AYDIN ADNAN MENDERES UNIVERSITY
COURSE INFORMATION FORM

Course Title	Scientific Research Methodologies								
Course Code	MME536		Couse Level	Second Cycle (Master's Degree)					
ECTS Credit	8	Workload	195 *(Hours)*	Theory	3	Practice	0	Laboratory	0
Objectives of the Course	Expressing detailed approaches related to scientific research methodologies, enabling knowledge acquisition in the qualities of scientific research, enabling knowledge acquisition in scientific research methods, enabling comprehension about the causal relationship between research question and research method, enabling competence in developing a scientific research proposal.								
Course Content	Defining research, research in the physical sciences tradition, design research. Qualities of scientific research. History of design research. Ways of approaching research, quantitative research designs, qualitative research designs, comparison of the qualitative and quantitative research methods. Nature of quantitative research, research types and topics. Quantitative research design, data collection and data analysis. Research problem formulation techniques. Using library sources and literature search. Nature of qualitative research, data collection methods. Observation as a research method. Research Interviewing. Case study research. Analyzing qualitative data. Grounded Theory.								
Work Placement	N/A								
Planned Learning Activities and Teaching Methods	Explanation (Presentation), Demonstration, Discussion, Case Study, Project Based Study, Individual Study								
Name of Lecturer(s)	Prof. İsmail BÖĞREKCİ								

Assessment Methods and Criteria		
Method	Quantity	Percentage (%)
Midterm Examination	1	15
Final Examination	1	60
Quiz	1	15
Assignment	1	5
Term Assignment	1	5

Recommended or Required Reading	
1	Archer, B. (1999). On the Methods of Research, Ankara: METU Faculty of Architecture Press.
2	Glaser, B. G. and Strauss, A. L. (1967). The Discovery of Grounded Theory, Chicago, Aldine.
3	Yin, R. K. (2009). Case Study Research: Design and Methods (4th ed.). Newbury Park, CA: Sage.
4	Kıncal R. Y. (2015) Bilimsel Araştırma Yöntemleri (4. Basım). Nobel Yayınları

Week	**Weekly Detailed Course Contents**	
1	Theoretical	Definition of research, research in the science tradition, design research
2	Theoretical	Qualities of scientific research
3	Theoretical	History of design research
4	Theoretical	Ways of approaching research: Quantitative research designs, qualitative research designs, comparison of the qualitative and quantitative research methods.
5	Theoretical	Nature of quantitative research, research types and topics.
6	Theoretical	Quantitative research design, data collection and data analysis
7	Theoretical	Research problem formulation techniques
8	Intermediate Exam	Midterm Exam
9	Theoretical	Using library sources and literature search
10	Theoretical	Nature of qualitative research, data collection methods
11	Theoretical	Observation as a research method
12	Theoretical	Research interviewing
13	Theoretical	Case study research
14	Theoretical	Analyzing qualitative data
15	Theoretical	Grounded theory
16	Final Exam	Final Exam

Workload Calculation				
Activity	Quantity	Preparation	Duration	Total Workload
Lecture - Theory	16	2	4	96
Assignment	5	0	3	15
Term Project	1	15	10	25
Quiz	4	4	1	20
Midterm Examination	1	15	2	17
Final Examination	1	20	2	22
			Total Workload (Hours)	195
			[Total Workload (Hours) / 25*] = **ECTS**	8
**25 hour workload is accepted as 1 ECTS*				

Learning Outcomes	
1	The qualities that differentiate scientific research from other types of research
2	Scientific research methods
3	Ability to choose the most suitable research method on the basis of the research question
4	Ability to develop a scientific research proposal.
5	Ability to literature review

Programme Outcomes *(Mechanical Engineering Master's Without Thesis)*	
1	To be able to access wide and deep information with scientific researches in the field of Engineering, evaluate, interpret and implement the knowledge gained in his/her field of study
2	To be able to complete and implement “limited or incomplete data” by using the scientific methods
3	To be able to consolidate engineering problems, develop proper method(s) to solve and apply the innovative solutions to them
4	To be able to develop new and original ideas and method(s), to develop new innovative solutions at design of system, component or process
5	To be able to gain comprehensive information on modern techniques, methods and their borders which are being applied to engineering
6	To be able to design and apply analytical, modeling and experimental based research, analyze and interpret the faced complex issues during the design and apply process
7	To be able to gain high level ability to define the required information and data
8	To be able to work in multi-disciplinary teams and to take responsibility to define approaches for complex situations
9	To be able to transfer of the process and results of studies at national and international environments systematic and clear verbal or written
10	To be able to become aware of social, scientific and ethical values guarding adequacy at all professional activities and at the stage of data collection, interpretation, and announcement
11	To be able to become aware of new and developing application of profession and ability to analyze and study on those applications
12	To be able to gain ability to interpret engineering application’s social and environmental dimensions and it’s compliance with the social environment

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	5	4	4	5	3
P2	4	5	3	4	4
P3	5	4	5	3	4
P4	4	3	3	4	3
P5	3	5	4	3	5
P6	5	3	3	5	3
P7	3	4	5	3	4
P8	4	5	3	4	5
P9	5	5	4	4	3
P10	4	4	5	5	5
P11	5	3	5	3	3
P12	4	5	4	4	5