

BMEE304P	Metal Forming and Machining Lab	L	T	P	C
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Pre-requisite	BMEE209L, BMEE209P	Syllabus version			
		1.0			
Course Objectives					
1. To provide practical exposure on deformation behavior of ferrous and non-ferrous metals. 2. To impart hands-on experience on machine tools and machining processes.					
Course Outcomes					
At the end of the course, the student will be able to 1. Investigate the deformation characteristics of ferrous and non-ferrous metals as per ASTM standard. 2. Evaluate the effect of cutting parameters in machining operations. 3. Generate various features on components through machining operations.					
Indicative Experiments					
1.	Erichsen cupping test to determine the formability of ferrous metals and nonferrous metals.				
2.	Rolling of ferrous metals and non-ferrous metals.				
3.	Compression test for flow stress analysis.				
4.	Deformation and recrystallization in copper.				
5.	Cold work-annealing cycle for deformation of low carbon steel.				
6.	Study the effect of cutting parameters on temperature generation in machining.				
7.	Measurement and analysis of cutting forces in turning operation.				
8.	Measurement of surface finish in grinding operation.				
9.	Grinding of single point cutting tool using tool and cutter grinder.				
10.	Gear manufacturing in milling machine.				
11.	Helical gear cutting using gear hobbing and gear shaping.				
12.	Programing and profile cutting in wire-EDM.				
Total Laboratory Hours					30 hours
Text Books					
1.	B.L.Juneja, Fundamentals of Metal Forming Processes, 2010, New Age International, 2 nd edition.				
2.	Geoffrey Boothroyd and Winston. A. Knight, Fundamentals of Machining and Machine Tools, 2005, CRC Press, 3 rd edition.				
3.	K. C. Jain, A. K. Chitale, Textbook of Production Engineering, 2014, PHI Learning Pvt.				
4.	Lab Manual prepared by course faculty.				
Reference Books					
1.	Amitabha Ghosh and Asok Kumar Mallik, Manufacturing Science, 2010, 2 nd edition, East-West Press.				
2.	Dixit U.S. and Ganesh Narayanan R, Metal Forming: Technology and Process Modelling, 2013, McGraw-Hill Education, Noida.				
3.	Dieter G.E., Mechanical Metallurgy, 1995, McGraw-Hill.				

4.	Hosford W.F. Caddell R.M., Metal Forming – Mechanics and Metallurgy, 2011, 4 th edition, Cambridge University Press.		
5.	Amitabha Battacharyya, “Metal Cutting, Theory and Practice”, 1984, New Central Book Agency.		
6.	Hassan Abdel-Gawad ElHofy, Fundamentals of Machining Processes (Conventional and Nonconventional Processes), 2018, CRC press, 3rd Edition.		
7.	Rao P.N., Manufacturing Technology: Metal Cutting and Machine Tools, 2018, Volume 2, 4 th Edition, McGraw Hill Education.		
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