

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

Christopher Frugé

[Christopher.Fruge@rutgers.edu](mailto:Christopher.Fruge@rutgers.edu)

Office hours: by appointment

### 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*
  - o Available for free on his website: <https://tellerprimer.ucdavis.edu/>
  - o Includes answers to the exercises in the chapters

### Course Structure and Assignments

- Reading
  - o Each week that we cover the Kahneman, there will be reading assigned from *Thinking, Fast and Slow* ("Kahneman"). Each week we cover logic, there will be reading from Teller's *A Modern Formal Logic Primer* ("Logic").
- Lecture videos
  - o Each week I'll make short lecture videos covering portions of *Thinking, Fast and Slow* or the logic from *A Modern Formal Logic Primer*.
  - o There are extra videos going over logic practice exercises, as well as older lecture videos on the logic material from previous versions of the course.
- Discussion videos

- You are required to make discussion videos for each unit of *Thinking, Fast and Slow*. You will also comment on your classmates' videos.
- 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
  - 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
  - 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.
  - 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
  - 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
  - During the weeks we cover the logic, I will run online practice sessions the day before the first problem set is due.
  - These will be completely optional and will not be graded.
  - These will be via a web-conferencing app, probably Zoom.
  - If you would like to attend, just send me an email a day before the session at the latest.
- NO FINAL EXAM OR FINAL PAPER
  - Your grade is totally determined by the cumulative points you earn on the assignments throughout the semester.

### Grade breakdown

- Your final grade will be calculated out of 100 points.
  - A = 93-100 points
  - B+ = 88-92 points
  - B = 83-87 points
  - C+ = 78-82 points
  - C = 73-77 points

- D+ = 68-72 points
- D = 63-67 points
- F = 0-62 points
- Discussion: 20 points total
  - There will be 8 video posts you are required to upload worth 2 points each, for a total of 16 points. Shoot for about 1-3 minutes for each video.
  - You are required to comment on 2 video posts per video post assignment, where each comment is worth .25 points, for a total of 4 points. Shoot for about 3-5 sentences for each comment.
    - I will randomly assign you the videos to comment on. Except for the very first introduction videos, for which I will assign you everyone's.
  - Late posts and comments 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: January 19 – January 24*

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

- Lecture videos
  - Kahneman Lecture Intro, chs. 1-3
  - Kahneman Lecture chs. 4-6
- Assignments
  - Discussion video post on Kahneman Intro, chs. 1-3
    - DUE: January 22
  - Comment on video post on Kahneman Intro, chs. 1-3
    - DUE: January 23
  - Quiz on Kahneman Intro, chs. 1-3
    - DUE: January 23
  - Discussion video post on Kahneman chs. 4-6
    - DUE: January 23
  - Comment on Discussion video post on Kahneman chs. 4-6
    - DUE: January 24
  - Quiz on Kahneman chs. 4-6
    - DUE: January 24

*Week 2: January 25 – January 31*

- Readings
  - Kahneman chs. 7-9
  - Kahneman chs. 10-12
- Lecture videos
  - Kahneman Lecture chs. 7-9
  - Kahneman Lecture chs. 10-12
- Assignments
  - Discussion video post on Kahneman chs. 7-9
    - DUE: January 29
  - Comment on Discussion video post on Kahneman chs. 7-9
    - DUE: January 30
  - Quiz on Kahneman chs. 7-9 quiz
    - DUE: January 30
  - Discussion video post on Kahneman chs. 10-12
    - DUE: January 30
  - Comment on Discussion video post on Kahneman chs. 10-12
    - DUE: January 31

- Quiz on Kahneman chs. 10-12 quiz
  - DUE: January 31

*Week 3: February 1 – February 7*

- Readings
  - Kahneman chs. 13-15
  - Kahneman chs. 16-18
- Lecture videos
  - Kahneman Lecture chs. 13-15
  - Kahneman Lecture chs. 16-18
- Assignments
  - Discussion video on Kahneman chs. 13-15
    - DUE: February 5
  - Comment on discussion video on Kahneman chs. 13-15
    - DUE: February 6
  - Quiz on Kahneman chs. 13-15 quiz
    - DUE: February 6
  - Discussion video on Kahneman chs. 16-18
    - DUE: February 6
  - Comment on discussion video on Kahneman chs. 16-18
    - DUE: February 7
  - Quiz on Kahneman chs. 16-18 quiz
    - DUE: February 7

