Hazardous Waste Operations & Emergency Response  
ESCI 4370.001/101  CRN 201901.82696/82698  
Department of Physical and Environmental Science  
Spring 2019

A. COURSE INFORMATION

<table>
<thead>
<tr>
<th>Course number/section:</th>
<th>ESCI 4370.001/4370.101</th>
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<tbody>
<tr>
<td>Class meeting time:</td>
<td>8:00 am-5:00 pm M-Sa, January 7-12, 2019</td>
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<tr>
<td>Class location:</td>
<td>NRC 1101 &amp; NRC 1026</td>
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**Official Room Assignment:** This is a published National Spill Control School course combined with attendees from industry and government. The course will meet at the NSCS classroom and storeroom (NRC 1101 and NRC 1026) due to the large amount of equipment needed for the course and for hands-on exercises. Other alternative on-campus field locations may be chosen for spill response exercises and equipment deployment.

**Course Website:** None

B. INSTRUCTOR INFORMATION

<table>
<thead>
<tr>
<th>Instructor:</th>
<th>H.A. Tony Wood</th>
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</thead>
<tbody>
<tr>
<td>Office location:</td>
<td>6300 Ocean Drive, NRC Ste. 1100, Corpus Christi, TX 78412</td>
</tr>
<tr>
<td>Office hours:</td>
<td>This is a 40-hour course from 8 am until 5 pm over 6 days M-F + Sat. 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.</td>
</tr>
<tr>
<td>Telephone:</td>
<td>(w) 361-825-3335</td>
</tr>
<tr>
<td>e-mail:</td>
<td><a href="mailto:tony.wood@tamucc.edu">tony.wood@tamucc.edu</a></td>
</tr>
<tr>
<td>Appointments:</td>
<td>call above phone number</td>
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C. COURSE DESCRIPTION

**Catalog Course Description**

This intense short course is designed to provide professional certification meeting the off-site training requirements for U.S. OSHA Hazardous Waste Operations and Emergency Response (HAZWOPER) regulations as specified in 29 CFR 1910.120. It qualifies students to support emergency response or hazardous waste management operations. The HAZWOPER Supervisor portion of this course will prepare the college graduate to supervise others, prepare reports, and assume responsible positions of management at hazardous waste and emergency response sites.

**Extended Course Description**

This intense short course includes the same course topics and materials offered during full semesters but the content is consolidated into six 8-hour class days. This course is designed to provide professional certification and initial 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. Four separate professional certifications will be achieved in this course including ICS 100, ICS 700, HAZWOPER, and HAZWOPER Supervisor. This course is recommended for students expecting to enter the environmental workforce or internships within the next year.

This course satisfies the 40-hour off-site employee training requirements of 29 CFR 1910.120 as well as the Resource Conservation and Recovery Act of 1976 (RCRA) and Section 126 of the Superfund Amendments and Reauthorization Act (SARA). These laws apply to workers at hazardous waste sites. The initial training covers safe site investigations, the identification of hazardous materials, typical hazards, proper selection of protective equipment, spill containment and clean-up, container selection, and the transport of spill residues and wastes. The HAZWOPER Supervisor portion of this course will prepare the college graduate to supervise others, prepare reports, and assume responsible positions of management at hazardous waste and emergency response sites.

D. PREREQUISITES, COREQUISITES, and EXCLUSIONS

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

Co-requisites:
- 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 100 and 700) 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.
- 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.

Exclusions
- Students who have taken this course (ESCI 4370) may not take ESCI 5370 for graduate credit. Students who have taken HAZWOPER at other institutions within the last year may
opt to take only the HAZWOPER Supervisor course (as a separately listed ESCI course).

E. REQUIRED TEXTBOOK(S), READINGS AND SUPPLIES


Recommended Free Downloadable Software:
- ALOHA
- CAMEO
- FEMA ICS 100
- FEMA ICS 700
- MARPLOT
- WISER

Supplies

Supplies are provided.

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 identify:

1. The purposes of OSHA, USEPA, USCG, and NIOSH and their roles in regulating the environmental, health, and occupational safety considerations of the workplace;
2. Hazardous materials, their hazards, their symptoms of exposure, and appropriate engineering controls and personal protective measures;
3. Approved site characterization procedures and methods to: identify problems that may exist in the workplace; assess risks; and how to mitigate those risks;
4. The hazards that may occur when reactive compounds and mixtures are improperly stored or managed;
5. The essential elements of establishing effective site controls including the establishment of safe work zones and decontamination procedures;
6. How to develop and use site health and safety plans (HASP);
7. How to implement response procedures for site or personnel emergencies or hazardous materials exposures.
G. INSTRUCTIONAL METHODS AND ACTIVITIES

This is an OSHA recognized and industrially oriented safety course. Students should be able to assess all hazards and mitigate those hazards. Hazards may exist in the form of mechanical, thermal, electrical, acoustic, chemical, and biological hazards. Spill response equipment and heavy weights may also represent hazards. Students must wear appropriate personal protective equipment. 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 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.

