



**Санкт-Петербургский филиал федерального государственного  
автономного образовательного учреждения высшего образования  
"Национальный исследовательский университет  
"Высшая школа экономики"**

Факультет Санкт-Петербургская школа экономики и менеджмента

Департамент Финансов

**Рабочая программа дисциплины**  
Введение в поведенческую и экспериментальную экономику /Introduction to Behavioral and Experimental Economics  
для майнора Personal and Behavioral Finances  
уровень - бакалавриат

Разработчик программы

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Утверждена академическим руководителем  
майнора

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*Настоящая программа не может быть использована другими подразделениями университета и другими вузами без разрешения кафедры-разработчика программы.*



Behavioral and Experimental Economics  
 Instructor: Vasilisa Makarova,  
 Credit Value: 5

### Course Outline

This course will cover some major approaches to the study of individual behavior and decision making. It will explore a selection of the most important ideas in behavioral economics, restricting ourselves to models of individual decision making. The goal is to introduce models of behavior alternative to the standard homo oeconomicus approach, building on some insights from experimental economics and psychology. Main objective of the course is to understand human behavior beyond theory of finance.

To do that, we will touch upon both experiments and theory. From the experimental side, we will study the most profound observations from the lab and the field, learn basic techniques how to create and evaluate your own experimental data. From the theoretical side, we will study basic theories that attempt to explain observed biases and learn how to extend the standard financial models to account for behavioral aspects.

The course begins with fairly simple questions in the field of choice behavior, representation of and behavior under uncertainty, time preferences, and other-regarding preferences..

Secondly, students learn how to apply bounded rationality models;

the methods of fundamental and technical analysis when planning work in the stock market

3. Shortcomings /criticisms of standard models

4. Strategy restrictions in Applications

Finally, students will receive basic knowledge and skills in a Strategy restrictions in Applications (Auctions, bargaining, information transmission)

### Assessment Methods

**Key competences** acquired in the course make a student able to suggest alternative models that assume lesser sophistication on agents

ULo 1 Able to learn and demonstrate skills in the field, other than the major field

ULo 5 Work with information: find, define and use the information from different sources which required for solving of research and professional problems (including the system approach)

ULo 8 Able to efficiently communicate based on the goals and communication situations

### Structure and content

	Topic	Face-to-face meetings			Home work	Totally
		Seminars	Lectures	Totally		
1	General overview of standard approach and its introspective vs learning justification	4	6	8	20	28
2	Analogy-based expectation equilibrium Equilibrium with subjective prior and self-confirming equilibrium	2	4	8	20	28
3	Valuation equilibrium and equilibrium with imperfect recall Level k and quantal response equilibrium	2	6	8	20	28
4	Choices, Values and Frames	2	6	10	20	30
5	Judgement, beliefs, heuristics and biases	4	6	10	20	30
6	Decision-making under risk and uncertainty	2	6	10	16	26



7	The treatment of time	4	6	6	14	20
		<b>20</b>	<b>40</b>	<b>60</b>	<b>130</b>	<b>190</b>

## Topics

### 1. General overview of standard approach and its introspective vs learning justification

- Huck Jehiel and Rutter (2011): "Learning spillover and analogy-based expectations: A multi-game experiment", Games and Economic Behavior

### 2. Analogy-based expectation equilibrium

Equilibrium with subjective prior and self-confirming equilibrium

- Jehiel, P. (2005): "Analogy-based Expectation Equilibrium", Journal of Economic Theory
- Jehiel, P. and F. Koessler (2008): "Revisiting Games of Incomplete Information with Analogy-based Expectations", Games and Economic Behavior
- Dekel E., D. Fudenberg and D.K. Levine (2004): "Learning to Play Bayesian Games", Games and Economic Behavior
- Eyster E. and M. Rabin (2005): "Cursed Equilibrium", Econometrica

### 3. Valuation equilibrium and equilibrium with imperfect recall

Level k and quantal response equilibrium

- Jehiel, P. and Samet, D. (2007): "Valuation Equilibrium", Theoretical Economics
- Piccione, M. and A. Rubinstein (1997): "On the Interpretation of Decision Problems with Imperfect Recall", Games and Economic Behavior
- Nagel, R.M. (1995): "Unraveling in guessing games", American Economic Review
- McKelvey, D. and T. Palfrey (1995): "Quantal Response Equilibrium", Games and Economic Behavior
- Osborne M.J. and A. Rubinstein (1998): "Games with procedurally rational players", American Economic Review

### 4. Choices, Values and Frames

- Rational choice
  - Psychological motives not included in the standard framework
  - Modeling Choice Procedures
  - Individual preferences and social values
  - Welfare
- Akerlof, G. and R. Kranton (2010), "Identity economics", Princeton U. Press
- Bénabou, R. and J. Tirole (2006), "Incentives and pro-social behaviour", American Economic Review, 96, 1652-1678.
- Gilboa, I. and D. Schmeidler (2001), "Case based decision theory", Cambridge U. Press
- Kahneman D. and A. Tversky (eds) (2000), "Choices, Values, and Frames", Cambridge U. Press
- Rubinstein, A. (2012), "Lecture notes in microeconomic theory : the economic agent", Princeton U. Press

