

**Insight & Invention  
UHC HC 302  
Spring 2012**

**Course Overview:**

How do different disciplines approach understanding the world? This course – a continuation of the fall course – explores how three additional fields – engineering, public health, and law – approach the research process. This exploration provides a basis for confronting the general questions: What do we know? How do we know it? What does knowledge mean? – thereby deepening our understanding of different forms of inquiry.

We will devote roughly one-third of the course to each of the three disciplines under consideration. There will be two lectures per week (Monday and Wednesday) followed by a group discussion meeting (Friday).

Your assessment will be based on your performance on problems sets, labs, readings, papers, and other activities during the semester. The course will sharpen the writing and quantitative skills developed during your freshman year.

**Grading Scheme**

Each of the three units will account for 30% of the final grade, while the remaining 10% will turn on the faculty's assessment of your contributions across the three units and your performance on any culminating exercises at the end of the course. You must complete all assignments. Failure to complete assignments may result in failure of the course.

Each unit's grades will be calculated as follows:

1. Law: 60% for short weekly reflection papers (4 papers, 15% each); 30% for an end of unit paper; and 10% class preparation and discussion participation.
2. Engineering: 2 papers (50% of the grade); labs (30%); and final assignment (20%)
3. Public Health: Engagement in class (30% of the grade); Critical Book Review (30%); Final Paper (40%)

**Code of Conduct**

Students are expected to abide by both KHC and BU's Undergraduate Academic Code of Conduct. Both can be found at <http://www.bu.edu/uhc/current-students/policies/>

**Lecture Times & Location**

When: Monday and Wednesday, 12:00-1:30  
Where: COM 217

**Discussion Times & Locations**

B1: Friday, 9:30-11:00	SMG 310	(w/SMG 312 as a break out room)
B2: Friday, 12:00-1:30pm	COM 217	(w/COM 213 as a break out room)

**Lab Day/Times and locations**

Please refer to unit 2 (Biomedical Engineering) for more information regarding the labs

**Course website:** [blackboard.bu.edu](http://blackboard.bu.edu)

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**Faculty**

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Office hours:	T 2:00-3:00 pm W 9:00-10:00am Th 11:30am-12:30pm	M 9:30-11am W 9:30-11am	<i>Weeks 1-10:</i> M 1:30-2:00 pm W 1:30-2:00 pm  <i>Weeks 11-15:</i> F 11am – 12pm <i>and by appointment</i>

**Teaching Assistants/Discussion Leaders**

	<b>Jennifer Neubauer</b> jenen1056@gmail.com 410-913-6274	<b>Azatuhi “Az” Ayrikyan</b> az.ayrikyan@gmail.com 617-353-5882	<b>Nancy Scott</b> nscott@bu.edu 617-414-1278
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Office hours:	<i>Weeks 1-5:</i> M 10:00-11:00 am T 10:00-11:00 am R 3:00-4:00 pm  <i>Weeks 6-15:</i> R 3:00-4:00 <i>and by appointment</i>	T 4-5pm <i>and by appointment</i>	<i>Weeks 1-10:</i> F 11am-12pm  <i>Weeks 11-15:</i> F 11am-12pm & 2:30-4:30p <i>and by appointment</i>

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## Unit 1 - Prof. Stacey Dogan - Law: "Publicity Rights and the Commodification of Personality"

In the mid-1990s, sports leagues began to claim that fantasy sports leagues, which use real player statistics to create a "fantasy" alternative version to real-life professional sports, violated players' "right of publicity" by using their names and statistics without permission. Although the courts have so far rejected these claims, they raise fascinating questions about what rights celebrities should have to control (and profit from) the use of their names, pictures, and biographical information. This unit will use the example of famous athletes and fantasy sports to explore fundamental questions about the meaning and rationale behind the "right of publicity" in United States law. In the course of discussing the right of publicity, we will also explore the justification for other laws protecting intellectual property, including patent, copyright, trademark, and trade secret law. Throughout, we will be approaching the question from the perspective of a legal scholar, attempting both to describe the law by interpreting cases and statutes, and to think critically about the law's policy goals and whether current law is actually promoting them.

