KNES 289H and KNES 289X:
Genetically-Modified Humans: Physical Performance in the Post-Genomic Era

Spring 2010

Monday: Discussion Sections:
289H 0101: 2p-2:50 in 1115 PLS Bldg
289X 0101: 9a-9:50 in 0303 SPH Bldg
289X 0102: 10a-10:50 in 0303 SPH Bldg
289X 0103: 1p-1:50 in 1164 PLS Bldg

Wednesday: Lecture: 9a-9:50 in 2400 CSS Building

Friday: Online discussion and peer review (no in-class meeting)

Instructor: Stephen Roth, Ph.D., 2134c SPH Building, 301-405-2504, sroth1@umd.edu
TA: Mallory Marshall, B.S., 0226 SPH Building, mallory@umd.edu

Office Hours:
Dr. Roth: Tues., Wed., Thur. 10a-11a; Fri. 9-10a, and by appointment.
T/A: Wed. 10a-12p and Friday 1-2p.

Course Outline
Description: KNES 289H/X is a 3-credit “I-series” hybrid course (lecture and online components). The investigation of the human genome sequence is revolutionizing the worlds of medicine and biology, with significant ethical, legal and social implications for all members of society. In this post-genomic era, can society pursue optimal health and maximal physical performance without changing what it means to be human? Students will critically evaluate key scientific advancements in genomics across a number of domains and will engage in both written and oral dialogue about the consequences of such advancements from multiple perspectives (e.g., biological, socio-cultural, ethical, legislative). Topics addressed will include: nature vs. nurture; genetics in sport and physical performance; maximal physical performance; gene therapy; genetic enhancement; eugenics and in vitro genetic manipulations; race and health disparities; talent selection and genetic discrimination; and personalized medicine. For each module, students will: identify critical problems and questions; compose an initial draft essay on the issue; evaluate and debate peer draft essays online using e-learning tools; engage in presentation and oral discussion; revise and finalize their essay based on the online and oral discussions.

Objectives:
1) To analyze the potential impact of genomics on modern aspects of health and physical performance.
2) To evaluate and discuss the challenging ethical, legal and social dilemmas that will face society into the future as genetic technologies become more mainstream.
3) To develop arguments both written and oral demonstrating an understanding of the possible outcomes of the expansion of genetics into health and human performance.

Pre-requisites: None, though you should successfully complete Freshman English before taking this course, as this is a writing intensive course.

Technology Issues: A couple of notes of importance. Please use your umd.edu email account for course communication, even if it is forwarded to a different email service provider. Important communications are provided via email and all of that will go to your assigned umd.edu account; I cannot guarantee email delivery to other providers (e.g., gmail, comcast, etc.). Turn off cell phones in class. Laptop use is restricted to note taking – if you are here to learn, then facebook updates can wait! Because this course has a significant online component, you must have regular computer and Internet access. Because you must upload and review materials on the ELMS/Blackboard website, you may need to work with the OIT Help Desk (www.helpdesk.umd.edu) to deal with any browser compatibility or other computer difficulties you may be having. We will try to work through all such issues in the first week of the course, but you are ultimately responsible for maintaining access to ELMS throughout the semester.

Course Materials: Course materials will include a broad range of readings, including peer-reviewed research and review articles, opinion pieces, policy guidelines, newspaper and magazine articles, and Internet resources (e.g., web articles; online tutorials). Materials are available online at the Blackboard campus website (http://elms.umd.edu/). You’ll need your umd.edu login/password to access the KNES 289H/X webpage. PDF files of all readings and other material are available for viewing and printing. Students are responsible for printing all materials, though building a digital PDF library is encouraged. Readings will need to be read prior to the initial draft submissions and scheduled discussion sections. Slide handouts are provided to facilitate note taking on the lecture days.

Note also that the textbook listed for this course is recommended rather than required – a number of topics discussed in this course are not included in the textbook, and the textbook includes a number of topics not covered by this course. Nevertheless, the textbook covers basic information regarding genetics and physical performance that will likely be useful for background information or specific ideas for your writing assignments, so it is recommended (the eBook version may be cheaper for those who have an eBook reader or similar device).

