Tarih: 24 Ağustos 2025 19:01

Department of Mathematics Education / Department of Mathematics and Science Education /

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
MB 204	RESEARCH METHODS IN EDUCATION	2.00	0.00	0.00	2.00	3.00

Course Detail

Course Language	:	Turkish
Qualification Degree	:	Bachelor
Course Type	:	Compulsory
Preconditions	:	Not
Objectives of the Course	:	The aim of this course is the basic concepts of research methods, research process, general characteristics of data collection tools, analysis and evaluation of data, access to articles, theses and databases, research models and types, basic paradigms in scientific research, quantitative and qualitative research designs, sampling in qualitative research, data collection, data analysis, validity and reliability, article or thesis review, evaluation and presentation, preparing a research report in accordance with research principles and ethics, and action research in education.
Course Contents	:	This course covers basic concepts of research methods, research process, general characteristics of data collection tools, data analysis and evaluation, access to articles, theses and databases, research models and types, basic paradigms in scientific research, quantitative and qualitative research designs, sampling in qualitative research, data collection, data analysis, validity and reliability in qualitative research, article or thesis review, evaluation and presentation, preparing a research report in accordance with research principles and ethics, action research in education.
Recommended or Required Reading	:	The primary resources for the course will include lecture notes and supplementary materials, and visual and digital tools such as smartboards or projectors will be utilized during the course delivery. To enhance students' understanding of research processes, scientific articles, sample research reports, and statistical analysis software will be incorporated, while applied studies and case analyses will support the learning process. Additionally, to provide students with in-depth knowledge of research design, data collection techniques, and analysis processes, academic sources on qualitative, quantitative, and mixed methods will be recommended, and interactive discussions and group work will be encouraged to foster critical thinking skills. Recommended Sources: (1) Creswell, J. W., & Creswell, J. D. (2017). Research design: Qualitative, quantitative, and mixed methods approaches. Los Angeles: Sage Publications. (2) Yıldırım, A., & Şimsek, H. (2011). Qualitative research methods in social sciences (8th ed.). Ankara: Seçkin Publishing. (3) Özmen, H., & Karamustafaoğlu, O. (2019). Research methods in education. Ankara: Pegem Academy Publishing. (4) Fraenkel, J. R., & Wallen, N. E. (2019). How to design and evaluate research in education (7th ed.). New York: McGraw Hill. (5) Karasar, N. (2007). Scientific research method: Concepts, principles, techniques. Ankara: Nobel Publishing.
Planned Learning Activities and Teaching Methods	:	This course is designed to provide a comprehensive understanding of research methodologies through a combination of theoretical and applied learning approaches, structured in alignment with student-centered learning strategies. The course will begin with an introduction to fundamental concepts of the research process, methodological approaches, and scientific paradigms, which will be delivered through interactive lectures, discussions, and digital-visual materials such as smartboards, projectors, and database access. To enhance students' research competencies, activities such as critical reading, article and thesis analysis, case studies, and literature reviews will be incorporated. Quantitative and qualitative research designs, data collection methods, sampling techniques, and data analysis procedures will be elaborated through both theoretical discussions and practical applications based on academic studies. In this regard, students will be trained in designing and implementing data collection instruments, utilizing statistical analysis software, and preparing research reports in accordance with academic standards. Collaborative learning and problem-based learning (PBL) methodologies will be adopted to foster active student engagement. Group projects, research assignments, and seminar presentations will be integrated into the course to develop students' critical thinking, analytical evaluation, and academic writing skills. Additionally, within the scope of action research in education, students will be provided with opportunities to engage in data collection, analysis, and interpretation within a specific educational context. Special sessions will be dedicated to topics such as ethical principles in scientific research, academic integrity, and proper citation practices to cultivate students' awareness of academic ethics. Ultimately, this course aims to equip students with a multidisciplinary perspective on research processes, enabling them to apply scientific methods ethically and effectively while producing high-quality academic research.
Recommended Optional Programme Components	:	Active participation is crucial for students to develop a deep understanding of research methodologies. To enhance the effectiveness of learning, students are expected to read the assigned academic sources before class, analyze scientific articles, and actively engage in class discussions. To facilitate practical applications of research processes, students are encouraged to familiarize themselves with basic statistical analysis software (e.g., SPSS, R, Jamovi) and acquire fundamental knowledge in data processing and analysis. Individual and group research projects will be conducted to provide hands-on experience, and students will be encouraged to engage in independent research activities. Given the significance of ethical principles in scientific research, students must adhere to academic integrity standards, avoid plagiarism, and properly cite sources. In this regard, students are expected to conduct research ethically, be proficient in citation styles (e.g., APA, Chicago), and prepare research reports in accordance with academic writing conventions. To ensure more effective and systematic research, students should actively utilize university library resources and online databases (e.g., Web of Science, Scopus, Google Scholar). Additionally, participation in academic seminars and scientific events is recommended to further develop research and academic writing skills. Finally, to foster an interdisciplinary perspective, students will analyze research studies from various fields and evaluate methodological diversity. This approach aims to enhance students' ability to critically assess research processes, develop analytical thinking skills, and produce high-quality academic work.
Instructors	:	Prof. Dr. Şenol Kartal
Instructor's Assistants	:	There is no teaching assistant assigned for this course.
Presentation Of Course	:	This course will be conducted through face-to-face instruction, incorporating theoretical lectures, interactive discussions, practical applications, and group activities. Visual and digital materials (such as smartboards, projectors, and database access) will be utilized to enhance comprehension and engagement. To encourage active student participation, methods such as problem-based learning, group projects, and seminar presentations will be implemented. Additionally, students will be expected to analyze scientific articles, engage in critical evaluations, and develop small-scale research projects to deepen their understanding of research processes. Throughout the course, individual and group-based assignments will be conducted to improve academic writing and research skills, with a strong emphasis on ethical considerations and adherence to academic standards in scientific research.
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Course Outcomes

