

Syllabus for the College of Engineering

ENU 4612L: Nuclear Radiation Detection and Instrumentation Laboratory (1 credit),
Fall 2014 (required course)

Course Title: Nuclear Radiation Detection and Instrumentation Laboratory

Instructor: Katherin Goluoglu

Text: Glenn F. Knoll, *Radiation Detection and Measurement*, 3rd Ed., John Wiley & Sons, Inc., 1999. (ISBN: 0-471-07338-5)

You will need access to a chart of nuclides during the course. You may use any one of the numerous resources available (so long as it is accurate). Below are a couple of chart of nuclides that are used frequently.

- Joseph R. Parrington, et al., *Nuclides and Isotopes*, 15th Ed., Lockheed Martin / GE Nuclear, 1996.
- <http://atom.kaeri.re.kr> (This is a website maintained by the Korea Atomic Energy Research Institute – Recommended)

Prerequisites/Co-requisites

EEL 3003	Elements of Electrical Engineering
EEL 3303L	Electrical Circuits Laboratory (or equivalent)
ENU 4605	Interaction of Radiation with Matter
ENU 4612	Nuclear Radiation Detection and Instrumentation

Office/Hours: Room 232 NSC, By appointment.

Class Meeting

Time/Place: One (1) 3-hour laboratory session each week. Meeting times to be determined based on students' schedules
125 NSC (Nuclear Science Building)

Material and Supply Fees

N/A

Course Outline

Lab Topic	Report Type	% of Grade	Due
Introduction & Lab Safety	None	-	-
Lab #1: Oscilloscope Usage	Worksheet	5%	1 week after
Lab #2: Nuclear Instrument Electronics	Worksheet	5%	1 week after
Lab #3: Geiger-Mueller Detectors	Short Report	10%	1 week after
Lab #4: Gas-Flow Proportional Counters	Short Report	10%	1 week after
Lab #5: NaI Scintillation Detectors	Worksheet	5%	1 week after
Lab #6: High-Purity Ge Detectors	Short Report	10%	1 week after
Lab #7: Neutron Detection	Long Report	25%	Last day of classes

Grading

Quizzes	20%
Attendance/Technique/Lab Notebook	10%
Reports and Worksheets	70%

Attendance and Expectations

Students are expected to attend each laboratory session. Students must participate in each laboratory exercise and produce an individual laboratory report on each exercise. Students may make up experiments provided there is a valid medical reason or previously excused reason. Students must perform **ALL** laboratory experiments in order to receive a passing grade.

Quizzes

A quiz will be given at the beginning of each class. It is highly suggested that the students read the lab handout ahead of time to prepare for the lab.

Worksheets

You will be provided with worksheets for each lab, detailing the information you need to pay attention to for each experiment. You will fill these worksheets out as you perform the work. In addition, there are several questions you'll need to answer prior to turning in the worksheets. You will have one week to complete the worksheet. The worksheets will be due one week later AT THE BEGINNING of your laboratory section.

Lab Notebook

Students are required to keep a detailed lab notebook or binder that contains everything from the course. The lab notebook will be part of your lab technique grade. This will have at the minimum all of the data you record or print out that is associated with the course. Equipment information and sketches of experimental setup should also be included in the notebook, as should any important information that helps you explain your results. This will help you prepare and write your reports. Note: For experiment with graded worksheets, you will turn in only the worksheets for grading.

Short Reports

Short reports are abbreviated formal reports. Adequate explanation and discussion of all parts of the lab is necessary. You will be given guidelines for writing short reports. Short reports are due one week later AT THE BEGINNING of your laboratory section. Short reports are required for experiment #'s 3, 4, and 6.

Long (Formal) Report

The longer report for experiment #7 (neutron activation analysis) is essentially a report designed to demonstrate your knowledge of the experiment, from theory to data analysis and everything in between. This report will be detailed in its description, and thus will be much longer than your previous reports. You will be given guidelines for writing the long report later in the semester.

1. Grading Scale

The grading scale is as follows:

90-100	A
85-89	B+
80-84	B
75-79	C+
70-74	C
65-69	D+
60-64	D
0-59	E

A C- will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C- average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit: <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Graduate students need an overall GPA of 3.00 truncated and a 3.00 truncated GPA in their major (and in the minor, if a minor is declared) at graduation.” For more information on grades and grading policies, please visit:

<http://gradcatalog.ufl.edu/content.php?catoid=4&navoid=907#grades>

Requirements for class attendance and make-up exams, assignments, and other work are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Honesty Policy: All students admitted to the University of Florida have signed a statement of academic honesty committing themselves to be honest in all academic work and understanding that failure to comply with this commitment will result in disciplinary action. This statement is a reminder to uphold your obligation as a UF student and to be honest in all work submitted and exams taken in this course and all others. Note that failure to comply with this commitment will result in disciplinary action compliant with the UF Student Honor Code Procedures.

See <http://www.dso.ufl.edu/sccr/procedures/honorcode.php>

Accommodation for Students with Disabilities: Students Requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

UF Counseling Services: Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:

- UF Counseling & Wellness Center, 3190 Radio Rd, 392-1575, psychological and psychiatric services.
- Career Resource Center, Reitz Union, 392-1601, career and job search services.

Software Use: All faculty, staff and student of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Evaluations: Students are expected to provide feedback on the quality of instruction in this course by completing online evaluations at:

<https://evaluations.ufl.edu>

Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of the assessments are available to students at:

<https://evaluations.ufl.edu/results> .