

Course Title	Research Methodology			
Course Code	DLCLIMA501			
Course Type	Compulsory			
Level	MSc (Level 2)			
Year / Semester	1 st / 1 st			
Teacher's Name	Spyridon Galatsidas			
ECTS	7.5	Lectures / week		Laboratories/week
Course Purpose	<p>The importance and role of scientific research is today indisputable in understanding the world we live in, through the promotion of knowledge, science and subsequent technology, which utilizes scientific research results. Scientific research is a logical, systematic plan for solving a research problem, which identifies the aims and objectives of the research, highlights the context and approach of the researcher to the topic under investigation, explains how the researcher will conduct his research, describes the process of data collection and the analysis methodology to be followed to ensure the reliability and validity of the results and conclusions of the research, which are ultimately subject to the judgment of the scientific community.</p> <p>In the context of the Research Methodology course, students are initially introduced to the basic concepts of scientific research, as an organized and appropriately designed process of expanding knowledge. The definition of scientific research is given and its basic characteristics are described, the types of research are presented and distinguished, the phases-stages of implementation of scientific research are briefly given as well as the main factors influencing the choice of a research topic, while the main parts of a research report are described in detail. Ethical and moral issues of research are examined, as scientific progress cannot ignore such issues and, in many cases, scientific discoveries can also influence the ethical views of society. The relationship between ethics and science and its evolution over time is examined, as well as the relationship between "appropriate" and social ethics and the institutional framework for the application of ethics in research is discussed.</p> <p>A comprehensive overview of the research process is presented, in order to provide the student with an overall picture of how to develop a research proposal, the phases to be followed and the available techniques and tools. The data collection methods that provide the basic material for the implementation of a research, both in science and social science research are following. The differentiation of methods is examined, depending on the purpose and subject of the research, the most commonly applied means of data collection are presented and described and detailed examples of their application are given. Particular emphasis is placed on the questionnaire as a means of data collection.</p> <p>Data processing and analysis is done today quickly and efficiently with the use of specialized software, the most popular of which are presented and explained, combined with the necessary organization and coding of data.</p>			

	<p>The methods of statistical analysis of data are divided into two large groups, descriptive and inferential statistics. In descriptive statistics, students will get acquainted with the procedures of processing of data, in order to gain an insight into the values of the variables they have to handle. They will become familiar with procedures of sorting, creating tables, grouping and creating presentation charts and will proceed to calculations of descriptive statistics of the data.</p> <p>The deepening of statistical analyses will be done with the methods of inferential statistics, so as to be possible to draw conclusions and generalizations that will apply to the entire statistical population under investigation. Analysis methods include confidence interval estimates, hypothesis testing, comparisons of means, correlation, regression analysis. The literature review is an important stage of scientific research since it is a process of reviewing the research effort that has already been carried out and is used as a background for the implementation of a new research effort. The basic directions, ways and means are given for students to develop the necessary strategies to identify, in databases of libraries and scientific publications, the available bibliographic material on a topic under investigation.</p> <p>Capitalization of the whole research effort is its imprinting in the writing of a scientific paper. Here the characteristics of research discourse are examined, as a result of generally accepted scientific rules and a series of general guidelines are given for the writing and presentation of scientific papers, with rules for organizing the structure, contents and formatting of a scientific paper.</p>
<p>Learning Outcomes</p>	<p>Upon successful completion of the course, students will be able to:</p> <ul style="list-style-type: none"> • Define basic concepts of scientific research. • Describe the main features of scientific research. • Explain the main features of scientific research. • Describe the key parts of a research report. • Explain the key parts of a research report. • Choose which chapters of a research report are appropriate for different types of research. • Design scientific research, both qualitative and quantitative. • Compose research questions about a research topic. • Justify the need to apply and substantiate ethical rules to research. • Defend basic ethical and moral principles of scientific research. • Organize scientific research by selecting the appropriate methodology for data collection, processing and analysis. • Choose the appropriate sampling method to collect data. • Justify the choice of a sample plan and substantiate it on a case-by-case basis. • Relate sample size with the accuracy and confidence of estimates. • Prepare survey questionnaires, combining bibliographic sources from similar surveys.

