

CITE 10003 - Disasters and Failures

Dr. Michael Scherger

Fall 2016

Instructor Contact Information

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- Office Hours: M, W 10:00 - 12:00; T, Th 13:00 - 15:00; or by appointment
- Web: <http://personal.tcu.edu/mscherger>

Course Information

- Meeting Time: T, Th: 9:40 - 10:20 (Lecture), 10:30 - 12:20 (Lab)
- Classroom: Tucker Technology Center - 246 (Lecture & Lab)
- Webpage: Pearson Learning Studio and <http://personal.tcu.edu/mscherger>
- Lecture and Lab Final Exam: Thursday, December 15, 2016 (make travel plans AFTER this date!)

Course Description

In this course we work with fundamental methodologies and tools used in science, engineering, and information technology. We learn the difference between science and engineering. We will also use the steps of the scientific method when learning about various disasters and failures. The use of these concepts with the right balance of information and experience can help us avoid errors made in the past; furthermore informed citizens can make better policy decisions and become more astute consumers.

Textbook and Readings

All reading materials / slides will be posted on TCU Online. You will have access to course notes, lab procedures, study guides. Portions of the quizzes may be graded via Scantron sheets (provided by your instructor). The Scantron machine will automatically indicate the correct answer(s) for questions marked as incorrect.

Prerequisites

None.

Course Objectives

This course focuses on how we can develop technological solutions to problems by applying the scientific method to the study of major technological accidents and failures. The lecture material will be augmented by laboratory experiences where the student will be able to experiment with some common everyday complex systems and study their failures under carefully controlled conditions. Upon completion of this course, students will be able to demonstrate a basic understanding of ...

1. the investigation methodologies, computer models and simulation methods used by engineers and scientists in the development of modern technologies
2. the engineering, and the underlying natural science, behind a set of modern technologies
3. how the engineering and the underlying natural science behind modern technologies controls not only what we can do, but how society must deal with both the positive and negative effects of a technology

Course Schedule and Topics (Subject to change)

Week	Dates	Topic	Lab
1	8/23 8/25	Introduction, Scientific Method, Science vs. Engineering Review of Basic Statistics, Errors and Error Calculations	Non-standard Rule Lab
2	8/30 9/1	Nuclear Medicine Overview Nuclear Medicine Disasters	Mouse Trap Lab
3	9/6 9/8	Pharmaceuticals Overview Pharmaceutical Disasters	No Lab
4	9/13 9/15	Quiz 1, Convocation Bridges I	No Lab
5	9/20 9/22	Bridges II Bridge Disasters	Bridge Lab
6	9/27 9/29	Aircraft and Flight Basics Aircraft Basics Disasters	No Lab
7	10/4 10/6	Early Space Program and Disasters Space Shuttle and Disasters	No Lab
8	10/11 10/13	Fall Break - No Classes Quiz 2	No Lab
9	10/18 10/20	Electricity Basics Power Networks Disasters	Battery Lab
10	10/25 10/27	Nuclear Power Basics Nuclear Power Disasters	Solar Lab
11	11/1 11/3	Telephone and Computer Network Basics Telephone and Computer Network Disasters	Card Sorting Lab
12	11/8 11/10	Software and Computer Program Basics Software and Computer Program Basics	Software Lab
13	11/15 11/17	Software and Computer Program Basics and Disasters Software and Computer Program Disasters	Software Lab (cont.)
14	11/22 11/24	Quiz 3 Thanksgiving - No Classes	No Lab
15	11/29 12/1	Environmental Disasters Environmental Disasters	Fuel Cell Lab
16	12/6	Review	
17	12/15	Quiz 4	

Course Assessments, Extra Credit, and Late Work Policies

- **60% Quizzes:** Four quizzes administered during the course. If you miss a quiz and have a valid excuse (see below), then you will have an opportunity to makeup the quiz. Otherwise the quiz is marked as a zero. Each quiz may be a combination of multiple choice questions, fill in the blank, or short answer. The last quiz is given during finals week.
- **40% Lab Write-ups:** The laboratory experience will reinforce the lecture material by giving the student a chance to discover how the scientific method is used in the design of complex products/systems and study of technologies. All laboratories will be completed in teams of two at the assigned laboratory time. A write up (most fill-in-the-blank) for each lab will be due at the end the scheduled lab. There are 10 labs.

Grading Scale

Final course grades are rounded to the nearest integer.

