# Course design


## Course description

Institutional Economics is an obligatory discipline. The one-semester course is taught in English in the 3st and 4nd modules to the third-year graduate students. The course consists of introduction and the two parts dedicated to origins of institutions and their performance. The distinctive feature of this course is its focus on origin of institutions and institutional dynamics. The respective part includes topics related to asymptotically stable and stochastically stable states where the latter interpreted as institutional norms. The second part is dedicated to issues that are more conventional for the new institutional economics. They include the theory of state, the theory of property rights, and basic models of the economics of contracts. The course suggests that the students are familiar with basics of calculus, linear algebra, probability theory and game theory.

## Scope of application and reference to regulatory documents

This document establishes the minimum requirements for knowledge, skills and competences of the student, determines the coverage and content of the course, indicates teaching methods and forms of learning activities as well as assessment criteria and grade determination.

The course syllabus is designed for the instructors, teaching assistants and students of the Education Program 080100.62 ‘Economics’.

This syllabus has been developed in accordance with:

* National curriculum standard FGROS-3
* Education Program 080100.62
* University Academic Plan of the Education Program 080200.62.

## Course objectives

The course aims to:

* make the students familiar with the established models and analytical tools in the new institutional economics and evolutionary theory,
* develop the students’ skills to apply the institutional and evolutionary methods to study of the modern societies and their historical evolutions
* help the students to address the problems as to actual dynamics and performance of institutions in their native regions and/or countries
* encourage the students to use the methods and models of the institutional analysis in their research activities
* enable the students to analyze the real cases and make the effective decisions in the position of a manager

## Intended learning outcomes

On completion of the course student will be able to:

* formulate basic theories and models of institutional economics,
* use the notions and models of the discipline for solving the problems
* explain dynamics of specific institutions and their performance using the models of evolutionary game theory and institutional economics
* compare various countries and communities in terms of the new institutional theory of the state
* analyze conflict situations and coordination problems with reference to the results of the evolutionary game theory
* make the effective decisions in the standard situations of adverse selection and moral hazard
* choose the proper organizational arrangement in case of the uncertainty and incomplete contracts

## Student’s competences after the course

The following abbreviations (NC/NRU-HSE Codes as per Educational Standard of the National Research University Higher School of Economics) are used in the Table 1:

GSC – general scientific competence, IC – instrumental competence, SPC – social, personal and cultural competence, PC – professional competence

Table 1 below provides the logical links between student’s competencies developed in the course, measurable intended learning outcomes and corresponding education methods.

## Place of the course in the structure of the educational program

The course is one of the basic disciplines of economic theory along with Microeconomics and Macroeconomics. The main feature of this discipline is that the theory of rational choice is used for analysis of much wider class of problems of social and economic life compared with the standard coursed of economics. The prerequisites of the course are, on the one hand, completed courses in basic economics, in particular, in microeconomics, on the other hand, basic skills in mathematical disciplines such as calculus, linear algebra, game theory, and probability theory. At the same time, an important prerequisite of the course is knowledge in humanities, in particular in history. This all-round prior training should ensure the students to acquire both the technical skills and abilities to interpret and to make proper general conclusions.

