

CHATTANOOGA STATE COMMUNITY COLLEGE
CHATTANOOGA, TENNESSEE
ENGINEERING TECHNOLOGY DIVISION

COURSE SYLLABUS

NP 101 Nuclear Seminar

Instructor: Lisa Miller
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Credit Hours: 1
Semester: Fall 2011
Room: C-69

Catalog Course Description

This course introduces the student to career opportunities in the nuclear field. Topics will include a brief history of nuclear energy, an overview of the nuclear power industry, radiation protection, safety, and medical applications of nuclear energy.

Prerequisites:

None

Corequisites:

None

Entry Level Standards

Textbook/Materials

None

Institutional Student Learning Outcomes

- ISLO3. Critical Thinking and Analytical Skills
- ISLO4. Global and Cultural Awareness

Program Student Learning Outcomes

- PSLO6. An understanding of professional and ethical responsibility. [ISLO4]
- PSLO8. Acquired broad education necessary to understand the impact of engineering solutions in a global and societal context. [ISLO3]

I. Course Student Learning Outcomes

- CSLO1. Provide students with the knowledge the nuclear industry in the United States. [PSLO6]
- CSLO2. Provide students with the knowledge of major nuclear accidents worldwide. [PSLO8]
- CSLO3. Satisfy the requirements for the Nuclear Uniform Curriculum Program Certificate. [PSLO6, 8]

II. Topics:

Week	Topic
1	8/31 -A Brief History of Nuclear Energy
2	9/7 -Overview of the Nuclear Power Industry.
3	9/14 -Types of U. S. Nuclear Reactors: BWR, PWR, AP1000

4	9/21 -Radiation
5	9/28 -Radiation Protection
6	10/5 -Regulation of Radiation Exposure
7	10/12 -Biological Effects of Radiation
8	10/19 -Mid-Term Test
9	10/26 - U. S. Nuclear Accidents-Browns Ferry fire, Idaho Falls stuck rod, Davis-Besse, Salem Generating Station turbine blade, TMI
10	11/2 - International Accidents-Chernobyl
11	11/9 -International Accidents-Fukushima
12	11/16 -Nuclear Fuel Cycle
13	11/23 -Other Uses of Nuclear Energy-Military, Nuclear Medicine, Radiation Therapy, Food Irradiation, and X-Ray Production
14	11/30 -Nuclear Waste Management
15	12/7 -TVA: A Brief History
16	12/14 -Final Exam 1:00-2:50

Important Dates

- 9/5- Labor Day Holiday-No Class
- 9/14- Activity Period at 10:00-Student Chapter of the American Nuclear Society Meeting.
- 10/7 -Activity Period at 11:00-Student Chapter of the American Nuclear Society Meeting
- 10/17, 10/18- Fall Break-No class
- 10/19- Mid-Term Test
- 11/24, 11/25-Thanksgiving Holiday Break-No class
- 12/7-Last Day of Class
- 12/14-Final Exam

III. Instructional Activities

11. Read materials provided in class.
12. Answer discussion questions.
13. Complete exams.

Alignment of Assessments with CSLOs (actual assessments are defined below)		
CSLO1	CSLO2	CSLO3
a) Midterm Test	a) Midterm Test	a) Midterm Test
b) Final Exam	b) Final Exam	b) Final Exam

IV. Course Objectives

- O1 List scientists credited with the discovery of fission. [CSLO 1,2,3]
- O2 Describe the development of nuclear energy for peaceful applications. [CSLO 1,2,3]
- O3 List major advances in nuclear energy starting from the 1940's. [CSLO 1,2,3]
- O4 Briefly describe how an electrical power plant works. [CSLO 1,2,3]
- O5 Differentiate major types of power plants: coal-fired, gas-fired, hydroelectric, and nuclear. [CSLO 1,2,3]
- O6 Differentiate the two major types of reactors found in the United States. [CSLO 1,2,3]
- O7 Briefly describe the AP1000. [CSLO 1,2,3]
- O8 Describe the nuclear fuel cycle. [CSLO 1,2,3]
- O9 Describe a nuclear fuel pellet and nuclear fuel assembly. [1CSLO 1,2,3]

