Decision Theory

Course	Decision Theory, 30.2696 (German: Entscheidungstheorie, 30.2612)
Allocation at h_da	BSc *Computer Science* (CS faculty) and BSc *Applied Mathematics* (Math faculty)
Responsibility	Prof. Dr. Oliver Skroch
Language	English

Content

— Normative and descriptive decision theory
— Basic model of decision theory (utility measurement, axiomatics, result matrix, preference functions, decision rules)
— Decisions under security, risk and uncertainty
— Formal representation of single-stage and multi-stage decision scenarios
— Information acquisition in insecure decision scenarios
— Committee decision making

(Interactive decision theory / "game theory" is not covered.)

Learning objectives

When individuals, groups or organizations become active in business, or economy in general, basically always decisions have to be made. Decision theory deals with the targeted actions of decision-makers who have the freedom to choose from a number of alternative decision options.

This decision theory course aims to offer well-researched tools for making "rational" and "better" decisions in business and economy (normative), and also to explain how real decisions are made in practice there (descriptive).

Students should:
— be able to recognize, understand and critically discuss how decisions in business and economy are taken in a rational way (or, in an intentionally rational way),
— be able to classify and formally describe different decision scenarios that appear in common practice,
— practically apply models and methods proposed by decision theory to typical example scenarios,
— develop an ability, through numerous examples, to recognize and discuss the possibilities and limitations of decision theory,
— be able to critically discuss the problem of how "rational decision-making" and "optimal decisions" can be defined and adequate solutions identified.

Type, weekly hours, credit points

90 min. lecture per week + 90 min. practical per week, 5 CP; seminar-style lecture, accompanying lecture notes, practical in small workgroups, exercises with solution hints

Exam

Written end-term exam, graded, 90 minutes duration

Prerequisite — Successful participation in the exercises is a preliminary exam performance (not graded, exercise tasks, development or design tasks)

Registration — Explicitly required for the exam, in addition to the course registration

Literature

Bamberg G, Coenenberg A, Krapp M: *Betriebswirtschaftliche Entscheidungslehre*, 16th rev. ed. Munich (2019). (in German)

Kahnemann D, Tversky A: „Prospect Theory: An analysis of decision under risk". *Econometrica*, (47) 2, 263-292 (1995).

Klein R, Scholl A: *Planung und Entscheidung*, 2nd ed. Munich (2011). (in German)

Rapoport A: *Decision Theory and Decision Behaviour*, 2nd rev. ed. New York, USA-NY (1998).

Sen A: „Rationality and Social Choice". *American Economic Review*, (85) 1, 1-24 (1995).

(Further literature will be discussed during the course.)