**Table 1. Design of the course to develop student’s competencies**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Aims**The course aims to: | **Measurable ILOs** | **NC/NRU-HSE Code** | **Assessment for Learning** | **Teaching Strategy** | **Learning Activity** |
| **Formative** | **Summative** |
| make the students familiar with the established models and analytical tools in the new institutional economics and evolutionary theory | formulate basic theories and models of institutional economics | GSC-1, SPC-14 | Q&A  |  | Lecture | Attending, memorizing |
| Quiz (peer-marked) | Quiz |
| Seminars (clarification)Guidance for reading  | Apprehending, reproducing linking to theory |
| develop the students’ skills to apply the institutional and evolutionary methods to study of the modern societies and their historical evolutions | use the notions and models of the discipline for solving the problems | GSC-1, SPC-1, SPC-14 | Q&A (written answers) | Test | LectureSeminars (problem solving)  | Transforming knowledge |
| Final exam |
| explain dynamics of specific institutions and their performance using the models of evolutionary game theory and institutional economics | SPC-4, SPC-14, PC-4, PC-10 | Q&A | Final exam | Lecture | Transforming knowledge |
| Seminars (problem solving) | Challenging conceptions |
| help the students to address the problems as to actual dynamics and performance of institutions in their native regions and/or countries | compare various countries and communities in terms of the new institutional theory of the state | SPC-14, PC-1, PC8-10 | Q&A | Final exam | LectureSeminars (discussion/debates) | Relating experience to theory and theory to practice, solving problems |
| encourage the students to use the methods and models of the institutional analysis in their research activitiesenable the students to analyze the real cases and make the effective decisions in the position of a manager | analyze conflict situations and coordination problems with reference to the results of the evolutionary game theory | SPC-14, PC-1, PC-11 PC-12 | Q&A(written answers) | Test | Preparing the cases for discussions (problem solving) | Relating theory to practice |
| Final exam |
| Office hours (goal-action-feedback cycle) | Self-directed learning, solving problems |
| make the effective decisions in the standard situations of adverse selection and moral hazardchoose the proper organizational arrangement in case of the uncertainty and incomplete contracts | IC-3, SPC-14, PC-11, PC-12 | Q&A(written answers) | Test | Moderating debates and interactive teaching | Solving problems |
| Final exam |

# Course schedule

The course consists of the two big parts. These parts are preceded by an introduction to the course which gives the subject-matter and key assumptions and results of the evolutionary theory and the new institutional economics. The first one introduces the topics of the evolutionary theory related to the analysis of institutional change and extensively uses analytical tools of game theory. The part includes topics 2 through 10. The second part covers the core of the new institutional economics and includes topics 11 through 15.

**Table 2. Workload distribution between classroom hours and self-study**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Week** | **Topic** | **Total** | **Classroom activities** | **Self-study** |
| Lectures | Classes |
| 1. | Introduction to the institutional economics | 6 | 2 | 1 | 3 |
| **Part I. Origin and evolution of institutions** |
| 2. | Institutions and their analysis within the framework of game theory | 8 | 2 | 2 | 4 |
| 3. | Adaptive mechanism | 4 | 1 | 1 | 2 |
| 4. | Fictitious play | 4 | 1 | 1 | 2 |
| 5. | Games with the fictitious play property | 8 | 2 | 2 | 4 |
| 6. | Games without the fictitious play property | 4 | 1 | 1 | 2 |
| 7. | Analysis of dynamics | 8 | 2 | 2 | 4 |
| 8. | Asymptotic stability of the dynamic system | 4 | 1 | 1 | 2 |
| 9. | Adaptive play in the ergodic setting | 18 | 3 | 6 | 9 |
| 10. | Welfare implications of the conventions | 12 | 2 | 4 | 6 |
| **Part II. Performance of institutional systems and the resource allocation** |
| 11. | State | 12 | 3 | 3 | 6 |
| 12. | Property rights and Coase theorem | 8 | 2 | 2 | 4 |
| 13. | Pre-contract opportunism | 14 | 3 | 4 | 7 |
| 14. | Post-contract opportunism | 8 | 2 | 2 | 4 |
| 15. | Incomplete contracting | 14 | 3 | 4 | 7 |
| **Total** | 132 | 30 | 36 | 66 |

# Course content

**1. Introduction to the institutional economics**

Key features: wider subject-matter, adjustment of the basic assumptions

Neoclassical economics as an initial point: the core and the bent

Evolutionary game theory

Subject-matter: origin and evolution of norms, dynamic features of processes

Basic assumptions: bounded information, errors, variations and heterogeneity in players’ memory, group players

Results: the natural selection, the role of institutions, stochastically stable equilibria, path-dependence and inertia

Examples: IBM and Macintosh, QWERTY versus Dvorak, the currency game

New institutional economics

Subject-matter: economic imperialism, economics of history, features of the equilibrium states

Assumptions: bounded rationality, opportunism, incomplete property rights, transaction costs, non-market institutions

Results: the relationship between institutions and economic development

Examples: capitalism and socialism, developed and developing economies

**Reading**

Skorobogatov A. S. (2006) *Institutional Economics*. Saint-Petersburg: HSE. Ch. 1.

