AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title		Criques and Analyses of Research in Science Education					
Course Code		İFB530		Couse Level	Second Cycle (Master's Degree)		
ECTS Credit	8	Workload	200 *(Hours)*	Theory	3	Practice	0	Laboratory	0

Objectives of the Course	At the end of the course, student; 1. Explores trends and issues related to research design. 2. Develops an understanding of the various components of research design and of the relationships among those components. 3. Identifies a research problem within students' field of concentration, to generate appropriate research questions, and to explore the choice of an appropriate methodology and design. 4. Explores issues in designing a clearly focused, defensible research project. 5. Explains the language and approach of scientific research. 6. Describes how a suitable research "problem" is selected. 7. . Uses library resources and services.
Course Content	Emphasis on conceptualizing advanced educational research problems, analyzing data and interpreting data, and developing the methodology for dissertation proposals. Investigating and critically analyzing relevant research in science education.
Work Placement	N/A
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Discussion, Individual Study
Name of Lecturer(s)	Lec. Hanife Can ŞEN, Lec. Hediye CAN

Assessment Methods and Criteria

Method	Quantity	Percentage (%)
Midterm Examination	1	25
Final Examination	1	50
Quiz	2	10
Term Assignment	1	15

Recommended or Required Reading

1	American Psychological Association. (2001). Publication Manual of the American Psychological Association, 5th ed., Washington, D.C.: American Psychological Association.
2	Cohen, J. & Cohen, P. (1983). Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences, 2nd ed., New Jersey: Lawrence Erlbaum Associates Publishers.
3	Frankel, J.R. and Wallen, N.E. (1996). How to Design and Evaluate Research in Education, 3rd ed., New York, USA, Mc Grawhill, Inc.
4	Gravetter, F.J. & Wallnau, L.B. (2000). Statistics for the Behavioral Sciences, 5th ed., New York, USA, Wadsworth Thomson Learning.
5	McMillan, J. H. & Schumacher, S. (2001). Research in education: A conceptual introduction, 5th ed., New York: Longman.
6	Öner, N. (1997). Türkiye'de kullanılan psikolojik testler: bir başvuru kaynağı, 3. Basım, İstanbul: Boğaziçi Üniversitesi.

Week	Weekly Detailed Course Contents	
1	Theoretical	Johnson, B. (2001). Toward a new classification of nonexperimental quantitative research. Educational Researcher, 30(2), 3-13.
2	Theoretical	Raths, J. (1973). The emperor's clothes phenomenon in science education. Journal of Research in Science Teaching, 10(3), 201-211.
3	Theoretical	Brewer, J. K. (1978). Effect size: The most troublesome of the hypothesis-testing considerations. Research Quarterly, 11(4), 7-10.
4	Theoretical	Brewer, J. K. (1972). On the power of statistical tests in the American Educational Research Journal. American Educational Research Journal, 9(3), 391-401. Brewer, J. K. (1978). Everything you always wanted to know about statistics but didn't know how to ask. (p. 113-118). Dubuque: Kendall Hunt.
5	Theoretical	Brewer, J. K (1985). Behavioral statistics textbooks: Source of myths and misconceptions. Journal of Educational Statistics, 10(3), 252-268. Tversky, A., & Kahneman, D. (1971). Belief in the law of small numbers. Psychological Bulletin, 76(2), 105-110.