### 5. Judgement, beliefs, heuristics and biases

- Representing uncertainty and beliefs via a probability
  - Heuristic and biases
- Gilboa, I. (2010) "Theory of Decision under Uncertainty", Cambridge U. Press

- Kahneman D., P. Slovic and A. Tversky (eds) (1982), "Judgement under uncertainty: heuristics and biases", Cambridge U. Press
- Kahneman D., (2011), "Thinking fast and slow", Farrar, Grauss and Giroux

**6. Decision-making under risk and uncertainty**

- Expected utility
- Non expected utility under risk
- Prospect Theory and loss aversion
- Ambiguity

- Gilboa, I. (2010) "Theory of Decision under Uncertainty", Cambridge U. Press
- Wakker, P. (2010) "Prospect Theory", Cambridge U. Press

**7. The treatment of time**

- Discounted utility
- Issues with discounted utility
- Quasi hyperbolic discounting
- Time inconsistency and self control
- Hyperbolic discounting
- Loss aversion

- Frederick, S., G.Loewenstein, and T.O'Donoghue (2002), "A review of intertemporal choice". Journal of Economic Literature, 90; 351-401.
- Gul, F. and W. Pesendorfer (2001) "The simple theory of temptation and self-control", mimeo Princeton

**8. Other regarding preferences (self study)**

- Altruism and interdependent preferences
- Inequality aversion
- Fairness and reciprocity

- Fehr, E. et K. Schmidt (2003) "Theories of Fairness and Reciprocity" in M. Dewatripont, L. Hansen, S. Turnovsky (Eds), Advances in Economics and Econometrics -8th world congress, Econometric Society Monographs, Cambridge University Press
- Sobel, J. (2005) "Social interdependent preferences and reciprocity", Journal of Economic Literature, , 43, 392-436.

**Assessment** includes the final exam grade (50%), in-class participation (20%) and home assignments (30%).

$$GC = 0,3 \cdot Ghw + 0,2 \cdot Gsa + 0,5Gft$$

The final exam consists of questions for each topic of the course and lasts 80 minutes. The maximal grade for the exam is 100 points.

The in-class participation covered the attendance and in-class activity. The maximal grade for the in-class participation is 20 points.

The home assignments can be completed both individually and in groups (up to 5 participants). The maximal grade for an assignment is 100 points.

### Sample Final Exam

1. Describe the concept of „idiosyncratic investments“. (25 points)
2. Consider an example when the *ex ante* investment ( $I$ ) by the supplier affects the quality (the value) of the product to the buyer. The buyer's *ex post* value is:

$$V(I) = 3I - 1/2I^2$$

Assume that  $I$  is observable by the buyer but not verifiable by a court, so that it cannot be specified by a contract. The buyer's surplus in case of trade is  $v(I) - p$ , and the supplier's surplus is  $p - c - I$  ( $c$  is a constant production cost  $< 1/2$ ). (i) Determine the efficient amount of investment. (ii) Suppose that there is no contract and the two parties bargain *ex post* according to the Nash bargaining solution. Is the investment optimal? (iii) Suppose that the parties sign a contract specifying that the buyer has the right to buy the good at a given price  $p$ . Is this contract efficient? What if the supplier has the right to sell at a given price? (25 points)

3. Describe the problem resulting in a typical principle-agent relationship. How to mitigate this problem? What are the "incentive-compatibility" and "individual rationality" constraints in this context? / Describe the concept of specific assets. How it can be measured? (25 points)
4. What are the key problems in empirical testing of the personal investments? (25 points)

### Sample test (quiz)

1. What does Allais' Paradox tells us?  
It is irrational to follow Expected Utility Theory.  
Expected Utility Theory does not explain actual behavior of persons sufficiently well.  
People tend to violate the Independence Axiom.
2. Which are the key ideas of Prospect Theory (PT)?  
People frame their decisions in gains and losses rather than considering their potential final wealth.  
People tend to overweight small probabilities and underweight large probabilities. This can be modeled by a probability weighting function.  
People do not know probabilities exactly and hence overestimate small probabilities. This can be modeled by a probability weighting function.  
People compute the PT or CPT functional in order to make decisions.
3. How does PT explain why people gamble and buy insurances?  
People have a value function which is concave in gains (gamble) and convex in losses (insurance).  
People overweight small probabilities, like winning in a lottery or losing their home in a fire.
4. Why does PT violate stochastic dominance?  
Extreme events are overweighted, hence a small chance to lose a larger amount makes a lottery overly unattractive. This leads to a violation of stochastic dominance.  
Several small-probability events with similar outcome are overweighted relative to a single outcome with a slightly larger payoff, thus PT prefers the former to the latter, violating stochastic dominance.  
The convex shape of the value function in losses leads to risk-seeking behavior that makes people prefer risky lotteries over safe outcomes, violating stochastic dominance.
5. Which properties does Cumulative Prospect Theory (CPT) satisfy?  
Events with extremely low or high outcomes are overweighted.  
All small-probability events are overweighted.
6. Decision Theory  
CPT does not violate stochastic dominance.  
CPT agrees with PT for lotteries with finitely many outcomes.  
CPT can be formulated for lotteries with finitely many outcomes as well as for arbitrary lotteries.
7. In which cases do Mean-Variance Theory and EUT coincide?  
When we consider only normal distributions of outcomes.