Course Structure: This is a hybrid course, which incorporates group lectures, small-group discussions, and various online discussion and peer review tools. Strategically, the course incorporates e-learning tools to promote interactive learning and target a new way to engage students in a higher impact learning process. After attending the lecture period and engaging individually with assigned readings, students will compose an initial draft essay in which they reflect on the particular weekly topic from a particular perspective (e.g., biological, psychological, social, legal, ethical). Using online file-sharing and discussion boards, students will critique peer essays for their ability to thoughtfully convey the critical aspects of the particular issue. Some students will then prepare a short presentation based on the essays and online discussions for the weekly oral discussion sections. Following the student presentations, all students will participate in oral discussion led by the TA and/or instructor in an effort to more fully engage the topic. Students will then revise their essays based on the discussion and online peer-review processes, submitting their final essay by the following week. The course instructor and a TA will collaborate in the leadership of the discussion sections and the monitoring of
online forums. The TA will provide feedback on the draft essays submitted by students and assist the instructor with final essay grading.

**Typical Weekly Format:** Each weekly topic begins on Wednesday. During the lecture day, students are introduced to the topic of the week and the key issues, with a discussion of the resources that are available online. Using this foundation, students will then read and engage a variety of resources online, from which they will draft an Initial Draft Essay that will be submitted online by Friday at Noon (12pm). During the online discussion and peer review period, students will evaluate the Initial Draft Essays of five of their peers, providing constructive feedback on the strengths and weaknesses of the essays by Sunday at Noon. Thus, students will have read a series of essays by different students and provided critical evaluation based on their own interpretation of the course materials for that topic. On Monday during the Discussion Sections, students will then come together to discuss and debate the topic, having immersed themselves in the topic from a variety of perspectives during the online period. Following this small-group discussion, students will then revise their essays, incorporating feedback from the online peer review and in-person discussions, and submit the Final Draft Essay by Wednesday at 9am, at which point the next weekly topic begins. Students are STRONGLY encouraged to review the course resources for the next topic before the lecture day so they are familiar with the topic before lecture and are better able to complete the initial draft.

**Course Philosophy:** This course relies almost exclusively on active learning techniques (rather than exams) that emphasize critical reading and evaluation of key resources, written reflection, peer evaluation and commentary, presentation and oral discussion, and thoughtful revision. Thus, both individual and group activities provide students with multiple avenues of investigation into each weekly topic, allowing reasonable depth and insight across multiple disciplinary perspectives. The knowledge gained will be based in a range of disciplines including kinesiology, biology, psychology, and philosophy, thus making the information relevant to all majors. Importantly, students are engaged in content across this range of disciplines for nearly all of the weekly topics, providing ample opportunity for integration of the information and analysis of the interdisciplinary impact of genetics on issues of health and physical performance.

**Honors Students in KNES 289H:** The Honors component of the course for KNES 289H students will be announced later in the semester. Stay tuned…
Weekly Topics and Schedule:
(Note – discussion sections will NOT meet on Jan 25, 2010 – first day of classes)

**Week 1: Topic: Course introduction: How do I succeed in this course?**
**Online Session:** Practice with Blackboard file submission and peer evaluation process.
Monday Discussion Sections (2/1/2010): TA/Instructor will lead discussion.
Questions answered in small group setting.
Due Dates: initial draft Jan 29, 12p; Evals Jan 31, 12p; final draft Feb 3, 9a.

Resources: Focus on the Syllabus – read it, maybe twice! Other resources found on ELMS under Course Documents, Week 1/Topic 1.

**Week 2: Topic: The Basics: What is the Human Genome?**
**Online Session:** Access resources, initial draft Friday 12p; peer evaluation Sunday 12p.
Monday Discussion Sections (2/8/2010): No group presentations; TA/Instructor will lead discussion.
Due Dates: initial draft Feb 5, 12p; Evals Feb 7, 12p; final draft Feb 10, 9a.

