Philosophy 321/01: Probability and Decision

University of British Columbia
Department of Philosophy
Fall 2020: MWF 12-1
Web-based Course

Instructor	Office	Telephone	E-mail	Office Hours
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Description: There are two well-developed philosophical theories that try to characterize what it means to make choices rationally. One is decision theory, which considers the position of one agent choosing between several alternatives, with varying levels of information about factors that might influence the resulting outcomes. The other is game theory, which provides techniques for analyzing interactions among several rational agents.

This course explains the fundamentals of these two theories and relevant background concepts such as probability and utility. We also explore paradoxical situations where the theories appear to clash with ordinary intuitions about rationality. We will consider applications throughout the course, with emphasis on social applications of game theory, and conclude with an introduction to evolutionary game theory and a discussion of Skyrms' book, *Evolution of the Social Contract*.

Students who take this course should feel comfortable with technical work. I recommend having taken Phil 120 (Critical Thinking), Phil 125 (Scientific Reasoning), Phil 220 (Logic), or any introductory-level course in mathematics, computer science or economics. Please speak to me if you have any concerns about this aspect of the course.

I. Course learning objectives.

1) You will acquire the technical skills to solve simple problems in decision theory, game theory and evolutionary game theory.

2) You will be able to discuss and evaluate (briefly) central philosophical issues and puzzles about rational choice that have emerged in all three areas.

3) You will develop skills to engage in the detailed assessment of an important philosophical issue in decision theory, or some application of decision theory to a philosophical problem, in a term paper.

II. Texts.

[P] *An Introduction to Decision Theory*, *2nd ed.* Martin Peterson (Cambridge University Press, 2017). Available in bookstore.
[SC] *Evolution of the Social Contract*, Brian Skyrms (Cambridge University Press, 1996). Available in bookstore.
[X] Extra materials (linked through syllabus on web page).

III. Requirements: The final grade will be based upon the following scheme (***= synchronous activity**):

	Weight
Three problem sets (5% each)	15%
*Mid-term test (**Oct. 23**)	20%
Term Paper (2000-2500 words/7-10 pages — due **Dec. 4**)	30%
*Final exam (exam period)	35%

Problem sets: These will be distributed with at least two weeks notice, and submitted via the Canvas page. **Submission deadlines for problem sets are strict: no late submissions can be accepted**. (See statement on honesty below.)

Mid-term test: This is a one-hour test that will take place during the **Friday Oct. 23** lecture. This will be a **synchronous** activity: all students are expected to write the test at the scheduled time.

Term paper: Topics wil be distributed by **October 28**. Students may propose their own topics if they submit a proposal by **November 13**; I'll review the proposal as quickly as possible. The **late penalty** is 5% per day, unless there are clear grounds for accommodation.

Final exam. There will be a two-hour final examination during the exam period. More details will be provided during the course. This will be a **synchronous** activity: all students are expected to write the exam at the scheduled time.

IV. Adaptation for web-based course.

In order to balance the desire for participation against the flexibility that students will need in their schedules, I propose the following plan.

1) **Live lectures: Monday and Wednesday.** The Monday and Wednesday 12-1 lectures will be live on **Collaborate Ultra**, but will all be recorded and posted. Students can certainly ask questions during these lectures, but the focus is the lecture itself. For those who do not attend, these lectures are required viewing.

2) **Pre-recorded lecture.** A third weekly lecture will be pre-recorded and posted for students to watch at their convenience. This lecture will be required viewing. I'll do my best to have the lecture posted by each Thursday afternoon.

3) **Optional tutorial: Friday.** The Friday 12-1 time slot will be reserved for class discussion (on **Collaborate Ultra**) of issues raised during the week, which we'll call the "tutorial". We may use this time for a combination of breakout discussions and full-class discussion. I will record these sessions. Participation is optional and there is no grade for participation, but participation in these sections (and in the Monday and Wednesday lectures) will significantly enhance your understanding and enjoyment of the course material.

Please note: even though I will post lecture notes, those notes will likely not include everything that we discuss in class. That is why I am requiring that you view or attend the lectures.

In summary: this course has **no required synchronous components other than the midterm and the final examination.** The Friday tutorial is a synchronous activity, but it is optional.

V. Course organization. This course is entirely delivered online. You will need to organize your schedule to keep on top of the material and the assignments. The key organizational tool is the **Canvas page**. In addition to the lectures, there are multiple ways to learn the course material, as follows:

- **Independent reading.** As with any course, you will learn through careful reading of the assigned material, following the schedule posted below ([Lecture and Assignment Schedule](#)).

- **Pre-recorded and posted lectures.** As noted above, I'll record two live lectures and one pre-recorded lecture per week. You will find the lectures on the Canvas page as follows: **Collaborate Ultra → Menu** (three horizontal lines) of **Sessions bar** (black rectangle at top of the screen) → **Recordings.**

  Old recordings. After one month, the recordings seem to disappear, but they are still there. After clicking **Recordings**, go to the right side of the screen and click on **Recent Recordings**. Switch to **Recordings In a Range**, then (on the left side of the screen) enter a start date of September 9 to see all of the old recordings.