- O10 Describe major worldwide nuclear accidents. [CSLO 1,2,3]
- O11 Define the term radiation. [CSLO 1,2,3]
- O12 List sources of radiation. [CSLO 1,2,3]
- O13 Define the term half-life. [CSLO 1,2,3]
- O14 Describe health effects of radiation. [CSLO 1,2,3]
- O15 Describe how to protect oneself from contamination. [CSLO 1,2,3]
- O16 Explain what radiological controlled areas are. [CSLO 1,2,3]
- O17 List instruments used for radiation detection. [CSLO 1,2,3]
- O18 Describe the acronyms CFR, NRC, and INPO. [CSLO 1,2,3]
- O19 Know the topics addressed in title 10 of the code of federal regulations. [CSLO 1,2,3]
- O20 Describe safety culture principles. [CSLO 1,2,3]
- O21 Discuss the importance of communications in the nuclear industry. [CSLO 1,2,3]
- O22 Describe medical applications of nuclear energy. [CSLO 1,2,3]
- O23 Describe career opportunities associated with nuclear energy. [CSLO 1,2,3]
- O24 Describe the sequence of events in the Fukushima disaster. [CSLO 1,2,3]
- O25 Describe consequences of the Fukushima disaster. [CSLO 1,2,3]
- O26 Describe other uses of nuclear energy. [CSLO 1,2,3]
- O27 Describe how nuclear waste is regulated. [CSLO 1,2,3]
- O28 Briefly describe the history of TVA. [CSLO 1,2,3]

V. Assessment

- A. Tests: Two tests will be given during the semester. Each test will consist of multiple choice and short answer type questions. The tests will allow the student to demonstrate their knowledge of the global importance of nuclear energy. The tests will count for 100% of the overall grade.
- B. Final Exam: The final exam will be given during the scheduled final exam period. The final exam will cover material from the midterm exam.
- C. Certification: Students will be required to make a minimum of an 80 to obtain the Nuclear Uniform Curriculum Program Certification of Completion.
- D. Work Ethic: This class will support the Chattanooga State W. E. Succeed campaign in which the four areas of teamwork, integrity, productivity, and professionalism will be practices. Students are expected to be present and on time in all classes. In addition, all work must be submitted by the due date. Work not submitted by the due date will have points deducted. After the third day, late work is not accepted. If a student misses a test or quiz, he or she must have a valid reason and make arrangements for a make-up. If the student does not contact the instructor within one day of missing the test or quiz, a "0" will be recorded.

E. Grade Determination:

Midterm Test	50%
Final Exam	50%
Total	<u>100%</u>

VI. Grading Scale

90—100	A
80—89.9	B
70—79.9	C
65—69.9	D
0—64.9	F

VII. Course Delivery Format

Standard Format – This format is the traditional format and may use an on-line format (**eLearn**) to provide access to “static” materials which include the syllabus, course material, contact information, and presentations. Faculty must make available, when requested, a copy of the syllabus and any other instructor provided course materials, including instructor contact information. Faculty may require on-line activities and assignments to include on-line tests and submission of all written and on-line communications. The extent of on-line activities/assignments may vary by course but will be specified on the syllabus.

VIII. College Policies

This class is governed by the policies and procedures stated in the current Chattanooga State Student Handbook. Additional or more specific guidelines may apply.

ADA Statement

Students who have educational, psychological, and/or physical disabilities may be eligible for accommodations that provide equal access to educational programs and activities at Chattanooga State. These students should notify the instructor immediately, and should contact Disabilities Support Services within the first two weeks of the semester in order to discuss individual needs. The student must provide documentation of the disability so that reasonable accommodations can be requested in a timely manner. All students are expected to fulfill essential course requirements in order to receive a passing grade in a class, with or without reasonable accommodations.

Disruptive Students

The term “classroom disruption” means – student behavior that a reasonable person would view as substantially or repeatedly interfering with the activities of a class. A student who persists in disrupting a class will be directed by the faculty member to leave the classroom for the remainder of the class period. The student will be told the reason(s) for such action and given an opportunity to discuss the matter with the faculty member as soon as practical. The faculty member will promptly consult with the division dean and the college judicial officer. If a disruption is serious, and other reasonable measures have failed, the class may be adjourned, and the campus police summoned. Unauthorized use of any electronic device constitutes a disturbance. Also, if a student is concerned about the conduct of another student, he or she should please see the teacher, department head, or division dean.

Affirmative Action

Students who feel that he or she has not received equal access to educational programming should contact the college affirmative action officer.