Upon the completion of this course a student :
1 Can explain the fundamental concepts related to research methodologies.
2 Can explain data collection techniques.
3 Can explain the stages of a scientific research process.
4 Can explain quantitative and qualitative research designs.
5 Can access articles, theses, and databases.
6 Can analyze and critically evaluate articles or theses related to their field.
7 Can prepare a research report in accordance with research principles and ethics.

Preconditions

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS

Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods	Course Learning Outcomes
1.Week	*Fundamental concepts and principles of research methodologies			*During the introduction, the syllabus will be reviewed, and fundamental concepts and principles of research methods will be discussed. Read Chapter 1: Science and Scientific Research from the book Research Methods in Education. This section covers the definition of science, its relationship with scientific knowledge, and scientific methods. Investigate the importance of scientific research in the field of education and take notes.	*This week, fundamental concepts and principles of research methods will be discussed. Students will be introduced to the key components of the research process, and their role in scientific research will be explained. The lecture method will be used to provide fundamental knowledge, followed by the discussion method to enhance students' awareness of research processes. Group work will involve analyzing examples of research methods to reinforce core concepts.	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1
2.Week	*Research process (identifying the problem, defining the problem and sample, data collection and analysis, interpreting the results)			*This week, the research process (identifying a problem, defining the sample, data collection and analysis, interpreting results) will be covered. Read Chapter 3: Research Topics and Problems and Chapter 4: Sampling Methods from the book Research Methods in Education. Examine the methods of defining research topics and formulate a research problem.	*This week, the research process (identifying a problem, determining the sample, data collection and analysis, and interpreting results) will be discussed. The stages of scientific research will be explained to students, and example studies will be analyzed. The lecture method will be used to explain core processes, while the hands-on activity method will help students define a research problem and analyze the process. The discussion method will be used to evaluate the advantages and disadvantages of different research approaches.	Ö.Ç.1 Ö.Ç.2 Ö.Ç.1 Ö.Ç.2
3.Week	*General characteristics of data collection tools, data analysis, and evaluation			*This week, the general characteristics of data collection tools, data analysis, and evaluation will be examined. Read Chapter 5: Quantitative Data Collection Techniques and Chapter 6: Qualitative Data Collection Techniques from the book Research Methods in Education. Analyze quantitative and qualitative data collection methods and determine the appropriate data collection techniques for a given research topic.	*This week, the general characteristics of data collection tools, data analysis, and evaluation will be examined. The use of data collection tools in research will be analyzed, and different data collection techniques will be discussed. The lecture method will explain data collection processes, while the case study method will be used to analyze various data collection tools. Group work will involve selecting appropriate data collection tools for a given research topic and conducting an analysis.	Ö.Ç.2 Ö.Ç.2 Ö.Ç.2
4.Week	*Access to articles, theses, and databases, reviewing academic literature, and utilizing research findings effectively.			*This week, access to articles, theses, and databases, as well as the review of academic literature and the effective use of research findings, will be discussed. Read Chapter 2: Literature Review from the book Research Methods in Education. Conduct a literature review in the field of education using academic databases and compile your findings.	*This week, access to articles, theses, and databases, as well as the examination of academic literature and the effective use of research findings, will be discussed. Students will be introduced to academic databases and literature review techniques. The lecture method will explain the importance and processes of literature review, while the hands-on activity method will involve students conducting a literature review on a given topic. The discussion method will be used to assess the contribution of academic studies to the scientific process.	Ö.Ç.5 Ö.Ç.5 Ö.Ç.5

