The University of Florida, Department of Material Science and Engineering
Nuclear Engineering Program

ENU 4612L: Nuclear Radiation Detection and Instrumentation Laboratory
Addendum to the Lecture Syllabus
Fall Semester 2017

Laboratory Objectives: Provide students with a working knowledge of radiation detectors, detector systems, and their associated electronics. Develop communication skills including technical writing and oral presentations. Prepare students for independent research and/or design projects.

Credit: 1 hours

Instructor: Prof. Kyle C. Hartig kyle.hartig@ufl.edu
352-392-4907
Office hours: Monday, 1240 – 1340
Tuesday 1045 – 1145
Note: Office hours may change due to laboratory schedule / upcoming travel schedule

Note: For all course-related questions a preferred mode of interaction is to visit the instructor in person during office hours and refrain from using email.

Teaching Assistant: Christopher Greulich
Email: cgreulich@ufl.edu
Office hours: Scheduled via email; NSC 231

Textbook: G. Knoll, *Radiation Detection and Measurement,* Wiley, Fourth Edition, 2010 (978-0470131480)

Pre-requisites and Co-requisites:
Pre-requisites for ENU 4612:
- EEL 3003 Elements of Electrical Engineering
- ENU4605 Interaction of Radiation with matter

Meeting Times & Schedule:
Lecture: MWF 0935–1025, Aug 21 - Dec 6, 2017

Laboratory: ENU4612L laboratory sections will be assigned/scheduled during the first week of classes.

Note: adjustments to this regular schedule could be made periodically and announced in advance in class and through the class website/email. Occasionally, the lecture may be recorded and the students instructed to watch a video on the course Canvas site instead of meeting for class.

Meeting Location
Laboratory: Reactor Classroom (Nuclear Science Building)

Web Tools: https://lss.at.ufl.edu/
The course Canvas site will be used to distribute the syllabus, announcements, slides, grades, etc.

I will place course notes ahead of lectures on Canvas. The notes I post will only contain

fragments of the entire lecture. Students are required to attend class and fill in the blanks as necessary, according to written lecture notes dictated in class. Canvas will also be the location to download other posted course materials, such as homework, solution sets, and sample problems.

Grading: Your performance in both the lecture and laboratory will be graded separately as they are two different courses. Below is a breakdown for the grading in the lecture and laboratory:

Lecture:	Laboratory:
Homeworks - 20%	Short Reports - 30%
Pop Quizzes - 10%	Worksheets (7) - 30%
Midterms (2) - 30%	Quizzes (7) - 30%
Final Exam - 40%	Presentation - 10%

The following grades will be assigned based on the final score: A, A-, B+, B, C, and E.

Lab Reports

You will be required to turn in 2 individual short lab reports (a short ~3 page tech memo) on Lab #3 (Geiger-Mueller) and (a longish ~10 page report) Lab #5 (NaI Scintillation). These lab reports will be due 10 days from the date that the lab was actually performed. Guidelines will be handed out describing what is expected to be included in these reports and the formatting style to be used. Lab reports must be prepared by computer and turned into the class site dropbox in PDF format prior to the deadline.

Professional document and figure standards will be enforced on all electronic submissions in this course. The onus is on you to figure out how to meet these standards in whatever programs you use to write the document and make figures. Excel may not be used to prepare figures (plots). It is suggested that students prepare figures (plots) in Python (GnuPlot), MatLAB, Mathematica, Igor Pro, or Origin Pro. I have exactly zero sympathy for those who select a word processor or computer program without knowing how to format their text or figures using it – complaints that the standards are not the same as a particular piece of software's defaults will fall on deaf ears.

Quizzes

A short quiz will be given at the beginning of every lab session (except for Lab 0). They will consist of 1-2 simple questions that will be taken from the lab information handout given before each session.

Worksheets

I will provide the worksheets and lab instruction handouts at the start of each lab session. These worksheets will consist of several questions that each student must answer individually on their own worksheets. At the end of the lab session, I will collect the worksheets for grading. The only exception to this will be on the two weeks where a short report is required and for the lab session that you choose to do an oral presentation on. On these 3 weeks you will hold on to the worksheets in order to use the data for your lab reports or PowerPoint slides. In total, I will grade 4 worksheets during the entire lab semester: everyone must hand in worksheets for Labs #1 and #2; two additional worksheets will be graded but will vary depending on which lab a student selects to perform oral presentation for.

Oral Presentation

Every student must prepare a ~10 minute oral presentation on a selected lab session of your choice (can only select from Labs 4, 6, or 7). Guidelines will be given describing the grading breakdown and what is expected in the presentation. The presentation will be given to the instructor on a selected date.

Grading Scale

The final grades will be assigned based on:

- A:≥92%
- A-: 89.5-91.99%
- B+: 87-89.49%
- B: 80-86.99%
- C: 69-79.99%
- E:<69%

Attendance and Expectations

Students are expected to attend ALL laboratory sessions. Students must participate in each laboratory exercise, including lab quizzes, and produce individual laboratory worksheets for every lab, along with two laboratory reports during the semester. Students may make up experiments provided that valid medical reason or previously excused reason. Students must perform ALL laboratory experiments in order to receive a passing grade.