Resources: found on ELMS under Course Documents, Week 2/Topic 2.

**Week 3: Topic: Nature vs Nurture: Is this even a question?**
**Online Session:** Access resources, initial draft Friday 12p; peer evaluation Sunday 12p.
Monday Discussion Sections (2/15/2010): No group presentations; TA/Instructor will lead discussion.
Due Dates: initial draft Feb 12, 12p; Evals Feb 14, 12p; final draft Feb 17, 9a.

Resources: found on ELMS under Course Documents, Week 3/Topic 3.

**Week 4: Topic: Maximal Physical Performance: What makes an Olympian?**
**Online Session:** Access resources, initial draft Friday 12p; peer evaluation Sunday 12p.
Monday Discussion Sections (2/22/2010): First group presentations. Presenting group plus TA/Instructor to lead discussion.
Due Dates: initial draft Feb 19, 12p; Evals Feb 21, 12p; final draft Feb 24, 9a.

Resources: found on ELMS under Course Documents, Week 4/Topic 4.

**Week 5: Topic: Genetics in Sport: How important are genes to elite sport performance?**
**Online Session:** Access resources, initial draft Friday 12p; peer evaluation Sunday 12p.
Due Dates: initial draft Feb 26, 12p; Evals Feb 28, 12p; final draft Mar 3, 9a.

Resources: found on ELMS under Course Documents, Week 5/Topic 5.

**Week 6: Topic: Talent Selection: How do we find the next Michael, LeBron, Lance, etc.?**


*Online Session: Access resources, initial draft Friday 12p; peer evaluation Sunday 12p.*


**Due Dates:** initial draft Mar 5, 12p; Evals Mar 7, 12p; final draft Mar 10, 9a.

**Resources:** found on ELMS under Course Documents, Week 6/Topic 6.

*Mid-Course Evaluation – Details will be announced on ELMS*

**Week 7: Topic: Genetic testing: When and how is testing appropriate?**


*Online Session: Access resources, initial draft Friday 12p; peer evaluation Sunday 12p.*


**S.B.** **Due Dates:** initial draft Mar 12, 12p; Evals Mar 21, 12p; final draft Mar 24, 9a.

**Resources:** found on ELMS under Course Documents, Week 7/Topic 7.

**Week 8: Topic: Personalized Medicine: How will genetics change the future of healthcare?**


*Online Session: Access resources, initial draft Friday 12p; peer evaluation Sunday 12p.*


**Due Dates:** initial draft Mar 26, 12p; Evals Mar 28, 12p; final draft Mar 31, 9a.

**Resources:** found on ELMS under Course Documents, Week 8/Topic 8.

**Week 9: Topic: Race and Genetics: Can genes explain health disparities?**


*Online Session: Access resources, initial draft Friday 12p; peer evaluation Sunday 12p.*


**Due Dates:** initial draft Apr 2, 12p; Evals Apr 4, 12p; final draft Apr 7, 9a.

**Resources:** found on ELMS under Course Documents, Week 9/Topic 9.

**Week 10: Topic: Geographic ancestry, race, and sport success. Is this a “Taboo” topic?**


*Online Session: Access resources, initial draft Friday 12p; peer evaluation Sunday 12p.*

**Due Dates:** initial draft Apr 9, 12p; Evals Apr 11, 12p; final draft Apr 14, 9a.

**Resources:** found on ELMS under Course Documents, Week 10/Topic 10.

**Week 11: Topic: Genetic Enhancement: Is gene doping the wave of the sporting future?**


*Online Session: Access resources, initial draft Friday 12p; peer evaluation Sunday 12p.*


**Due Dates:** initial draft Apr 16, 12p; Evals Apr 18, 12p; final draft Apr 21, 9a.

**Resources:** found on ELMS under Course Documents, Week 11/Topic 11.

**Week 12: Topic: Reproductive Technologies: Designer babies for the future?**


*Online Session: Access resources, initial draft Friday 12p; peer evaluation Sunday 12p.*


