toed shoes and work gloves must be worn when working with equipment.

F. STUDENT LEARNING OUTCOMES AND ASSESSMENT
Assessment is a process used by instructors to help improve learning. Assessment is essential for effective learning because it provides feedback to both students and instructors. A critical step in this process is making clear the course’s student learning outcomes that describe what
students are expected to learn to be successful in the course. The student learning outcomes for this course are listed below. By collecting data and sharing it with students on how well they are accomplishing these learning outcomes students can more efficiently and effectively focus their learning efforts. This information can also help instructors identify challenging areas for students and adjust their teaching approach to facilitate learning.

By the end of this course, students should be able to:

1. Operate under an ICS system.
2. Organize oil spill response on water.
4. Divert, contain, and collect oil on water.
5. Manage personal and team safety.

G. INSTRUCTIONAL METHODS AND ACTIVITIES

This is an OSHA recognized and industrially oriented safety course. Students should be able to assess all hazards and know how to mitigate those hazards. Mechanical hazards exist in the form of boats, motors, trailers, vehicles, and other spill response equipment. Students must wear appropriate personal protective equipment. All students are required to wear Personal Flotation Devices (PFDs) when on boats or floating docks. Non-swimmers must notify the instructor and should wear PFDs whenever they are within 6 feet of the water. Protective gloves and clothing should be worn whenever working with equipment, fuel, oil, and grease. Closed toe shoes must be worn during all class periods that involve working with boats, anchors, or other response equipment. Significant portions of this course will be held outdoors in the sun. Students are responsible for bringing their own hats, sunglasses, protective clothing, and sunscreen lotion. Any student with a serious (peeling or blistering) sunburn as a result of this class may have their course grade reduced by one letter.

H. MAJOR COURSE REQUIREMENTS AND GRADING

- Lecture Attendance  20%
- Field Exercises Attendance  20%
- Graduate Presentation  20%
- Exam  20%
- ICS Homework & Incident Action Plans  20%

A certificate of completion for this course will only be awarded if there is 100% perfect attendance (or missed hours are made-up) and if a score of 70% or higher is achieved on the course exam.

I. COURSE CONTENT/SCHEDULE

This schedule is intended to serve as general guidance. Weather, student abilities, extended
discussions on specific and current topics, or other factors may result in significant adjustments to this schedule.

Day 1
NRC 1101 Classroom

- Course Introduction – Syllabus, schedule, assignments, & expectations
  - History
    - Historical oil spills, spill sources and causes
    - Discussions regarding Gulf Spill of 2010
  - Regulatory
    - Regulations and regulatory agency overview
  - Management
    - Video: ICS & Unified Command
    - Logistics & Communications
    - Assign ICS roles
    - Response organizations, contingency planning, training, references
    - Resources: ESI, Oil Spill Toolkit, TIPS Plans, etc.
    - Exercise: Standard ICS forms
    - Field Exercise: FRP and SPCC Planning
  - Science
    - Physical, chemical, & biological processes related to oil in the environment
  - Oil Spill Response Safety & Health
    - Oil spill responder safety and site safety plans
    - Safe boat operations
    - Heat & Exposure
  - Techniques, Technologies, & Tactics
    - Shoreline characterization (SCAT)
    - DVD: Countermeasures on Water
    - Booming Strategies
    - Skimmers
    - Skimmer Demonstration in Classroom
    - DVD: Kvichak Operations
- Chemical Treating Agents
- In-situ Burning

- Homework: Shoreline characterization exercise – Ocean Drive, Blind Oso, University Beach, Suter Park, Packery Channel, Jetties, or Gulf Beach

Day 2

NRC 1101 Classroom

- ICS Certificates due
- Incident Action Plans due
- Fast Tank Deployment (University boat barn 11W)
- Waste management
  - DVD: Countermeasures on Land
  - DVD: Waste Management
  - In-Situ Treatment
  - Video: Petroleum Leaks Underground
  - Transportation Logistics
  - Bioremediation & Land Farming
  - Landfill
  - Incineration

- Graduate Presentations
- Exam

Day 3

- Start at the TAMU-CC Boat Barn #11 & mobilize to the CC Marina
- Shoreline characterizations due
- Field Exercises
- Trailering
- Oil spill equipment inventory (CC Marina Conex)
- Boating Safety & small boat handling
- Anchor systems
- Boat handling exercise
- Boom deployment & staging
• Boom handling obstacle course
• Two boat corraling
• U-Booming
• J-Booming

Day 4
Field Exercises starting at the CC Marina
• Single boat corraling
• Booming a vessel
• Oil spill skimming systems
• V-Booming with a skimmer

Day 5
Field Exercises starting at the TAMU-CC Boat Barn & mobilizing to the CC Marina
• Shoreline protection
• Exclusion Booming
• Cascade Booming
• Shingle / Chevron Booming
• Demobilize to Boat Barn & Clean Up

Note: Changes in this course schedule may be necessary due to weather or other factors. If needed, they will be announced to the class by the instructor. The assignments and exams shown are directly related to the Student Learning Outcomes described in Section F.