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods	Course Learning Outcomes
5.Week	*Preparing a research report in accordance with research principles and ethics			*This week, preparing a research report in accordance with research principles and ethics will be discussed. Read Chapter 21: Reporting Research from the book Research Methods in Education. Learn about academic writing rules and explore scientific ethical principles.	*This week, writing a research report in accordance with research principles and ethics will be discussed. Writing techniques that comply with scientific ethical rules and methods to avoid plagiarism will be emphasized. The lecture method will explain scientific writing rules, while the hands-on activity method will involve students writing a short academic paper. The discussion method will be used to evaluate the impact of ethical violations on academic studies.	Ö.Ç.3 Ö.Ç.7 Ö.Ç.3 Ö.Ç.7 Ö.Ç.3 Ö.Ç.7
6.Week	*Fundamental paradigms in scientific research			*This week, fundamental paradigms in scientific research will be examined. Read Chapter 7: Scientific Research Paradigms from the book Research Methods in Education. Analyze different scientific paradigms used in educational research and evaluate their impact on education policies.	*This week, fundamental paradigms in scientific research will be discussed. Students will be introduced to positivist, post-positivist, interpretive, and critical paradigms, and their influence on the research process will be explained. The lecture method will be used to introduce key paradigms, while the comparative analysis method will be used to evaluate the differences between them. Group work will involve examining sample research studies based on different paradigms.	Ö.Ç.6 Ö.Ç.6 Ö.Ç.6
7.Week	*Research models and types, quantitative and qualitative research designs, mixed-method research, and areas of application.			*This week, research models and types, quantitative and qualitative research designs, mixed-method research, and application areas will be covered. Read Chapter 8: Quantitative and Qualitative Research Models and Chapter 18: Mixed-Method Research from the book Research Methods in Education. Compare research models and discuss which models are more suitable for educational research.	*This week, research models and types, quantitative and qualitative research designs, mixed-method research, and their application areas will be discussed. Students will be introduced to different research models and their appropriate usage contexts. The lecture method will explain research designs, while the case study method will be used to evaluate different research models. The hands-on activity method will involve students selecting an appropriate research model for their chosen topic and conducting an analysis.	Ö.Ç.6 Ö.Ç.6 Ö.Ç.6
8.Week	*Midterm exam week			*Midterm exam week	*Midterm exam week	
9.Week	*Quantitative and qualitative research designs, method selection in the research process, data collection techniques, and analysis methods.			*This week, quantitative and qualitative research designs, method selection in the research process, data collection techniques, and analysis methods will be examined. Read Chapter 9: Causal-Comparative Research Method and Chapter 10: Experimental Research Method from the book Research Methods in Education. Choose an appropriate research method for a given research problem and justify your choice.	*This week, quantitative and qualitative research designs, method selection in the research process, data collection techniques, and analysis methods will be examined. Students will learn how to choose and apply appropriate quantitative and qualitative research methods. The lecture method will provide theoretical knowledge, while the hands-on activity method will involve students selecting suitable research methods for a given topic and conducting a small-scale analysis.	Ö.Ç.4 Ö.Ç.4 Ö.Ç.4
10.Week	*Quantitative, qualitative, and mixed research designs, method selection in the research process, data collection techniques, and analysis methods.			*This week, quantitative, qualitative, and mixed-method research designs, method selection in research, data collection techniques, and analysis methods will be explored in detail. Read Chapter 12: Case Study Research Method and Chapter 14: Phenomenological Research Method from the book Research Methods in Education. Examine the advantages and limitations of different methods used in educational research.	*This week, quantitative, qualitative, and mixed-method research designs, method selection in research, data collection techniques, and analysis methods will be explored in detail. Differences between data collection techniques will be explained, and students will engage in exercises on selecting appropriate techniques. The lecture method will provide theoretical insights, while the hands-on activity method will allow students to use different data collection techniques to build datasets.	Ö.Ç.3 Ö.Ç.4 Ö.Ç.3 Ö.Ç.4 Ö.Ç.3 Ö.Ç.4