Young, P. H. (1998) *Individual Strategy and Social Structure. An Evolutionary Theory of Institutions*. Princeton NJ: Princeton University Press. Ch. 1.

**Supplementary references**

North, D. (1990) Institutions, Institutional Change and Economic Performance, Cambridge: Cambridge University

Press.

Acemoglu D. (2009) *Introduction to Modern Economic Growth*. Princeton and Oxford: Princeton University Press.

Acemoglu D., Robinson J. A. (2006) *Economic Origins of Dictatorship and Democracy*. Cambridge: Cambridge University Press.

Acemoglu D., Johnson S, Robinson J. A. (2002) Reversal of Fortune: Geography and Institutions in the Making of the Modern World Income Distribution // *Quarterly Journal of Economics*, Vol. 117, No. 4, pp. 1231-1294.

**Part I. Origin and evolution of institutions**

**2. Institutions and their analysis within the framework of game theory**

The notion and significance of institutions: coordination and incentives, local and global levels, common information and enforcement

Types of institutions and their links: informal rules (meaning, origin, application and workability); meaning and hierarchy of formal rules; links between informal and formal rules

Key notions of the institutional analysis: Pareto equilibrium, social optimum, pure and mixed Nash equilibria, dominant strategies equilibrium, cycle

Coordination problem and institutions: multiple Nash equilibria, representative individual, play of groups, initial conditions for institutional evolution

Incentives tuning and institutions: prisoner’s dilemma, homo economicus and opportunism, equilibrium selection in repeated games, long-term relations in local and global communities

Institutional consequences for coordination, incentives, and payoff distribution

**Reading**

Skorobogatov A. S. (2006) *Institutional Economics*. Saint-Petersburg: HSE. Chs. 1-2.

**Supplementary references**

North, D. (1990) *Institutions, Institutional Change and Economic Performance*. Cambridge: Cambridge University

Press.

Skorobogatov A. S. (2011) Gifts, Gift-Exchange, and Market Exchange as Organizational Alternatives // *Voprosy Economiki*, No. 11. pp. 38-56.

Varian H. R. (2006) *Intermediate Microeconomics. A Modern Approach*. New York: W. W. Norton. Chs. 28.

**3. Adaptive mechanism**

Learning: the notion and meaning in the repeated games

Games with and without learning: battle of the sexes, QWERTY versus Dvorak

Adaptive mechanism based on the organic rationality: the natural selection

Adaptive mechanism partly based on rational choice: imitation, reinforcement

Adaptive mechanism based on the bounded rationality: best reply, bounded information, bounded and heterogeneous memory, errors

Best reply and alternative adaptive mechanisms: modeling, assumptions, outcomes

Recurrent game: heterogeneous strategic sets, utility functions and classes of the players

**Reading**

Young, P. H. (1998) *Individual Strategy and Social Structure. An Evolutionary Theory of Institutions*. Princeton NJ: Princeton University Press. Ch. 2.

**Supplementary references**

Skorobogatov A. S. (2014) Evolutionary choice of institutional norms in the non-ergodic environment // *Journal of Institutional Studies*, No. 4.

Varian H. R. (2006) *Intermediate Microeconomics. A Modern Approach*. New York: W. W. Norton. Chs. 28-29.

