

## ITEM CARD (SYLLABUS)

### Description of the course

|   |   |   |                       |        |
|---|---|---|-----------------------|--------|
| Code course                                 | Course name   | <i>ECONOMETRICS 1</i>   |                       |        |
| <i>IBF/O/INS/A.3</i>                        |   | <i>EKONOMETRIA 1</i>  |                       |        |
| Language                                    | English   |   |                       |        |
| Academic Year                               | 2024/2025   |   |                       |        |
| Direction of study                          | <i>International Business and Finance</i>                                     |   |                       |        |
| Level of education (study)                  | <i>Level 1</i>  |   |                       |        |
| Profile of education (study)                | <i>General academic</i>   |   |                       |        |
| Form of study                               | <i>Extramural</i>   |   |                       |        |
| Semester / semesters                        | 3   |   |                       |        |
| Belonging to a course groups                | <i>A- Fundamental courses</i>   |   |                       |        |
| Course status                               | <i>Compulsory</i>   |   |                       |        |
| Form of classes, hours, ECTS points         | Form of classes   | Number of hours   | Number of ECTS points |        |
|   | Lecture   | 15 [h]  | 5 ECTS                |        |
|   | Exercises   | 15 [h]  |                       |        |
|   | Seminar   | [h]   |                       |        |
| Relationship of subject                     | with profile of education (study)   | <i>Related to conducted scientific activity in the field of economics and finance</i> |                       | 3 ECTS |
|   | with qualifications   | -----   |                       | ECTS   |
|   | with discipline   | Economics and finance   |                       | 5 ECTS |
| Form of teaching                            | <i>traditional - classes organized at the University</i>                      |   |                       |        |
| The criterion for the selection of students | All students of International Business and Finance                            |   |                       |        |
| Unit running course                         | Department of Mathematics   |   |                       |        |
| Coordinator                                 | dr inż. Monika Maj  |   |                       |        |
| Faculty www address                         | <a href="http://weif.uniwersytetradom.pl">http://weif.uniwersytetradom.pl</a> |   |                       |        |
| E-mail, phone number of coordinator         | <a href="mailto:m.maj@uthrad.pl">m.maj@uthrad.pl</a> (48) 361-78-12           |   |                       |        |

### COURSE OUTCOMES, METHODS OF TEACHING AND VERIFICATION OF THE EFFECTS OF EDUCATION

|                        |  |
|------------------------|--|
| Purpose of the course: | The aim of the course is to familiarize students with selected quantitative methods used in modeling economic phenomena and in forecasting economic processes. |
|------------------------|--|

|   |   |
|---|---|
| <p>Course teaching content:</p>   | <p>The course content is related to conducted scientific research.</p> <p><b>Lecture content:</b></p> <ol style="list-style-type: none"> <li>1. Introduction (1h)</li> <li>2. Elements of operational research, PL method, graphical illustration, simplex method, applications (3 h, W3)</li> <li>3. Transport issue, model, methods of determination of initial solution, optimal solution (2 h, W3)</li> <li>4. Selected information about boundary matrices (1 h, BN,W1)</li> <li>5. Theory of single-horizon linear econometric models (model with one explanatory variable): stages of econometric testing, design, selection variable, KMNK, point estimation, interval (2h, BN, W2)</li> <li>6. verification of the model, elements of forecasting (2h, BN, W2)</li> <li>7. Developmental trend models, linear trend, power trend, creeping (2h, W2)</li> <li>8. Elements of multidimensional comparative analysis (2h, W3)</li> </ol> <p><b>Exercises content:</b></p> <ol style="list-style-type: none"> <li>1. Reminder of basic information from algebra linear (1 h)</li> <li>2. Building PL models, methods of solving PL method, examples of applications (3h, W3, U4, K2)</li> <li>3. Solving transport issues, model, determination of the initial and optimal solution (2 h, W3, U4, K2)</li> <li>4. The use of boundary matrices in econometrics (1 h,U1)</li> <li>5. Econometric modelling (construction, selection variable, KMNK, point estimation, interval (2 h, W2, U2, U3, K1)</li> <li>6. Standardization of variables, correlation coefficients, elements of forecasting (2 h, U3)</li> <li>7. Simple development trend models, linear trend, Powerful, creeping (2 h, U3, K2)</li> <li>8. WAP in practice (1h, U2, K2)</li> <li>9. Auditorium work (1h)</li> </ol> |
| <p>Method of teaching:</p>  |   |
| <p>Grading criteria, criteria for assessing learning outcomes, method of calculating the final grade:</p> | <p><i>The condition for passing the course is achieving all the required learning outcomes specified for the course.</i></p> <p>Lecture – assessment from the written exam.<br/>Exercises – total of grades: 10% activity in classes, 90% grade from a written test.</p>  |

