The instructor and university reserve the right to modify elements of the course during the term. The university may change the dates and deadlines for any or all courses in extreme circumstances. If either type of modification becomes necessary, reasonable notice and communication with the students will be given with explanation and the opportunity to comment on changes. It is the responsibility of the student to check their McMaster email and course websites weekly during the term and to note any changes.

2016-2017

Med Phys 4B03/6B03
RADIOACTIVITY & RADIATION INTERACTIONS

(Term 1)
MON, WED 14:30 - 15:20, Fri 16:30 - 17:20
BSB-117

D.R. CHETTLE
NRB-106 ext. 27340
E-mail: chettle@mcmaster.ca

OBJECTIVE: To provide a fundamental understanding of radiation physics and dosimetry and to develop a facility for calculations in this field.

Custom Courseware, Medical Physics 4B03/6B03, Course Notes (revised September 2016) not substantially different from 2013 or 2014 versions.

C.M. Lederer et al, (eds), "Table of Isotopes" 7th (or 6th) edition, Wiley, 1978

A. Atomic and Nuclear Structure:
atomic masses, binding energy, reactions, fission, fusion kinetics

B. Radioactivity:
decay modes, Q-values, transformation kinetics, activity, source production

C. Interaction of Radiation with Matter:
energy loss, alpha particles, beta ranges, photon attenuation, interaction mechanisms, neutrons
D. Radiation Dosimetry:
absorbed dose, exposure, specific gamma constant, internal dosimetry, radiation quality

E. External Radiation Protection:
shielding and build up, X-ray shielding

F. Nuclear Reactors
a brief introduction to neutron balance (if time permits)

Evaluation:
Assignments 3 to 5 20-30%
Tests 1 or 2 20-30%
Final Examination 40-60%
A weighted mean of the numerical scores from all components will be calculated in order to determine a final grade.

The McMaster Standard Calculator (Casio fx991) may be used on tests and examinations.
A formula sheet is provided with tests and examinations.

Academic Dishonesty

Academic dishonesty consists of misrepresentation by deception or by other fraudulent means and can result in serious consequences, e.g. the grade of zero on an assignment, loss of credit with a notation on the transcript (notation reads: “Grade of F assigned for academic dishonesty”), and/or suspension or expulsion from the university.

It is your responsibility to understand what constitutes academic dishonesty. For information on the various kinds of academic dishonesty please refer to the Academic Integrity Policy, specifically Appendix 3, located at:
http://www.mcmaster.ca/senate/academic/ac_integrity.htm

The following illustrates only two forms of academic dishonesty:
1. Plagiarism, e.g. the submission of work that is not one’s own or for which other credit has been obtained.
2. Improper collaboration in group work. Copying or using unauthorized aids in tests and examinations.