

NOTE: This enhanced syllabus contains the topics as well as many of the links to texts used in the course. Please e-mail M. Osherow or M. Suri with any questions, or for more information.

HUM 120H, Fall, 2011
M/W 1 to 2:15 p.m., Kuhn 216M

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“Mathematics and what it means to be Human”

*The true spirit of delight, the exaltation, the sense of being more than Man,
which is the touchstone of the highest excellence, is to be found in mathematics
as surely as in poetry.*
-Bertrand Russell

In this seminar we will explore connections between mathematics and the humanities. Though these disciplines are often considered to be at odds with one another, we will uncover ways in which mathematical concepts investigate and define what it means to be human and how the humanities utilize, represent and explode mathematical ideas. This interdisciplinary approach acknowledges ways in which the humanities embrace and benefit from diverse forms of intellectual inquiry.

Required Text:

- Shakespeare, William. *King Lear*. (Any edition containing act, scene, and line numbers).
Stoppard, Tom. *Arcadia* (New York: Faber & Faber, 1994).
A good English dictionary.

Recommended Text:

Oulipo Compendium. Ed. Harry Mathews and Alastair Brotchie (London: Make Now Press; Revised edition, 2005)

Summer Reading/Viewing:

- Haddon, Mark. *The Curious Incident of the Dog in the Night-time* (New York: Vintage Books, 2003).
Devlin, Keith. Excerpt from “What is this Thing Called Mathematics” in *The Math Gene* (Basic Books, 2000).
- Suri, Manil. “Mathematics of Fiction” <http://www.youtube.com/watch?v=vbHTvA0Bans&feature=relmfu>

Course Requirements:

- Each student’s participation in all class discussions is a requirement for this course. Come to each class with something to say about the assigned reading(s), questions to ask, and ways to engage.
- Attend class and arrive on time. Missing more than three classes will lower your class participation grade considerably. Students who miss six or more classes will not pass this course. Two late arrivals is the equivalent of one absence.
- Reading assignments must be done carefully and in their entirety. It is fine to have questions, but an attempt to engage with class materials must be evident. Quizzes on readings may be given unannounced if student preparedness is in question.
- The assigned readings for each topic must be brought in hardcopy to the appropriate classes
- All work submitted for this course must be typed and submitted on time. Late papers are penalized heavily.
- Film screenings will be required over the course of the term. These films are on reserve in the library.

- No electronic devices may be used during class unless specifically called for by the instructors.
- A Blackboard site exists for this course. There you will find selected readings available in pdf format, assignments and updates to the class syllabus. (Many of the readings can be accessed through the syllabus.)
- There is no mid-term or final exam for this course. However, the scheduled final exam time will be used for student presentations and all students are required to attend.
- Reminder: your scholarship program requires you to attend a selection of Humanities Forum events. These are generally held on Wed at 4:00 p.m. and appear on this syllabus.
- Your grade for this course is based on the following:

Class Preparation and Participation	20%
Written Assignments	50%
Response to Classmates' Project Proposals	10%
Project Proposal and Presentation	20%

Course Assignments:

- The course syllabus shows what is to *have been completed* by the date by which it appears.
- Additional readings and written assignments may be given throughout the semester based on discussions, responses and the like. These will be posted on the class's electronic Blackboard. For instance, you will see that assignment M1, based on the Monty Hall problem is due on Sep 7.
- Please remember that all assignments are requirements. Failure to perform any of them, on time, will jeopardize grades. This includes assignments listed in this syllabus as well as additional ones assigned via Blackboard during the course.

Seminar Syllabus:

TOPIC 1: Perceiving Mathematics

W	Aug 31	Seminar Introduction: "Mathematics and what it means to be Human" Course requirements Discussion: Haddon's <i>The Curious Incident</i> and Devlin excerpt
W	Sept 7	Haddon's <i>The Curious Incident</i> and Devlin excerpt (cont'd)
M	Sept 12	The Two Cultures Texts: C. P. Snow's "The Two Cultures" (condensed) http://classes.dma.ucla.edu/Spring07/9-1/pdf/1-snow_the-two-cultures.pdf

