BIOS 60591
Topics in Epidemiology — Global Health Challenges
Debartolo 228
14:00 PM-15:15 PM Monday and Wednesday
Fall 2013

Instructor
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Please note that there will be a number of different instructors who will provide students with training in specific skill areas.

Global health is concerned with both the interconnectedness and multidimensionality of health as well as with disparities in human disease across the world. The burden of disease occurs unevenly between and within countries; tackling these differences requires a critical understanding of the multivariate and complex determinants of health that range from the genetic background of individuals and populations through exposure to different environments and pathogens, social conditions, economic development, health systems and governance, and individual beliefs, attitudes and behaviours.

This course is intended to introduce students to the field of global health by providing an overview of key issues in this nascent but increasingly important topic, and by equipping students with the framework, knowledge and skills needed to interpret and address these problems. On completion of the course, students would be expected to be self-directed, critical and highly original in tackling problems in global health, besides having the skills required to further extend their knowledge and understanding through research or professional practice in this field of public health.

Learning goals
By the end of the course, students should be able to:
1. Discuss critically major and emerging issues in global health
2. Be aware of major global health diseases
3. Understand the multidimensionality of global health
4. Appreciate the need for an interdisciplinary approach, spanning biology, socio-ecology, economics and politics, for investigating, understanding and finding solutions for global health issues
5. Appreciate the need for innovative thinking and solutions in tackling global health problems
6. Write plans for implementing multi-sectorial approaches to intervening in health
Office Hours
I welcome the opportunity to meet with students individually. I prefer speaking with you after class or by appointment. To set up a time, I can be reached at 574-631-2234 or by e-mail emichael@nd.edu

Academic Integrity
Students are expected to uphold the Academic Code of Honor described in the Graduate School’s Bulletin of Information (online at http://graduateschool.nd.edu/assets/29023/bulletin.1011.pdf), p. 18.

Attendance
Students are expected to attend all class sessions. If you cannot make a class, please obtain advanced approval from the instructor. The class participation grade will be lowered by one partial unit (i.e. from a B+ to a B) for each unexcused absence. More than three unexcused absences will lead to a failure of the course.

Course Outline
The course will be divided into two modules. The first will be taught and the second will comprise writing a mini-essay and delivering a group seminar.

Module 1 (Taught)
This module will serve to provide an overview of key challenges and issues in global health, including introduction and discussion of major global health issues, key determinants of health emphasizing the multi-factorial aetiology of disease and disparities between and within countries, the primacy of health from the national and human rights/capability perspectives, emerging problems, and major approaches to improving health, including different health systems and priorities, and the roles of specific interventions and of the big international agencies and corporations. A key feature given the multidimensionality and complexity of global health is the need for highly critical thinking and for discovering and applying innovative out-of-box solutions. This taught module will form the preparation for the mini-essay/seminar to be completed in module 2.

Module 2 (Mini-Essay and Group Seminar)
In this module, students will apply the knowledge and skills learned in Module 1 to write a mini-essay on highlighting the multidimensional epidemiology of a selected disease. Essays will contain background to the chosen disease, key determinants and multiple exposure-disease pathways, and how an understanding of the multivariate disease pathways may be used to successfully intervene against the chosen disease.

Students will also present a group seminar on the last day of the course on the epidemiology and control of a particular infectious disease using innovative approaches. This will include search and obtaining of data, analysis, interpretation and presentation of results. It will also include the derivation of complex, sustainable, interventions based on new innovative approaches founded on social enterprise/frugal innovation principles.
By the end of this module, students should be able to:

- Identify, read and analyze material relevant to the epidemiology of a specific disease
- Synthesize information about disease determinants to develop conceptual models of the multi-factorial transmission of disease
- Develop original plans for taking a multi-sectorial and innovative approach to disease intervention based on new innovations in health delivery
- Locate findings in the context of existing literature
- Evaluate feasibility of proposed interventions
- Present findings clearly and concisely in written and oral forms

