MM5750: WELDING APPLICATION TECHNOLOGY

Course Content:

Testing of Weldments: destructive and non-destructive. Fatigue behaviour of welded structures. Brittle fracture: metallurgical considerations. Notch toughness, transition temperature and their dependence on various factors. Fracture mechanics approach: plane strain toughness and crack opening displacement criteria, J-integral and R-curve method, application of above concepts in toughness characterization of weldments. Economics of welding: Cost evaluation and selection of process, comparison with other fabrication techniques. Training of welding personnel, safety precautions. Quality control in welding, standards and codes. Application of welding technology in a few industries. Pressure vessel fabrication, chemical industry, nuclear reactors, ship and offshore structures, aviation, automotive and railroad industries.

Text Books:

1. Advanced welding processes – Technologies and Process Control by **John Norrish**, ISBN: 978-1-84569-130-1., Woodhead Publishing, reprint by Elsevier, 2006.
2. Welding Engineering and Technology by **R.S. Parmar**, Khanna Publishers., ISBN: 81-7409-028-2, 2010

Reference Books:

1. International Institute of Welding – Codes and Standards (iwelding.sharepoint.com)
2. **Li, Leijun. et. al**. eds.. ASM Handbook: Welding Fundamentals and Processes, vol. 6A. Materials Park, OH: ASM International, 2011.

Prerequisite:

NIL