**Due Dates:** initial draft Apr 23, 12p; Evals Apr 25, 12p; final draft Apr 28, 9a.

**Resources:** found on ELMS under Course Documents, Week 12/Topic 12.

**Week 13: Topic: Gene therapy and eugenics: How much is too much?**


*Online Session: Access resources, initial draft Friday 12p; peer evaluation Sunday 12p.*


**Due Dates:** initial draft Apr 30, 12p; Evals May 2, 12p; final draft May 5, 9a.

**Resources:** found on ELMS under Course Documents, Week 13/Topic 13.

**Week 14/Finals Week: Topic: Final Thoughts: Can society pursue optimal health and maximal physical performance without changing what it means to be human?**


*Online Session: Access resources, initial draft Friday 12p; peer evaluation Sunday 12p.*

*Monday Discussion Sections (5/10/2010): Last group presentations (if needed). Presenting group plus TA/Instructor to lead discussion.*

**Due Dates:** This is the “Final Exam” Essay. Initial draft May 7, 12p; Evals May 9, 12p; **Final Draft Due Friday, May 14 at 12p/Noon.**

**Resources:** found on ELMS under Course Documents, Week 14/Topic 14.

**Essays:** For each weekly topic (beginning with each Wednesday Lecture Day), student complete 1) an Initial Draft Essay, due each Friday at 12p/Noon; and 2) a Final Draft Essay due the
following Wednesday at 9am. Students will receive an initial grade from the Instructor/TA for the Initial Draft Essay, and a final grade on the Final Draft Essay. The initial grade will be dependent on the quality of the initial response, including the ability to address the weekly topic using support from the course materials and other resources. The essay is expected to be between 2-3 pages double spaced with 3-5 supporting references, emphasizing primary sources. The final grade will address the quality of the Final Draft Essay and the incorporation of feedback from the online peer-review and small-group discussion periods. At the end of the Final Draft Essay, students will include a list of the key changes made in response to the peer evaluation and Discussion sections (thus explaining how they’ve improved their work). Thus, students will receive two grades for each essay with the initial grade contributing ~15% and the final grade contributing ~85% of each weekly essay. Of the 12 assigned essays in Weeks 2-13, course grades will be calculated from the 10 highest grades (2 essays are excluded from final grading). Week 1 is a practice essay that will not count toward final grading. The Final Exam Essay from Week 14 is described separately below.

Online Peer Evaluation: Following submission of the initial draft essays, students will evaluate the Initial Draft Essays of each student (5 essays read and critiqued). This peer review will occur during the Online Discussion and Peer Review period, which begins Friday at Noon and ends Sunday at 12p/Noon. Peer evaluations must be submitted during this period, after which students will review their peers’ feedback and prepare for the small group discussion. Peer evaluations will be graded, with the grade determined by the quality of the peer review. High quality reviews will make specific notations of strengths and weaknesses of each essay and have suggestions for improvement. All writing should be formally written and grammatically correct; these critiques are not text messages to your friends! Of the 12 assigned essays in Weeks 2-13, course grades will be calculated from the 10 highest evaluation grades (2 evaluations are excluded from final grading). Week 1 is a practice evaluation that will not count toward final grading. Evaluations for the Final Exam Essay from Week 14 are described separately below.

Presentations: Within each Discussion section, students will be assigned to groups of 2 students. These small groups will be assigned to orally present the key issues related to a particular topic as an introduction to the Discussion section. The presentation will be ~10 minutes, with each student contributing roughly half of the oral component. Slides (e.g., Powerpoint or equivalent) are encouraged but not required – quality presentations can take many forms and creativity is encouraged. Students will be provided with guidelines specific to each topic and grading will be based on how well the students present the information requested by those guidelines.

Attendance and Participation: Attendance and participation are included in the course grade. Attendance is required for the Lecture and Discussion days. Attendance and participation will be recorded during the Discussion days. Students are allowed 2 absences without consequence on the course grade.

