

THREE RIVERS COMMUNITY-TECHNICAL COLLEGE  
COURSE OUTLINE

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Course Number/Title: NUC K110 and K111 Radiation, Health, Safety

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Lecture 2 hrs      Laboratory 0 hrs      Credit 2 hrs      Contact 2 hrs

Course Description: This course is an introduction to basic concepts associated with Nuclear Physics and Nuclear Radiation, Health and Safety. Topics include nuclear structure, radioactivity, interaction of radiation with matter, shielding, radiation measurement, exposure and biological effects.

Method: Lecture

Text: Basic Radiation Protection; Gollnick, 5th edition

Prerequisites: MAT K186, CHE K121 Co-Requisites: NUC K111. NUC 117

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| COURSE TOPICS/CONTENT  | HOURS |
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| 1. Atomic and Nuclear Structure                                      | 1     |
| 2. Radioactive Decay and Radiation                                   | 3     |
| 3. Interaction of Radiation with Matter                              | 3     |
| 4. Radiation Detectors and Measurement                               | 8     |
| 5. Biological Effects of Radiation                                   | 3     |
| 6. Dose and Exposure Control   | 4     |
| 7. Regulations   | 2     |
| 8. Waste Disposal  | 1     |
| 9. Internal Exposure and Removal of Airborne and Waterborne Activity | 4     |
| TOTAL HOURS  | 30    |

Date: May 1, 1997

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Program Coordinator: James R. Sherrard

Department Chairperson: Tim Wentzell

Continuation Sheet No 2 of 2

Course Number>Title: NUC 1100 Radiation, Health, Safety

Measurable Objectives

Upon completion of the course, the student will know in detail: the various types of radioactive decay, their decay mechanisms, and resulting radiation decay modes. The student will also understand the impact of radiation on various biological systems and appreciate the principles of exposure control (time, distance and shielding). These principles are taught from both the conceptual and mathematical approach.

The student will also learn the physical principles of radiation detection as well as how the application and limitations of current detection equipment. Pertinent federal exposure/dosage regulations will be covered.

The course will also teach the student how internal radiation exposure/damage can be minimized by controlling airborne and waterborne concentrations of radionuclides.

**Policy on academic dishonesty:** Academic dishonesty is harmful to the educational process and to class morale. Anyone caught cheating on an exam will be given a zero for that exam and will not receive a letter of recommendation from me for future academic endeavors!

Please try to avoid having cell phones ring during class.

**Quizzes:** Quizzes will be announced, but I do not have the time to call students who are absent the day a quiz is announced. If you miss a class call me or a classmate in order to find out if a quiz has been scheduled.