### I. Assignments

1. Four short (2-3 page) reflection papers, due on the first three Wednesday classes: Jan. 18, Jan. 25, Feb. 1, and Feb. 8. Topics will be posted on the Blackboard site by the prior Friday. Each paper will account for 15% of your grade. Please submit your papers to [uhc301@gmail.com](mailto:uhc301@gmail.com) before class on the due date.
2. Final paper, due on Friday, Feb. 17. For your final paper (5-7 pages, and 30% of your grade), you will be asked to develop a research plan to explore a topic in intellectual property law. The assignment (with the topic) will be distributed on Wednesday, Feb. 8.
3. Readings as assigned, and preparation for class, including reflection on discussion questions to be posted on the Blackboard site. Discussion in lecture and sections will account for 10% of your grade.

### II. Lecture Schedule

1. Wed, Jan 18: Introduction: substance and methodology  
Readings: Alan Schwarz, *Baseball Is a Game of Numbers, But Whose Numbers Are They?*, NEW YORK TIMES, May 16, 2006, Section A (assignment and link to article are posted on Blackboard)  
Writing assignment: short paper #1 due (see assignment on Blackboard)
  - Fri, Jan 20- Discussion
2. Mon, Jan 23: Understanding the common law roots of the right of publicity: privacy and false endorsement  
Readings:
  - Samuel D. Warren & Louis D. Brandeis, *The Right to Privacy*, 4 HARVARD LAW REVIEW 193 (1890)
  - *Edison v. Edison Polyform Mfg. Co.*, 73 N.J. Eq. 136, 67 A. 392 (N.J. Ch. 1907)

3. Wed, Jan 25: The *Haelan* case and the birth of the modern right of publicity  
 Reading: *Haelan Labs v. Topps Chewing Gum*, 202 F.2d 866 (2d Cir. 1953)  
 Writing assignment: short paper #2 due. Topic will be posted on Blackboard.
  - Fri, Jan 27- Discussion  
 Readings:
    - Melville B. Nimmer, *The Right of Publicity*, 19 LAW & CONTEMPORARY PROBLEMS 203 (1954)
4. Mon, Jan 30: Implications and extensions of *Haelan*: contemporary applications  
 Readings:
  - *Midler v. Ford Motor Co.*, 849 F.2d 460 (1988)
  - *White v. Samsung*, 971 F.2d 1395 (9<sup>th</sup> Cir. 1992)
  - *White v. Samsung*, 989 F.2d 1512 (9<sup>th</sup> Cir. 1993) (Kozinski, J., dissent from denial of rehearing *en banc*)
5. Wed, Feb 1: The right of publicity and the First Amendment  
 Readings:
  - *Cardtoons v. Major League Baseball Players Association*, 95 F.3d 959 (1996) (excerpts)
  - *Comedy III v. Saderup*, 25 Cal. 4<sup>th</sup> 387 (2001) (excerpts)
 Writing assignment: short paper #3 due. Topic will be posted on Blackboard.
  - Fri, Feb 3- Discussion
6. Mon, Feb 6: Private rights over facts  
 Readings:
  - *New York Mercantile Exchange v. Intercontinentalexchange*, 497 F.3d 109 (2d Cir. 2007)
7. Wed, Feb 8: Thinking critically about the right of publicity  
 Readings:
  - Michael Madow, *Private Ownership of Public Image: Popular Culture and Publicity Rights*, 81 CALIF. L. REV. 125 (1993)
 Writing assignment: short paper #4 due. Topic will be posted on Blackboard.  
 The final paper assignment will be introduced in this lecture.
  - Fri, Feb 10- Discussion
8. Mon, Feb 13: Thinking critically about the right of publicity, continued  
 Readings:
  - Mark P. McKenna, *The Right of Publicity and Autonomous Self-Definition*, 67 U. PITT. L. REV. 225 (2005)
9. Wed, Feb. 15: The right of publicity and fantasy sports  
 Readings:
  - *CBC v. Major League Baseball*, 505 F.3d 818 (8<sup>th</sup> Cir. 2007)
  - Fri, Feb 17 – Discussion. The role of a legal scholar

Readings: You should read this series of blog posts on the value of various forms of legal scholarship: the [first post by J.B. Ruhl](#), responses from [Jim Chen](#) and [Larry Solum](#), and a [rebuttal from J.B. Ruhl](#).