Schedule

**Wednesday, August 28**
Introductions and Discussion of Course Objectives.

**Monday, September 2**
The Global Burden of Diseases

**Wednesday, September 4**
Infectious Diseases as a Global Problem: TB (JS)

**Monday, September 9**
Infectious Diseases as a Global Problem: Malaria (FC)

**Wednesday, September 11**
Infectious Diseases as a Global Problem: Helminths

**Monday, September 16**
Chronic Diseases and Risks I: Obesity, diabetes and metabolic syndrome as a global problem

**Wednesday, September 18**
Chronic Diseases and Risks II: Obesity, diabetes and metabolic syndrome as a global problem

**Monday, September 23**
Special Invited Lecture: Health and Development (SM: London School of Economics)

**Wednesday, September 25**
Special Invited Lecture: Healthcare Reforms and Accountability of Health Systems (SM: London School of Economics)

**Monday, September 30**
Special Invited Lecture: Global Health: From Global to National Perspectives (MM: National Institute for Medical Research, Tanzania)

**Wednesday, October 2**
Chronic Diseases and Risks III: Obesity, diabetes and metabolic syndrome as a global problem
Monday, October 7
Environmental Health I: Climate Change, Ecosystems and Biodiversity and their Effects on Health

Wednesday, October 9
Environmental Health II: Climate Change, Ecosystems and Biodiversity and their Effects on Health

Monday, October 14
Environmental Health III: Climate Change, Ecosystems and Biodiversity and their Effects on Health

Wednesday, October 16
Emerging problems I: injuries, violence, complex emergencies, demographic change, poverty, migration, globalization, urbanization, socio-ecology, global development, food technology, mental health, and politics/governance

October 19- 27 – Mid-term break

Monday, October 28
Emerging problems II: injuries, violence, complex emergencies, demographic change, poverty, migration, globalization, urbanization, socio-ecology, global development, food technology, mental health, and politics/governance

*Wednesday, October 30
Submission of Mini-Essay on Multi-dimensional Disease Epidemiology

Monday, November 4
Global Control of Neglected Tropical Diseases (PC)

Wednesday, November 6
Innovations in Global Health I: Social Enterprise Models (MP)

Monday, November 11
Innovations in Global Health II: Social Enterprise Models (MP)

Wednesday, November 13
Innovations in Global Health I: Crowdsourcing and Informatics (JB, TM)

Monday, November 18
Innovations in Global Health II: Health Informatics

Wednesday, November 20
Disease Intervention Design and Management: Impact of Complexity I

Monday, November 25
Disease Intervention Design and Management: Impact of Complexity II
November 27-Dec 1-Thanksgiving Holiday

Monday, December 2
Investigating the socio-ecology of disease

Wednesday, December 4
Preparation for seminar I

Monday, December 9
Seminar presentations on Social Enterprise/Frugal innovations approaches to Health I

Wednesday, December 11
Seminar presentations on Social Enterprise/Frugal innovations approaches to Health II

December 13-15--Reading days

December 16-20--Final examination day

Course components and assessments

- Core course content will be introduced in lectures. Handouts will be available for each class, but will only outline the lecture topic and must be supplemented by notes taken in class and by reading of required texts
- Students will submit a mini-essay on the multi-factorial epidemiology of disease in human populations
- Students will work in groups to develop interventions/solutions for a health problem of their choice focusing on social enterprise/frugal innovation approaches. Groups will make class seminars of their solutions on the last 2 days of the Course.

Assessment of this course will be by:

1. Mini-Essay on Multi-dimensional Epidemiology (25%)
2. Social Enterprise/Frugal Innovations Seminar (25%)
3. End of term Exam based on Open Book format (50%)
Required Texts


Course Tutors:

FC: Frank Collins  
JB: Joe Bock  
JS: Jeff Schorey  
MM: Mwele Malecela  
MP: Melissa Paulsen  
PC: Philip Coyne  
SM: Shirin Madon  
TM: Tom Marentette  
EM: Edwin Michael