≥93	90-92	87-89	83-86	80-82	77-79	73-76	70-72	67-69	63-66	60-62	<60
A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F

Make-up Work

Make-up work will only be permitted for two reasons: an official university absence or documented medical appointments. A student who has an *official university absence* must contact the instructor *before* the absence to schedule a make up of any assessment that will be missed. A student who has a *documented medical appointment* will need to bring in documentation of medical excuse in order to makeup the work. Such medical related absences will be rescheduled accordingly.

Mobile Device / Laptop Computer Usage

Please turn off cell phones and other related electronic devices. Disruptions caused by cell phones and other related devices may result in a pop quiz for the entire class. You may use your computer to follow along with the slides presented and take notes. Please refrain from using social media sites until after class.

Attendance Policy

Due to the nature of this course, this class will require that your body and mind show up to every class. In addition to simply being in class, you should come prepared to ask questions about the material being covered that day. Due to the size of the class, we may use a seating chart and you can assume that attendance is being monitored. If you are tardy for lecture, you may not be permitted to take the quiz. *Come to class on time!!!!*

TCU Campus Resources for Students

****TCU Campus Resources for Students:** Many resources exist on the TCU campus that may be helpful to students: Mary Coats Burnett Library (257-7117); Center for Academic Services (257-7486, Sadler Hall. 1022); the William L. Adams Writing Center (257-7221, Reed Hall 419); Student Development Services (257-7855, BLUU 2003); and Office of Religious & Spiritual Life (257-7830, Jarvis Hall), Campus Life (257-7926, Sadler Hall 2006), and the Counseling, Testing, and Mental Health Center (257-7863, Brown Lupton Health Center).

***Email Notification:** Only the official TCU student email address will be used for all course notification. It is your responsibility to check your TCU email on a regular basis.

Academic Dishonesty

The Computer Science Department takes academic dishonesty quite seriously. Academic misconduct will not be tolerated. Such acts are detailed in the current TCU Academic Catalog and include: copying, using, or in any way misrepresenting another's work as your own; substituting for another or having someone substitute for you; plagiarism; collusion; abusing resource materials; unauthorized use of computer software or hardware; fabrication and falsification; complicity in misconduct. Such conduct at a minimum results in a zero on the test or assignment, and may result in a failing grade for the course.

Unless otherwise stated on the assignment sheet, all graded material must be completed individually. Students may give each other general advice, but they may not share algorithms, final answers, or program source code.

Finally, you should be careful not to give others access to your code. This means that you should not keep your program in a publicly accessible directory, you should not leave your terminal unattended, and you should not forget to pick up your printouts.

Netiquette: Communication Courtesy Code

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats. If I deem any of them to be inappropriate or offensive, I will forward the message to the Chair of the department and the online administrators and appropriate action will be taken, not excluding expulsion from the course. The same rules apply online as they do in person. Be respectful of other students. Foul discourse will not be tolerated. Please take a moment and read the following link concerning netiquette <http://www.albion.com/netiquette/>. Participating in the virtual realm, including social media sites and shared-access sites sometimes used for educational collaborations, should be done with honor and integrity:

Student Disabilities Statement

Texas Christian University complies with the Americans with Disabilities Act and Section 504 of the Rehabilitation Act of 1973 regarding students with disabilities. Eligible students seeking accommodations should contact the Coordinator of Student Disabilities Services in the Center for Academic Services located in Sadler Hall, 1010. Accommodations are not retroactive, therefore, students should contact the Coordinator as soon as possible in the term for which they are seeking accommodations. Further information can be obtained from the Center for Academic Services, TCU Box 297710, Fort Worth, TX 76129, or at (817) 257-6567.

Adequate time must be allowed to arrange accommodations and accommodations are not retroactive; therefore, students should contact the Coordinator as soon as possible in the academic term for which they are seeking accommodations. *Each eligible student is responsible for presenting relevant, verifiable, professional documentation and/or assessment reports to the Coordinator.* Guidelines for documentation may be found at http://www.acs.tcu.edu/disability_documentation.asp.

Students with emergency medical information or needing special arrangements in case a building must be evacuated should discuss this information with their instructor/professor as soon as possible.

TCU Mission Statement

To educate individuals to think and act as ethical leaders and responsible citizens in the global community.

Course syllabi are intended to provide students with basic information concerning the course. The syllabus can be viewed as a blueprint for the course; changes in the syllabus can be made and students will be informed of any substantive changes concerning examination, the grading or attendance policies and changes in project assignments.