- **Final papers will be collected. Please submit your papers, before the meeting of your discussion section, to UHC301@gmail.com.**

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## Unit 2 - Prof. Muhammad Zaman - Biomedical Engineering: “Engineering Health”

Engineers like to build things, big and small, and use them to solve problems. From hanging bridges to nanotechnology, engineers through their tools continue to shape and transform our daily life. But can they use some of the same principles to build tools to solve some of the most pressing problems in modern medicine?

This unit will explore the fundamentals, quantitative and qualitative approaches, opportunities and challenges in applying engineering principles to improve human health and combat disease. We will focus on why should we develop quantitative approaches, and why are they better than qualitative tools? We will start by looking at a broad spectrum of research approaches, ranging from genetic circuits to new diagnostic tools for early disease detection. Then, we will focus on two high profile problems in biomedical engineering research. The first one is cancer detection and diagnosis and what engineering approaches can do to help. The second focus area will be challenges in detecting, diagnosing and managing diseases in the developing world. Both of these case studies will focus on the problem, challenges, opportunities and long-term impact of engineering on human health, both at home and abroad.

### I. **Assignments:**

1. 2 papers (choose one from each category)

#### **Category 1:**

Topics:

1. Cancer detection in 2050: what would you like to see?
2. What should engineers learn from social scientists?
3. Analysis of failures of engineering devices in health and what can we learn from them?

#### **Category 2:**

1. What should be the design criteria for a successful device in managing AIDS in Zambia?
2. What devices should Gates Foundation fund?
3. What have we learned from devices that have not been successful in the field?

2. Homework assignments
3. Final assignment on design and analysis of a device for global health

### II. **Lecture Schedule**

10. Tues, Feb 21 (Substitute Monday schedule): Biomedical Engineering: Why?  
Readings: Biomedical Engineering for Human Health, The Social Responsibility of the Scientist
11. Wed, Feb 22: Quantitative tools for human health: The governing principles.

Readings: Chapter from Principles of Biomedical Engineering

- Fri, Feb 24 – Discussion
12. Mon, Feb 27: Spectrum of quantitative engineering tools for human health: From nano to macro, from fundamental to applied.
  13. Wed, Feb 29: Cancer and Biomedical engineering : Hallmarks of cancer and Molecular tools  
Readings: Hallmarks of Cancer; Molecular bioengineering and cancer
    - Fri, March 2 – Discussion
  14. Mon, Mar 5: Cancer and Biomedical engineering: Macromolecular tools  
Readings from Biomedical Engineering: Health Care Systems, Technology and Techniques (Ch.14)
  15. Wed, Mar 7: Cancer and Biomedical engineering: Where do we go from here?
    - Fri, Mar 9 – Discussion
  16. Mon, Mar 19 : Biomedical engineering and Global Health: The big picture and challenges. Is cancer relevant?  
Readings from Biomedical Engineering for Global Health
  17. Wed, Mar 21 : Biomedical engineering and Global Health: Diagnostics versus management
    - Fri, Mar 23– Discussion
  18. Mon, Mar 26 Biomedical engineering and Global Health: Design challenges, translation, solutions and the future

### **III. Labs (Each of the 8 labs meets for two hours.)**

#### **Week 1:**

**Lab 1: Intro to quantitative microscopy**

**Lab 2: Intro to fluorescence imaging**

#### **Week 2:**

**Lab 1: Cell culture fundamentals**

**Lab 2: Cell proliferation experiments**

#### **Week 3:**

**Lab 1: End point cell migration experiment 1**

**Lab 2: Time-lapse microscopy of cell migration.**

#### **Week 4:**

**Lab 1: Image analysis from time lapse experiments**

**Lab 2: Data analysis contd., literature comparison and error propagation**

From a big picture perspective, labs in the Sophomore class (Spring term) are designed to:

- 1) Emphasize the importance of careful experimentation and analysis.
- 2) Introduce basic lab safety skills with regards to biological materials.
- 3) Develop a familiarity with biomedical instrumentation and measurement and limitations of various experimental techniques in providing quantitative information.