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods	Course Learning Outcomes
11.Week	*Sampling, data collection, data analysis, validity and reliability, interpretation of findings, and reporting.			*This week, sampling, data collection, data analysis, validity and reliability, interpretation of findings, and reporting will be discussed. Read Chapter 19: Quantitative Data Analysis and Chapter 20: Qualitative Data Analysis from the book Research Methods in Education. Evaluate data analysis methods in sample studies conducted in educational research.	*This week, sampling, data collection, data analysis, validity and reliability, interpretation of findings, and reporting will be discussed. Students will learn about the significance of data analysis in scientific research and its accuracy. The lecture method will provide fundamental knowledge, while group work will involve students analyzing and interpreting a given dataset.	Ö.Ç.2 Ö.Ç.3 Ö.Ç.2 Ö.Ç.3 Ö.Ç.2 Ö.Ç.3
12.Week	*Validity and reliability in scientific research, types of internal and external validity, reliability analyses, and accuracy and consistency of measurement tools.			*This week, validity and reliability in scientific research, types of internal and external validity, reliability analyses, and the accuracy and consistency of measurement tools will be examined. Read Chapter 11: Meta-Analysis from the book Research Methods in Education. Analyze the accuracy and consistency of measurement tools used in scientific research.	*This week, validity and reliability in scientific research, internal and external validity types, reliability analyses, and the accuracy and consistency of measurement tools will be examined. Students will learn methods to enhance the validity of data collection tools. The lecture method will present theoretical concepts, while the hands-on activity method will involve students analyzing selected measurement tools.	Ö.Ç.2 Ö.Ç.3 Ö.Ç.2 Ö.Ç.3 Ö.Ç.2 Ö.Ç.3
13.Week	*Reviewing, evaluating, and presenting articles or theses, academic writing standards, critical analysis methods, and scientific presentation techniques.			*This week, article or thesis review, evaluation, and presentation, academic writing rules, critical analysis methods, and scientific presentation techniques will be discussed. Read Chapter 13: Ethnographic Research Method from the book Research Methods in Education. Review an article on educational research and conduct a critical analysis.	*This week, article or thesis review, evaluation, and presentation, academic writing rules, critical analysis methods, and scientific presentation techniques will be discussed. Students will learn how to critically assess an academic paper. The lecture method will explain academic writing rules, while the hands-on activity method will involve students reviewing a paper and preparing a presentation.	Ö.Ç.6 Ö.Ç.7 Ö.Ç.6 Ö.Ç.7 Ö.Ç.6 Ö.Ç.7
14.Week	*Reviewing, evaluating, and presenting articles or theses, academic writing standards, critical analysis methods, and scientific presentation techniques.			*This week, scientific presentation techniques will be discussed. Read Chapter 17: Grounded Theory from the book Research Methods in Education. Examine techniques for effectively presenting a scientific research study.	*This week, action research in education, practice-based research processes, instructional development studies, data collection and analysis techniques, and adapting findings to educational environments will be examined. Students will learn about the contributions of action research to educational settings. The lecture method will provide theoretical knowledge, while the hands-on activity method will involve students designing an action research proposal.	Ö.Ç.6 Ö.Ç.7 Ö.Ç.6 Ö.Ç.7 Ö.Ç.6 Ö.Ç.7
15.Week	*Action research in education, practice-based research processes, instructional improvement studies, data collection and analysis techniques, and adaptation of findings to educational settings.			*This week, action research in education and instructional development processes will be covered. Read Chapter 15: Action Research and Chapter 16: Developmental Research Method from the book Research Methods in Education. Analyze the implementation of action research in education.	*This week, action research in education, practice-based research processes, instructional development studies, data collection and analysis techniques, and adapting findings to educational settings will be examined. Students will learn about the contributions of action research to educational environments. The lecture method will provide theoretical knowledge, while the hands-on activity method will involve students designing an action research proposal. The discussion method will be used to evaluate the impact of action research on the education system.	Ö.Ç.5 Ö.Ç.6 Ö.Ç.7 Ö.Ç.5 Ö.Ç.6 Ö.Ç.7 Ö.Ç.5 Ö.Ç.6 Ö.Ç.7 Ö.Ç.5 Ö.Ç.6 Ö.Ç.7

