

COURSE DESCRIPTION CARD

| Bialystok University of Technology Faculty of Engineering Management | | | | | | | | | |
|---|---|----------|-----------|----------|-----------|-----------|----------|--|--|
| Field of study | Management | | | | | | | Degree level and programme type | first degree/ second degree |
| Specialisation/ diploma path | - | | | | | | | Study profile | - |
| Course name | Strategic modelling and business dynamics | | | | | | | Course code | IS-FM-00091W |
| | | | | | | | | Course type | elective |
| Forms and number of hours of educational activities | L | C | LC | P | SW | FW | S | Semester | winter |
| | | | 30 | | | | | No. of ECTS credits | 5 |
| Entry requirements | | | | | | | | | |
| Course objectives | Students get knowledge in the area of system dynamics method and its relation to market, management and research. They will able to build models and use causal loop diagrams, stock and flow diagrams, table functions, and equations to represent and illustrate cause-and-effect relationships. They gain knowledge how avoids mistakenly interpreting symptoms as causes. Student will analyse and understand strategic business, as well as find long-term solutions and avoid 'fire-fighting' behaviour. Students in pair using Vensim will able to model chosen simulation in relation to strategic management area. | | | | | | | | |
| Course content | 1. Introduction to system dynamics and systems thinking. 2. System thinking and simulation in strategic management. 3. Principles for formulating dynamic system modeles. 4. Structure of a dynamic system model. 5. Introduction to Vensim software. 6. Strategic modelling with Vensim. 7. System dynamics perspective in the case of pharmaceutical market dynamics and strategic planning. 8. New approach to simulation modelling. | | | | | | | | |
| Teaching methods | Case studies, computer laboratory classes, project group | | | | | | | | |
| Assessment method | Evaluation of the project, presentation on the group the project and defence, test based of background | | | | | | | | |
| Symbol of learning outcome | Learning outcomes | | | | | | | Reference to the learning outcomes for the field of study | |
| | Knowledge: the graduate knows and understands | | | | | | | | |
| LO1 | Obtain knowledge about the system dynamics methods. | | | | | | | - | |
| LO2 | Understand the relation in the economy and business in perspective of system dynamics and can build own simulation. | | | | | | | - | |
| | Skills: the graduate is able to | | | | | | | | |
| LO3 | Can use Vensim to strategic modelling and business dynamics. | | | | | | | - | |

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| LO4 | Practical use causal loop diagrams, cause-and-effect relationships | - |
| | Social competence: the graduate is ready to | - |
| LO5 | Communicate and work in small groups. | - |
| LO6 | Use principles and ethical standards. | - |
| Symbol of learning outcome | Methods of assessing the learning outcomes | Type of tuition during which the outcome is assessed |
| LO1 | test and evaluating the student's project | |
| LO2 | test and evaluating the student's project | |
| LO3 | evaluating the student's project | |
| LO4 | evaluating the student's project | |
| LO5 | evaluating the student's project | |
| LO6 | evaluating the student's project | |
| Student workload (in hours) | | No. of hours |
| Calculation | Participation in the laboratory classes | 30 |
| | Preparation for the laboratory | 30 |
| | Elaborating the project/students-teacher consultation | 35 |
| | Presentation and prepare to pass the module | 30 |
| | | |
| | TOTAL: | 125 |
| Quantitative indicators | | HOURS |
| Student workload – activities that require direct teacher participation | | 1 |
| Student workload – practical activities | | 4 |
| Basic references | 1. Garcia J.M., Theory and Practical Exercises of System Dynamics, Spain, 2017 2. Garcia J.M., Common mistakes in System Dynamics, Spain, 2019 3. Sterman J. D., Business Dynamic. Systems Thinking and Modeling for a Complex Worlds, Irwin McGraw-Hill, 2000 | |
| Supplementary references | 1. Forrester J.W., Industrial Dynamics, Pegasus Communications, Waltham, 1999 2. Warren K., Strategic Management Dynamics, Wiley, 2008, 3. Paich M., Peck C., Valant J., Pharmaceutical market dynamics and strategic planning: a system dynamics perspective, System Dynamics Review, vol 27, No 1, 2011 4. Morecroft J. D.W., Strategic Modelling and Business Dynamics, Wiley, 2007 | |
| Organisational unit conducting the course | Department of Management, Economics and Finance | Date of issuing the programme |
| Author of the programme | D r Andrzej Pawluczuk | 22.02.2022 |

L – lecture, C – classes, LC – laboratory classes, P – project, SW – specialization workshop, FW - field work, S – seminar