Syllabus: Logic, Reasoning, and Persuasion – 01: 730: 101: 91

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Overview

In this course, we will learn about both good and bad reasoning. By learning what good reasoning is like, we can try to use it. By learning what bad reasoning is like, we can try to avoid it. Our route into bad reasoning will be through Daniel Kahneman's *Thinking, Fast and Slow*, where he discusses a range of biases in our thinking. Our route into good reasoning will be through learning the basics of propositional logic, which allows us to model good argumentation.

Course Goals

Students will learn the basics of first-order logic.

Students will learn about common frameworks for our judgment formation and decision making.

Students will learn to write reflectively about different belief-forming practices.

Required Texts

- Daniel Kahneman, *Thinking, Fast and Slow*
- Paul Teller, *A Modern Formal Logic Primer*
    - Available for free on his website: https://tellerprimer.ucdavis.edu/
    - Includes answers to the exercises in the chapters

Course Structure and Assignments

- Reading
    - Each week that we cover the Kaheman, there will be reading assigned from *Thinking, Fast and Slow* ("Kahnmenan"). Each week we cover logic, there will be reading from Teller's *A Modern Formal Logic Primer* ("Logic").
- Lecture videos
    - Each week I'll make short lecture videos covering portions of *Thinking, Fast and Slow* or the logic from *A Modern Formal Logic Primer*.
- Discussion posts
    - You are required to make a post on the discussion forum for each unit of *Thinking, Fast and Slow*. Either post a new thread or respond to someone else's post. So these can be a question about the material, an elaboration on a point made in the book, an example supporting a claim made, or a response to someone else's post with any of the above.

These should each be roughly 4-7 sentences. I'll grade these for clarity and engagement with the material. The due dates are listed below.

- o I'll also create discussion forums for the logic chapters. You aren't required to post here, but I encourage you to post with any questions you have about the chapter or in-text exercises. I also encourage you to answer any questions you see. The more people who participate, the more help you will get on your own work! You can also post about the problem sets, but be sure not to give out the answers. (E.g., you can tell someone to try a certain inference rule in completing a proof, but don't write out the whole proof).

- Quizzes
  - o There will be quizzes on each unit of *Thinking, Fast and Slow*. The quizzes are open book but you must do them on your own. The due dates are listed below.
- Problem sets
  - o There will be problem sets on each chapter of the logic textbook. You can do them on your own or in a small group. The due dates are listed below.
  - o For practice, I recommend doing the exercises given in each of the chapters, though these aren't assigned. I'll distribute answers. *I highly recommend you do the practice problems and not try to do the problem sets on the fly.*

- Extra credit
  - o There will be extra credit quizzes on the Kahneman as well as the logic. You can do these at any point in the term.
- Logic practice sessions
  - o During the weeks we cover the logic, I will host online practice sessions the day before the first problem set is due.
  - o These will be via a web-conferencing app called BigBlueButton.
  - o I will send out a Doodle poll each week to try to pick a time where the most people can make it. *Only fill out a time on the Doodle poll if you are certain you would participate at the times you select.*

Grade breakdown

- Your final grade will be calculated out of 100 points.
  - o A = 93-100 points
  - o B+ = 88-92 points
  - o B = 83-87 points
  - o C+ = 78-82 points
  - o C = 73-77 points
  - o D+ = 68-72 points
  - o D = 63-67 points
  - o F = 0-62 points

- Discussion posts: 20 points total
  - o 8 posts overall, so each gives you a maximum of 2.5 points
  - o Late posts count for 0 points.

- Quizzes: 40 points total
  - 8 quizzes total. Each gives you a maximum of 5 points on your final grade.
  - Late quizzes will be deducted worth 10% less each day they are late. So a perfect quiz that is one day late will give you 4.5 points toward your final grade.
- Problem sets: 40 points total
  - 6 problem sets. The first four are worth 5 points each. The last two are worth 10 points each.
  - Late problem set will be worth 10% less each day they are late. So a perfect problem set that is two days late, if it's one of the first four, will give you 3 points, and a perfect problem set, if it's one of the last two, that is four days late will give you 6 points.
- Extra credit
  - Extra credit points you earn will just be directly added to your point total. So there is no penalty for getting extra credit answers wrong. *You can only gain points and help your final grade by doing extra credit.*

Schedule

The first half of the term we'll cover the Kahneman, and the second half we'll cover logic.

