

Introduction to Formal Reasoning & Decision Making - Syllabus

(730:109:05, Fall 2021)

Instructor: kelsey laity-d'agostino

Course hours: Asynchronous, group meetings by arrangement

Office hours: TBD (by student availability), and by appointment

Email: kelaity.d@rutgers.edu

Course Website: canvas.rutgers.edu, Intro to Formal Reasoning, & Decision Making - (730:109:05 - Fall 2021)

Course Description: To get by in the world, we have to make judgments about what to believe and what to do. This course will introduce you to formal tools and techniques for distinguishing good reasoning from bad and for making rational decisions. Along the way, we will cover how deductive logic can reveal the structure of the most reliable inferences, how probability can be used to capture the strength of inductive inferences, and how an understanding of probability helps us make decisions under uncertainty.

This course fulfills the SAS Core requirements QQ (Formulate, evaluate, and communicate conclusions and inferences from quantitative information) and QR (Apply effective and efficient mathematical or other formal processes to reason and to solve problems).

Course Goals:

1. Translate natural language arguments into arguments in a formal language and use those formal tools in evaluating arguments and analyzing statements.
2. Use formal and mathematical tools to represent and evaluate reasoning and decision-making.

Below are the details of the course policies and an outline of the course, including a list (*subject to change*) of the course readings and due dates. **You are responsible for knowing the contents of this syllabus.**

Required Texts:

- o All texts will be posted to our course Canvas site
- o All instructor comments on assignments

Students are expected to have completed the relevant course readings before engaging with the posted lesson materials and to have completed the lessons and readings before course activities and assignments.

General course plan (subject to change):

Readings and video lessons along with the corresponding Zoom meetings, discussions, and assignment or quiz for each module will be posted on Canvas. Make sure to complete the readings and videos before completing the week's quiz or assignment.

Unit 1 (09.01 – 09.10): introduction to arguments, inference, and logic

Unit 2 (09.11 – 10.22): deductive logic

Midterm exam

Unit 3 (10.23 – 11.19): probability

Unit 4 (11.20 – 12.13): decision theory

Final exam: Exam period

Course requirements:

Six assignments (20 points each, 40% of final course grade): The nature of assignments will be slightly varied, though all will require you to solve problems using the concepts and tools you learn throughout the course, or to answer questions about important concepts. The goal is to get you to both demonstrate your understanding of material we have discussed in class and to think critically about or use the relevant concepts.

Assignments and their due dates will be posted on Canvas under the relevant module. All assignments must be submitted electronically through the **Assignments** section on Canvas. You may either type your assignment or submit a scan of a handwritten document. All submissions must be in **pdf** form, however. This is so any symbols you use appear the same to me.

Six assignments (10 points each, 20% of final course grade): The quizzes, like the assignments, will be designed to help you consolidate and use what you learn from the online lessons and readings. They will be five to ten questions on the material you just covered. The questions will be true-false, multiple choice, or require an answer of a couple of words. However, they may require that you do a problem yourself (e.g. a proof for which you do not submit the work).

Quizzes and their due dates will be posted on Canvas under the relevant module. Quizzes and Assignments will be due on alternating weeks.

Midterm exam (25% of final course grade): The midterm exam will cover material on formal logic from the first half of the course.

Final exam (25% of final course grade): The final exam will cover material on probability and decision-theory from the second half of the course.

Participation in three 'discussions' on Canvas (5 points each, 5% of final course grade): For each lesson, I will post a corresponding topic in the **Discussions** tab on Canvas. Three times throughout the course, you must post a question about the text or lesson material (essentially every other week) or an answer to another student's question. All discussions and their closing ('due') dates will be posted on Canvas under the relevant module.

Posts will be graded on the following scale:

Complete: 5 points

Incomplete: 2 points

Not submitted: 0 points

A complete score will be given to specific, detailed clear questions about a concept or problem *or* to an answer that fully and clearly addresses a previously posted question. An incomplete score will be given to vague questions or ones that show limited familiarity with the material. The idea is for you to help or get help from each other, though I will also answer any unanswered questions, correct misunderstandings, or add clarity to a discussion.

