MED 2101
Biomedicine: Past Present and Future
Georgia Duker, PhD
Mondays and Wednesdays, 3-4:55 pm
S373 BSTR
3 Credits

General Description
Advances in biomedicine permeate our civilization. Medical innovations such as the mapping of the human genome and organ transplantation have entered an accelerated phase of the biological revolution begun in 1543 by Vesalius. In his landmark work on human anatomy, Vesalius employed evidence-based science, observation and empirical induction. This course will attempt to analyze this biomedical revolution through an examination of the historical, social and scientific elements of major biomedical themes. It will identify the points of origin and historical context in which each theme arose, and follow with a specific example of the progress of each theme into a present application. Topics will include:

1. Human anatomy form and function
2. The Cell: Microscopy
3. Blood: Artificial heart
4. Regulation of the internal milieu and homeostasis: Renal dialysis
5. Neuron theory: Parkinson’s Disease
6. Inheritance and genetics: Stem cell biology
7. Foreign invaders: Bacteria and viruses: HIV/AIDS crisis
8. Immunology history: Organ transplantation
9. Development of the CT scanner: Functional MRI imaging & cognition
10. Epidemics: Genetics of the plague: Bioterrorism
11. Endocrinology: Development of the “Pill”: Reproductive technology
12. Anesthesia & Pain perception: Brain death & end-of-life
13. Health Care in the US

Students Who May Be Interested In This Course
Students interested in the origins of biological and medical science will have a specific interest in this course. However, it should appeal to any student interested in the goals and function of our society. Healthcare now utilizes approximately 14% of the U.S. gross domestic product with future predictions running as high as 20%. Changes in biomedicine have significant effects on healthcare expenditures, ethical behavior, family relationships and social pressures.

Evaluation
25% EXAM 1 (short answer and essay)
25% EXAM 2
25% Research Paper (12-15 pages, without references)
5% History of Medicine Talk – Written Analysis/Critique
5% Stem Cell Presentation (10 minutes)
2% Development of the Pill Presentation (3-4 minutes)
8% Research Paper Presentation (20 minutes)
5% Class Participation
**Prerequisites**
Prerequisite include the introductory biology sequence (BIOSC 0150/0715 and BIOSC 0160/0716), human physiology (BIOSC 1250/1070 or NROSCI 1250/1070), and junior or senior standing. Students should have an interest in the advances achieved in biomedicine and their effect on society and a broad foundation of knowledge of science and biology.

**Texts**
Selected articles and readings from primary sources, historical reports and secondary sources will be posted on the CourseWeb page for MED 2101. Expect anywhere from 20-40 pages of reading per session.

**Class Size**
8 Students

**About The Instructor**
Georgia K. Duker was born in Illinois. Her small town upbringing fostered an early sense of independence; having three brothers forced her to continually assert that she could do whatever a boy could do! After completing a B.S. in Biology at Penn State University in 2 ½ years, she traveled in Europe and Asia for a year, then returned to Penn State for a M.S. in Biology/Biochemistry. She came to the University of Pittsburgh School of Medicine for her Ph.D. in Human Anatomy and Cell Biology. A brief three-year sojourn as a biology faculty at Simmons College in Boston was followed in 1987 by her return to Pitt as an Assistant Professor in the Department of Cell Biology and Physiology in the School of Medicine.

Dr. Duker currently teaches “anything normal” for first and second year medical students: cell biology, biochemistry, physiology, and histology. Her teaching contributions are scattered over twelve different courses throughout that two-year span and range in format from large lectures, microscopy labs to small problem-solving groups. Indeed, Dr. Duker has been honored by the medical students with their “Golden Apple” and Excellence in Education Awards, and by the University with the Chancellor’s Distinguished Teaching Award.

**Special Enrollment Notes**
All students wishing to enroll in this course must obtain a permission number from the Honors College; permission number procedures are available here:

[http://www.honorscollege.pitt.edu/course-enrollment-permission](http://www.honorscollege.pitt.edu/course-enrollment-permission)

When searching for this course on PeopleSoft, you must change the “Course Career” pull-down menu option from “Undergraduate” to “Graduate” in order to find this course.