| Education effects for the course in relation to the direction effects and form of classes |   |                                   |                                 | Verification methods of learning outcomes (form check) |                               |
|---|---|-----------------------------------|---------------------------------|--|-------------------------------|
| Number of education effect  | Description effects of education for the subject (PEU)<br>Student who has completed the course (W) knows and understands/(U) is able to /(K) is ready to:     | Directional learning effect (KEU) | Form of realization of teaching | Examination form                                       | Form check                    |
| W1  | Students knows and understands the rules of mathematical formalism, necessary for construction and analysis of simple mathematical models useful in economics | K_W01<br>K_W05                    | Lecture exercises               | Pass with a grade                                      | Written exam/<br>written test |

|    |  |                |                   |                   |                                       |
|----|--|----------------|-------------------|-------------------|---------------------------------------|
| W2 | Student knows and understands the essence of building different types of deterministic and stochastic econometric models | K_W04<br>K_W05 | Lecture exercises | Pass with a grade | Written exam/<br>written test         |
| W3 | Student knows the basics of the linear programming issue, transport issue and WAP  | K_W04<br>K_W05 | Lecture exercises | Pass with a grade | Written exam/<br>written test         |
| U1 | Student can use a spreadsheet for simple calculations  | K_U13<br>K_U15 | exercises         | Pass with a grade | Written test                          |
| U2 | Student can prepare data and make classification and linear ordering   | K_U02<br>K_U05 | exercises         | Pass with a grade | Written test                          |
| U3 | Student can estimate, verify and practically use the linear econometric model with one explanatory variable              | K_U02<br>K_U07 | exercises         | Pass with a grade | Written test                          |
| U4 | Student can build a simple linear programming model, including transport issues and solve it.                            | K_U02<br>K_U07 | exercises         | Pass with a grade | Written test                          |
| K1 | Student is ready for further education, knows limitations of their own knowledge.  | K_K01<br>K_K05 | exercises         | Pass with a grade | Discussion/<br>activity during course |
| K2 | Student is ready to use simple econometric models in practice.   | K_K01<br>K_K05 | exercises         | Pass with a grade | Discussion/<br>activity during course |

| Recommended reading, literature supplement, teaching aids   |   |
|---|---|
| 1.  | Zbigniew Śleszyński, Using bordered matrices for Durbin-Watson d statistic evaluations, „Central European Review of Economics & Finance”, Faculty of Economics , K. Pułaski University of Technology and Humanities in Radom vol. 5, No 2 (2014), pp. 51-60; ISSN 2082-8500       |
| 2.  | <a href="https://economics.ut.ac.ir/documents/3030266/14100645/Jeffrey_M._Wooldridge_Introductory_Econometrics_A_Modern_Approach__2012.pdf">https://economics.ut.ac.ir/documents/3030266/14100645/Jeffrey_M._Wooldridge_Introductory_Econometrics_A_Modern_Approach__2012.pdf</a> |
| 3.  | <a href="http://home.ustc.edu.cn/~matheming/Econometrics.pdf">http://home.ustc.edu.cn/~matheming/Econometrics.pdf</a>   |
| 4.  | <a href="https://www.cbpbu.ac.in/userfiles/file/2020/STUDY_MAT/ECO/1.pdf">https://www.cbpbu.ac.in/userfiles/file/2020/STUDY_MAT/ECO/1.pdf</a>   |
| <i>A detailed list of additional literature, web sources and teaching aids will be provided by a teacher during the first class</i> |   |

| Student workload needed to achieve the assumed learning outcomes - balance of ECTS points |                                  |  |                 |
|---|----------------------------------|--|-----------------|
| Participation in classes, activities  | Student's working hours [h]      |  |                 |
|   | Other hours.<br>Contact<br>(IGK) | Classes without<br>a teacher –<br>student's own<br>work<br>(ZBN) | Classes         |
| Participation in Lectures/ Seminars   | X                                | X  | 15[h]           |
| Participation in Exercises/Laboratories   | X                                | X  | 15[h]           |
| Participation in the Consultation   | 7[h]                             | X  | X               |
| Preparing to lectures/ exercises/seminars<br>Preparation for an examination               | X                                | 88[h]  | X               |
| Summary of student's workload   | 7[h]/0,3ECTS                     | 88 [h]/ 3,5ECTS  | 30[h]/ 1,2 ECTS |
| Points of ECTS for subject  | 125 [h] / 5ECTS                  |  |                 |

| Additional information and remarks  |
|---|
| For students with special needs, including those with disabilities and chronic illnesses, the methods and forms of verifying learning outcomes specified above (in the course syllabus) are appropriately adjusted to meet the individual needs of these students.<br>"The detailed rules and rights of students with special needs, including those with disabilities and chronic illnesses, regarding participation, assessment, and examinations, are specified in the Study Regulations, Study Rules, and |

Procedures for Ensuring Accessibility of the Educational Process for Students with Special Needs, including those with disabilities and chronic illnesses."