H. MAJOR COURSE REQUIREMENTS AND GRADING

- Course Attendance, Assignments, & Participation 50%
- Final Exam 50%

I. COURSE CONTENT/SCHEDULE

Overview of Topics Covered
- Regulations Overview
- Site Characterization
- Toxicology
- Hazard Recognition
- Hazard and Safety Analysis
- Hazardous Chemical Awareness
- Hazardous Waste Management
- Radiological Hazards
- Respiratory Protection
- Personal Protective Equipment
- Site Control
- Decontamination
- Medical Surveillance
- Air Monitoring
- Confined Space Entry
- Emergency Procedures
- Material Sampling
- Supervising safety at hazardous waste and hazardous materials incident sites

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.

**Monday**

Introduction to Program

NIMS ICS: Roles and Responsibilities

- FEMA ICS 100 or ICS 200 Assignment
- FEMA ICS 700 or ICS 800 Assignment

“The Emergency Operations Center” (Video)

CHAPTER 1: Hazardous Materials Management System

CHAPTER 2: Health and Safety

CHAPTER 3: Incident Command Systems

CHAPTER 5: Site Management and Control

Hazmat Communications including Definitions and Acronyms

Hazmat Laws, Regulations and Standards

Hazardous Waste Operations and Emergency Response

Assigning Response Roles and Responsibilities

Public Protective Actions

Staging Areas and Hazard Control Zones

**Tuesday**

CHAPTER 6: Identifying the Problem

CHAPTER 7: Hazard Assessment and Risk Evaluation

CHAPTER 8: Personal Protective Clothing and Equipment

Exposure and Toxicity Concerns

Medical Surveillance and Monitoring of Field Personnel

Hazard and Risk Evaluation

Material Safety Data Sheets (MSDS) & North American Emergency Response Guidebook

TLV’s and PEL’s

Heat Stress and Hypothermia

Field Observation - Occupancy and Location, Container Shapes, Markings and Color,

**Wednesday**

CHAPTER 10: Implementing Response Objectives

CHAPTER 11: Decontamination

Establishing the EOC

Strategies and Tactics

- Confined Space and Lock Out, Tag Out
- Static Electricity – Bonding and Grounding
- Spills & Leaks - Containment & Control
- Other Special Topics

CHAPTER 9: Information Management and Resource Coordination

Advanced Information Resources – Internet Sites

- WISER
- ALOHA
- CAMEO
- MARPLOT

CHAPTER 12: Terminating the Incident

*Tabletop Exercise: Planning an Emergency Response for a Haz-Mat highway accident*

Incident Debriefing

Post Incident Analysis and “Lessons Learned”

Case Studies of Emergency and Remedial Response Actions
Post Emergency Response
Hazardous Waste Management
Written Exam and Review

Thursday

Demonstration and Discussion: Decon Set-up
Demonstration and Discussion: Over-packing a Drum
Field Exercise: Half & Full Face Respirator Fit Testing
Field Exercise: Cascade Air System

Friday
Field Exercise: Level A Hazmat Dress-Out
Field Exercise: Level A Hazmat Spill Drill (3-4 hours)
Field Exercise: Equipment Recovery and Storage
Demonstration and Discussion: Spill Response Techniques and Materials

Saturday or Tuesday - TBD
8 Hour HAZWOPER Supervisor Course
Management & Leadership Skills
Safety Management Systems
Regulatory Inspections & Investigations
Environmental & Safety Sampling

Note: Changes in this course schedule may be necessary and 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
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**
No extra credit is permitted in this course.

**Cell Phone & Laptop Use**
Students may bring electronic devices to this class. Several “Apps” may be installed and may be useful for certain class exercises. 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.

**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**
All students registered for this course must complete a TAMU-CC ESCI lab safety course online by the end of the second class day.

This is an OSHA recognized and industrially oriented safety course. Students should assess all hazards and mitigate those hazards. Protective gloves and clothing should be worn whenever working with equipment. Closed toe shoes must be worn during all class periods that involve working with response equipment. Students should be aware of their
own physical limitations and advise the instructor privately.

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/](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 some heavy lifting. The safety of every student is of paramount importance. Personal protective equipment (PPE) 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.

**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 the Center for Instruction 350 or can be reached at (361) 825-3928.

**GENERAL DISCLAIMER**

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