Participation in five Zoom meetings (3 points each, 5% of final course grade): Each week, I will hold a short meeting (<1hr) to discuss any material in the course, followed by additional office hours for students with individual questions. The purpose of these meetings will be to clarify your understanding of material from the course. I will come prepared to each meeting with an activity that will give you a chance to practice using the tools or concepts you have learned that week. I ask you to come to the meetings you attend prepared to appear on camera (it just makes discussion easier and more inviting!), to engage with others in the course, and to ask specific questions you have about the material.

In addition to being a chance to go over course content, my hope is that these meetings will humanize the experience of this asynchronous course by giving you a chance to interact with others in your class.

Everyone is encouraged to ask questions in class and to share their reactions to the material. You should feel free to take intellectual risks in asking questions and offering observations, ideas, and arguments in response to one another and to me. And, as students, you are not expected to know all the answers in advance, so you should never be afraid to ask a question. I also encourage you to stick around for office hours for further discussion, or, for shorter queries, send me an email.

Finally, your participation in these informal meetings and the discussion posts on Canvas (e.g. engagement on a discussion forum) throughout the semester *may* be favorably taken into

account if your grade is on the borderline. I also welcome you to email me with questions or thoughts about the material or to visit me in office hours.

Canvas:

The Canvas course site will be crucial to all of our course activities. Almost all instructional material will be provided through the Canvas site. You can access Canvas with your NetID and password.

For this online course, students are expected to have consistent and reliable access to the internet, and it is your responsibility to reach out to your instructor to discuss any potential technological limitations, ideally before they become problems.

All course work must be submitted through Canvas. No course work may be submitted by email. Additionally, I will be using Canvas to send you information about the course through email. To do so, go to your **Account** and then your **Profile**, and make sure the starred email appearing on the right-hand side of the page is one that you check on a regular basis.

You will receive important course announcements through Canvas and at your Rutgers email address, so it is also important that you check that account regularly. Additionally, while under the **Account** section, go to the **Notifications** tab. Make sure a green check appears next to the **Announcement** setting so that you get notified by email of any announcements I add to the course site. You are responsible for keeping up to date with any announcements I send out through Canvas.

Canvas will also be your best source for keeping track of due dates and course work. Please check it regularly.

If you want help navigating Canvas, there is a **Help** section on the bottom left sidebar. There you can find Canvas Guides and the contact information for the 24/7 help desk.

Office Hours:

Please feel welcome to take advantage of office hours! Office hours will be held each week after the group activity and question period on Zoom. They allow you to continue the conversations begun in class and to get one-on-one help with any challenges you may encounter. Office hours are your chance to use me as a resource. Often the most successful students come to office hours for more help with their work or to engage in ongoing discussion of the material. I will also do my best to answer any questions you have about managing course work, navigating the university, or philosophy as a discipline.

A note about the course: This is a relatively technical course in philosophical logic and formal reasoning. Success in the course requires that you be comfortable using the logical and

mathematical tools you learn. Doing so requires not just reading the material and watching the video lectures, but also doing a lot of practice problems. To this end, there are a number of assignments and quizzes. I also *highly* recommend doing other practice problems from the text throughout the course. Like in a math course, later material will build on tools and skills you learn earlier in the course. Also, please do not hesitate to reach out at any time with questions about the material, including how to do the problems.

Late work:

The equivalent of ten percentage points will be taken off for each day an assignment or quiz is late. Participation work cannot be made up or submitted late.

You are responsible for knowing what your assignments are and for getting them done on time. If you find yourself struggling to keep up, I encourage you to get in touch before you are unable to catch up.

Remote learning:

Per Rutgers University policy, no member of the University may record another without their explicit consent. This means that I will not record or post recordings of any remote meetings in which you participate without your explicit consent. Note that you should also refrain from recording online class meetings and discussions. If you have any further concerns regarding how to best position yourself to succeed in a remote learning environment, please visit the Rutgers Learning Centers' site, "[How to Succeed in an Online Course.](#)"

Inclusivity in the Virtual Classroom:

Students are expected to abide by the University's code of student conduct while participating in all academic activities, which you may review at the following link: <http://studentconduct.rutgers.edu/>. Additionally, a portion of the [University's Policy](#) Prohibiting Discrimination and Harassment follows:

Rutgers University is committed to a working and learning environment for all faculty, staff and students that is free from discrimination and harassment...Discrimination and harassment compromise the integrity of the University and unfairly interfere with the opportunity for all persons to fully participate in the academic, work, and living environment at Rutgers. The University recognizes the human dignity of each member of the Rutgers community and believes that each member has a responsibility to promote respect and dignity for others so that all employees and students are free to pursue their educational and work goals in an open environment, participate in the free exchange of ideas, and to share equally in the University's employment and educational opportunities. To achieve this end, the University strives to foster an academic, work, and living

environment that is free from discrimination and harassment on the basis of membership in the protected classes referenced above.

