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).

Problems sets, labs, readings, papers, and other activities during the semester will be part of the final assessment, as will the final examination. The course will sharpen the writing and quantitative skills developed during your freshman year.

Grading Scheme
Each of the three units will account for 25% of the final grade, while the remaining 25% will be based on the final exam. 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: 40% for short weekly reflection papers (4 papers, 10% each); 30% for an end of unit paper; and 30% class preparation and discussion participation.
2. Engineering: 2 papers (50% of the grade); homework assignments and 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 Location TBD
B2: Friday, 12:00-1:30pm COM 217 (w/COM 213 as a break out room)

Lab Day/Times and locations
TBD
Reading/Viewing List

1. Texts
   - pick at least one of the following books
   - Other readings as posted.

2. Readings (available on blackboard site or via indicated website)
   - (pick at least one of the following)
   - Other readings as posted

Course website: blackboard.bu.edu
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 (1-2 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 10% of your grade.
   
   2. Final paper, due on Friday, Feb. 17. Your final paper (5-7 pages, and 40% of your grade) should reflect on the extent to which professional athletes (and their League representatives) should have the right to demand a royalty from the use of their names, images, and biographical information. We are interested primarily in a “normative” analysis – a commentary that addresses what the law should be, and why. Your paper should draw upon our discussions of the right of publicity in the fantasy sports context, but should think more broadly about other contexts in which commercial and non-commercial actors might want to use this information. What about journalists, videogame manufacturers, t-shirt sellers, artists, biographers, critics, scholars? What interests of the athlete might argue in favor of such a right? What interests of others might argue in favor of limitations? And what should the nature of the right and limitations be?
   
   3. Readings as assigned, and preparation for class, including reflection on discussion questions to be posted on the Blackboard site each week. Discussion in lecture and sections will account for 30% of your grade.

II. Lecture Schedule
   1. Wed, Jan 18
      Introduction: substance and methodology
      o Substance:
        ▪ The fantasy sports litigation
        ▪ Economic and philosophical concepts relevant to intellectual property questions
          • Public goods
          • Utilitarianism
          • Personhood
          • Competition vs. monopoly
Methodology
- Resources – tools and building blocks
  - Common law and cases
  - Reading judicial opinions
- Fri, Jan 20- Discussion

2. Mon, Jan 23
   Understanding the common law roots of the right of publicity: privacy

3. Wed, Jan 25
4. Understanding the common law roots of the right of publicity: false endorsement
   - Fri, Jan 27- Discussion

5. Mon, Jan 30
   The *Haelan* case and the birth of the modern right of publicity

6. Wed, Feb 1
   Implications and extensions of *Haelan*: from baseball cards to evocation to art
   - Fri, Feb 3- Discussion

7. Mon, Feb 6
   Thinking critically about the right of publicity: do we need it? Why?

8. Wed, Feb 8
   Thinking critically about the right of publicity: wherein speech?
   - Fri, Feb 10- Discussion

9. Mon, Feb 13
   The right of publicity and sports: video games and fantasy

10. Wed, Feb 15
    Do we need reform? Why, what, and how?
    - Fri, Feb 17- Discussion

**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, 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, 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 can engineering approaches 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 the long-term impact of engineering on human health, both at home and abroad.

I. **Assignments:**
   1. 2 papers (choose one from both categories)
      
      **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**

   11. Tues, Feb 21 (Substitute Monday schedule) Biomedical Engineering: Why?
      Readings: Biomedical Engineering for Human Health

      Readings: Chapter from Principles of Biomedical Engineering
      • Fri, Feb 24 – Discussion


   14. 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

   15. Mon, Mar 5: Cancer and Biomedical engineering: Macromolecular tools

   16. Wed, Mar 7: Cancer and Biomedical engineering: Where do we go from here?
      • Fri, Mar 9 – Discussion

   17. Mon, Mar 19 : Biomedical engineering and Global Health: The big picture and Challenges
      Readings from Biomedical Engineering for Global Health
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. Blog Participation (10%)
   c. Discussion Section Participation (10% assessed by Teaching Assistant)

2. **Paper 1 – Critical Book Review (30%)**: Please submit a 3-page critical book review. Seminar participants will be able to pick from a short list of short, readable scientific journalism books on malaria. (Titles will include *The Fever* by Sonia Shah, *Lifeblood*, by Alex Perry, *The Malaria Capers* by Robert S. Desowitz, and possibly one or two others I am reviewing currently). Book reviews will be due at the start of the 4th week of the module (April 23rd).

3. **Paper 2 – Final Paper (40%)** – Seminar participants will receive a problem statement posted on the course website after the April 25th lecture. Please submit a 5 page paper addressing the problem using an interdisciplinary approach to synthesize the course materials.

**III. Lecture Schedule**

20. Wed, Mar 28 – Introduction and Malaria Control through History
   - Fri, Mar 30 – Discussion

21. Mon, Apr 2 – Malaria and Epidemiology

22. Wed, Apr 4 – Malaria and Biology
   - Fri, Apr 6 – Discussion

23. Mon, Apr 9 – Applied Science – Malaria Control Interventions

24. Wed, Apr 11 – Institutional Framework for Malaria Control
   - Fri, Apr 13 – Discussion

   **No Class Mon, Apr 16**

25. Wed, Apr 18 (Substitute Monday Schedule) – Economics of Malaria Control
   - Fri, Apr 20 – Discussion

26. Mon, Apr 23 – Politics of Malaria Control

27. Wed, Apr 25 – Ethical Issues in Malaria Control
   - Fri, Apr 27 – Discussion

28. Mon, Apr 30 – Evaluations of Malaria Control

29. 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, discussions, and on the course website on their readings. Required readings are listed below; optional readings will be posted on the course Blackboard site.

2) Scientific Papers
   - Other readings as posted.

3) Scientific Journalism (pick at least one of the following books...will also serve as the basis for Assignment 2)
   - TBD

4) Institutional Reports (pick at least one of the following)
   - Other readings as posted