COURSE SYLLABUS

Course Titles:
ESCI 4330.001 - OIL SPILL PREVENTION AND RESPONSE
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Semester: Maymester-Summer 2014
Class Dates: May 19-23, 2014
Class Hours: 8am – 5 pm daily  (Total of 40 hours per OSHA Requirements)

Instructor: H.A. Tony Wood
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Instructor E-mail: tony.wood@tamucc.edu

Official Room Assignment: TBD – The class will meet at NRC 1101 to prepare and mobilize for field exercises. Most deployments will then originate at TAMUCC 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.

Oil Spill Response 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 emergency 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 and materials 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, and HAZWOPER for Oil Spill Response.

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.

Course Requirements
- 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”.
- Students must complete the web-based FEMA NIMS and ICS training programs (ICS 700 and 100) online. 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.
- All students will be responsible for developing specific documents for the Incident Action Plan during the tabletop exercise.
- 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 out of 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 semester.
- 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.

Graduate Credit Requirements
Graduate Students must complete a separate assignment, report, and or presentation. The topic must be approved in advance by the instructor and will be commensurate with graduate level expectations. Graduate students taking ESCI 5330 will be required to prepare a 15-20 slide PowerPoint briefing on specific protection strategies for a coastal inlet in Texas. The student will discuss the strategies and tactics that would be used to protect that inlet and inshore environmental habitats in the event of an offshore oil spill. The presentation will be delivered to the class during the last class day.

Learning Objectives
This course satisfies the 40-hour off-site employee training requirements of 29 CFR 1910.120 for oil spill responders. The initial training covers safe site investigations, the assessment of oil spills, typical hazards, proper selection of protective equipment, spill response equipment, strategies, and tactics. Upon completion of this course students will earn a professional certificate of completion and will be able to:

1. Know and describe the laws, regulations, and history related to oil spills.
2. Have an awareness of incident command systems and the involved agencies and oil spill response organizations as well as their roles in oil spill prevention and response.
3. Recognize and be able to assess the impacts of oil on the environment.
4. Understand the basic physical, chemical, and biological processes that affect oil in the environment.
5. Be able to use and supervise the effective use of basic oil spill response strategies, tactics, and equipment.

**Examination**

A final examination will be given on the last day of the 40-hour course or upon completion of all course-work. A passing grade will be achieved only upon completion of instruction, including lab and field exercises, and a grade of 70% or better on the final exam.

**Evaluation Criteria**

- Lecture Attendance & Class Participation 25%
- Field Exercises Attendance & Class Participation 25%
- Final Exam 25%
- Incident Action Plan 15%
- Homework 5%
- Tabletop Exercise 5%

**Safety**

This is an OSHA recognized and industrially oriented safety course. 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. 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) sunburn as a result of this class may have their grade reduced by one letter grade.

**Assignments**

At a minimum, each student must complete the FEMA courses ICS 100 and ICS 700. These assignments may be completed online, prior to the course or as homework during the course. A certificate of successful completion must be provided to the instructor. Additional assignments may be given over the period of this course. Graduate Students taking ESCI 5330 must complete a separate assignment, report, and or presentation. The topic must be approved in advance by the instructor and will be commensurate with graduate level expectations.

**Attendance/tardiness**

OSHA mandates the number of hours that must be completed in these certification courses. Any missed time must be made up through special arrangements with the instructor. Students seeking HAZWOPER certification for this OSHA mandated training MUST attend all 48 hours of class sessions.
including participation in the lab demonstrations, experiments, and field exercises. Forty-hours of combined classroom and lab attendance are required in order to be issued a certificate of completion meeting the requirements of 29CFR 1910.120 for Hazardous Waste Operators And Emergency Responders (HAZWOPER). An additional 8 hours are required for HAZWOPER Supervisors. Any students who miss any course hours must attend make-up sessions prior to being awarded a grade or a certificate of completion. The laboratory portion of this course will include a tabletop emergency response management exercise and a simulated spill response in full personal protective equipment. The student should make every effort to complete this short-course with the class. The student must schedule any required make-up course sessions or exams with the instructor within two months of the scheduled completion of the course.

**Late work and Make-up 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.

**Extra Credit** - None is permitted in this course.

**Cell Phone/Electronic Device Usage**
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 acceptable during hourly breaks.

**Attire**
This course will require classroom and field activities each day. Students may dress casually. It is appropriate to wear clothing suitable for work on boats. Clothing may get wet from splash. It may be helpful to bring a towel and a change of clothes. Students must wear closed-toed shoes (sandals and flip-flops are not permitted). Students should bring or wear clothing and hats to protect from the intense mid-day solar rays. Sunscreen lotions are also recommended.

**Required Textbooks and Materials:**
The books and resources required for this course are all available online and electronically:

**Prerequisite:** Science or engineering background or permission of instructor.
Overview of Topics Covered

TOPICS & TENTATIVE SCHEDULE
This schedule is intended to serve as general guidance. Student abilities, extended discussions on specific and current topics, or other factors may result in some adjustments to this schedule.

Day 1 – May 19, 2014
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 - May 20, 2014
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 corralling
• U-Booming
• J-Booming

Day 3 – May 21, 2014
Field Exercises starting at the CC Marina
• Single boat corralling
• Booming a vessel
• Oil spill skimming systems
• V-Booming with a skimmer

Day 4 - May 22, 2014
Field Exercises starting at the TAMU-CC Boat Barn & mobilizing to the CC Marina or Packery Channel
• Shoreline protection
• Exclusion Booming
• Cascade Booming
• Shingle / Chevron Booming
• Demobilize to Boat Barn & Clean Up

Day 5 - May 23, 2014
NRC 1101 Classroom
• ICS Certificates due
• Incident Action Plans due
• Fast Tank Deployment (University boat barn 11W)
• Waste management
  o DVD: Countermeasures on Land
  o DVD: Waste Management
  o In-Situ Treatment
  o Video: Petroleum Leaks Underground
  o Transportation Logistics
  o Bioremediation & Land Farming
  o Landfill
  o Incineration
• Tabletop Exercise
• Graduate Presentations on TIPS

PLEASE READ This Important Notice to All Students Including Students with Disabilities:
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. Texas A&M University-Corpus Christi complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disabilities. If you believe that you may have a disability (physical impairment, learning disability,
psychiatric disability, etc.), that would limit your participation, please contact the Services for Students with Disabilities Office at 361-825-5816. If you need any disability accommodations in this class, please have the SDO and/or student notify the instructor as soon as possible.

If you are a returning veteran, military contractor, or other affected person 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.

Our concern for the safety of all students extends well beyond what is traditionally considered a disability. The lab portion of this course includes field exercises that are designed to simulate real oil spill response activities. Students will not be exposed to real oil spills but students may expect to do some strenuous physical simulations on boats or shorelines. Students may wear Tyvek coveralls and will wear PFDs. If a student cannot swim or is not in adequate physical health to complete these exercises then they must advise the instructor(s) in advance.

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, let the instructor know that and wear your PFD at all times when you are within 6 feet of the water’s edge.

**Other Academic Policies**

**Academic Integrity/Plagiarism.**
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 dismissal from the course and having to repeat the course.

**Dropping a Class**
Events can sometimes occur that make dropping a course necessary or wise. Please consult with the instructor and your academic counselor before deciding to drop. There may be other solutions. If dropping the course is 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. Stopping attendance and participation WILL NOT automatically result in your being dropped from the class.

**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.

**Grade Appeals**
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 (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.

**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; the certain uncompleted portions of this course would continue through the use of Blackboard and/or email. Unless the OSHA requirements are met, Certificates of Completion would not be issued. 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.