

# Radiation Technology and Applications

MANE-4420, MANE 6965 (3 credits)

## FINAL PROJECT REQUIREMENTS

### 1 OBJECTIVES

1. Broaden familiarity with existing radiation applications and technologies.
2. Use learned skills for review and analysis of a radiation applications or technologies.

### 2 PROJECT TOPICS

The objective of the final project is to research a specific radiation application or technology. In your work you are required to give an overall description of the instrument, provide detailed explanation of the operation theory; perform analysis of the MDC and the accuracy of the instrument using the methods learned in class. You should also provide your own insight on how to use the equipment and suggest methods to improve it.

The project can be on an existing instrument, instruments under research and development, or your own idea of a new or improved radiation application or technology. When using existing equipment you are encouraged to contact the manufacturer to get information on their product.

**The deliverables** include a presentation and a project report.

A project proposal is required, successful approval of the topic is required in order to continue.

### 3 DATES

The dead line for the written project proposal is **November 2**. Projects will be presented in the last three weeks of the semester starting **November 30**. You should plan on a **15 min presentation** of your topic followed by 2-5 minutes of class discussion and questions. The deadline for the final project report is the last class (**December 7**).

### 4 GRADE

The project replaces the final exam for the purpose of grading. The weight of the project is 40% of your grade. The project grade will be determined from evaluation of the project proposal, report and presentation.

### 5 FORMAT

#### 5.1 Proposal

Following is a **required outline** for the project proposal (~ 1 page)

- A. PROJECT TITLE
  - a. YOU NAME
  - b. COURSE NAME
  - c. DATE

- B. OBJECTIVE: state your goals in presenting this topic.
- C. DESCRIPTION: provide a description of the instrument.
- D. THEORY OF OPERATION: provide a brief review of the physical principles behind the application you selected.
- E. MILESTONES: break down by weekly activities what your anticipated progress will be towards completion of the final report.
- F. REFERENCES: provide references including references to the application web site, company name, and exact model or equipment description.

## 5.2 Final reports

The project **should not exceed 10 pages** not including appendices (section H below).

Following is a suggested outline for your final project report:

- A. TITLE PAGE
  - a. Project Title
  - b. Your name
  - c. Course name
  - d. date
- B. ABSTRACT
  - a. One or two paragraphs describing the instrument, project goals, and results
- C. INTRODUCTION
  - a. Provide an introduction on the application discussed.
- D. THEORY OF OPERATION
  - a. Explain how the instrument works, use equations as needed.
  - b. Provide an review of the physical principles behind the application.
- E. SENSITIVITY AND ACCURACY ANALYSIS
  - a. Provide a comprehensive sensitivity and accuracy analysis based on the method learned in class.
- F. CONCLUSIONS
  - a. Your remarks about the instrument design and its accuracy.
- G. REFERENCES
  - a. List the references used **all references must be cited** in the project text
- H. APPENDICES
  - a. Additional information as needed.