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Course item:

1. INFORMATION ABOUT THE COURSE**A. Basic information**

Name of course	Decision Support Systems
Study level	<i>first degree</i>
Unit running the study programme	<i>Faculty of Management, Department of Management Engineering</i>
Study programme	<i>Management and Production Engineering</i>
Speciality	<i>Manufacturing Bioengineering</i>
Name of teacher (s) and his academic degree	<i>Waldemar Bojar, Professor</i>
Introductory courses	<i>specify maths, information technology, management information systems</i>
Prerequisites	<i>basic knowledge of maths, computing, IT, management</i>

B. Semester/week schedule of classes

Semester	Lectures	Classes	Laboratories	Project	Seminars	Field exercises	ECTS
summer	15		30				4

2. EFFECTS OF EDUCATION (acc. to National Qualifications Framework)

Knowledge	<i>on successful completion of the course student is supposed to identify process of planning and organization of production by means of computer tools, including a detailed technological solutions and also is able to discern a variety of production systems for manufacturing the raw materials of plant origin perceived in the perspective of the food supply chain and other industrial products of plant origin</i>
Skills	<i>on successful completion of the course student is supposed to analyse, plan, project and interpret application and usage of specialized tools for ensuring the rational management of resources necessary for manufacturing the raw materials of plant origin perceived in the perspective of the food supply chain and other industrial products of plant origin. In particular, student will be able to plan parameters for the plant production management, model and resolve problems of production systems including economic and social, natural, as well as technological and organizational conditions and calculate measures useful for evaluation of received from Decision Support System application decision scenarios.</i>
Competences	<i>on successful completion of the course student is supposed to cooperate with company managers to prepare decision scenarios for optimal planning production systems for manufacturing the raw materials of plant origin</i>

3. TEACHING METHODS

<i>multimedia lecture, lab, project, method of cases</i>
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4. METHODS OF EXAMINATION

<i>written exam a one during semester, project a one during semester</i>
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5. SCOPE

<i>Lectures</i>	<i>Phases of decision-making process. Decision-making in different timeframes. Definition and genesis of decision support systems (DSS) - functions, structure and processes. Expert systems in agriculture-examples. Characteristics of effective decision support systems in agriculture. Predicting</i>
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	<p>performance using simulation experiments. Preparing the database for DSS. Technology spreadsheets, the use of optimization methods. DSS design using knowledge engineering tools: Factors shaping the process of modernizing the equipment of farms and agricultural enterprises with the mechanized equipment. Development of computer technology based DSS applications in the area of the strategic planning of machines selection.</p>
Laboratories	<p>Simulating economic effects of different decision-making situations regarding changes in: products prices, amounts of expenditures, crops volume, used technologies, production structure, etc. Designing an optimal plan for the selection of machines with simulation models and taking into account the possibility of planning for different decision-making scenarios with different: activities, their scale, technological processes, sets of mechanization and staff, purchase forms, machinery usage patterns, natural risks, etc. A case study to illustrate the farms modeling methodology – i.e. models parameterization and amended changes effects evaluation to illustrate various decision-making simulation using MOWM expert system. Creation of processing algorithms and knowledge base input and output sets.content</p>

6. LITERATURE

Basic literature	<p>Leigh W.E., Doherty M.E., 1986. <i>Decision support and expert systems</i> South-Western. Prentice-Hall. Martin J., Oxman S., 1988. <i>Building expert systems a tutorial</i>. Prentice-Hall.</p>
Supplementary literature	<p>Constantine L.L., Lockwood L.A., 2002. <i>Process Agility and Software Usability</i>. [in] <i>Information Age</i>. D. Constantine & Lockwood Ltd., University of Technology, Sydney. <i>Formal Methodologies and Tools for Decision Support Systems</i>, 2009. <i>European Journal of Operational Research</i> Volume 195, Issue 3, ed. P. Zarate. <i>IT Decisions in Organizations</i>, 2009. <i>Decision Support Systems</i>. Volume 46, Issue 4, Ed. James Y.L. Thong and Felix B. Tan, 753-912.</p>