

## Quantitative Methods & Decision Making

Department of administrative management and International activity

Faculty of Agricultural Management

<b>Lecturer</b>	<b>Assoc. Prof. Dr. Olena Kovtun</b>
<b>Teaching period</b>	<b>academic year 2017/2018 (autumn 3)</b>
<b>Type subject</b>	<b>Master</b>
<b>ECTS credit</b>	<b>6</b>
<b>Assessment</b>	<b>written and oral</b>
<b>Marking scale</b>	<b>4-point scale</b>
<b>Contact hours</b>	<b>60</b>

### Objective and general description

Top managers and directors used to rely on their experience and instinct to make decisions. Increasingly, however, they want to know what the numbers mean. In the big data era, quantitative methods used by operations analysts and economists provide solid evidence to guide management decisions on production, distribution, marketing and personnel management. These methods also help managers project future business conditions, enabling them to adjust their strategies as needed.

### Lectures:

1. Fundamentals of Decision Making (DM). An Introduction to Models
2. Quantitative Methods and Computer-based Information Systems
3. LP. The Simplex Method. Introduction. Simplex solution procedures. Surplus and artificial variables. Solving the minimization problems. Solving LP by computer.
4. The Dual in LP. Special cases in using the simplex method.
5. Game Theory. Introduction to the language of games. Pure strategy games. The minimax criterion. Mixed strategy games. Dominance.
6. Markov Analysis. Introduction. States and state probability. The matrix of transition probabilities. Equilibrium conditions. Solving Markov analysis problems by computer.
7. Decision Trees

### Seminars:

1. Case 1. Formulation of constrained optimization models.
2. Case 2. Formulation of constrained optimization models.
3. Case 3. Formulation of constrained optimization models.
4. Case 4. Formulation of constrained optimization models.
5. Case 5. Formulation of constrained optimization models.
6. Case 6. Formulation of constrained optimization models.
7. Case 7. Formulation of constrained optimization models.
8. Case 8. Formulation of constrained optimization models.

### Study literature:

1. Jennings D. and Wattam S., Decision Making, Prentice Hall, England, 1998
2. Curvin G. and Slater R., Quantitative methods for Business Decisions, Tomson, China, 2000
3. Robert T. Clemen, Making Hard Decisions. An Introduction to Decision Analysis, 1995