Through the lab, we expect *all* students to:

- 1) Perform experiments in triplicate and understand the statistical significance of multiple experiments.
- 2) Analyze results quantitatively.
- 3) Compare results with control experiments and discuss results in light of existing literature.

**Experimental studies:** The goal of the lab is for students to understand quantitatively how cancer cells migrate and to analyze their results by comparing their findings to values reported in published scientific literature. Students will perform the lab tasks in the following sequence:

- a) Students, who will be working in groups, will be provided cancer and non-cancerous cell lines and introduced to basic techniques of cell culture.
- b) Student teams will measure cellular proliferation rate by measuring the doubling time of cells *in vitro*.
- c) Students will be introduced to basics of microscopy and will familiarize themselves with the workings of a fluorescence microscope.
- d) Student teams will then stain the cells with a fluorescent dye and will be required to analyze the toxicity of the dye.
- e) Each team will carry out time-lapse imaging of cells and analyze the results in terms of spatial and temporal behavior of cancerous and non-cancerous cells.
- f) Each student, in his/her report, will be required to quantify the results, provide standard deviation and discuss the sources of error, both random and systematic, in his/her analysis.
- g) Each student will compare the findings of his/her team with previously published data on these cells and provide a critical analysis of how and why their results agree or disagree with previous findings.
- h) Finally, students will be required to discuss why this approach may or may not have any relevance to cancer research in general, and for finding the cure for cancer in particular.
- i) The students will also be required to argue, given the current economic crisis, whether the federal government should continue to support cancer research or use its limited resources elsewhere.

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### **Unit 3 - Prof. Jonathon Simon – School of Public Health: Bugs, Burdens, Behaviors, Budgets, and the Bosses (organizations): The Case of Malaria Control in Modern Times**

Malaria, an infectious disease we have known about for over 4000 years, still kills almost 800,000 people per year. Most of these deaths are in children in low-and-middle income countries. Efforts to control the global scourge of malaria provide a fascinating case study to begin to appreciate the approaches, complexities, and challenges of public health scholarship and practice.

Improving the health of populations --- the core mission of Public Health both as a science and as a profession --- requires its scholars and practitioners to deal with amazing complexity. By focusing on social change at a population rather than an individual level, insights and interventions require one to think as an interdisciplinary scientist across multiple scientific disciplines. Each has their own, and often differing, intellectual traditions and methodological approaches. And just to make it even harder, this systems thinking on an intellectual level has to be grounded within the crass, pragmatic world of financial constraints because the burdens of disease are always greater than the budgets.

This unit, using the current global malaria control efforts as a case study, will take you on a whirlwind tour of how public health challenges are conceptualized and addressed. We will explore the importance of drawing contributions from history, epidemiology, biology, clinical medicine, political economy, economics, political science, evaluation sciences and ethics. The challenge for the student, mirroring the challenges faced by public health professionals, is to collate, evaluate, integrate, and synthesize the essential information each discipline brings to the problem in order to maximize attaining the social goal of improving the health of populations. Hang on...Good Luck...and enjoy the intellectual journey.

### **I. Specific Objectives**

1. Introduce seminar participants to public health approaches to inquiry.
2. Using global malaria control as the case throughout the course, deepen seminar participants understanding of and appreciation for interdisciplinary approaches to scholarship and problem solving.
3. Deepen participants understanding of the complexities of public health (and most other) problems and foster an appreciation for thinking about systems approaches rather than disciplinary approaches.