At the same time, the University is committed to the principles of academic freedom and believes that vigorous discussion and debate, as well as free inquiry and free expression, are an integral part of the University community.

In accordance with University policies, I intend to maintain an open and inclusive classroom, which values the diverse perspectives and backgrounds of the student body at Rutgers. It is thus essential to the learning process that students remain respectful with one another. In recognition of this, I will do my best to model the forms of inclusivity and respect that I expect from my students. Any student who has concerns about their ability to participate in class discussion is encouraged to speak with me during office hours.

Accommodations:

Rutgers, the State University of New Jersey abides by the Americans with Disabilities Act of 1990, the Americans with Disabilities Act Amendments (ADAA) of 2008, and Sections 504 and 508. As such, all reasonable accommodation will be given to students with disabilities. You can begin the formal process to request accommodations by contacting the appropriate the Office of Disability Services at 848.445.6800 or dsoffice@echo.rutgers.edu, completing the Registration form on the ODS web site at: <https://ods.rutgers.edu/students/registration-form>, participating in an intake interview, and providing documentation: <https://ods.rutgers.edu/students/documentation-guidelines>. If the documentation supports your request for reasonable accommodations, your campus's disability services office will provide you with a Letter of Accommodations.

Anyone who needs accommodation should also feel welcome to come talk to me at the beginning of the semester. Please let me know if you require any special accommodations as early in the course as possible—I am very willing to be flexible to meet anyone's unique needs and make the course accessible!

Finding support at Rutgers:

Any student who has difficulty accessing sufficient food to eat or who lacks a safe and stable place to live is urged to contact the Dean of Students at 848.932.2300 or deanofstudents@echo.rutgers.edu. You are also encouraged to notify me, if you feel comfortable doing so, and I can connect you with a Writing Program administrator who can direct you to additional University resources that may prove helpful.

If you are having trouble with the material, remember please take advantage of office hours. But if you have further issues or concerns, you should reach out to your Deans. For personal issues, get in touch with your Dean of Students, and for academic issues, get in touch with your Academic Dean.

Dean Of Students & Undergraduate Academic Affairs

<http://deanofstudents.rutgers.edu>

Academic Deans & Office Of Academic Services

School of Arts and Sciences:

<http://sasundergrad.rutgers.edu>

School of Environmental and Biological Sciences:

<https://sebs.rutgers.edu/academics/>

Rutgers Business School:

<http://www.business.rutgers.edu/>

Mason Gross School of the Arts:

<http://www.masongross.rutgers.edu/content/undergraduate-academic-advisors>

Ernest Mario School of Pharmacy:

<https://pharmacy.rutgers.edu/>

School of Engineering:

<http://soe.rutgers.edu/oas/advising>

Rutgers Health Services

Student Health:

<http://health.rutgers.edu>

Counseling, Alcohol & Other Drug Assistance Program & Psychiatric Services (CAPS):

<http://health.rutgers.edu/medical-counseling-services/counseling/>

Many students face personal challenges or have mental health needs that interfere with academic progress and overall wellbeing. The university offers a variety of services to help, including crisis intervention, individual therapy, group therapy, a variety of workshops, alcohol and other drug assistance programs, psychiatric care, and medication management. These services are provided by staff with expertise in both general mental health concerns and issues unique to a college environment.

Office of Violence Prevention & Victim Assistance

<http://vpva.rutgers.edu>

Center for Social Justice & LGBTQ Communities

<http://socialjustice.rutgers.edu/>

Office of Disability Services

<https://ods.rutgers.edu>

International Student & Scholar Services

<https://global.rutgers.edu/international-scholars-students>