J. COURSE POLICIES

Attendance/Tardiness
Attendance is mandatory. This is an OSHA certification course requiring 40 hours of attendance. Students who must miss any portion of a class are responsible for making up the time prior to award of the certification. Any course hours not completed prior to the end of the semester will be given an incomplete (I) grade. If the time is not made up during the following semester the grade will be converted to an “F”.

Late Work and Make-up Exams
This is a one-week short course requiring 40 hours of attendance. Any and all absences, work assignments, or exams must be made up to score a passing grade and achieve NSCS certification.
Extra Credit
None

Cell Phone & Laptop Use
Students should not bring electronic devices to this class. If a student does bring electronic devices the equipment should be protected by a waterproof bag or case. The instructors do not have any responsibility for such equipment. Texting and voice calls should not be conducted during the instructional periods but are allowed during breaks.

Food in Class
Acceptable. Frequent hydration is recommended during outdoor class activities.

Missed Exams
All exams, assignments, and make-up work must be completed by the last scheduled class day of the semester. A grade of incomplete will be assigned if course work is not completed and it will have to be completed during the next regular semester.

Participation
Students are expected to behave as if they were an integral part of a spill response team.

Safety
Safety is paramount at all times during this course. All students registered for this course must complete a TAMU-CC ESCI lab safety course online by the end of the second class day. A module that includes an overview of safe boating activities is a part of this course. Weather and water safety are everyone’s responsibility. Stay alert.

This is an OSHA recognized and industrially oriented safety course (see OSHA Pub. 3172). Any behaviors that show disregard for the safety of the student or peers in the class will not be tolerated and may be grounds for dismissal from the class. Students should assess all hazards and mitigate those hazards. Mechanical hazards exist in the form of boats, motors, trailers, vehicles, and other spill response equipment. Students must wear appropriate personal protective equipment. Water, shoreline, weather, and biological hazards exist. All students are required to wear Personal Flotation Devices (PFDs) when on boats or floating docks. Non-swimmers must notify the instructor and should wear PFDs whenever they are within 6 feet of the water. Protective gloves and clothing should be worn whenever working with fuel, oil, and grease. Closed toe shoes must be worn during all class periods that involve working with boats, anchors, or other response equipment. Significant portions of this course will be held outdoors in the sun. Students are responsible for bringing their own hats, sunglasses, protective clothing, and sunscreen lotion. Any student with a serious (peeling or blistering) sunburn as a result of this class may have their course grade reduced by one letter.
K. COLLEGE AND UNIVERSITY POLICIES

- **Academic Integrity (University)**
  University students are expected to conduct themselves in accordance with the highest standards of academic honesty. Academic misconduct for which a student is subject to penalty includes all forms of cheating, such as illicit possession of examinations or examination materials, falsification, forgery, complicity or plagiarism. (Plagiarism is the presentation of the work of another as one’s own work.) In this class, academic misconduct or complicity in an act of academic misconduct on an assignment or test will result in a failing grade.

- **Classroom/Professional Behavior**
  Texas A&M University-Corpus Christi, as an academic community, requires that each individual respect the needs of others to study and learn in a peaceful atmosphere. Under Article III of the Student Code of Conduct, classroom behavior that interferes with either (a) the instructor’s ability to conduct the class or (b) the ability of other students to profit from the instructional program may be considered a breach of the peace and is subject to disciplinary sanction outlined in article VII of the Student Code of Conduct. Students engaging in unacceptable behavior may be instructed to leave the classroom. This prohibition applies to all instructional forums, including classrooms, electronic classrooms, labs, discussion groups, field trips, etc.

- **Statement of Civility**
  Texas A&M University-Corpus Christi has a diverse student population that represents the population of the state. Our goal is to provide you with a high quality educational experience that is free from repression. You are responsible for following the rules of the University, city, state and federal government. We expect that you will behave in a manner that is dignified, respectful and courteous to all people, regardless of sex, ethnic/racial origin, religious background, sexual orientation or disability. Behaviors that infringe on the rights of another individual will not be tolerated.

