Math410 Senior Seminar Spring 2011
Syllabus

PROFESSOR: David Housman

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OFFICE HOURS: See http://www2.goshen.edu/~dhousman/Schedule11Spring.htm

CLASS SCHEDULE: Thursdays 7:00 - 9:30pm, SC 107

PREREQUISITES: Senior or junior standing.

TEXT: Hofstadter, Douglas. *Gödel, Escher, Bach: An Eternal Golden Braid*. Basic Books, 1999. ISBN 978-0465026562.

COURSE GOAL: Each student will integrate mathematics and computer science with other disciplines, personal and social responsibilities, and her or his personal life.

COURSE STRUCTURE

1. Class discussion of readings from *Gödel, Escher, Bach: An Eternal Golden Braid* (GEB). A pair of students will lead the discussion, and each student will lead two discussions.

2. Student and instructor presentations of topics related to mathematics or computer science. Each student will present a topic and lead the ensuing discussion either (1) once alone, or (2) twice with a partner.

3. Portfolio creation by each student to document and integrate academic knowledge, personal ethics, and future plans.

4. A personal interview with the instructor at the end of the semester that will provide an opportunity for a review of your time at GC and your plans for the future.

GRADING

The grade you earn in this course will be based on the following activities:

Activity	Points
Participation (20 pts x 13 sessions)	260
GEB Discussion Leadership (100 pts x 2 discussions with a partner)	200
Presentation (200 pts or 100 pts x 2 discussions with a partner)	200
Portfolio (300 pts)	300
Personal Interview	40
TOTAL POSSIBLE POINTS	1000

Up to 10 points extra credit will be given for each attendance at and summary of a Science Speakers talk or a Computer Science or Mathematics Department sponsored activity. The summary should be no more than one page and can focus on one especially interesting aspect of the talk or activity. The summary should be preceded by a complete citation (speaker name, title of talk, name of activity, date, etc.).

The minimum points required to achieve different course letter grades are:

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
930	900	870	830	800	770	730	700	670	630	600	0

PARTICIPATION

A seminar by its nature assumes the active participation and contribution of all seminar participants. Seminar participants are expected to be present for all class sessions. As participants in a seminar, students are expected to arrive on time, come prepared, provide input to class discussion, present material and viewpoints, listen attentively as others present material, ask questions, and offer opinions.

Criterion	Points
Student provided exemplary input for the benefit of the class.	20
Student was an active participant in class activities and discussion	18
Student offered minimal input to class discussion and/or was late or left early.	14
Student was present that day but did not contribute to class discussion, or student missed a significant portion of the class.	10
Student absent or was disruptive in class.	0

GEB DISCUSSION LEADERSHIP

Gödel, Escher, Bach: An Eternal Golden Braid ruminates on the foundations of mathematics and computer science, the connections among all creative endeavors, and the possibilities of artificial intelligence. Through discussion, we should gain insight into the thoughts of Douglas Hofstadter, seminar participants, and ourselves. A pair of students will lead each discussion, and each student will lead two discussions.

Criterion	Points
Inform the class and instructor of assigned reading and preparatory activities by noon of the Monday before the class meeting.	5
Lead the class and instructor in activities and discussion that elucidates the ideas in the readings.	60
Provide opportunities for each student to engage in the activities and discussion.	10
Answer (if possible) questions asked by the class and instructor.	10
Summarize personal and class discoveries about the readings.	10
Engage in an assessment of the strengths and improvement areas for the class activities and discussion.	5
Total	100

PRESENTATION

A presentation is an opportunity for students to explore and share a topic of interest related to mathematics or computer science. The topic could be based upon prior work in a course or research project. The topic could be a real-world concern such as the disposal of electronic waste, privacy and secrecy of information, intellectual property, or reliability of mathematical models for predicting climate change. The topic could be a pure mathematics or computer science topic such as the P = NP conjecture, the construction of the real numbers from the empty set, or an introduction to a non-procedural computer language such as Scheme. Each student will do one presentation alone or will do two presentations with partners.

Criterion	Points
Inform the class and instructor of the presentation topic and any preparatory activities by noon of the Monday before the class meeting.	5
Lead the class and instructor in activities and discussion that elucidates the ideas in the topic.	60
Provide opportunities for each student to engage in the activities and discussion.	10
Answer (if possible) questions asked by the class and instructor.	10
Summarize personal and class discoveries about the readings.	10
Engage in an assessment of the strengths and improvement areas for the class activities and discussion.	5
Total	100

PORTFOLIO

The portfolio is an opportunity for students to document and integrate academic knowledge, personal ethics, and future plans. The completed portfolio is due 7:00 p.m. on Thursday, April 21, 2011. Any portion of the portfolio can be submitted up to a week before the due date for feedback and a tentative grade.

Criterion	Points
Presented in a three-ring binder, in a single pdf file, as a website, or other medium agreed to by the instructor. The first page or item is a table of contents of or links to the different artifacts. The portfolio is organized and professional.	40
Includes a one-page statement of your career objectives. There are several ways to do this. You might describe your first job, and where you would like to be 5 and 10 years from now. You might write a position announcement for your ideal job, and summarize the professional growth steps and intermediate career goals that will help you move toward this goal. You might find another creative way to present your career objectives.	40
Includes a current resume that follows guidelines given at http://www.goshen.edu/careerserv/Students/Job_Search_Preparation/Resumes.	40
Includes either (1) a completed graduate school application, (2) a completed job application, or (3) a cover letter seeking employment.	40
Includes a list of courses which make up your major(s) and minor(s), any significant general education or elective courses you have taken, and any other significant academic, internship, job, co-curricular, and/or volunteer experiences. For each course and experience in this list, write a 1-2 paragraph description of its contribution to your overall education	40
Includes three or more examples of your academic work (e.g., exams, assignments, projects, papers) and a short explanation for why these examples were chosen.	40
Includes a statement of your personal ethics and philosophy of life, how they were developed, and what impact they will have on your future career, personal, and social life.	60
Total	300

Academic Support. Goshen College wants to help all students be as academically successful as possible. If you have a disability and require accommodations, please contact Lois Martin, the Director of the Academic Resource & Writing Center early in the semester. In order to receive accommodations, documentation concerning your disability must be on file with the Academic Resource & Writing Center, Good Library 113, x7576, lmartin@goshen.edu . All information will be held in the strictest confidence. The Academic Resource & Writing Center offers tutoring and writing assistance for all students. For further information please see http://www.goshen.edu/studentlife/asc.php.

SCHEDULE (TENTATIVE)

Date	GEB	Presentation
Jan 13	Introduction David Housman	Congressional Apportionment David Housman
Jan 20	Chap 1-2	Career Services Anita Yoder
Jan 27	Chap 3-4	
Feb 3	Chap 5	
Feb 10	Chap 6-7	
Feb 17	Chap 8	
Feb 24	Chap 9	
Mar 10	Chap 10-11	
Mar 17	Chap 12-13	
Mar 24	Chap 14-15	
Mar 31	Chap 16	
Apr 7	Chap 17-18	
Apr 14	Chap 19	
Apr 21	Chap 20	