**4. Fictitious play**

Fictitious play: origin of the concept, definition

Key notions: finite strategy space, n-tuple of strategies, history of play, statistical frequency, product distribution; the same notions from the standpoint of every player

The model of best reply: utility of a probability distribution; best strategy

Fictitious play process: a distinctive feature compared with alternative play processes

Nash equilibrium and fictitious play process: fictitious play property

**Reading**

Young, P. H. (1998) *Individual Strategy and Social Structure. An Evolutionary Theory of Institutions*. Princeton NJ: Princeton University Press. Ch. 2.

**Supplementary references**

Skorobogatov A. S. (2014) Evolutionary choice of institutional norms in the non-ergodic environment // *Journal of Institutional Studies*, No. 4.

**5. Games with the fictitious play property**

Zero-sum game

Two-person and two strategies games with nondegeneracy condition: nondegeneracy, mixed and pure equilibrium strategies

Potential games: definition, classification, finite improvement path (FIP), fictitious play property, closed improvement path

Examples of potential games: prisoner’s dilemma, externalities game, congestion game, Cournot *n* oligopolist game

**Reading**

Young, P. H. (1998) *Individual Strategy and Social Structure. An Evolutionary Theory of Institutions*. Princeton NJ: Princeton University Press. Ch. 2.

**Supplementary references**

Monderer D. and Shapley L. S. (1996). Potential Games // *Games and Economic Behavior*, vol. 14, pp. 124-143.

Skorobogatov A. S. (2014) Evolutionary choice of institutional norms in the non-ergodic environment // *Journal of Institutional Studies*, No. 4.

**6. Games without the fictitious play property**

Fashion game: setup, results, interpretation, initial conditions, cycles, disequilibrium as a solution concept

Coordination games without equilibrium solution: the same strategic set for distinct players, Nash equilibrium as a natural solution, failure to coordinate, path dependency

Merry-go-round game: setup, initial conditions, cycles, disequilibrium result

Calendar game: initial conditions and failure to coordinate

**Reading**

Young, P. H. (1998) *Individual Strategy and Social Structure. An Evolutionary Theory of Institutions*. Princeton NJ: Princeton University Press. Ch. 2.

**Supplementary references**

Foster D. P. and Young P. H. (1998). On the Nonconvergence of Fictitious Play in Coordination Games // *Games and Economic Behavior*, vol. 25, pp. 79-96.

**7. Analysis of dynamics**

Dynamic equations: recurrent equation system, difference system, differential system

Phase diagram: the phase plane, mixed equilibrium, the four sections of the plane

Construction of the diagram: the dashed line, how algebraically to check location of an initial point

How to analyze the motion: both mixed strategies are above the equilibrium, both mixed strategies are below the equilibrium, one mixed strategies is above and other is below the equilibrium, initial point on the dashed line

Welfare implications: mixed equilibrium versus pure equilibria, dynamics in discrete time versus that in continuous time

Asymptotic properties of the game: miscoordination in discrete time under various mixed equilibria, difference as to outcomes between the mixed equilibrium and fictitious play

Non-ergodic setting: singular transition probabilities matrix of the fictitious play, initial conditions as an additional constraint

**Reading**

Young, P. H. (1998) *Individual Strategy and Social Structure. An Evolutionary Theory of Institutions*. Princeton NJ: Princeton University Press. Ch. 2.

**Supplementary references**

Skorobogatov A. S. (2014) Evolutionary choice of institutional norms in the non-ergodic environment // *Journal of Institutional Studies*, No. 4.

**8. Asymptotic stability of the dynamic system**

Dynamic system: the notion, a dynamic system in discrete and continuous time

Stability: the Lipschitz constant and the Picard theorem, Lyapunov stability and asymptotic stability

Larger class of learning dynamics with asymptotic stability

Conditions of asymptotic stability: regular selection dynamic and payoff monotonic dynamic, replicator dynamics as a special case

Asymptotic stability in the fictitious play

Asymptotic stability versus stochastic stability: deterministic states, dynamics system in the non-ergodic setting

A discrete Markov process: the notion, homogeneous process, ergodicity, stationary distribution, aperiodicity, position at a point

Asymptotic stability in the typewriter game

**Reading**

Young, P. H. (1998) *Individual Strategy and Social Structure. An Evolutionary Theory of Institutions*. Princeton NJ: Princeton University Press. Ch. 3.