Academic Integrity/Academic Honesty

In their academic activities, students are expected to maintain high standards of honesty and integrity. Academic dishonesty is prohibited. Such conduct includes, but is not limited to, an attempt by one or more students to use unauthorized information in the taking of an exam, to submit as one's own work, themes, reports, drawings, laboratory notes, computer programs, or other products prepared by another person, or to knowingly assist another student in obtaining or using unauthorized materials. Plagiarism, cheating, and other forms of academic dishonesty are prohibited. Students guilty of academic misconduct, either directly or indirectly through participation or assistance, are immediately responsible to the instructor of the class. In addition to other possible disciplinary sanctions, which may be imposed through the regular institutional procedures as a result of academic misconduct, the instructor has the authority to assign an "F" or zero for an activity or to assign an "F" for the course.

SMOKING/TOBACCO USE

Chattanooga State Technical Community College recognizes the increasing weight of scientific evidence that smoking is harmful not only to the “active” smoker but also to the “passive” smoker who is exposed to others’ smoke. Smoking is defined as the lighting or carrying of a lighted cigarette, cigar, pipe, or similar device.

Smoking is prohibited in all college buildings, owned or leased. Additionally, smoking will not be allowed in any college owned vehicles. All building entrances are posted as non-smoking areas. Signs stating “No Smoking within 50 ft of Entrance” are posted at all entrances. Signs are posted at all exits stating “Smoking Prohibited within 50 ft of Building.

The use of mouth tobacco (to include dipping, chewing, etc.) is prohibited in all Chattanooga State buildings, facilities, and vehicles.

The policy applies to all campuses and to the entire college community, including employees, students, and visitors. It is the responsibility of all faculty, staff, and students to adhere to, enforce, and inform visitors of the College’s smoking policy. If a student continues to disregard the posting, he/she will be reported to the Dean of Student Affairs. If an employee continues to disregard the posting, he/she will be reported to their respective Vice-President

DESIGNATED SMOKING AREAS

The College has designated “Smoking” areas on campuses and at the sites. These areas can be located on the campus map.

CAMPUS AWARENESS PLAN

The policy shall be published in the College catalog, student handbook, and the policies and procedures manual. Periodic notices shall be placed in other college publications.

Flyers will be posted on all bulletin board and e-mail notices will be sent each semester, which will inform college visitors as well as students, staff, and faculty of the College’s position on this issue.

Children

It is Tennessee Board of Regents policy that children are not permitted in the classrooms or laboratories. If you have children who must stay home for some reason, you must make other arrangements for their care than bringing them with you to class.

Tigermail is the official means of communication for the College.

The instructor reserves the right to modify this syllabus in writing during the course of the semester. Since this is a new course, the weekly topics calendar may be changed.

IX. Instructor Policies

Cell Phones

Activation of these devices represents a distraction and their use during lectures and labs (including instant messaging, games, and etc.) will be considered extremely disruptive to the learning environment. Please turn off (or set to vibrate) all such devices before entering the classroom. Please excuse yourself from the room if an emergency requires you to make or receive a phone call during class. If your cell phone goes off during a testing period, five points will be deducted from your test

Use of Computers/Printers

The use of a computer is mandatory for all students. Students will have access to the computers in C24, C33, C54, C84, & C87. These computers are connected to the ET server and can be used to access Microsoft Office and other software. There may be times when one of the computer rooms will not be available; these times will be posted with as much advance notice as possible. **It is the student's responsibility to see that his or her username and password are working properly and that his or her password is protected.** It is also the student's responsibility to back-up needed files. The school will not be responsible for any computer files that get "lost" or damaged. Back-up documentation for this class (such as the class syllabus, handouts, description of class assignments, etc.) will be available to the students through eLearn. Printers are to only be used by Engineering Technology students for assignments related to engineering and engineering technology classes or labs. Paper availability may be subject to print management activities and will be requested through assigned faculty. Please help conserve paper.

Classrooms & Labs

Food and drinks are prohibited in all Engineering Technology classrooms, with the exception of water in a closed container. All food and drinks are prohibited in labs located in the Branch Center for Technology. Any form of tobacco products are also prohibited in accordance with College and TBR policy.

To Log-in C24, C33, C54, C84 & C87: Username: ET_last name first initial middle initial (*no spaces*)

Password: student

Domain (log-in): CSTCC

Note: *Be sure to change your password after your initial log-in.*