

1.	Title of the course	Design and Analysis of Welded Structures
2.	Course number	ME527L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To ME5035/19
6.	To be offered by	Department of Mechanical Engineering
7.	To take effect from	January 2022
8.	Prerequisite	Nil
9.	<b>Course Objective(s):</b> To provide basic knowledge of the design and analysis of welds to understand the mechanical effect of welding performed under different thermal conditions on various types of weld joints. To provide analytical capabilities to ensure the safe performance of the welded structures under different loading conditions.	
10.	<b>Course Content:</b> Introduction to design, engineering properties of steels, weldability of structural steels, carbon equivalent, fatigue and creep properties of welded joints, theories and concepts of failures, weld joints and connections; Design of weld joints for static loading; Design of weld joints for fatigue loading; Introduction to design of weld joint for pressure vessel and automobile applications; Design of brazed and soldered joints; Heat flow in welding, distortion and residual stress distribution, the influence of residual stress in static and dynamic loading, introduction to stress corrosion.	
11.	<b>Textbook(s):</b> 1. Gray T G F, <i>Rational Welding Design</i> , 2nd Edition, Butterworth-Heinemann Ltd (1982). 2. Ralph I S, <i>Metal Fatigue in Engineering</i> , 2nd Edition, John Wiley & Sons (2000).	
12.	<b>Reference(s):</b> 1. Messler R W, <i>Principles of Welding</i> , 1st Edition, John Wiley & Sons (1999). 2. Brien A O, <i>Welding Hand Book</i> , 9th Edition, American Welding Society (2001). 3. Dieter G E, <i>Mechanical Metallurgy</i> , 3rd Edition, McGraw Hill (2017).	