DEPARTMENT OF TECHNOLGY EDUCATION,IER
UNIVERSITY OF THE PUNJAB, LAHORE-PAKISTAN
Course Outline

Programme	BS Technology Education	**Course Code**	**315**	**Credit Hours**	3
Course Title	Research Methods in Technology Education				

Course Introduction

This course provides an introduction to the fundamental principles and practices of research methods specifically tailored to technology education. Students will explore various research methodologies, learn how to design research studies, collect and analyze data, and interpret research findings. The course emphasizes practical application and the development of research skills relevant to technology education.

Learning Outcomes

On the completion of the course, the students will:

1. Understand the basic concepts and principles of research methods.
2. Identify and apply appropriate research methodologies in technology education.
3. Design research studies and develop research proposals.
4. Collect, analyze, and interpret qualitative and quantitative data.
5. Critically evaluate research literature.

Course Content		**Assignments/Readings**
Week 1	**Introduction to Research Methods** **Unit 1.1**: Overview of Research in Technology Education	Reflective essay on the importance of research in technology education
	Unit 1.2: Types of Research	
Week 2	**Research Ethics** **Unit 2.1**: Understanding Research Ethics	Write a report on ethical considerations in research
	Unit 2.2: Ethical Issues in Technology Education Research	
Week 3	**Literature Review** **Unit 3.1**: Conducting a Literature Review	Develop a literature review on a selected topic in technology education
	Unit 3.2: Evaluating Sources	
Week 4	**Research Design** **Unit 4.1**: Formulating Research Questions and Hypotheses	Develop research questions and hypotheses for a study

	Unit 4.2: Choosing a Research Design	
Week 5	**Qualitative Research Methods** **Unit 5.1**: Introduction to Qualitative Research	Write a report on the strengths and limitations of qualitative research
	Unit 5.2: Data Collection Techniques	
Week 6	**Quantitative Research Methods** **Unit 6.1**: Introduction to Quantitative Research	Write a report on the strengths and limitations of quantitative research
	Unit 6.2: Data Collection Techniques	
Week 7	**Mixed Methods Research** **Unit 7.1**: Introduction to Mixed Methods Research	Research and present on the benefits of mixed methods research
	Unit 7.2: Designing a Mixed Methods Study	
Week 8	**Data Analysis in Qualitative Research** **Unit 8.1**: Techniques for Analyzing Qualitative Data	Analyze and code qualitative data from an interview
	Unit 8.2: Using Software for Qualitative Analysis	
Week 9	**Data Analysis in Quantitative Research** **Unit 9.1**: Statistical Analysis Techniques	Perform basic statistical analysis on survey data
	Unit 9.2: Using Software for Quantitative Analysis	
Week 10	**Validity and Reliability** **Unit 10.1**: Ensuring Validity in Research	Evaluate the validity of a given research study
	Unit 10.2: Ensuring Reliability in Research	
Week 11	**Sampling Methods** **Unit 11.1**: Types of Sampling Methods	Research and present on different sampling methods
	Unit 11.2: Choosing an Appropriate Sampling Method	
Week 12	**Writing a Research Proposal** **Unit 12.1**: Components of a Research Proposal	Outline a research proposal
	Unit 12.2: Developing a Full Research Proposal	
Week 13	**Communicating Research Findings** **Unit 13.1**: Writing a Research Report	Write a research report based on collected data
	Unit 13.2: Presenting Research Findings	
Week 14	**Evaluating Research** **Unit 14.1**: Criteria for Evaluating Research	Critically evaluate a research paper using

	Unit 14.2: Peer Review Process	established criteria
Week 15	**Final Projects** **Unit 15.1**: Project Development and Planning	Develop a comprehensive project plan for a research study
	Unit 15.2: Project Implementation	
Week 16	**Course Review and Final Assessment** **Unit 16.1**: Review of Key Concepts and Themes	Group presentation summarizing key learning from the course
	Unit 16.2: Comprehensive Final Exam	

Textbooks and Reading Material

1. Textbooks.

- Research Methods in Education by Louis Cohen, Lawrence Manion, and Keith Morrison

2. Suggested Readings

- Educational Research: Planning, Conducting, and Evaluating Quantitative and Qualitative Research by John W. Creswell and J. David Creswell

Teaching Learning Strategies

1. **Lectures:** To introduce and explain key concepts and theories.
2. **Hands-on Labs:** To provide practical experience with robotics components and programming.
3. **Assignments and Projects:** To reinforce learning and encourage application of concepts in real-world scenarios.
4. **Group Discussions:** To facilitate peer learning and collaborative problem-solving.

Assessment

Sr. No.	Elements	Weight age	Details
1.	Midterm Assessment	35%	Written Assessment at the mid-point of the semester.
2.	Formative Assessment	25%	Continuous assessment includes: Classroom participation, assignments, presentations, viva voce, attitude and behavior, hands-on-activities, short tests, projects, practical, reflections, readings, quizzes etc.
3.	Final Assessment	40%	Written Examination at the end of the semester. It is mostly in the form of a test, but owing to the nature of the course the teacher may assess their students based on term paper, research proposal development, field work and report writing etc.