*Week 4: February 8 – February 14*

- Readings
  - Kahneman chs. 19-21
  - Kahneman chs. 22-24
- Lecture videos
  - Kahneman Lecture chs. 19-21
  - Kahneman Lecture chs. 22-24
- Assignments
  - Discussion video on Kahneman chs. 19-21
    - DUE: February 12
  - Quiz on Kahneman chs. 19-21 quiz

- DUE: February 13
  - Discussion video on Kahneman chs. 22-24
    - DUE: February 13
  - Comment on discussion video on Kahneman chs. 19-21
    - DUE: February 13
  - Quiz on Kahneman chs. 22-24 quiz
    - DUE: February 14
  - Comment on discussion video on Kahneman chs. 22-24
    - DUE: February 14
- Extra credit: now's a good time to do the Kahneman extra credit quizzes, though you have until exam period to do these.

#### *Week 5: February 15 – February 21*

- Readings
  - Logic ch. 1
- Lecture videos
  - Logic Lecture ch. 1
  - Recommended for additional help:
    - Older Version of: Logic Lecture ch. 1
    - Logic Practice Exercises ch. 1 Lecture
- Assignments
  - 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
  - Problem Sets
    - Logic Problem set 1
      - DUE: February 21
- Review session: Shoot me an email a few days before you want to attend – the scheduling can be a bit flexible depending on who is coming and when they are available.

#### *Week 6: February 22 – February 28*

- Readings

- Logic ch. 2
- Lecture videos
  - Logic Lecture ch. 2
  - Recommended for additional help:
    - Older Version of: Logic Lecture ch. 2
    - Logic Practice Exercises ch. 2 Lecture
- Assignments
  - Discussion/Practice Problems: *not graded, but highly recommended so you don't bomb the problem sets!*
    - Exercises from ch. 2, answers are included in a separate document
  - Problem Sets
    - Logic Problem set 2
      - DUE: February 28
- Review session: Shoot me an email a few days before you want to attend – the scheduling can be a bit flexible depending on who is coming and when they are available.

#### *Week 7: March 1 – March 7*

- Readings
  - Logic ch. 3 (SKIP 3.4)
- Lecture videos
  - Logic Lecture ch. 3
  - Recommended for additional help:
    - Older Version of: Logic Lecture ch. 3
    - Logic Practice Exercises ch. 3 Lecture
- Assignments
  - 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
  - Problem Sets
    - Logic Problem set 3
      - DUE: March 7

- Review session: Shoot me an email a few days before you want to attend – the scheduling can be a bit flexible depending on who is coming and when they are available.

#### *Week 8: March 8 – March 12*

- Readings
  - o Logic ch. 4
- Lecture videos
  - o Logic Lecture ch. 3
  - o Logic Lecture ch. 4
  - o Recommended for additional help:
    - Older Version of: Logic Lecture ch. 3
    - Logic Practice Exercises ch. 3 Lecture
    - Older Version of: Logic Lecture ch. 4
    - Logic Practice Exercises ch. 4 Lecture
- Assignments
  - o 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
  - o Problem Sets
    - Logic Problem set 4
      - DUE: March 12
- Review session: Shoot me an email a few days before you want to attend – the scheduling can be a bit flexible depending on who is coming and when they are available.

#### *SPRING BREAK March 13 – March 21*

#### *Week 9: March 22 – March 28*

- Readings
  - o Logic ch. 5
- Lecture videos
  - o Logic Lecture ch. 5
  - o Recommended for additional help:
    - 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. 5, answers are included in a separate document
  - Problem Sets
    - Logic Problem set 5
      - DUE: March 28
- Review session: Shoot me an email a few days before you want to attend – the scheduling can be a bit flexible depending on who is coming and when they are available.

#### Week 10: March 29 – May 3

- Readings
  - Logic ch. 6
- Lecture videos
  - Logic Lecture ch. 6
  - Recommended for additional help:
    - Older Version of: Logic Lecture ch. 6
    - Logic Practice Exercises ch. 6 Lecture
- Assignments
  - 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
  - Problem Sets
    - Logic Problem set 6
      - DUE: May 3
- Review session: Shoot me an email a few days before you want to attend – the scheduling can be a bit flexible depending on who is coming and when they are available.
- Extra credit: now is a good time to do the extra credit logic problem sets, though you have until exam period to do these.