College of Engineering Standard Syllabus: ENU 6627, Spring 2006

ENU 6627 Therapeutic Radiological Physics

1. **Course Description:** Introductory graduate course in therapeutic radiation therapy physics. (3 Credits)

2. **Pre-requisites:** Permission of instructor and Medical Physics Program Coordinator.

3. **Course Objective:** To become familiar with particle interactions for radiation therapy, principles of teletherapy units, ionization chambers for megavoltage measurements, dosimetery fundamentals, basic dose calculation models, calibration protocols and brachytherapy.

4. **Instructor**: *Dr. Sanjiv S. Samant*
   a. Office location: 220 Nuclear Sciences Building
   b. Telephone: 352-192-1401, ext 301
   c. E-mail address: **samant@ufl.edu**
   d. Web site: http://www.nre.ufl.edu/
   e. Office hours: Tuesdays- Thursdays, 10:00-11:00am

5. **Class Meeting Times:** UF Class Periods 9 and 10
   4:05 – 6:00pm, Mondays/ Wednesdays

6. **Meeting Location:** NRE Room 0227

7. **Material and Supply Fees:** Covered by Tuition/Registration

8. **Textbooks and Software Required**
   1a. Title: The Physics of Radiation Therapy
   1b. Author: Faiz M. Khan
   1c. Publisher and edition: Lippicott Williams and Wilkins, 3rd ed.
   1d. ISBN number: 0-7817-3065-1

   2a. Title: Introduction to Radiological Physics (Reference only)
   2b. Author: Frank H. Attix
   2c. Publisher and edition: John Wiley & Sons, 1st ed.
   2d. ISBN number: 0-471-01146-0

9. **Additional recommended reading**: Handouts or AAPM Task Group Reports to be distributed by instructor.

10. **Attendance and Expectations**: A**ttendance is required**. Penalties for each unexcused absence will be at the discretion of the Professor, up to a 2% deduction in cumulative average per unexcused absence. Please make arrangements for excused absences in advance. Graded homework is due no later than 5:00pm of the due date. After that a penalty will apply to that grade. **Students will be regularly assigned mandatory prior reading as part of class preparation.**

11. **Grading**: The distribution for the grades is given below.

ASSIGNMENT	TOTAL
Homework Problem Sets & Project	40 %
Midterm	20 %
Final Exam (cumulative)	40 %
	100 %

12. **Grading Scale**: (90-100 A, 86-89 B+, 80-85 B, etc.) Note: grades *may* be curved.

13. **Make-up Exam Policy**: All assigned homework/ project must be completed. Extensions may only be given at the discretion of the instructor for *excused* absences. There are **no** make-up midterms; *excused* absences will permit points from missed graded events to be credited as a percentage of the Final Exam Grade. Unexcused absences will result in a zero on the missed graded event.

14. **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.

15. **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.

16. **UF Counseling Services** – Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
    - University Counseling Center, 301 Peabody Hall, 392-1575, Personal and Career Counseling.
    - SHCC mental Health, Student Health Care Center, 392-1171, Personal and Counseling.
    - Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center, 392-1161, sexual assault counseling.
    - Career Resource Center, Reitz Union, 392-1601, career development assistance/ counseling.

17. **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.

TOPICS COVERED

I. Linear Accelerators
II. Radiation Interactions
III. Measurement of Ionizing Radiation
IV. Measurement of absorbed dose
V. Cavity Theory
VI. Linear accelerator based dosimetry modeling
VII. Dosimetry calculations
VIII. Dose calibration (TG51/ TG21 protocols)
IX. Treatment Planning
X. Brachytherapy (TG43 protocol)