6	Theoretical	McMillan, J. H., & Schumacher, S. (2001). Sources of a literature review, Research in Education: A Conceptual Introduction. (pp. 111, 112, 121, 128, 149, 154, 156, 157), 5th Ed., New York: Longman. McMillan, J. H., & Schumacher, S. (2001). Guidelines for evaluating…, Research in Education: A Conceptual Introduction. (pp. 53-55, 69, 70) 5th Ed., New York: Longman.
7	Theoretical	Clark, R. E. (1985). Evidence for confounding in computer-based instruction studies: Analyzing the meta-analyses. Educational Technology Journal, 33(4), 249-262. Clark, R. E. (1991). When researchers swim upstream: Reflections on an unpopular argument about learning from media. Educational Technology, 31(2), 34-40.
8	Intermediate Exam	Midterm exam will be administered.
9	Theoretical	Glass, G. V. (1982). A meta-analysis: An approach to the synthesis of research results. Journal of Education in Science Teaching, 19(2), 93-112. Horton, P., McConney, A., Gallo, M., Woods, A., & Hamelin, D. (1993). An investigation of the effectiveness of concept mapping. Science Education, 77(1), 95-111.
10	Theoretical	Johnson, D. W., Johnson, P. T., & Stanne, M. B. (2000). Cooperative Learning Methods: A Meta-Analysis. Minneapolis, Minnesota: University of Minnesota. Horton, P.B., McConney, A. A., Woods, A. L., Barry, K., Krout H. L., & Doyle, B. K. (1993). A Content analysis of research published in the Journal of Research in Science Teaching from 1985 through 1989. Journal of Research in Science Teaching, 30(8), 857-870.
11	Theoretical	Shaver, J. (1983). The verification of independent variables in teaching methods research. Educational Researcher, 12(8), 3-9.
12	Theoretical	Koran, M., & Koran, J. (1984). Aptitude treatment interaction research in science education. Journal of Research in Science Teaching, 21(8), 793- 808.
13	Theoretical	Peckham, P. D., Glass. G. V., & Hopkins, K. D. (1969). The experimental unit in statistical analysis. Journal of Special Education, 3, 337-349.
14	Theoretical	Hopkins, K. (1982). The unit of analysis: Group means versus individual observations. American Educational Research Journal, 19(1), 5-18, Spring
15	Theoretical	Borst, W. (1999). Guidelines for Writing in APA Style. Phenix City: Troy State University.
16	Final Exam	Final exam will be administered.

Workload Calculation

Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	14	5	3	112
Term Project	1	21	1	22
Individual Work	14	0	2	28
Quiz	2	7	1	16
Midterm Examination	1	9	1	10
Final Examination	1	11	1	12
			Total Workload (Hours)	200
			[Total Workload (Hours) / 25*] = **ECTS**	8

*25 hour workload is accepted as 1 ECTS

Learning Outcomes

1	Evaluates the strengths and weaknesses of a particular research report.
2	Describes major considerations (content, organization, rules, style, etc.) related to writing formal, scientific research reports.
3	To do literature review
4	4 To identify the science education fields to conduct research
5	5 To synthesize the results in a scientific research field

Programme Outcomes (Science Education Master)

1	To be able to have an expert theoretical knowledge within the field of science educatıon.
2	To be able to transfer expert knowledge gained in science education into various instructional environment.
3	To be able to integrate science education knowledge with the other disciplines and product functional knowledge
4	To be able to use information and communication technologies efficiently in conceptual learning
5	To be able to find scientific solutions to the problems in the field of science education
6	To be able to evaluate the knowledge critically in the field
7	To be able to participate in team projects in the science education field
8	To be able to adopt lifelong learning strategies to his/her studies
9	To be able to use at least one foreign language efficently in oral and verbal communication
10	To be able to share national and international data in the field of science education

11	To be able to comprehend and evaluate science-technology-society and environment interactions
12	To be able to comprehends science under the ethical values and take account of ethical considerations
13	To be able to use scientific information in the other domains that is gained in the masters field and have the transfer skills
14	To be able to follow the current development in the science education field
15	To be able to develop strategical plans and evaluate them in the context of quality processes

Contribution of Learning Outcomes to Programme Outcomes *1:Very Low, 2:Low, 3:Medium, 4:High, 5:Very High*

	L1	L2	L3	L4	L5
P1	3	3	5		
P2	4	5		5	5
P3	2	1	5		
P4	2	2		5	5
P5	4	1			
P6	3	5		5	5
P7	5	1	5	5	5
P8	2	1			
P9	3	3		5	5
P10	5	5		5	5
P11	2	2	5		
P12	5	5		5	5
P13	4	1	5	5	5
P14	5	2			
P15	3	4			