University of Gdańsk

Subject card

Subject name and code	Diagnosing Population Phenomena, PG_00178108		
Field of study	Informatics and Econometrics		
Date of commencement of studies	October 2026	Academic year of realisation of subject	2027/2028
Education level	Bachelor's studies	Subject group	Optional subject group Subject group related to scientific research in the field of study
Mode of study	full-time studies	Mode of delivery	at the university
Year of study	2	Language of instruction	Polish
Semester of study	4	ECTS credits	7.0
Learning profile	academic	Assessment form	exam
Conducting unit	Department of Statistics -> Faculty of Management -> Rector		
Name and surname of lecturer (lecturers)	Subject supervisor	dr hab. Beata Jackowska	
	Teachers		

Lesson types

Lesson type	Lecture	Tutorial	Laboratory	Project	Seminar	SUM
Number of study hours	30.0	30.0	15.0	0.0	0.0	75

E-learning hours included: 0.0

Learning activity and number of study hours

Learning activity	Participation in didactic classes included in study plan	Participation in consultation hours	Self-study	SUM
Number of study hours	75	4.0	96.0	175

Subject objectives

1. Introduce students to the basic concepts and methods of demography, and present contemporary population challenges in Poland and worldwide.
2. Demonstrate the nature, social determinants and consequences of demographic processes; outline the socio-demographic structure of populations and selected population-policy topics.
3. Prepare students to independently assess demographic situations and trends.
4. Explain the principles of constructing life tables from longitudinal and cross-sectional data, and enable students to acquire the skills to independently build tables and interpret them.
5. Familiarize students with data sources on social phenomena and processes, methods for their quantitative analysis, and the interpretation of results.
6. Provide information on aspects of the social changes taking place in Poland and Europe.

Learning outcomes

Course outcome	Subject outcome	Method of verification
[IiEL3_U02] Students can select or construct econometrics, informatics or statistics tools and apply them to describe and solve economic and social problems.	The student can select basic statistical and demographic methods and apply them to describe demographic and social phenomena and processes. The student is able to prepare a written work on the assessment of demographic and social situations and processes.	[SU2] presentation/project/paper/ report [SU3] text preparation/written work [SU4] test/exam - oral or written
[IiEL3_U04] Students can build and interpret models of economic and social phenomena and processes for decision-making processes.	The student is able to make a statistical description of basic demographic and social phenomena and processes, formulate and verify simple hypotheses regarding their formation, is able to construct simple demographic forecasts.	[SU2] presentation/project/paper/ report [SU3] text preparation/written work [SU4] test/exam - oral or written
[IiEL3_W04] The student has advanced knowledge and understanding of human roles, places, and behaviour in organizations or projects, both as individuals and in group and organizational dimensions.	The student knows and understands the social conditions and consequences of demographic and social processes and selected issues of population policy.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report [SW3] text preparation/written work
[IiEL3_U03] Students can obtain data from appropriately selected sources, use these data to solve economic and social problems, and process and interpret them using econometrics, informatics or statistics tools.	The student can obtain data on socio-demographic phenomena and processes, analyze these data and interpret the results of these analyses using statistical and demographic tools.	[SU2] presentation/project/paper/ report [SU3] text preparation/written work
[IiEL3_W03] To an advanced degree, the student knows and understands how an organization functions, the phenomena, processes and relationships occurring in its environment, and their impact on its functioning.	The student knows and understands the functioning of the population register and statistical information system. The student knows and understands contemporary population problems in Poland and the world and has knowledge about the social transformations taking place in Poland and Europe.	[SW4] test/exam - oral or written [SW2] presentation/project/paper/ report [SW3] text preparation/written work

Subject contents

Demography

1. Demography as a science of population development. Demographic theories. Records and statistical information system about the population. Research methods used in demography.
2. The world's population: the state and dynamics of change. Population density. Settlement barriers. Polish population: state and dynamics of change.
3. Population structure by sex and age. Factors influencing the population structure by sex and age. The process of demographic aging of the population: method of measurement and demographic and socioeconomic consequences.
4. Socio-occupational structure of the population.
5. Population processes and its elements. Measures of marriage, divorce, fertility, mortality and natural increase. Fertility and reproduction. Crude, specific, standardized measures. Demographic and non-demographic factors influencing population processes in Poland.
6. Population migration: types and methods of measurement. The role of migration in socio-economic development.
7. Methods of research and analysis of the health status of the population.
8. Population projection. Types of projections and their functions. Projection methods.
9. Selected demographic problems of the contemporary world.