Assesment Methods %
1 Vize : 40.000
2 Final : 60.000

ECTS Workload

Activities	Count	Time(Hour)	Sum of Workload
Vize	1	1.00	1.00
Ara Sınav Hazırlık	7	2.00	14.00
Ders Öncesi Bireysel Çalışma	14	3.00	42.00
Derse Katılım	14	2.00	28.00
Ödev	7	2.00	14.00
Rapor	1	1.00	1.00
		Total :	100.00
		Sum of Workload / 30 (Hour) :	3
		ECTS :	3.00

Program And OutcomeRelation

	P.O. 1	P.O. 2	P.O. 3	P.O. 4	P.O. 5	P.O. 6	P.O. 7	P.O. 8	P.O. 9	P.O. 10	P.O. 11	P.O. 12	P.O. 13	P.O. 14	P.O. 15	P.O. 16	P.O. 17	P.O. 18	P.O. 19	P.O. 20	P.O. 21	P.O. 22	P.O. 23	P.O.
L.O. 1	4	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L.O. 2	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L.O. 3	4	4	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L.O. 4	4	5	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
L.O. 5	0	4	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	4	0	0	4	0	0	4
L.O. 6	0	4	0	0	0	0	0	0	0	0	0	0	0	4	0	4	0	5	0	0	5	0	0	4
L.O. 7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4	5	0	0
Avarage	2.43	3.00	1.14	0	0.57	0	0	0	0	0	0	0	0	1.14	0	0.57	0	1.86	0	0	1.86	0.71	0	1.1

BEWARE OF PLAGIARISM! Please pay attention to proper academic citation rules and avoid plagiarism, an unethical and academically fraudulent behavior, when completing reports, assignments, or other academic works, and it is treated with the same disciplinary action as cheating in a classroom setting. It is imperative to refrain from presenting another person s ideas, language, expressions, or any other form of intellectual property as your own. Regardless of quality, your assignments/projects/research should reflect your original work. Perfection is not a requirement, and in case of any uncertainties regarding academic writing guidelines, you may seek clarification from your course instructor.

Engel Durumu/Uyarlama Talebi : Engel durumuna ilişkin herhangi bir uyarlama talebinde bulunmak isteyen öğrenciler, dersin öğretim elemanı ya da Nevsehir Engelli Öğrenci Birimi ile en kısa sürede iletişime geçmelidir.