- **Deadline for Dropping a Course with a Grade of W (University)**
  I hope that you never find it necessary to drop this or any other class. However, events can sometimes occur that make dropping a course necessary or wise. Please consult with your academic advisor, the Financial Aid Office, and me, before you decide to drop this course. Should dropping the course be the best course of action, you must initiate the process to drop the course by going to the Student Services Center and filling out a course drop form. Just stopping attendance and participation WILL NOT automatically result in your being dropped from the class. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

  The grade of W will be assigned to any student officially dropping a course. Please consult with the instructor before you decide to drop to be sure it is the best thing to do. Just stopping attendance and participation WILL NOT automatically result in your
being dropped from the class. Should dropping the course be the best course of action, visit the Office of the University Registrar for the Course Drop Form that must submitted. No student is eligible to receive a W without completing the official drop process by this deadline. Please consult the Academic Calendar (http://www.tamucc.edu/academics/calendar/) for the last day to drop a course.

• **Grade Appeals (College of Science and Engineering)**
  As stated in University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures, a student who believes that he or she has not been held to appropriate academic standards as outlined in the class syllabus, equitable evaluation procedures, or appropriate grading, may appeal the final grade given in the course. The burden of proof is upon the student to demonstrate the appropriateness of the appeal. A student with a complaint about a grade is encouraged to first discuss the matter with the instructor. For complete details, including the responsibilities of the parties involved in the process and the number of days allowed for completing the steps in the process, see University Procedure 13.02.99.C2.01, Student Grade Appeal Procedures. These documents are accessible through the University Rules website at http://www.tamucc.edu/provost/university_rules/index.html, and the College of Science and Engineering Grade Appeals webpage at http://sci.tamucc.edu/students/GradeAppeal.html. For assistance and/or guidance in the grade appeal process, students may contact the chair or director of the appropriate department or school, the Office of the College of Science and Engineering Dean, or the Office of the Provost.

• **Disability Services**
  The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please call (361) 825-5816 or visit Disability Services in Corpus Christi Hall 116.

If you are a returning veteran and are experiencing cognitive and/or physical access issues in the classroom or on campus, please contact the Disability Services office for assistance at (361) 825-5816.

http://disabilityservices.tamucc.edu/

• **Statement of Academic Continuity**
  In the event of an unforeseen adverse event, such as a major hurricane and classes could not be held on the campus of Texas A&M University–Corpus Christi; this course would continue through the use of Blackboard and/or email. In addition, the syllabus and class activities may be modified to allow continuation of the course. Ideally, University facilities (i.e., emails, web sites, and Blackboard) will be operational within two days of the closing of the physical campus. However, students
need to make certain that the course instructor has a primary and a secondary means of contacting each student.

**Other Important Policies**

Material covered in this course includes training required by the Occupational Safety and Health Administration (OSHA) for personnel working in oil spill response activities as described in 29 CFR 1910.120 and OSHA Publication 3172. OSHA regulates the safety and health of employees involved in response operations in any emergency response activities involving oil and other hazardous substances. While students are not employees, they are learning how to supervise safe work practices after graduation. Field exercises in this course are outdoors and on the water. Preparing for and executing these exercises may include the use and trailering of boats, the use of boom, skimmers, and pumps, and potentially some heavy lifting. The safety of every student is of paramount importance. Personal protective equipment (PPE) and Personal Flotation Devices (PFDs) must be worn whenever appropriate. Students should not engage in any activity that is beyond their safe capacity to complete the activity safely. Whether a disability or simply a physical limitation, you must act safely and communicate your personal situation to the instructor. If you are unable to swim, are a weak swimmer, or have fear around the water, let the instructor know. In any of these situations you should wear your PFD at all times when you are within 6 feet of the water’s edge.

**L. OTHER INFORMATION**

- **Academic Advising**
  The College of Science & Engineering requires that students meet with an Academic Advisor as soon as they are ready to declare a major. The Academic Advisor will set up a degree plan, which must be signed by the student, a faculty mentor, and the department chair. Meetings are by appointment only; advisors do not take walk-ins. Please call or stop by the Advising Center to check availability and schedule an appointment. The College’s Academic Advising Center is located in Center for Instruction 350 or can be reached at (361) 825-3928.

**GENERAL DISCLAIMER**

The instructor reserves the right to modify the information, schedule, assignments, deadlines, and course policies in this syllabus if and when necessary. Any necessary changes will be announced in a timely manner during regularly scheduled lecture periods.