- When the utility function is concave.
  - When the utility function is quadratic.
  - When the utility function is linear.
  - In lotteries with at most two outcomes.
8. Which axioms are satisfied by mean-variance theory?
- Completeness.
  - Transitivity.
  - Continuity.
  - Independence

**Sample Problem to discuss**

What's Your Risk Tolerance?

What are these hedge funds that I've heard about, and should I invest in them?

What if the fund manager in charge of my fund leaves?

**Quiz**

Define the following concepts and give one concrete example for each bias that they refer to.

- a) Hot hand
- b) Base rate neglect
- c) Gambler's Fallacy
- d) Conjunction Fallacy
- e) Just-World Bias
- f) Confirmatory Bias
- g) Conservatism
- h) Describe the representativeness heuristic and argue which of the concepts a) to g) can be explained with this heuristic.

Question 3 – Games (Points: 20)

Consider the following game.

	Left Right	
Top	75, 51	42, 27
Bottom	48, 80	89, 68

- a) Determine the choices of level-k players for both the row and the column player. To do so, assume that a level-0 player randomizes between L and R or Top and Down, respectively
- b) The above game was played by 36 pairs of subjects in a one-shot experiment. Of the 36 row players, 25 played Top and 11 played Down. Of the 36 Column players, 33 chose Left and 3 chose Right. Explain these results!

Question 4 – Essays (Points: 15)

- a) Supposedly some casinos in the South allow a person to sign a contract that mandates their arrest if the person enters the casino. Describe such contracts and people in the language of hyperbolic discounting. (300 word limit)
- b) There has been a boom in storage unit rental (i.e., renting additional space in a large complex, often not very close to home, to store things you do not have room in your house for). What concept from prospect theory might be relevant to explaining this shift in demand for storage?

### Main reading list:

1. Redhead K. Personal Finance and Investments. A behavioural finance perspective/Routledge, 2008, -338 p.
2. The Handbook of experimental economics / Ed. John H. Kagel, Alvin E. Roth . – Princeton, N.J. : Princeton University Press, 1995. – 721 p.
3. Mas-Colell, A. Microeconomic theory / A. Mas-Colell, M.D. Whinston, J.R. Green . – Oxford : Oxford University Press, 1995 . – 981 p.

### Recommendations for students about organization of self-study

Self-study is organized in order to:

- Systemize theoretical knowledge received at lectures;
- Extending theoretical knowledge;
- Learn how to use legal, regulatory, referential information and professional literature;
- Development of cognitive and soft skills: creativity and self-sufficiency;
- Enhancing critical thinking and personal development skills;
- Development of research skills;
- Obtaining skills of efficient independent professional activities.

Self-study, which is not included into a course syllabus, but aimed at extending knowledge about the subject, is up to the student's own initiative. A teacher recommends relevant resources for self-study, defines relevant methods for self-study and demonstrates students' past experiences. Tasks for self-study and its content can vary depending on individual characteristics of a student. Self-study can be arranged individually or in groups both offline and online depending on the objectives, topics and difficulty degree. Assessment of self-study is made in the framework of teaching load for seminars or tests.

In order to show the outcomes of self-study it is recommended:

- Make a plan for 3-5 presentation which will include topic, how the self-study was organized, main conclusions and suggestions and its rationale and importance.
- Supply the presentation with illustrations. It should be defined by an actual task of the teacher.

### **Recommendations for essay**

An essay is a written self-study on a topic offered by the teacher or by the student him/herself approved by teacher. The topic for essay includes development of skills for critical thinking and written argumentation of ideas. An essay should include clear statement of a research problem; include an analysis of the problem by using concepts and analytical tools within the subject that generalize the point of view of the author.

Essay structure:

1. *Introduction and formulation of a research question.*
2. *Body of the essay* and theoretical foundation of selected problem and argumentation of a research question.
3. *Conclusion* and argumentative summary about the research question and possibilities for further use or development.

### **Special conditions for organization of learning process for students with special needs**

The following types of comprehension of learning information (including e-learning and distance learning) can be offered to students with disabilities (by their written request) in accordance with their individual psychophysical characteristics:

- 1) *for persons with vision disorders:* a printed text in enlarged font; an electronic document; audios (transferring of learning materials into the audio); an individual advising with an assistance of a sign language interpreter; individual assignments and advising.
- 2) *for persons with hearing disorders:* a printed text; an electronic document; video materials with subtitles; an individual advising with an assistance of a sign language interpreter; individual assignments and advising.
- 3) *for persons with muscle-skeleton disorders:* a printed text; an electronic document; audios; individual assignments and advising.