



Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore
Shri Vaishnav Institute of Technology and Science
Choice Based Credit System (CBCS) Scheme in light of NEP-2020
Generic Elective for UG (III Semester)
(2024 Batch)

COURSE CODE	CATEGORY	COURSE NAME	TEACHING & EVALUATION SCHEME								
			THEORY			PRACTICAL		L	T	P	CREDITS
			END SEM University Exam	Two Term Exam	Teachers Assessment*	END SEM University Exam	Teachers Assessment*				
GUME101	GE	WELDING TOOLS AND TECHNIQUES	60	20	20	0	0	3	0	0	3

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C - Credit;

***Teacher Assessment** shall be based following components: Quiz/Assignment/Project/Participation in Class, given that no component shall exceed more than 10 marks.

Course Objectives:-

The primary objective of the course is to describe and develop knowledge of (A) Introduction of welding (B) Gas Welding (C) Arc welding, (D) Welding Inspection and testing and Welding Tools and Welding Defects.

Course Outcomes:-

After completion of this course the students will be able to describe the followings:

1. Students will be able to understand & describe concepts of welding process and its application.
2. Students will be able to describe Gas welding process and its industrial applications.
3. Students will be able to describe the principles of Arc welding.
4. Students will be able to understand the welding Inspection and testing.
5. Students will be able to understand the welding tools and Causes of welding defects.

Syllabus

Unit-I

(9 Hrs)

Introduction of welding:

Introduction of welding; Need of welding for fabrication work; Classification welding; Importance of welding; safety in welding process, Basic welding positions; Polarity; Rectifier; Weld symbol and welding symbol - Description and uses.

Unit-II

(10 Hrs)

Gas welding: Types of oxy-acetylene flames; Gas Welding Fluxes and Function; Flashback and Backfire; Gases used for welding and gas flame combinations; Effect of welding heat on the properties of metals; working principle of oxy-acetylene welding; applications of Gas welding

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Unit-III **(9 Hrs)**

Arc Welding: Introduction to fusion, non-fusion and pressure welding; Arc Welding Accessories; Welding Terms & Its Definition; Choice and storage of electrodes; Coding of Electrodes as per BIS, AWS and BS153; Difference between TIG and MIG welding; applications of Arc welding.

Unit-IV **(8 Hrs)**

Inspection and testing:

Inspection of weld (NDT) - Visual inspection; Methods of non-destructive tests; Destructive tests; Economy in welding & simple estimation

Unit-V **(9 Hrs)**

Welding Tools and Welding Defects:

Hand Tools; Grinder Pedestal and Bench; Hacksaw frames and blades; Files - Grades and Specification. Welding shop safety rules; Weld defects - Causes and remedies; Defects in Arc Welding - Causes and Remedies

Text Books:

1. “Welding Fundamentals” by William A. Bowditch, Goodheart-Willcox, 2016.
2. “Welding: Principles and Applications” by Larry Jeffus, Cengage Learning, 2011.
3. “Procedure Handbook of Arc Welding” by Lincoln Electric Company, 2014.
4. “Welding” by David J. Hoffman, Pearson Education, 2017.

Reference Books:

1. “Tig Welding: GTAW need to know for beginners & the DIY home shop” by Spencer Gould, Kindle Edition, 2017.
2. “Welding Skills” by B. J. Moniz, Amer Technical Pub, 2009
3. “Manufacturing Technology” by P. N. Rao, Vol. 1 and 2, 2018.
4. “Workshop Technology” by W. A. J. Chapman part I, II & III, 5th ed., 2001.
5. “Learn to Weld” by Stephen Blake Christena, 2021.

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