Syllabus 2015

PHG 542 / BH 530: Genetic Discovery in Medicine & Public Health
3 credits

Instructor: Wylie Burke MD PhD
email: wburke@u.washington.edu

Course Objectives
The goal of this course is to explore the implications of discoveries in genetic science for clinical and public health practice, with an emphasis on health policy and ethics.

Specific Learning Objectives:
• Describe the major genetic discoveries that have expanded opportunities for screening, diagnosis and treatment.
• Explain the personal and societal challenges posed by the use of genetic testing in medicine and public health.
• Identify and analyze policies aimed at ensuring appropriate use of genetic services in medicine and public health.

Course Requirements (See “Assignments” for further details)
• Participation in class discussion
• Serve as moderator for one class discussion
• Assigned readings
• Interview with a local expert
• Paper (10-12 pages of text plus references) addressing a policy issue related to the use of genetics in medical or public health.

Grading
• Participation in class discussion: 20% (cannot achieve full 20% credit if more than one class is missed)
• Moderation of class discussion: 10%
• Interview: 10%
• Paper: 60% (see “Assignments” for further details regarding components of the paper to be submitted during the course)
• Grading will be based on student performance using the grading system for graduate students published at the UW Graduate School web site:

Course Materials
All course materials can be accessed by enrolled students through the course web site under “Readings.”
## SCHEDULE

<table>
<thead>
<tr>
<th>WEEK</th>
<th>TOPIC</th>
<th>DISCUSSION TOPICS</th>
</tr>
</thead>
</table>
| 1 Jan 5 & 7 | Introduction | • Contributions of genetics to goals of medicine and public health  
• Policy and ethics  
Readings:  
Manolio et al- Future is Here  
Chaufon_2007  

**OPTIONAL Background Readings:**  
Burke et al- ELSI impact  
Burke et al –Categorizing  
Burke et al -Debating Clinical Utility  
McGuire_Burke_JAMA  
See also additional readings found in “Readings” section of course web site |
| 2 Jan 12 & 14 | Evolution of genetic technology  
**Draft idea for paper topic due Jan 14** | Applying new knowledge in medicine and public health  
• Assuring safety and efficacy  
• Enabling innovation  
• Supporting equity  
Readings:  
EGAPP_Methods  
Ginn et al - Gene therapy review  
Gutmann_Ethics_synthetic_biology  
Ransohoff et al JAMA |
| 3 Jan 21 | No class this week | Individual sessions to discuss paper topic, to be scheduled between Jan 15 and 26 |
| 4 Jan 26 & 28 | Screening  
**Plan for interview due Jan 26** | • Implications of newborn screening, 1960s-present  
• Rationale for genomic screening  
Readings:  
Burke et al. Genetic screening  
Grosse, Boyle et al  
Wall St J - genomes |
| 5 Feb 2 & 4 | Reproductive genetics | Choices, responsibilities, dilemmas of reproductive genetics  
Readings:  
Brown – Boy in the Moon -Excerpt  
Lippman 1991 Prenatal Genetic Testing and Screening  
Paren, Asch  
Yurkiewicz et al - Prenatal whole-genome sequencing |
<table>
<thead>
<tr>
<th>Week</th>
<th>Dates</th>
<th>Topics</th>
<th>Assignments</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>Feb 9 &amp; 11</td>
<td>Direct to consumer genetics</td>
<td>Who should determine/control access direct-to-consumer genomics?</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Interview report due Feb 11</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Readings:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Annas &amp; Elias</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>FDA Warning Letter</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>McGowan et al Early Users</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>That Personal Touch</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Feb 18</td>
<td>Genomic translation in context</td>
<td>What do we hope to accomplish with genomic knowledge?</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Readings:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Farley_AJPH</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Juengst et al Rhetoric of Empowerment</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Topol- Prewomb to Tomb</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Woolf - Misplaced Priorities</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Feb 23 &amp; 25</td>
<td>Summary: Using genomics for health benefit</td>
<td><strong>Readings:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Rough draft of paper due Feb 25</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Berg J JAMA Commentary</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Khoury et al Population precision medicine</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Langenberg et al –type 2 diabetes</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Mar 2 &amp; 4</td>
<td>Discussion Topics</td>
<td><strong>Readings to be determined</strong></td>
</tr>
<tr>
<td>10</td>
<td>Mar 9 &amp; 11</td>
<td>Discussion Topics</td>
<td><strong>Readings to be determined</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Final paper due 5:00 PM Mar 13</strong></td>
<td></td>
</tr>
</tbody>
</table>