DEPARTMENT OF ENERGY SCIENCE AND TECHNOLOGIES
COURSE SYLLABUS

Course Details				
Code	**Academic Year**			**Semester**
NWI401	3			5
Title	**T**	**A**	**L**	**ECTS**
Scientific Research Methods	2	0	0	2

Language	German					
Level	**Undergraduate**	**X**	**Graduate**		**Postgraduate**	
Department / Program	Energy Science and Technology					
Forms of Teaching and Learning	Face-to-face					
Course Type	**Compulsory**		**Elective**	**X**		
Objectives	The Scientific Research Methods course is designed to help students understand scientific research processes, teach the steps to follow while conducting research, and provide practical knowledge of scientific writing rules. The course aims to develop skills in hypothesis formulation, data collection and analysis, interpretation of results, and reporting.					
Content	This course covers the fundamental concepts and processes of scientific research. Throughout the course, topics such as the scientific method, problem identification, hypothesis development, literature review, data collection and analysis methods, ethical principles, scientific reporting, and presentation techniques will be addressed. Additionally, students will receive guidance on writing scientific papers and preparing research projects					
Prerequisites	None					
Coordinator	Associate Prof.Dr. Ergün KELEŞOĞLU					
Lecturer(s)	Associate Prof.Dr. Ergün KELEŞOĞLU					
Assistant(s)	None					
Work Placement	None					

Recommended or Required Reading	
Books / Lecture Notes	-
Other Sources	Heesen, B. Wissenschaftliches Arbeiten - Methodenwissen für das Bachelor-, Master- und Promotionsstudium.

Additional Course Material	
Documents	-
Assignments	-
Exams	1 Midterm, 1 Final

Course Composition		
Mathematics und Basic Sciences	-	%
Engineering	20	%

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Engineering Design	40	%
Social Sciences		%
Educational Sciences		%
Natural Sciences	20	%
Health Sciences		%
Expert Knowledge	20	%

Assessment

Activity	Count	Percentage (%)
Midterm Exam	1	20
Quiz		
Assignments	2	20
Attendance		
Recitations		
Projects	1	20
Final Exam	1	40
	Total	**100**

ECTS Points and Work Load

Activity	Count	Duration	Work Load (Hours)
Lectures	14	2	28
Self-Study	14	1	14
Assignments	2	4	8
Presentation / Seminar Preparation	1	2	2
Midterm Exam	1	2	2
Recitations			
Laboratory			
Projects			
Final Exam	1	2	2
		Total Work Load	**56**
		ECTS Points (Total Work Load / Hours)	**2**

Learning Outcomes

1	Gains the ability to identify and define a problem in a technical subject.
2	Develops the ability to design research aimed at solving a specific problem and present it to others.
3	Learns the systematic approach to conducting a literature review for their study.
4	Acquires skills in collecting, storing, evaluating, interpreting, and comparing experimental findings with the literature.

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5	Gains awareness and competence in presenting findings through various techniques such as articles and oral presentations.
6	Becomes aware of the ethical rules that must be followed at every stage of academic research.

Weekly Content	
1	Understanding the general definition of research design
2	Characteristics of quantitative and qualitative research
3	Literature review - I
4	Literature review - II
5	Purpose, research question, hypothesis, and research objective
6	Quantitative data collection and processing - I
7	Quantitative data collection and processing - II
8	Midterm Exam
9	Descriptive statistics in educational research - I
10	Descriptive statistics in educational research - II
11	Preparing a project proposal - I
12	Preparing a project proposal - II
13	Writing a research report - I
14	Writing a research report - II
15	Ethical issues in educational research
16	Final Exam

Contribution of Learning Outcomes to Program Objectives (1-5)

	P1	**P2**	**P3**	**P4**	**P5**	**P6**	**P7**	**P8**	**P9**
Ö1								3	5
Ö2								3	5
Ö3								3	5
Ö4								3	5
Ö5								3	5
Ö6								3	5

Contribution Level	1: Low 2: Low-intermediate 3: Intermediate 4: High 5: Very High
https://obs.tau.edu.tr/oibs/bologna/progLearnOutcomes.aspx?lang=EN&curSunit=5706	
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