**Supplementary references**

Aivasyan S. A. and Mkhitaryan V. S. (1998) *Applied Statistics and Foundations of Econometrics*. Moscow: Unity. Ch. 5.

**9. Adaptive play in the ergodic setting**

Assumptions as to the bounded rationality: heterogeneous and bounded memory, heterogeneous sample, errors

Implications: stochastic stability, case of zero error

Perturbed Markov process: the notion, errors, resistance

Criteria of stochastic stability: stochastic potential, the sum of the likelihoods of the z-trees, calculation difficulties

Stochastic potential in case of three recurrent classes: directed graph

Stochastically stable state in the typewriter game

The neighborhood segregation model: stochastic potential

Players heterogeneities: different sample sizes, when more information pays and when it does not – the etiquette game and chicken game; different utility functions; different errors in 2 x 2 games

Unbounded memory: the non-ergodic dynamics

Local interactions: inertia of the process

**Reading**

Young, P. H. (1998) *Individual Strategy and Social Structure. An Evolutionary Theory of Institutions*. Princeton NJ: Princeton University Press. Chs. 3, 5, 6.

**Supplementary references**

Schelling T. C. (1971) Dynamic Models of Segregations // Journal of Mathematical Sociology. No. 1, pp. 143-186.

**10. Welfare implications of the conventions**

Risk dominance: the notion in 2 x 2 game, the more general case, interpretation

Stochastic stability and risk dominance: risk-dominant equilibria as stochastically stable states in 2 x 2 games

Examples of the welfare bonus of risk-dominant states: the etiquette game, the currency game

Equilibrium selection in general coordination games: risk-dominant equilibria and stochastically stable states in 3 x 3 games

Equilibria and disequilibria: acyclic and weekly acyclic games, stochastically unstable equilibria and stochastically stable disequilibria

**Reading**

Young, P. H. (1998) *Individual Strategy and Social Structure. An Evolutionary Theory of Institutions*. Princeton NJ: Princeton University Press. Chs. 4, 7.

**Supplementary references**

Harsanyi J. C. and Selten R. (1988) *A General Theory of Equilibrium Selection in Games*. Cambridge, MA: The MIT Press.

**Part II. Performance of institutional systems and the resource allocation**

#### 11. State

Institutional definition of the state: prisoner’s dilemma, dilemma “make or take”, comparative force potential

McGuire-Olson model of the stationary bandit: long-term relations and the incentive to cooperate, the bandit problem of the optimum tax rate, the bandit problem of the optimum level of public goods, taxes, public goods, and coercion, democracy and autocracy

Tullock closed monopoly model: the nature of closed monopoly, deadweight losses and redistribution of the consumer surplus, social cost of rent-seeking and monopoly profit, internal political competition and redistributive state policies

Niskanen model of optimizing bureaucrat: objection function of a bureaucrat, rational choice of a bureaucrat and the size of the bureau, socially inefficient state agencies

**Reading**

McGuire M. C., Olson M. (1996) The Economics of Autocracy and Majority Rule: The Invisible Hand and the Use of Force // *Journal of Economic Literature*. No. 1, pp. 72-96.

Skorobogatov A. S. (2006) *Institutional Economics*. Saint-Petersburg: HSE. Ch. 3.

**Supplementary references**

Niskanen W. A. (1994) *Bureaucracy and Public Economics*. Elgar.