- **Posted lecture overheads.** The lecture overheads are posted in the "Modules" section of Canvas.

- **Posted handouts and assignments.** Copies will be posted in the "Modules" section of Canvas.

- **Tutorial.** As noted, the Friday classes will be optional tutorials for discussion. These will be sessions in **Collaborate Ultra** (click **Collaborate Ultra** on left side of Canvas page, then **join session** in progress – do not use the phone #, as this has long-distance charges), open to anyone who wishes to join. I will record and post them.

- **Office hours.** I will have one additional office hour per week, also held via **Collaborate Ultra**. This is an open office hour: anyone can join. If you require a confidential discussion, please send me an email message and we can set up a private meeting using Zoom.

- **Canvas Discussion.** I encourage you to raise questions of general interest using the **Discussion** section of Canvas. (*This may change to Piazza if I am able to set it up.)

VI. Course calendar. The course calendar on Canvas lists all assignment dates, apart from the final exam. This course syllabus also includes a [Lecture and Assignment Schedule](#) that lists assignment dates, topics and readings for each class.

VII. Announcements. Please read carefully all announcements posted throughout the term. These will include course updates, information about upcoming assignments, changes to assignments or due dates, corrections, and important alerts. They will remain posted in the **Announcements** section of Canvas.

VIII. Assignments: submission and records.

Most assignments will be administered through the **Assignments** tab in Canvas. The **Problem Sets** and **Term Paper** must be submitted as pdf file uploads, by the posted deadline, using the portal in the **Assignments** section. (This is subject to change: term papers

may be submitted via Turnitin.com.) The **Midterm** and **Final Exam** will be conducted as Canvas tests.

Assignment grades will be recorded and posted to Canvas in the **Grades** section. **Important:** although the grades will be accurate, please ignore any cumulative grade scores computed by Canvas. I will use a separate spreadsheet to compute cumulative grades. Please inform me of any discrepancies between assignment grades on Canvas and your own records.

General policies and other matters:

Academic accommodation: [UBC Access & Diversity](#) works with all instructors to provide appropriate accommodation for students with disabilities. Please notify Access and Diversity of your situation well in advance of any assignment due dates, and please feel free to discuss with me any way in which I can be of assistance.

For those new to philosophy, there is a [Philosophy Essay clinic](#) that offers help for those who wish to improve their philosophical writing skills. The website will be updated with the names and schedule of the instructors. I also encourage you to speak to me during my office hours.

Students are responsible for ensuring that they understand and abide by the [UBC regulations concerning academic misconduct](#) and **plagiarism**. Plagiarism is a very serious academic offense. If you are unsure about any issues relating to academic integrity, please consult with me or with your academic advising office.

Additional statement on honesty: Because this is an online course, all tests and assignments will be open book. However, **you are expected NOT to collaborate in any form with other students on tests or the final examination. All work done on tests must be your own.** Regarding the problem sets, I encourage you to do these mostly on your own, but you may work with other students – if so, please state this at the beginning of the assignment. (There is no impact on the evaluation; I just want to encourage honest reporting of collaboration.)

Statement of UBC values and policies:

UBC provides resources to support student learning and to maintain healthy lifestyles but recognizes that sometimes crises arise and so there are additional resources to access including those for survivors of sexual violence. UBC values respect for the person and ideas of all members of the academic community. Harassment and discrimination are not tolerated, nor is suppression of academic freedom. UBC provides appropriate accommodation for students with disabilities and for religious and cultural observances. UBC values academic honesty and students are expected to acknowledge the ideas generated by others and to uphold the highest academic standards in all of their actions. Details of the policies and how to access support are available [here](#).

Tentative Lecture and Assignment Schedule

Week of	Topics and Readings	Assignments/holidays
Sept. 7	Introduction; Basic Concepts of Decision Theory [P] 1, 2	
Sept. 14	Basics (cont.) and Decisions Under Ignorance [P] 2, 3; [X] Gardiner, "A Core Precautionary Principle" or similar	
Sept. 21	Decisions under Risk [P] 4	
Sept. 28	Utility and Probability [P] 5, 6; [X] Hájek, Pascal's Wager and infinite utility	
Oct. 5	Probability and its interpretations [P] 6, 7	**PS 1 due Oct. 5**
Oct. 12	Preference axioms; Newcomb's problem [P] 8, 9	****No class Oct. 12**
Oct. 19	Newcomb and Causal Decision Theory [p] 9; [X] Egan, "Some counterexamples to causal decision theory"	**Mid-term test: Oct. 23**
Oct. 26	Bayesianism; Game Theory I [P] 11	
Nov. 2	Game Theory II [P] 12	**PS 2 due Nov. 2**
Nov. 9	Social Choice Theory [P] 13	****No class Nov. 11**
Nov. 16	Evolutionary Game Theory [SC] 1, 2	
Nov. 23	Evolution of the Social Contract [SC] 2, 3; [X] Sober, "Evolution of Virulence" or similar	
Nov. 30	Evolution of the Social Contract [SC] 4, 5	**PS 3 due Nov. 30 Term paper: Dec. 4**

Note: This schedule may be revised as the course progresses.