COURSE #: NERS 586; **CREDITS:** 4/Elective	**COURSE TITLE:** Applied Radiological Measurements
TERMS OFFERED: Fall	**For each prerequisite below, "E" denotes Enforced and "A" denotes Advised.**
TEXTBOOKS/REQUIRED MATERIAL: Course Notes	**PREREQUISITES:** NERS 484, NERS 515, NERS 554 or equivalent
INSTRUCTOR(S): Kimberlee Kearfott	**COGNIZANT FACULTY:** Kearfott
CoE BULLETIN DESCRIPTION: Instrumentation and applied measurements of interest for radiation safety, environmental sciences, and medical physics. Dosimeters, radon gas, *in situ* gamma ray spectroscopy, skin dose, bioassay, internal dose evaluation, alpha detection, applied instrumentation, and other selected medical physics and health measurements. Includes analytical modeling and computer simulation for comparison with several physical experiments. Lectures and laboratory.	**COURSE TOPICS: (selections from the following)** Radiation safety training, Gamma ray spectroscopy, Applied Dosimetric measurements, Radon screening and dynamics, Health physics instruments, Other low level radiation measurements, Radiation surveys
COURSE STRUCTURE/SCHEDULE Lecture: 2 per week @ 50 minutes, Lab: 1 per week @ 4 hours	
COURSE OBJECTIVES For each Course Objective, links to the Program Educational Objectives are shown	1. Be able to select appropriate instrumentation for applied health and medical physics measurements [1,2] 2. Be capable of performing and analyzing realistic measurements through awareness of measurement limitations [1,2] 3. Be able to interpret estimated or simulated models in light of measurements [1, 2] 4. Be familiar with the breath of applied health and medical physics measurements and issues [3] 5. Improve group working skills [3] 6. Be able to present the results of measurements in a professional written and oral form [3]
COURSE OUTCOMES For each Course Outcome, links to The Program/ ABET Student Outcomes are shown [#,a-k]	1. Perform laboratory and *in situ* measurements of gamma-emitting and other radionuclides [2,5 6|ABET k,b,d] 2. Perform dosimetric measurements, quantifying their limitations [2,5,6|ABET k,b,d] 3. Perform and analyze measurements of radon gas using different screening devices [2,5,6,8|ABET k,b,d,h] 4. Perform other selected applied measurements, depending upon available equipment [2,5,6,8|ABET k,b,d,h] 5. Prepare professional, journal-style reports on experiments conducted [7|ABET g] 6. Formally present work as part of a small team [6, 7|ABET d,g]
ASSESSMENT TOOLS For <u>each</u> assessment tool, links to the courses outcomes are identified.	Links shown in brackets are to course outcomes 1. Individual written reports on laboratory exercises, which will include answering of specific questions, presentation of results, and (for some laboratory exercises) comparison with analytical or simulated results [1-5] 2. A small team presentation on the results of a particular laboratory exercise [5, 6] 3. Evaluation by each student of the presentations (peer evaluations) [6] 4. Course evaluation by each student at the end of the course assessing all outcomes [1-6]

Revision History: August 2005; May 2011; December 2016