Portland State University
Department of Physics

Biomedical Physics

Summer 2010: 6/21-7/9
Time: 10:30-12:50 MTWRF
Location: MWF: 224 CH, TR: 161 SB2
Instructor: Ralf Widenhorn
Contact: ralfw@pdx.edu
Office hours: per arrangement
Text: Introduction to Physics in Modern Medicine, Suzanne Amador Kane, 2nd edition
Web:http://www.physics.pdx.edu/~ralfw/physics/BiomedicalPhysics/BiomedicalPhysics.html

Course outline:

Progress in medical diagnostics, treatment, and research are linked to the development of new techniques and instruments. This class will address the physics behind some of the most commonly used instruments and behind cutting edge technologies. A wide range of concepts from mechanics, electromagnetism, optics, to quantum mechanics are used to explain the mechanisms behind sonography, endoscopy, microscopy, LASER eye surgery, x-ray, radiation-therapy, CAT scan, MRI, and more…..

Recommended books:
Physics in Biology and Medicine, Paul Davidovits
Biomedical Applications of Introductory Physiscs, J. A. Tuszynski, and J. M. Dixon

Grading:

1.	Attendance	2 points per class maximum of	24 points
2.	Class Participation		10 points
3.	Poster session (July 9th)		34 points
4.	Homework		32 points

The grade follows the traditional scale:

- 90 points or better is an A^-/A
- 80 points to 89 points is a B^-/B^+
- 70 points to 79 points is a C^-/C^+
- 60 points to 69 points is a D
- 59 points or less is a F

Homework:

Homework	Problems	Due day	Points
Outline 1		22-June	
Ch2 and Ch3	Q2.2, Q3.1, Q3.2, Q3.7, Q3.8, Q3.9	29-June	6
Outline 2		29-June	
Ch4	Q 4.2, Q4.3, Q4.4, Q4.5,	12-July	4
Ch5	Q5.2, Q5.4, Q5.5, Q5.6, Q5.8	6-July	5
Ch 6	Q6.1, Q6.2, Q6.4, P6.2, P 6.6	6-July	5
Ch 7	Q7.1, Q7.2, Q7.5, Q7.6, P7.2	6-July	5
Ch 8	Q8.2, Q8.3, Q 8.6, Q8.7, Q8.8, P8.4, P 8.5	12-July	7

Guest speaker schedule (subject to change)

Week 1

23-June How to design a poster — Amanda Thomas, OMSI
24-June Fluorescence Microscopy — Dr. Stefanie Kaech Petrie, OHSU
25-June LASIK — Dr. Stanley Teplick, Teplick Custom Vision

Week 2

30-June Radiation therapy — Dr. Wolfram Laub, OHSU
2-July X-ray imaging, CAT scans, MRI — Dr. Matthew Bentz, OHSU

Week 3

6-July Magnetic resonance imaging — Dr. Chris Kroenker, OHSU
7-July fMRI — Megan Herting, OHSU
8-July Ultrasound imaging — Dr. Cristina Fuss, OHSU