ODS/BPH 603 – Medical Biophysics Fall 2009

Course Outline

Course Schedule: Wednesdays, 11:00 – 11:50am
Location: 110 Parker Hall [South Campus]

Objective: To address major healthcare concerns associated with advanced imaging and implant technologies for diagnosis, correction, and monitoring of internal body organs and processes. The focus is on the impact of new technological developments in clinical practice, including modern diagnostic procedures involving X-rays, magnetic resonance, radionuclide emissions, and ultrasound --- safely and effectively applied in cases of therapeutic implants, as well as traditional measurements of the body's field potentials for myocardial and nervous function by electrical signal processing.

Format: Lecture, with emphasis on discussion; supplementing significant independent study of course materials provided, and expert interviews. You should be prepared to ask questions that will lead to discussion in each class.

Grading: Will be graded on A-to-F basis for Biomaterials Graduate Students. Students from other academic programs may elect to be graded on a Satisfactory/Unsatisfactory basis. Each assignment (e.g. an exam) will be graded as a flat A, B, C, D, or F if completed on time. Assignments turned in late will be penalized by one partial grade level for each 48 hours that the assignment is delayed [e.g. a take-home exam that would have been a "B" if handed in on time, will begin at a grade of B- if handed in late; if 96 hours late, a grade of C+ will be assigned]. The +/- scale will be applied when the final course grade is calculated.

Evaluation: Each student's grade will be based on the following 5 main items:

(1) Implant "Census" Update – 10% of course grade

(2) Take-Home Quiz #1 - 20% of course grade

(3) Take-Home Quiz #2 - 20% of course grade

(4) Take-Home Quiz #3 - 20% of course grade

(5) Assigned Interviews with clinical and research faculty:
verbal reports and written outlines - 20% of course grade

(6) Attendance and Participation in Class - 10% of course grade

Other Requirements: Reading assignments (e.g. journal articles) may be given in advance of some sessions. These assignments will be given no later than the preceding class, and will be communicated to students in class or on the "UB Learns" site for this course.

Course Director: Robert E. Baier, Ph.D., P.E. (110 Parker Hall - UB/South Campus)
telephone: 829-3560 (110 Parker) 829-2055 (308 Squire - lab)
e-mail: baier@buffalo.edu

To make an appointment with Dr. Baier, contact him directly. You also are welcome to "drop in" to see if he is available for a meeting. It is best to call first and see whether he is in the office (110 Parker Hall), the lab (308 Squire Hall), or available at a later time.

Alternate Contact: Anne E. Meyer, Ph.D. (Faculty) e-mail: aemeyer@buffalo.edu

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Class Schedule

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DATE	TOPICS
02sep2009	- organizational meeting; - introduction of **assignment #1: Implant "Census" Update [due 23sep2009]**
09sep2009	- radiation biophysics / sterilization of medical devices
16sep2009	- radiation biophysics / electromagnetic interactions with matter - **receive take-home quiz #1, which is due on 30sep2009**
23sep2009	- *Implant "Census" update [hand in assignment]* - bioelectrical phenomena - biocompatibility
30sep2009	- *take-home quiz #1 due* - radiation biophysics & imaging
07oct2009	- nuclear medicine
14oct2009	- x-ray imaging **- receive take-home quiz #2, which is due on 28oct2009**
21oct2009	- radiation biology
28oct2009	- *take-home quiz #2 due* - biomedical imaging – radiography, CT, MRI, role of computers
O4nov2009	- magnetic resonance imaging
11nov2009	- computed axial tomography **- receive take-home quiz #3, which is due on 02dec2009**
18nov2009	- ultrasound
25nov2009	- Fall Recess –No Class
02dec2009	-- *take-home quiz #3 due* - review: identify areas needing more clarification and explanation
09dec2009	- **give verbal reports and distribute written outlines on interviews***

***interviewees: to be determined and reported by students**