**II. Assignments:** This unit will be assessed based on 3 domains - your engagement with the material and the other participants in the seminar, a critical book review on a readable book length piece of scientific journalism on malaria, and a final paper, based on a practical problem in global malaria control, synthesizing the course materials.

1. Engagement in Class (30%)
  - a. Class Participation (10%)
  - b. Contribution to Discussion Section Activities (20% - *assessed by Teaching Assistant*)
2. Paper 1 – Critical Book Review (30%): Please submit a 3-page critical book review. Seminar participants will read *The Fever* by Sonia Shah. Book reviews will be due at the start of the 4<sup>th</sup> week of the module (April 23<sup>rd</sup>).
3. Paper 2 – Final Paper (40%)– Seminar participants will receive a problem statement posted on the course website after the April 25<sup>th</sup> lecture. Please submit a 5 page paper addressing the problem using an interdisciplinary approach to synthesize the course materials. Final papers will be due by the last class, May 2.

### **III. Lecture Schedule**



19. Wed, Mar 28 – Introduction and Malaria Control through History
    - Fri, Mar 30 – Discussion
  20. Mon, Apr 2 - Malaria and Biology – Professor Chris Gill (guest lecturer)
  21. Wed, Apr 4 – Malaria and Epidemiology
    - Fri, Apr 6 – Discussion
  22. Mon, Apr 9 – Applied Science – Biological and Behavioral Malaria Control Interventions
  23. Wed, Apr 11 – Institutional Framework for Malaria Control
    - Fri, Apr 13 – Discussion
- No Class Mon, Apr 16**
24. Wed, Apr 18 (Substitute Monday Schedule) – Economics of Malaria Control
    - Fri, Apr 20– Discussion
  25. Mon, Apr 23 – Politics of Malaria Control
  26. Wed, Apr 25 – Ethical Issues in Malaria Control
    - Fri, Apr 27 – Discussion
  27. Mon, Apr 30 – Evaluations of Malaria Control
  28. Wed, May 2 (Last Day of Classes) – Summary, Impact, and the Future of Malaria Control

### Readings:

Seminar participants will be exposed to three types of literature on malaria ---scientific papers, science journalism, and institutional reports. Participants will be expected to read from all three literatures and engage in class and discussions. Required readings are listed below; supplemental readings will be posted on the course Blackboard site

- 1) Scientific Papers (*The following papers are available through ezproxy and links will be posted on Blackboard.*)
  - Greenwood, B. M., Bojang, K., Whitty, C. J. M., & Targett, G. A. T. (2005). Malaria Lancet, 365(9469), 1487–1498. doi:10.1016/S0140-6736(05)66420-3
  - Tuteja, R. (2007), Malaria – an overview. FEBS Journal, 274: 4670–4679. doi: 10.1111/j.1742-4658.2007.05997.x
  - Other readings as posted.
- 2) Scientific Journalism (*The Fever* will also serve as the basis for Assignment 2 and is readily available inexpensively on used book websites)
  - *The Fever*. Sonia Shah. Sarah Crichton Books, Farrar, Straus and Giroux: New York. 2010.
- 3) Institutional Reports (pick at least one of the following)
  - *World Malaria Report 2010*. World Health Organization. WHO: Geneva. 2010 (url: [www.who.int/malaria/world\\_malaria\\_report\\_2010/worldmalariareport2010.pdf](http://www.who.int/malaria/world_malaria_report_2010/worldmalariareport2010.pdf))

- *A Decade of Partnership and Results*. Roll Back Malaria. WHO: Geneva. 2011. (url: [www.rollbackmalaria.org/ProgressImpactSeries/docs/report8-en.pdf](http://www.rollbackmalaria.org/ProgressImpactSeries/docs/report8-en.pdf))
- *The President's Malaria Initiative: Fifth Annual Report to Congress*. USAID: Washington, D.C. 2011. (url: [www.pmi.gov/resources/reports/pmi\\_annual\\_report11.pdf](http://www.pmi.gov/resources/reports/pmi_annual_report11.pdf))
- Other readings as posted