TOPIC 2: Pi and Patterns

W	Sept 14	What is Pi? Looking for patterns. Texts: <i>New Yorker Mag</i> : "Mountains of Pi" See Blackboard under Course Documents, or download from http://www.davidabrahamson.com/WWW/IALJS/Preston_TheMountainsOfPi_NYer_2Mar92.pdf
F	Sept 16	Due: Assignment for Topic 1 : Please submit a Word document (no pdfs!) electronically

via Blackboard by end of day. See, e.g:
http://ondemand.blackboard.com/r91/movies/bb91_student_submit_assignment.htm

- M Sept 19 Mathematics and film
Texts: *Pi* (film; written and directed by Darren Aronofsky)
- W Sept 21 Mathematics and film (cont'd)
Texts: *Good Will Hunting* (film; directed by Gus Van Sant)
Doxiadis "The mathematical logic of narrative"
<http://www.apostolosdoxiadis.com/en/files/essays/the%20mathematical%20logic%20of%20narrative.pdf?phpMyAdmin=D%2Ck4E0jiai%2Cf92iyT7AJVKhUh7d>
- M Sept 26 Meanings of math in poetry and fiction
Lines for a Prologue (A. MacLeish): <http://www.poetryfoundation.org/poem/171742>
Meditation on Statistical Method (J.V. Cunningham): <http://www.poetryfoundation.org/poem/171441> *Particular Beauties* (H. Moss): <http://www.poetryfoundation.org/poem/239774>

Suri's "The Tolman Trick" <http://www.crcnetbase.com/doi/abs/10.1201/b10616-36>

TOPIC 3: Zero

- W Sept 28 The complexity of nothing
Texts: excerpts from Kaplan's *The Nothing that Is* (E-reserves);
excerpt from Doxiadis's *Logicomix* (E-reserves)
- Fri Sept 30 Due: Assignment for Topic 2: Please submit a Word document electronically
by end of day via Blackboard.
- M Oct 3 Zero/Nothing (cont'd)
Texts: Shakespeare's *King Lear*
- W Oct 5 Zero/Nothing and Lear (cont'd)
Texts: *Lear*
Guest speaker: Dr. Phil Seng on Nihilism
- M Oct 10 Zero/Nothing and Lear (cont'd)
Texts: *King Lear* and selected poetry (E-reserves)

TOPIC 4: A Hundred Thousand Billion Poems

- W Oct 12 Constraints: Mathematical and Otherwise
Text: Introduction to *Oulipo Compendium*, Part III
- F Oct 14 Due: Assignment for Topic 3: Please submit a Word document electronically
via Blackboard by end of day.
- M Oct 17 Finite Numbers and the Oulipo Movement

Text: excerpt from *Oulipo Compendium*

W Oct 19

Finite Numbers (cont'd)

Texts: excerpt from *Oulipo Compendium*

In class: *Powers of 10* (film) <http://www.powersof10.com/film>

F Oct 21

Due: Assignment for Topic 4: Please submit a Word document electronically via Blackboard by end of day.

TOPIC 5:

Infinity

M Oct 24

Taming Infinity

Texts: Suri's "Taming Infinity" lecture (Youtube:)

http://www.youtube.com/watch?v=kBS_cNHvnBE

Stoppard's opening to *Rosencrantz and Guildenstern are Dead*

<http://www.youtube.com/watch?v=RjOqaD5tWBO>

W Oct 26

Taming Infinity (cont'd)

F Oct 28

Excursion to "Archimedes Palimpsest" exhibit at the Walters Art Gallery in Baltimore (Departure time TBD)

M Oct 31

Infinity and literature

Texts: Borges' *The Library of Babel*

<http://jubal.westnet.com/hyperdiscordia/library_of_babel.html>

(read biblical Babel narrative in Genesis 11: 1-9; available online

<http://www.kingjamesbibleonline.org/>)

W Nov 2

Exploring Infinity and Real Life

F Nov 4

Due: Assignment for Topic 5: Please submit a Word document electronically by end of day via Blackboard.

TOPIC 6:

Applications in Humanities Scholarship

M

Nov 7

Mathematical Elements of Current Humanities Research

<http://www.nytimes.com/2010/12/04/books/04victorian.html>

<http://www.nytimes.com/2010/11/17/arts/17digital.html>

<http://artsbeat.blogs.nytimes.com/2010/12/17/finding-needles-in-googles-500-billion-word-haystack/>

http://www.nytimes.com/2010/12/19/magazine/19Urban_West-t.html

W

Nov 9

Guest speaker on use of mathematics in research (see end of syllabus)

Text: Project summary or supplementary text from guest speaker (Bboard).

