HON 242 – A Scientific Approach to Uncertainty
Fall Session for 2007
Course Information

Instructor: Professor Bill Rayens
865 Patterson Office Tower

Office Hours: R: 1:00-2:00; virtual, TBA
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Textbooks: Statistical Reasoning for Everyday Life
2nd Edition, by Bennett, Briggs, and Triola

How We Know What Isn't So: The Fallibility of Human Reason in Everyday Life
by Thomas Gilovich

Polling and the Public: What Every Citizen Should Know
7th Edition, by Herbert Asher

USP Course Substitution: This course substitutes for STA 200 in the current USP. Make sure your academic adviser knows.

Learning Objectives

In HON 242 we want you to develop a variety of skills. Some of these skills can be most easily demonstrated with computations and calculations, while others will require the networking of ideas and the association of diverse concepts. Thus our intent is that upon successful completion of HON 242 a student should be able to:

- **Demonstrate task-based skills** including: act of unbiased sampling; computation of common descriptive measures; computation of normal probabilities; calculation of confidence intervals; testing of simple and compound hypotheses; and calculation of associated p-values; computation of best fitting regression lines and correlation coefficients; computations involved for simple ANOVAs; probability computations.

- **Demonstrate conceptual skills** including: description of bias, variability, and accuracy associated with statistical sampling; design of simple experiments; choice of appropriate descriptive measures, depending on measurement level, distribution shape; interpretation of confidence intervals; role of sampling distributions and normal curves in inference; nature of risk addressed by simple hypothesis testing and the sense in which p-values quantify that risk; interpretation and limitations of statistical significance; the sense in which correlation measures linear association, but does not address causation; the role and influence of public opinion polls; irrationalism and the perspective of cognitive and social psychologists on human inferential thought.

Grading

Your grades in this course will come from the following sources:

- Skills Drills 30%
- Midterm Paper 10%
- Midterm 25%
- Final Paper 10%
- Second Exam 25%

Skills Drills – 30%

These assignments will mostly be sets of multiple choice problems that will appear on our course Blackboard (Bb) site. For most of these you will have two attempts at each, and your work will be automatically graded, recorded, and immediate feedback received.

However, you may also be assigned other Skills Drills, including but not limited to in-class questions, short projects, web-based activities, etc. Make sure you watch the Bb site and pay attention in class so you'll know when these assignments are made and when they are due.

Midterm Paper - 10%

Push Polls. Wikipedia offers the following definition: "A push poll is a political campaign technique in which an individual or organization attempts to influence or alter the view of respondents under the guise of conducting a poll. Push polls are generally viewed as a form of negative campaigning. The term is also sometimes used incorrectly to refer to legitimate polls which test political messages, some of which may be negative." Please thoroughly research the history of such polls, give examples from the last two years, and discuss the opinions of the American Association of Political Consultants. You must do your own work. I won't be happy with 15 identical papers, obviously. I will grade the papers based on the clarity of the writing and the depth of the research. This is an opportunity to begin to write about an important statistical issue. Minimum of three pages, typed, 12 point font and single-spaced.

Final Paper - 10%

The Regression Fallacy. Wikipedia offers the following definition: "The regression (or regressive) fallacy is a logical fallacy. It ascribes cause where none exists. The flaw is failing to account for natural fluctuations. It is frequently a special kind of the post hoc fallacy." This issue occupies a lot of Gilovich's presentation. Please research this concept thoroughly and give examples and explanations that are beyond, or at least better than Gilovich's. Given what you have seen about regression and correlation in this class, offer a technical explanation of the "regression toward the mean" phenomenon as part of your larger description of the fallacy. You must do your own work. I won't be happy with 15 identical papers, obviously. Unlike the first paper, this paper is an opportunity to combine your emerging conceptual skills with some task-based skills, which is a particular synthesis I'll look for. I will grade the papers based on the clarity of the writing and the depth of the research. Minimum of four pages, typed, 12 point font and single-spaced. Make good decisions on how to include any formulas or derivations in the flow..

Midterm and Final – 25% each

These are individual activities. The final exam is just a "second exam". It is not cumulative. It will be held during the regular final exam block.

How is my final course grade calculated?
At the end of the term the following fractions are calculated and added together to produce a number between 0 and 100.

1. $\frac{\text{Skills Drills Points Earned}}{\text{Total Skills Drills Points Possible}} \times 100\% \times (0.30)$
2. $\frac{\text{Points Earned on First Paper}}{\text{Total Points Possible on First Paper}} \times 100\% \times (.010)$
3. $\frac{\text{Points Earned on Second Paper}}{\text{Total Points Possible on Second Paper}} \times 100\% \times (.010)$
4. $\frac{\text{Points Earned on Midterm Exam}}{\text{Total Points Possible on Midterm Exam}} \times 100\% \times (.25)$
5. $\frac{\text{Points Earned on Final Exam}}{\text{Total Points Possible on Final Exam}} \times 100\% \times (.25)$

The sum of these seven items will then be used according to the following standard scale to determine the course letter grade:

- 90 or above A
- 80 to 89 B
- 70 to 79 C
- 60 to 69 D
- 59 or below E

Tentative Schedule of Events – Subject to Revision Depending on Semester Circumstances			
Month	**Day**	**Bennett, Briggs and Triola**	**Notes**
August	**23**	Classes Begin – Introduction	Begin reading Asher
	28	Chapter 1	
	30	Chapter 1	
	4	Chapter 2	
	6	Chapters 1-3 of Asher Students lead discussion	
	11	Chapter 4	
	13	Chapter 4	
	18	Chapter 5	
	20	Chapter 5	
	25	Chapter 5	
	27	Chapters 4-7 of Asher Students lead discussion	
October	**2**	Chapter 6	
	4	Chapter 6	
	9	Review	Begin reading Gilovich
	11	**Test I – Covers Chapters 1-6 and Asher**	11-12:15 in classroom
	16	No formal class. Dr. Rayens at conference.	
	18	Chapter 8	**First paper is due**
	23	Chapter 8	
	25	Chapter 9	
	30	Chapter 9	
November	**1**	Chapter 9	
	6	Chapter 9	
	8	Chapter 7	
	13	Chapter 7	
	15	Part I of Gilovich Students lead discussion	
	20	Part II of Gilovich Students lead discussion	
	21-24	**Thanksgiving Holiday**	
	27	Part III of Gilovich Students lead discussion	
	29	Supplemental material on ANOVA	**Second paper is due**
December	**4**	Supplemental material on ANOVA	
	6	Review	
FINAL EXAM	**13**	**Test II – Everything since Exam I**	10:30 a.m. in classroom