**12. Property rights and Coase theorem**

Property rights in the common law: broad interpretation of property rights in institutional economics

Economic reason d’être of property rights: coordination and the effective incentives

Common resource tragedy: private and social costs, ineffective incentives and overutilization of the resource

Miscoordination and underutilization of the resource

Coase theorem: the meaning and interpretation, the wealth effect

The illustrations: fisher and steal factory, farmer and cowboy, smoker and non-smoker

**Reading**

Skorobogatov A. S. (2006) *Institutional Economics*. Saint-Petersburg: HSE. Chs. 4-5.

**Supplementary references**

Varian H. R. (2006) *Intermediate Microeconomics. A Modern Approach*. New York: W. W. Norton. Chs. 34.

**13. Pre-contract opportunism**

Information asymmetry: hidden information, hidden action, king Solomon problem.

Economic effects of the information asymmetry: adverse selection, moral hazard, moral hazard

Distinction between principal and agent: the informational endowment and the attitude to risk. The relationship between the hidden information and adverse selection and between the hidden action and moral hazard are considered. There are analyzed differences in the attitude to risk as a condition of the second-best in the adverse selection models, and as a condition of moral hazard.

Akerlof model: the market destruction and the exclusion of the best from the market

Model with the two kinds of agents: the principal problem, menu of contracts as a solution, discrete and continuous utility functions

Screening: Bertrand competition of principals, the pooling and separating equilibria

Signaling: the agent incentives to signalize, the pooling and separating equilibria, the Cho-Kreps intuitive criterion for selection of equilibrium is presented

**Reading**

Skorobogatov A. S. (2006) *Lectures and Problems on Theory of Contracts*. Saint-Petersburg: HSE. Chs. 1-5.

**Supplementary references**

Varian H. R. (2006) *Intermediate Microeconomics. A Modern Approach*. New York: W. W. Norton. Chs. 37.

Spence M. (1973) Job Market Signaling // *Quarterly Journal of Economics*, vol. 87, pp. 355–375.

**14. Post-contract opportunism**

Moral hazard: the simple model with the two levels of agent’s efforts and the two levels of principal’s results, the general problem of stimulating agent’s efforts, the fundamental conflict between incentives and insurance as a key source of moral hazard is defined and explained

Solution of an issue: profit sharing, optimal contracts in case of an absolute and zero bargaining capacity of an agent for symmetric information and asymmetric information, the conflict between the agent‘s incentives and insurance, transfer of principal’s trading gain to agent

Moral hazard in team: the effective wage, macroeconomic consequences of effective wage

**Reading**

Skorobogatov A. S. (2006) *Lectures and Problems on Theory of Contracts*. Saint-Petersburg: HSE. Chs. 6-8.

**Supplementary references**

Shapiro C, and Stiglitz J. (1984) Equilibrium Unemployment as a Worker Discipline Device // *American Economic Review*, vol. 74, pp. 433-444.

Varian H. R. (2006) *Intermediate Microeconomics. A Modern Approach*. New York: W. W. Norton. Chs. 37.

**15. Incomplete contracting**

Parameters of transactions: relational asset specificity, structural uncertainty, transaction frequency

Means of management: market, trilateral, bilateral and unilateral relations, trade-off between market and hierarchy

Incomplete contracts: statement of an issue, assumptions as for rationality and kind of information asymmetry, Means of organization: property rights, firm, and integration

The Hart-Moore model: relationships between contract incompleteness and underinvestment, transaction-specific and positive externalities

The Grossman-Hart model: complete contract, non-integration, control of a firm over actions of both firms, and optimal distribution of property rights

The Tirole-Furubotn-Richter model: non-integration and control of a buyer and control of a seller, distribution of the assignments inside an organization

**Reading**

Skorobogatov A. S. (2006) *Lectures and Problems on Theory of Contracts*. Saint-Petersburg: HSE. Chs. 9-12.

**Supplementary references**

Grossman S. J. and Hart O. D. (1986) The Costs and Benefits of Ownership: A Theory of Vertical and Lateral Integration // *Journal of Political Economy*, vol. 94, pp. 691-719.