M

Nov 14

Guest speaker on use of mathematics in research (see end of syllabus)

Text: Project summary or supplementary text from guest speaker (Bboard)

W

Nov 16

Guest speaker on humanities study/research and use of mathematics

Text: <http://scienceblog.com/46622/minority-rules-scientists-discover-tipping-point-for-the-spread-of-ideas/>

M Nov 21 Wrap up: discussion of Project Proposals, etc.

TOPIC 7: Case Study: Fermat's Last Theorem and Stoppard's *Arcadia*

W Nov 23 Fermat's Last Theorem and Fractals: Possible meeting in Computer Lab
Class to meet in Computer Lab (will be confirmed)
Texts: excerpt from Singh (E-reserves)
Due: Assignment for Topic 6/Memo in preparation of Final Project Proposal: Please submit a Word document electronically by end of day via Blackboard.

M Nov 28 Mathematics in *Arcadia*:
Class to meet in Computer Lab (will be confirmed)
Text: Stoppard's *Arcadia*

W Nov 30 *Arcadia* (cont'd)
Class to meet in Computer Lab (will be confirmed)
Text: Stoppard's *Arcadia*

Th Dec 1 Reminder: Humanities Forum, 4:00 p.m. Kuhn Gallery: Marcy Reaven: *Giving the Past Presence*

M Dec 5 *Arcadia* and the two cultures
Texts: Stoppard's *Arcadia*, On Deconstruction (E-reserves)

TOPIC 8: Seeing is Believing

W Dec 7 Student Presentations (Post Summary on Blackboard)
Texts: TBD
Due: Assignment for Topic 7: Please submit a Word document electronically by end of day via Blackboard.
[NOTE: students presenting on this date may submit Assignment 7 on Friday, Dec 9.]

F Dec 9 Due: Responses to 12/7 student presenters (respond electronically to each presenter via Blackboard).

M Dec 12 Student Presentations (Post Summary on Blackboard)
Texts: TBD

T Dec 13 Due: Responses to 12/12 student presenters (respond electronically to each presenter via Blackboard).

M Dec 18 *Due: Final Proposals for all students who have presented previously.* Please submit a Word document electronically to both of your professors by end of day via Blackboard.

TBD 2-Hr Exam Pd Student Presentations/Wrap-Up Slot (Post Summary on Blackboard)
Suggested times Fri., Dec 16 3:30- 5:30 p.m., Wed., Dec 21, 1-3p.m. (scheduled class exam time) or other alternative.

Texts: as distributed

TBD

Due: Responses to final student presenters (respond electronically to each presenter via Blackboard).

GUEST SPEAKERS:

1. Dr. Shawn Bediako, Department of Psychology, UMBC, spoke about a project in which the Dept of Math and Statistics acted as consultant (for statistics involved in study) through its CIRC group.

Daily Experiences of Young Adults with Sickle Cell Disease

ABSTRACT: Sickle cell disease (SCD) is the world's most common genetic blood disorder and is marked by intermittent periods of severe, disabling pain. Over the last decade, biomedical advances have led to a clearer understanding of SCD pathophysiology and have also significantly reduced the high mortality rates once associated with the condition. Individuals with SCD may become more susceptible to social stigmas about the condition as they age, and such stigma might consequently predispose them to increased pain, health care utilization, social isolation, and negative mood. The proposed research will pursue two specific aims: (1) utilize daily diaries to assess variability in sickle cell-specific stigma among adults with SCD; and (2) assess the influence of SCD stigma on various health outcomes. A cohort of young adults (N=40) with SCD will complete a daily diary over a three-week period. The diary will include measures of perceived stigma, pain, health care utilization, social isolation, negative mood, and quality of life. Prior findings from in-depth analyses of patient daily diaries indicate that this methodology achieves high levels of patient compliance. In addition, we will utilize a web-based platform for completing the diaries that will facilitate reliable and valid data entries.

2. Dr. Rachele Lawton, Associate professor of the Community College of Baltimore County, spoke about her statistical analysis of the "English Only" movement, for which she also consulted with the Dept of Math and Stat, UMBC (CIRC). Her talk inspired one of the students to design her final project as a statistical survey to shed light on the effect of phrasing on people's responses to related questions.