



Syllabus Course Program



Basics of Scientific Research

Specialty

073 – Management

Institute

Institute of Education and Science in Economics,
Management and International Business

Educational program

International Business

Department

Management (204)

Level of education

Master's level

Course type

Mandatory

Semester

1

Language of instruction

English

Lecturers and course developers

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PhD in Physics & Mathematics, Master's degree in Management, associate professor, associate professor of Management department

Authored and co-authored over 130 scientific publications. Teaches courses: «Organization theory», «Managerial decisions», «Marketing management», «Business ethics and social responsibility», «Basics of scientific research»

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General information

Summary

The course introduces students to the philosophical foundations of science, the nature and principles of scientific research, the specificity of research in social sciences, approaches to planning and conducting research, methods of data collection, processing, and analysis, forms of presenting research results. The course emphasizes the importance of adhering to the principles of academic integrity in research activities. The ultimate goal of the course is to help students develop the ability to carry out an independent research project and effectively communicate its results.

Course objectives and goals

- to help students develop the ability to plan and conduct a research project and present its results;
- to instill in students values and principles of academic integrity;
- to familiarize students with methods of qualitative and quantitative data collection used in social sciences;
- to equip students with methods of quantitative data analysis

Format of classes

Lectures, workshops, laboratory classes, self-study. Final control in the form of a differentiated grading

Competencies

GC01. The ability to conduct research at the required level

GC02. The ability to communicate with representatives of other professional groups of different levels (with experts in other areas of knowledge / types of economic activity)

GC06. The ability to generate new ideas (creativity)

GC07. The ability for abstract thinking, analysis and synthesis.

Learning outcomes

LO01. To critically assess, select, and use appropriate scientific, methodological and analytical tools for managing under conditions of unpredictability

LO09. To be able to communicate in professional and academic circles in the official language of Ukraine and in a foreign language

Student workload

The total volume of the course is 120 hours (4 ECTS credits): lectures - 16 hours, workshops - 16 hours, laboratory classes - 16 hours, self-study - 72 hours.

Course prerequisites

Basic knowledge of statistics

Features of the course, teaching and learning methods, and technologies

Interactive lectures with presentations, discussion-based learning, multiple choice tests, a paper (essay) on a topic either not covered or only partially covered in the course, presentation of the paper in class, student-peer feedback, data analysis using MS Excel spreadsheet

Program of the course

Topics of the lectures

Topic 1. Philosophy and methodology of science

1. Science and its role in modern society. 2. The logic of scientific method. 3. The criteria of scientific knowledge. 4. Forms of scientific knowledge. 5. Empirical research methods. 6. Theoretical research methods. 7. Types of scientific research.

Topic 2. The specificity of scientific research in social sciences

1. Classifications of sciences. 2. Natural vs. social sciences.

Topic 3. Scientific research process: planning, conducting, presenting the results

1. Steps in planning and carrying out a research project. 2. Research problem. Research goal. Research question. 3 Literature review. 4. Presentation of the research results. Academic articles. Scientific conferences.

Topic 4. Scientific ethics

1. Fundamental principles and concepts of scientific ethics. 2. Special ethical issues in social sciences. 3. Misconduct in science. 4. Plagiarism and guidelines for ethical writing.

Topic 5. Data collection methods in social sciences

1. Types of data used in social sciences. 2. Qualitative data collection techniques. 3. Quantitative data collection techniques.

Topic 6. Measurements in social sciences

1. Characteristics of a good measurement system. 2. Types of scales used for measurements in social sciences. 3. Questionnaires as instruments for data collection.

Topic 7. Sample design and sampling procedures

1. The sampling procedure. 2. Probability sampling techniques. 3. Non-probability sampling techniques. 4. Determination of sample size.

Topic 8. Data analysis

1. The general procedure of testing the statistical significance of differences. Type I and type II errors. 2. Methods of testing for statistical significance. 3. Correlation analysis. Regression analysis.

Topics of the workshops

Topic 1. Philosophy and methodology of science

1. The demarcation problem: the criteria of scientific knowledge.
2. Empirical and theoretical knowledge.
3. Empirical research methods.
4. Theoretical research methods.

Topic 2. The specificity of scientific research in social sciences

1. Classifications of sciences.
2. Natural vs. social sciences.
3. Business research vs economics.

Topic 3. Scientific research process: planning, conducting, presenting the results

1. Research problem statement, research goals and research questions.
2. Research hypotheses.
3. Research methods.
4. Presentation of the research results.
5. Genres of academic writing.

Topic 4. Scientific ethics

1. Misconduct in science.
2. Plagiarism and guidelines for ethical writing.

Topic 5. Data collection methods in social sciences

1. Observations: types, advantages, limitations.
2. Surveys: classifications, advantages, limitations, types of errors.
3. Experiments: sources of errors, internal and external validity.

Topic 6. Measurements in social sciences

1. Types of scales used for measurements in social sciences (nominal, ordinal, interval, ratio).
2. Measures of central tendency.
3. Questionnaire design.

