COURSE #: NERS 425**; CREDITS:** 4/Selective	**COURSE TITLE:** Applications of Radiation
TERMS OFFERED: Winter	**For each prerequisite below, "E" denotes Enforced and "A" denotes Advis**
TEXTBOOKS/REQUIRED MATERIAL: Handouts	**PREREQUISITES:** NERS 312 (A)
INSTRUCTOR(S): Atzmon, Fleming, Hartman, Pozzi, F	**COGNIZANT FACULTY:** Micheal Atzmon
CoE BULLETIN DESCRIPTION: Applications of radiation interaction with matter using various forms (neutrons, ions, electrons, photons) of radiation, including neutron activation analysis, nuclear reaction analysis, Rutherford backscattering analysis, x-ray diffraction, plasma-solid interactions and wave-solid interactions. Lectures and laboratory.	**COURSE TOPICS:** Radiation Safety; Statistics and Error Propagation; X-ray diffraction; Langmuir Probes, AC and DC; Neutron activation analysis; Neutron source strength determination; Energy-angle correlati for D-T neutrons; Nuclear reaction analysis; Radon gas and thermolumi detectors.
COURSE STRUCTURE/SCHEDULE Lecture: 1 per week @ 80 minutes; Laboratory: 1 per week @ 4 hours	
COURSE OBJECTIVE For each Course Objectiv links to the Program ducational Objectives ar shown	1. Teach students advanced radiation measurements techniques [1,2] 2. Increase student's knowledge of the applications of radiation [1,2,3] 3. Provide an opportunity for team work [3] 4. Provide an opportunity for the practice of written communications skills [3]
COURSE OUTCOMES For each Course Outcom links to the Program/ABE Student Outcomes are shown [#,a-k]	1. Students demonstrate their knowledge of advanced radiation measurements techniques [5|ABET b] 2. Students will communicate in writing their insights into radiation applications [1,4,6,7|ABET a,c,d,g]
ASSESSMENT TOOLS For each assessment tool to the Course Outcomes a identified	1. Each of the experiments provides the topic for a separate laboratory report, prepared by each student. One of the reports (nuclear reaction analysis) is prepared by groups consisting of 4-6 members. In addition to being graded on the technical content, students receive a grade on the presentation. 2. Course evaluations at the end of the course provide student self-assessment of selected outcomes**.** 3. Faculty self-assessment provides self-assessment data on all outcomes.

Revision History: September, 1998; May, 2005; October, 2005; June 2010