

BMEE302P	Metal Casting and Welding Lab		L	T	P	C
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Pre-requisite	BMEE209L, BMEE209P		Syllabus version			
			1.0			
Course Objectives						
1. To provide an insight on foundry practices.						
2. To impart practical exposure on the effect of welding parameters on joint characteristics.						
Course Outcome						
At the end of the course, the student will be able to						
1. Assess the properties of moulding sand and demonstrate the melting practices.						
2. Evaluate the effect of welding parameters on microstructure and weld quality.						
3. Investigate the weldability of various materials.						
Indicative Experiments						
1.	Determination of permeability, shear strength and compression strength of the given foundry sand.					
2.	Determination of the grain fineness of the given foundry sand.					
3.	Determination of clay content for the given moulding sand sample and to study the variation of compression strength for various moisture contents.					
4.	Determination of flowability for the given foundry sand.					
5.	Prepare the mould for the given pattern with the core using two boxes and three – box moulding process.					
6.	Foundry melting practice – demonstration.					
7.	To study the effect of heat input on microstructure of weld metal and HAZ of Al / Ni alloys performed under GTAW process.					
8.	To study the effect of FSW process parameters (tool rotational speed, axial load, and travel speed) on the butt welding of Al alloy.					
9.	Study the bead on plate experiment (bead profile, penetration, and its dilution) on Austenitic stainless steel by using GMAW process.					
10.	To study the weldability of plastic material using ultrasonic welding machine.					
11.	To study the residual stress measurement of the friction stir welded specimen (Demonstration).					
12.	Effect of shielding gases on the weld performance of GMAW process. (Case study)					
Total Laboratory Hours						30 hours
Text Books						
1.	John K.C, Metal Casting and Joining, 2015, PHI publications.					
2.	P. L. Jain, Principles of Foundry Technology, 2009, 5th edition, TMH Publications.					
3.	Parmar R.S, Welding Engineering and Technology, 2013, Khanna Publishers.					
3.	Lab Manual prepared by course faculty					
Reference Books						
1.	Srinivasan N. K., 'Foundry Technology', 1986, Khanna Publications					
2.	Richard L Little, Welding and welding technology, 2020, Mc Graw Hill					
Mode of assessment: Continuous assessment, FAT, Oral examination						
Recommended by Board of Studies			09-03-2022			
Approved by Academic Council			No. 65	Date	17-03-2022	