Department of Philosophy

Phil 325: Risk, choice and rationality — *Katalin Bimbo*

[Course description — Fall term (2026)]

Decision theory addresses an issue — *decision making* — that everybody faces multiple times every day. Occasionally, decisions are made by a collection of people. for example, in a parliament or a congress. When we think about a decision, then we have to consider the results of various actions that might be taken; moreover, our consideration has to include a comparison or evaluation of the outcomes. Modern *decision theory*, which uses certain mathematical tools to analyze decision problems and to give rational reasons for particular choices, emerged in the middle of the 20th century.

Some of the basic concepts in decision theory include *states*, *actions* and *outcomes*. The set of outcomes is equipped with a *preference order* which comes with a numerical representation. Some actions can lead to a certain outcome in a very direct fashion, with negligible uncertainty about the connection between the action and its outcome. However, some other actions yield a particular result with less certainty, but with some likelihood. In these situations, we might wish to assign probabilities to various circumstances or groups of outcomes. Then, we can compute *expected values* and *expected utilities* for the various options available.

A concept that plays an important role in decision problems is *information*. The presence or the absence of information pertains to *epistemic* aspects of a situation and it can markedly alter which choice is optimal. Decision making is further complicated when there are several agents, whose preferences have to be considered or whose actions have explicit or hidden dependencies. In general, this is a perennial problem in society, in communities or in a group of people (where people interact).

The course will allow you to learn some elements of *utility theory*, *probability theory* and *game theory* to sharpen the formulations and the solutions of a whole range of decision problems. Learning the content will not only enhance your knowledge about decision theory, but it will allow you to make *more optimal decisions* by heeding the recommendations of the theory.

[There is *no official prerequisite* for this course. We will use some mathematical concepts and tools in this course, but they are simple or will be clarified as needed.]

Time: M, W, F 11:00 am–11:50 am

Readings will be linked in the canvas class or available in the library.

For *further information*, please contact the instructor at <bimbo@ualberta.ca>.
The (official) **course outline** is available in the canvas class during the course.