

WELDING TECHNOLOGY

(Professional Elective – I)

Course Code: 15ME11M1

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Pre requisites:

Manufacturing Technology - I

Course Outcomes:

At the end of the course, the student will be able to

- CO 1** Explain basics of arc welding
- CO 2** Demonstrate welding techniques like MIG and SAW
- CO 3** Identify special welding techniques
- CO 4** Explain about resistance and thermit welding
- CO 5** Demonstrate advanced welding methods

UNIT – I

(10 Lectures)

Classification of welding processes: Arc welding power sources, power source characteristic curves, arc physics, flux covering, different types of electrodes and their applications, gas welding and cutting, flame characteristics

UNIT-II

(10 Lectures)

Gas tungsten arc welding process, electrode polarity, shielding gas, use of pulsed arc welding process; gas metal arc welding, mode of metal transfers, pulsed MIG welding process. Submerged arc welding, advantages and limitations.

UNIT-III

(10 Lectures)

Orbital welding of tubes / pipes; Plasma-arc welding process, transferred and non- transferred arc welding and their applications, plasma cutting, surfacing and applications

UNIT-IV**(10 Lectures)**

Working Principle of resistance welding process-spot, seam, projection, upset and flash butt welding, electro slag and electro gas welding, Thermit welding

UNIT-V**(10 Lectures)**

Radiant energy welding processes - equipment -electron beam welding (EBW) - laser beam welding (LBW) - applications of EBW and LBW- Solid state welding:Friction Stir Welding, Ultrasonic welding, adhesive bonding and diffusion bonding-Defects in welding, Residual stresses and distortion.

TEXT BOOKS

1. Nadkarni S.V., “*Modern Arc Welding Technology*”, 1 st Edition, IBH Publishing, 2005
2. Kearns W. H, “*Welding Hand Book (Welding Processes)*”, Volume II and III, 7th Edition, AWS, 1984

REFERENCES

1. Parmar R. S., “*Welding Engineering and Technology*”, 1st Edition, Khanna Publishers, 2008.
2. Jackson M.D. “*Welding methods and metallurgy*”, Charles Griffin and Co. London 1967.