Week 1 May 26-31

- Readings
  - Kahneman Intro, chs. 1-3
  - Kahneman chs. 4-6
  - Kahneman chs. 7-9

- Lecture videos
  - Kahneman Lecture Intro, chs. 1-3
  - Kahneman Lecture chs. 4-6
  - Kahneman Lecture chs. 7-9

- Assignments
  - Discussion post on Kahneman Intro, chs. 1-3
    - DUE: May 29
  - Quiz on Kahneman Intro, chs. 1-3
    - DUE: May 29

  - Discussion: post on Kahneman chs. 4-6
    - DUE: May 30
  - Quiz on Kahneman chs. 4-6
    - DUE: May 30

- Discussion post on Kahneman chs. 7-9
  - DUE: May 31
- Quiz on Kahneman chs. 7-9 quiz
  - DUE: May 31

Week 2 June 1-7

- Readings
  - Kahneman chs. 10-12
  - Kahneman chs. 13-15
  - Kahneman chs. 16-18

- Lecture videos
  - Kahneman Lecture chs. 10-12
  - Kahneman Lecture chs. 13-15
  - Kahneman Lecture chs. 16-18

- Assignments
  - Discussion post on Kahneman chs. 10-12
    - DUE: June 5
  - Quiz on Kahneman chs. 10-12 quiz
    - DUE: June 5

  - Discussion post on Kahneman chs. 13-15
    - DUE: June 6
  - Quiz on Kahneman chs. 13-15 quiz
    - DUE: June 6

  - Discussion post on Kahneman chs. 16-18
    - DUE: June 7
  - Quiz on Kahneman chs. 16-18 quiz
    - DUE: June 7

Week 3 June 8-14

- Readings
  - Kahneman chs. 19-21
  - Kahneman chs. 22-24

- Lecture videos
  - Kahneman Lecture chs. 19-21
  - Kahneman Lecture chs. 22-24

- Assignments
    - o Discussion post on Kahneman chs. 19-21
        - DUE: June 18
    - o Quiz on Kahneman chs. 19-21 quiz
        - DUE: June 19

    - o Discussion post on Kahneman chs. 22-24
        - DUE: June 20
    - o Quiz on Kahneman chs. 22-24 quiz
        - DUE: June 21

- Extra credit: now's a good time to do the Kahneman extra credit quizzes

Week 4 June 15-21

- Readings
    - o Logic ch. 1
    - o Logic ch. 2
    - o Logic ch. 3 (SKIP 3.4)

- Lecture videos
    - o Logic Lecture ch. 1
    - o Logic Lecture ch. 2
    - o Logic Lecture ch. 3
    - o Recommended for additional help:
        - Older Version of: Logic Lecture ch. 1
        - Older Version of: Logic Lecture ch. 2
        - Logic Practice Exercises ch. 1 Lecture
        - Logic Practice Exercises ch. 2 Lecture
        - Older Version of: Logic Lecture ch. 3
        - Logic Practice Exercises ch. 3 Lecture

- Assignments
    - o Discussion/Practice Problems: *not graded, but highly recommended so you don't bomb the problem sets!*
        - Exercises from ch. 1, answers are included in a separate document
        - Exercises from ch. 2, answers are included in a separate document
    - o Discussion/Practice Problems: *not graded, but highly recommended so you don't bomb the problem sets!*
        - Exercises from ch. 3, answers are included in a separate document

    - o Problem Sets

- Logic Problem set 1
  - DUE: June 19
- Logic Problem set 2
  - DUE: June 20
- Logic Problem set 3
  - DUE: June 21

- Review session: June 18, fill out the Doodle poll beforehand to let me know your time preferences.

Week 5 June 22-28

- Readings
  - Logic ch. 4
  - Logic ch. 5

- Lecture videos
  - Logic Lecture ch. 4
  - Logic Lecture ch. 5
  - Recommended for additional help:
    - Older Version of: Logic Lecture ch. 4
    - Logic Practice Exercises ch. 4 Lecture
    - Older Version of: Logic Lecture ch. 5
    - Logic Practice Exercises ch. 5 Lecture

- Assignments
  - Discussion/Practice Problems: *not graded, but highly recommended so you don't bomb the problem sets!*
    - Exercises from ch. 4, answers are included in a separate document
    - Exercises from ch. 5, answers are included in a separate document

  - Problem Sets
    - Logic Problem set 4
      - DUE: June 27
    - Logic Problem set 5
      - DUE: June 28

  - Review session: June 26, fill out the Doodle poll beforehand to let me know your time preferences.

Week 6 June 29-July 3

- Readings
  - o Logic ch. 6

- Lecture videos
  - o Logic Lecture ch. 6
  - o Recommended for additional help:
    - ▪ Older Version of: Logic Lecture ch. 6
    - ▪ Logic Practice Exercises ch. 6 Lecture

- Assignments
  - o Discussion/Practice Problems: *not graded, but highly recommended so you don't bomb the problem sets!*
    - ▪ Exercises from ch. 6, answers are included in a separate document
  - o Problem Sets
    - ▪ Logic Problem set 6
      - • DUE: July 3

  - o Review session: July 2 fill out the Doodle poll beforehand to let me know your time preferences.

- Extra credit: now is a good time to do the extra credit logic problem sets.