Topic 7. Sampling procedures

1. Probability versus nonprobability sampling.
2. Determination of sample size.
3. Confidence interval.

Topic 8. Statistical analysis of data

1. Testing for statistical significance of differences and deviations: sampling statistics, chi-square analysis, analysis of variance.

Topics of the laboratory classes

Topic 1. The use of search engines for literature review. Google Scholar. DOI.

Topic 2. The use of reference managers for organizing, storing and working with sources of literature.

Topic 3. Academic honor code of NTU "KhPI" and other higher educational institutions.

Topic 4. Presentation of research results. Academic style of writing. Referencing and citing.

Topic 5. Primary and secondary data collection. Assessing the quality of data. Working with databases.

Topic 6. Measurement scales used in social sciences. Developing questionnaires for surveys in social sciences.

Topic 7. Data processing. Data visualization.

Topic 8. Correlation and regression analysis of data.

Self-study

The demarcation problem: pseudoscience. Multidisciplinary and transdisciplinary fields of studies.

Case studies on ethical conduct in science.

Focus groups. Projective techniques. Longitudinal studies. Panel studies. Experimental designs.

Examination of the results of a survey, description and evaluation of the data collection and data analysis methodology used in the survey.

Scales used in social sciences (Likert scales, constant sum scales, semantic differential scales)

Course materials and recommended reading

1. Judith Bell, Stephen Waters. Doing Your Research Project: A Guide for First-Time Researchers, 6th Edition / Mac Graw Hill Education, 2014. - 267 p.
2. Iacobucci, Dawn, Churchill Gilbert A. Marketing Research: Methodological Foundations, 12th Edition / Nashville, TN: Earlie Lite Books, Inc., 2018. - 544 p.
3. Sharan B. Merriam. Qualitative Research: A Guide to Design and Implementation, 4th Edition / John Wiley & Sons, 2015. - 368 p.
4. John W. Creswell Research Design: Qualitative, Quantitative and Mixed Methods Approaches 4th Edition / SAGE Publications, Inc. 2014. - 273 p.
5. Sekaran U. and Bougie R. Research Methods for Business: A Skill-Building Approach. 7th Edition, Wiley & Sons, West Sussex, 2016, - 420 p.
6. Zikmund W.G., Babin B.J., Carr J. C., Griffin M. Business Research Methods, 8th Edition / South-Western College Pub, Cincinnati, OH, 2009. - 668 p. Jones G. R. Organizational Theory, Design, and Change. - Seventh edition/ Pearson, 2013. -514 p.

7. The Code of Ethics of Academic Relations and Integrity of NTU "KhPI". URL: <http://blogs.kpi.kharkov.ua/v2/quality/wp-content/uploads/sites/25/2023/05/KODEKS-ETYKY2.pdf>
8. Тимошенко, І. В., Сідоров, В. І., Нащекіна, О. М. Основи наукових досліджень: методологія і практика : навчальний посібник для студентів економічних спеціальностей / І. В. Тимошенко, В. І. Сідоров, О. М. Нащекіна ; за заг. ред. д. е. н. І. В. Тимошенкова. – Х. : ХНУ імені В. Н. Каразіна, 2018. – 229 с.
9. Nicholas Walliman, Research methods: the basics / Routledge Taylor and Francis group London and New York, 2011. – 205 p.
10. Michael J Crotty. The Foundations of Social Research / SAGE Publications Ltd., 2015. -256 p.
11. William Strunk, Jr. The Elements of Style. <http://www.bartleby.com/141/>.

Assessment and grading

Criteria for assessment of student performance, and the final score structure

- 100% Final assessment as a result of two tests (50%) and continuous assessment (50%).
- 50% two multiple choice tests
- 50% Continuous assessment:
- 15% problem solving (data analysis);
 - 25% paper and its presentation in class;
 - 10% participation in class discussions

Grading scale

Total points	National	ECTS
90–100	Excellent	A
82–89	Good	B
75–81	Good	C
64–74	Satisfactory	D
60–63	Satisfactory	E
35–59	Unsatisfactory (requires additional learning)	FX
1–34	Unsatisfactory (requires repetition of the course)	F

Norms of academic integrity and course policy

The student must adhere to the Code of Ethics of Academic Relations and Integrity of NTU "KhPI": to demonstrate discipline, good manners, kindness, honesty, and responsibility. Conflict situations should be openly discussed in academic groups with a lecturer, and if it is impossible to resolve the conflict, they should be brought to the attention of the Institute's management.

Regulatory and legal documents related to the implementation of the principles of academic integrity at NTU "KhPI" are available on the website: <http://blogs.kpi.kharkov.ua/v2/nv/akademichna-dobrochesnist/>

Approval

Approved by

Date, signature

Head of the department
Olena PROKHORENKO

Date, signature

Guarantor of the educational program
Taras DANKO