Appendix No. 1.5 to the Resolution No. 61/2025
of the Rector of the University of Rzeszów

SYLLABUS

REGARDING THE QUALIFICATION CYCLE FROM 2026 TO 2029
ACADEMIC YEAR 2028/2029

1. BASIC COURSE/MODULE INFORMATION

Course/Module title	Statistical Research Tools and Techniques
Course/Module code *	
Faculty (name of the unit offering the field of study)	Faculty of Exact and Technical Sciences
Name of the unit running the course	Institute of Mathematics
Field of study	Mathematics
Qualification level	First-cycle studies
Profile	General academic
Study mode	Full-time
Year and semester of studies	Year 3, semester 6
Course type	Specialisation course
Language of instruction	English
Coordinator	Sebastian Wójcik, PhD
Course instructor	Sebastian Wójcik, PhD

* - as agreed at the faculty

1.1.Learning format – number of hours and ECTS credits

Semester (no.)	Lectures	Classes	Laboratories	Seminars	Practical classes	Internships	others	**ECTS credits**
6	15		30					3

1.2. Course delivery methods

☒ conducted in a traditional way
☐ involving distance education methods and techniques

1.3. Course/Module assessment (exam, pass with a grade, pass without a grade)

Laboratory classes – pass with a grade, lectures – pass without a grade.

2. PREREQUISITES

Descriptive statistics, introduction to R

3. OBJECTIVES, LEARNING OUTCOMES, COURSE CONTENT, AND INSTRUCTIONAL METHODS

3.1. Course/Module objectives

O1	Students will be introduced to the standard GSBMP model.
O2	Students will acquire skills in designing sample surveys.
O3	Students will acquire skills of applying R packages dedicated for sample surveys.

3.2. COURSE/MODULE LEARNING OUTCOMES (TO BE COMPLETED BY THE COORDINATOR)

Learning Outcome	The description of the learning outcome defined for the course/module	Relation to the degree programme outcomes
LO_01		
LO_02		
LO_n		

3.3. Course content (to be completed by the coordinator)

A. Lectures

Content outline
Conducting sample surveys based on GSBPM model
Designing questionnaires
Sample design
Standard estimators for sample surveys
Disclosure control

B. Classes, laboratories, seminars, practical classes

Content outline
Developing survey frame
Sample design with *sampling* package
Estimation and weights with *survey* package
Weights calibration with *calib* package
Missing data problem and data imputation techniques
Statistical disclosure control with *sdc* package

3.4. Methods of Instruction

Lecture: lecture supported by a multimedia presentation/ distance learning
Laboratory classes: designing and conducting experiments

4. Assessment techniques and criteria

4.1 Methods of evaluating learning outcomes

Learning outcome	Methods of assessment of learning outcomes (e.g. test, oral exam, written exam, project, report, observation during classes)	Learning format (lectures, classes,...)
LO-01		
LO-02		

4.2 Course assessment criteria

Lecture credit is based on a test.

The condition for passing the lecture is obtaining at least 50% of the points on the test.

Laboratory (practical class) credit is based on a project and class participation.

The condition for passing the laboratories is obtaining at least 50% of the points from the project. The final grade is then determined according to the following scale:

below 50% – fail,

[50–60%) – satisfactory,

[60–70%) – satisfactory plus,

[70–80%) – good,

[80–90%) – good plus,
[90–100%] – very good.

5. Total student workload needed to achieve the intended learning outcomes – number of hours and ECTS credits

Activity	Number of hours

Course hours	45
Other contact hours involving the teacher (consultation hours, examinations)	2
Non-contact hours - student's own work (preparation for classes or examinations, projects, etc.)	30
Total number of hours	77
Total number of ECTS credits	3

* One ECTS point corresponds to 25-30 hours of total student workload

6. Internships related to the course/module

Number of hours	*Not applicable*
Internship regulations and procedures	*Not applicable*

7. Instructional materials

Compulsory literature: GSBPM model (online https://unece.org/sites/default/files/2024-10/Implementation%20Standards%20in%20the%20context%20of%20GSBPM.pdf) GSIM model – user guide (online https://unece.org/sites/default/files/2025-03/GSIM%20User%20Guide.pdf) Common Statistical Data Architecture (CSDA) (online https://statswiki.unece.org/download/attachments/129177312/HLG-MOS%20Reference%20Data%20Architecture%20v1.0.pdf?version=1&modificationDate=1516727553690&api=v2) Introduction to Survey Sampling / By:Graham Kalton Publisher: SAGE Publications, Inc., 2021 Practical Methods for Design and Analysis of Complex Surveys / Risto Lehtonen, Erkki Pahkinen, Wiley, 2003
Complementary literature: Learning RStudio for R Statistical Computing. Learn to effectively perform R development, statistical analysis, and reporting with the most popular R IDE / Mark van der Loo, Edwin de Jonge, Packt Publishing

Approved by the Head of the Department or an authorised person