Hart O. D. and Moore J. (1988) Incomplete Contracts and Renegotiation // *Econometrica*, vol. 56, pp. 755-785.

# Forms of assessment

## Formative assessments

The following forms for the current assessment are used

* Quiz
* Q&A - Questions and Answers (questions based on reading and lecture material) during contact sessions
* Home Assignments in LMS
* Mid-term closed-book test in LMS (2 hours in class)

## Summative assessments

Summative grade is determined as follows

* Quizzes and Q&A [20%]
* Home Assignments in LMS [20%]
* Mid-term closed-book test in LMS (2 hours in class) [30%]
* Final closed-book exam in LMS (2 hours in class) [30%]

# Teaching methods and education technologies

The discipline should be taught interactively. Both lectures and seminars imply feed-back from the students with its further assessment as a part of the summative grade. Lectures consist in revision of the previously taught material that facilitates the feed-back, and presentation of new material using animated slides with some intentionally blank spaces to be filled in by the students. During seminars the students are to practice in solving problems. This make them develop their technical skills as well as their ability to analyze various real cases related to change and performance of institutions.

The following resources support students’ learning:

lecture slides that are distributed before lecture, so students don’t need to copy them. However, some spaces in formulae, graphs and propositions are intentionally left blank to facilitate students’ lecture participation and attention;

problems in LMS for the home assignments, the mid-term test and the final exam.

# Sample questions and problems

**Sample multiple choice tasks to be used in the final exam**

1. According to the neoclassical economics, economic reason for the state

a) is related to market failures;

b) is the need to run the counter-cyclical policy;

c) reduces to specification of property rights;

d) reduces to long-run planning of economic development.

2. The key feature of an agent able to specify property rights is

a) comparative advantage in violence;

b) comparative advantage in collecting and processing information;

c) power to define the agenda;

d) orientation to maximization of the social welfare.

3. The common resource tragedy does not imply that

a) under the free access regime there is difference between the private and social costs;

b) specification of property rights facilitates effective resource allocation;

c) under the free assess regime there is no point of optimal resource exploitation for on individual level;

d) the free assess regime leads to the resource waste.

**Sample questions for the seminar discussions**

1. Under the exhaustive property right specification, lack of the wealth effect, and positive transaction cost, what is to be relationship between an initial property rights distribution and resource allocation? Will it be optimal? Explain
2. Why inequality between private and social costs excludes optimal resource allocation? Explain using Coase theorem.
3. In what sense the prisoner’s dilemma suggests that institutions matter?
4. Why given lack of labor division institutions are not necessary for society?
5. What difference exists between the neoclassical economics and the new institutional economics in their assumptions as to what institutions are part of subject-matter of economics?

**Sample problems for the test and the final exam**

1. Resources move between four locations according to the transition probability matrix with the trembling hand

a. fill the gaps in the matrix with the vulgar fractions;

b. find the location most affected by the trembling hand effect;

c. find the location with the maximum transition probability;

d. explain the results.

2. Payoffs matrix for the game 2 x 2 is as follows

a. is there Nash equilibrium in this game? If yes, find it. Is it unique?

b. is there Pareto-optimum in this game? If yes, find it. Is it unique?

c. what values of the discount rate make the players choose socially optimal strategies?

3. Payoff matrix in the etiquette game is as follows:

|  |  |  |  |
| --- | --- | --- | --- |
| man woman |  | Not yield | Yield |
|  |  | p2 | 1-p2 |
| Yield | p1 | 4,5 | 0,0 |
| Not yield | 1-p1 | 0,0 | 5,4 |

Fine asymptotically stable etiquette norm under the initial mixed strategies p1 = 0,2, р2 = 0,9.

a. man yield

b. woman yield

c. mixed equilibrium

d. moving along the dashed line

4. State set of the system has the three recurrent classes. The transitions between them imply the resistance as is pictured in the directed graph:

Find stochastically stable recurrent class.

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