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

Programme	BS Technology Education	**Course Code**	**BSTE309**	**Credit Hours**	3
Course Title	**Welding and Fabrication**				

Course Introduction

This course provides a basic introduction to the principles and practices of welding and fabrication. Students will learn about various welding techniques, safety practices, and fabrication processes. The course includes theoretical understanding and practical exercises to develop foundational skills in welding and fabrication.

Learning Outcomes

On the completion of the course, the students will:

1. Understand the basic concepts and techniques of welding.
2. Identify and use various welding equipment and materials.
3. Apply safety practices in welding and fabrication.
4. Perform basic welding operations.
5. Explore different fabrication methods and processes.

	Course Content	Assignments/Readings
Week 1	**Introduction to Welding and Fabrication** • **Unit 1.1**: Overview of Welding and Fabrication • **Unit 1.2**: History and Evolution of Welding Techniques	Reflective essay on the importance of welding in modern industry
Week 2	**Welding Safety Practices** • **Unit 2.1**: Safety Equipment and Personal Protective Equipment (PPE) • **Unit 2.2**: Safety Procedures in Welding	Research and present a safety plan for a welding workshop
Week 3	**Welding Equipment and Tools** • **Unit 3.1**: Types of Welding Equipment • **Unit 3.2**: Maintenance of Welding Tools	Create a maintenance checklist for welding equipment

Week 4	**Basic Welding Techniques** • **Unit 4.1**: Introduction to Arc Welding **Unit 4.2**: Introduction to MIG and TIG	Write a report on different welding techniques and their applications
Week 5	**Welding Materials and Consumables** • **Unit 5.1**: Types of Welding Materials • **Unit 5.2**: Selection of Welding Consumables	Research and present on the properties of different welding materials
Week 6	**Welding Joints and Positions** • **Unit 6.1**: Types of Welding Joints • **Unit 6.2**: Welding Positions and Techniques	Develop a diagram illustrating different welding joints and positions
Week 7	**Welding Defects and Inspection** • **Unit 7.1**: Common Welding Defects • **Unit 7.2**: Inspection Methods in Welding	Write a report on how to identify and correct welding defects
Week 8	**Introduction to Fabrication** • **Unit 8.1**: Basics of Fabrication • **Unit 8.2**: Fabrication Tools and Equipment	Research and present on different fabrication processes
Week 9	**Fabrication Processes** • **Unit 9.1**: Cutting and Shaping Techniques • **Unit 9.2**: Bending and Forming Techniques	Develop a simple fabrication project plan
Week 10	**Welding and Fabrication Project Planning** • **Unit 10.1**: Project Planning and Design • **Unit 10.2**: Material Selection and Cost Estimation	Create a detailed project plan for a basic welding and fabrication project
Week 11	**Practical Welding Sessions**	Perform a basic welding

	• **Unit 11.1**: Hands-On Welding Practice • **Unit 11.2**: Project-Based Welding Practice	task and document the process
Week 12	**Practical Fabrication Sessions** • **Unit 12.1**: Hands-On Fabrication Practice • **Unit 12.2**: Project-Based Fabrication Practice	Complete a simple fabrication project and document the process
Week 13	**Welding and Fabrication in Industry** • **Unit 13.1**: Applications of Welding in Industry • **Unit 13.2**: Case Studies of Fabrication Projects	Research and present on a real-world welding or fabrication project
Week 14	**Welding and Fabrication Trends** • **Unit 14.1**: Advances in Welding Technology • **Unit 14.2**: Innovations in Fabrication Processes	Write a report on current trends and future directions in welding and fabrication
Week 15	**Final Project Development** • **Unit 15.1**: Planning and Designing the Final Project • **Unit 15.2**: Implementing the Final Project	Develop and present a final welding and fabrication project
Week 16	**Course Review and Final Assessment** • **Unit 16.1**: Review of Key Concepts and Themes • **Unit 16.2**: Comprehensive Final Exam	Group presentation summarizing key learning from the course

Textbooks and Reading Material

1. Textbooks.

- Welding: Principles and Applications by Larry Jeffus

2. Suggested Readings

- Modern Welding by Andrew D. Althouse, Carl H. Turnquist, and William A. Bowditch

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.