Final Exam Essay: In lieu of a formal final examination, students will complete a final essay during Week 14/Finals Week of the course. This essay will follow a similar format as the typical weekly essays, but will be of double the length of a typical weekly essay (7-8 pages double spaced with at least 10 supporting references). This is a culminating essay and should reflect the student’s ability to access information across the multiple resources engaged throughout the
course. The initial draft (~20%; graded by peers, as is typical) and peer evaluations (~15%) will be graded in addition to the final draft (~65%).

**Late Work:** Late assignments will NOT be accepted. Students who do not complete Initial Draft Essays by the assigned times will receive 0 points for that component; students who do not complete the peer evaluations by the assigned times will receive 0 points for that component; students who do not complete the Final Draft Essay by the assigned time will receive 0 points for that component. All of these components are time-locked in ELMS; once an assignment is closed, it is impossible for the Instructor or TA to add the assignment past the due date. Thus, all students must complete their work by the assigned time in order for it to be graded. Significant extenuating circumstances will only be considered with documentation.

**Grading:** Grading is based on the quality of the initial draft and final draft essays, peer evaluations, attendance/participation, group presentation, and the final exam essay. Students will grade each other on the Initial Draft Essays during the peer evaluation process, but the Instructor/TA will assure that those grades are fair (each student will be graded by 5 peers, with the average grade used as the grade for the Initial Draft Essay, accounting for ~13% of the total course grade). Plus/Minus grades will not be used except under exceptional circumstances.

**Grades are based on:**

| Weekly Topic Essays (12 weekly essays beginning week 2, 10 highest grades counted) | Percentage of Final Grade |
| Initial Draft Essays | 10% |
| Final Draft Essays | 50% |
| Weekly Topic Peer-Review Evaluations (12 total evaluations, 10 graded) | 10% |
| Attendance and Participation (14 total weeks, 12 graded) | 12% |
| Presentation: Group presentation of ~10 minutes | 5% |
| Final Exam Essay (3, 2, and 8%, for initial draft, eval, and final draft, respectively) | 13% |

**Grade:**

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**Accommodations for Students with Special Needs:**
The University has a legal obligation to provide appropriate accommodations for students with special needs (permanent or temporary, physical or mental). If you have a documented special need and wish to discuss academic accommodations, please contact the instructor as soon as possible.

**Academic Integrity:**
The University of Maryland, College Park has a nationally recognized Code of Academic Integrity, administered by the Student Honor Council. This Code sets standards for academic integrity at Maryland for all undergraduate and graduate students. As a student you are responsible for upholding these standards for this course. It is very important for you to be
aware of the consequences of cheating, fabrication, facilitation, and plagiarism. For more information on the Code of Academic Integrity or the Student Honor Council, please visit http://www.shc.umd.edu.

To further exhibit your commitment to academic integrity, remember to sign the Honor Pledge on all examinations and assignments: "I pledge on my honor that I have not given or received any unauthorized assistance on this examination (assignment)."

Religious Observances

The University of Maryland System policy provides that students should not be penalized because of observances of their religious beliefs; students should be given an opportunity, whenever feasible, to make up, within a reasonable time, any academic assignment that is missed due to individual participation in religious observances. The student is responsible for providing written notification to the professor within the first two weeks of the semester. The notification must identify the religious holiday(s) and the date(s). The student shall hand the written notification to the instructor personally to avoid problems with collecting mail from mailboxes or e-mail. After this time, special arrangements may not be possible.

*CourseEvalUM*

As a member of our academic community, you as a student have a number of important responsibilities. One of these responsibilities is to submit your course evaluations each term though CourseEvalUM in order to help faculty and administrators improve teaching and learning at Maryland. Dates for the evaluation process will be provided; the link at which you can access the submission system is: www.courseevalum.umd.edu). If you submitted all of your evaluations in the fall or are a new student, you can also access all posted results from Fall 2007 forward via Testudo under CourseEvalUM Reporting. To retain this access, you must submit all of your evaluations each semester. More information is at: https://www.irpa.umd.edu/Assessment/CourseEval/stdt_faq.shtml.