	<ul style="list-style-type: none"> • Develop a data organization model that will serve their subsequent processing and analysis. • Use statistical data processing and analysis software. • Perform validity checks on data, identify potential errors and justify their decisions on validity and correction of errors. • Perform sorting and grouping procedures of variable values. • Select and create appropriate charts to clearly present their data. • Process data with appropriate methods and tools of descriptive statistics. • Explain and interpret the results of data processing. • Contrast processing results and conclude on similarities and differences on a case-by-case basis. • Analyze the data by selecting and applying the appropriate methods of inferential statistical analysis. • Use the appropriate procedures (commands-functions) of the software to perform the analyzes. • Interpret the results of analyses in a rationally accepted and scientifically sound manner. • Draw conclusions and generalizations that are scientifically acceptable. • Search for literature review data in databases of libraries and scientific publications. • Distinguish aspects of a research topic and formulate key words to describe it. • Draw conclusions from the synthesis of bibliographic sources for the adoption of appropriate approaches to a research topic. • Write a literature review on the research topic or aspects of it. • Organize the structure and contents of a scientific paper. • Standardize bibliographic references according to recognized international standards and introduce them into a scientific work. • Elaborate a research paper for publication. 		
Prerequisites		Corequisites	
Course Content	<ul style="list-style-type: none"> • Introduction to scientific research • Research ethics • Data collection methods • The questionnaire as a data collection tool 		

	<ul style="list-style-type: none"> • Data preparation and data entry • Descriptive Statistics • Inferential Statistics • Correlation – Regression • Literature review • Research discourse and scientific paper writing
Teaching Methodology	<p>Distance Learning.</p> <p>The course will provide the theoretical background through synchronous and asynchronous communication methods. The set of learning activities is supported by an electronic communication and learning platform.</p> <p>The main learning activities of the course are as follows:</p> <ol style="list-style-type: none"> 1. Study of the required course literature. 2. Presentations of content or main points or specific studies in various formats (PowerPoint, oral presentations, annotated presentations). 3. Topics discussion, formulation and resolution of questions in a specialized forum. 4. Questions, quizzes, exercises, position papers, and other self-assessments. 5. Preparation of course assignments. 6. Participation in seven video conferences.
Bibliography	<p>Textbooks</p> <p>Selected chapters from:</p> <p>Matthew Decarlo. 2018. Scientific Inquiry in Social Work. Open Social Work Education, Roanoke, VA. https://open.umn.edu/opentextbooks/formats/984.</p> <p>Rajiv S. Jhangiani, I-Chant A. Chiang, Carrie Cuttler, & Dana C. Research Methods in Psychology 4th edition. https://kpu.pressbooks.pub/psychmethods4e/</p> <p>Hamed Taherdoost. 2022. Designing a Questionnaire for a Research Paper: A Comprehensive Guide to Design and Develop an Effective</p>

	<p>Questionnaire. Asian Journal of Managerial Science, 2022, 11, pp. 8. DOI: https://doi.org/10.51983/ajms-2022.11.1.3087 hal-03741836/</p> <p>BARBARA ILLOWSKY, DE ANZA COLLEGE. (2018). Introductory Statistics. OpenStax, Rice University. https://openstax.org/details/books/introductory-statistics.</p> <p>Thomas J. Quirk, Meghan H. Quirk, Howard F. Horton. 2021. Excel 2019 for Environmental Sciences Statistics. A Guide to Solving Practical Problems. Springer Cham. https://doi.org/10.1007/978-3-030-66277-6.</p> <p>Ratna Tantra. A Survival Guide for Research Scientists. 2019. Springer Cham. https://doi.org/10.1007/978-3-030-05435-9</p>
<p>Assessment</p>	<ul style="list-style-type: none"> • Final exam (55%) • 2 evaluative assignments (10% + 20% = 30%) • 3 interactive online activities (5% + 5% + 5% = 15%) <p>All assignments (except for the final exam) are assigned and submitted on the electronic platform, where they undergo plagiarism checks using the Turnitin tool. The final exam is developed by the instructor and completed by the students on a special platform exclusively used for examinations.</p> <p>Students have 3 weeks to submit each evaluative assignment (total duration 6 weeks) and 2 weeks to complete each interactive online activity. It is at the discretion of the instructor to decide whether to grant an extension for assignment submission.</p>
<p>Language</p>	<p>Greek / English</p>