Life Tables

1. Longitudinal and cross-sectional analysis of mortality, the Lexis diagram. Sources of mortality data.
2. Demographic life tables: types of tables, table functions, interpretation of table functions and relations between them, properties of table functions.
3. Principles of constructing life tables, construction of life tables for males and females separately and combined.
4. Graduation of life tables (moving-weighted-average, interpolation and analytical methods), assessment of smoothness and fit of the graduated results.
5. Parametric models of mortality (analytical laws of mortality), fitting models and their extrapolation to the oldest ages.

Social statistics

1. Research area of social statistics. Data sources in social statistics. Basic social research in Poland and the EU.
2. Households and their classification.
3. Household income and its components. Equivalence scales. Methods of analysis of household income distribution.
4. Quality of life and standard of living ways of defining and measuring, spatial differentiation and changes over time.
5. Poverty and social exclusion - methods of identifying the poor and socially excluded. Measurement of poverty and social exclusion. The scope and depth of household poverty - spatial differentiation and changes over time.

Prerequisites and co-requisites

Knowledge of descriptive statistics in the scope of the "Statistics I" course program from the 1st semester of studies.

Assessment methods and criteria

Subject passing criteria	Passing threshold	Percentage of the final grade
Passing the tutorial and the laboratory based on partial written colloquia or partial projects in teams.	51.0%	50.0%
Passing the lecture based on a written exam.	51.0%	50.0%

Recommended reading

Basic literature

1. Balicki A., *Analiza przeżycia i tablice wymieralności*, PWE, Warszawa 2006
2. Bednarczyk T. H., Bielawska K., Jackowska B., Wycinka E., *Ekonomiczne i demograficzne uwarunkowania funkcjonowania i rozwoju ubezpieczeń*, Wyd. UG, Gdańsk 2019 (rozdz. 5-7)
3. Holzer J.Z., *Demografia*, PWE, Warszawa 2006
4. Okólski M., Fihel A., *Demografia. współczesne zjawiska i teorie*, Wydaw. Naukowe Scholar, Warszawa 2012
5. Panek T., *Statystyka społeczna*, Polskie Wydawnictwo Ekonomiczne, Warszawa 2020

	Supplementary literature	1. Brown R. L., *Introduction to the Mathematics of Demography*, ACTEX Publications, Winsted, Connecticut 1993 2. Jackowska B., *Modele dalszego trwania życia oraz ich zastosowania w przypadku osób starszych*, Wyd. UG, Gdańsk 2013 3. Wołoszyn A., *Nierówności dochodowe gospodarstw domowych w Polsce i ich uwarunkowania społeczno-ekonomiczne*, PWN, Warszawa 2020 4. Słaby T., *Konsumpcja. Eseje statystyczne*, Difin, Warszawa 2006 5. Leszczyński A., *Eksperymenty na biednych. Polityczny, moralny i ekonomiczny spór o to, jak pomagać skutecznie*, Wydawnictwo Krytyki Politycznej, Warszawa 2016 6. Matuszczyk K., Duszczyk M., Lesińska M., *Upolitycznienie problemu starzenia się społeczeństwa w Polsce*, Wydawnictwo Uniwersytetu Warszawskiego, Warszawa 2019 7. Fihel A. (red.), *Starzenie się społeczeństwa a polityka fiskalna i migracyjna*, Wydawnictwo Uniwersytetu Warszawskiego, Warszawa 2017
	eResources addresses	
Example issues/ example questions/ tasks being completed		
Work placement	Not applicable	

Document generated electronically. Does not require a seal or signature.