

1.	Title of the course	Abrasive Machining and Finishing Processes
2.	Course number	ME514L
3.	Structure of credits	3-0-0-3
4.	Offered to	PG
5.	New course/modification to	Modification To ME5031/9
6.	To be offered by	Department of Mechanical Engineering
7.	To take effect from	July 2022
8.	Prerequisite	Nil
9.	<p>Course Objective(s): This course gives the basic understanding of material removal by abrasive particles and its physics. Course can enable the students to model and simulate various abrasive machining and finishing processes. This also helps in selecting appropriate cutting fluids for better performance and operator safety. Mass finishing process can help the students to finish complex featured components that are common in practical applications.</p>	
10.	<p>Course Content: Introduction to abrasive processes; Conventional abrasive processes: Grinding process, grinding fluids and its emissions, honing, lapping and super finishing, surface integrity in abrasive process; Mass abrasive finishing processes: Vibratory bowl finishing, tumbling, drag finishing, sand blasting; Abrasive based advanced machining process: Abrasive jet machining, abrasive water jet machining, ultrasonic machining; Hybrid abrasive machining processes: Electrical discharge grinding, powder mixed electrical discharge machining, electro-chemical grinding, electro-chemical honing; Advanced abrasive finishing processes: Abrasive flow finishing, magneto rheological finishing, magnetic field assisted abrasive finishing.</p>	
11.	<p>Textbook(s):</p> <ol style="list-style-type: none"> Jain V K, <i>Nanofinishing Science and Technology: Basic and Advanced Finishing and Polishing Processes</i>, CRC Press (2016). Shaw M C, <i>Principles of Abrasive Processing</i>, Oxford University Press (1996). 	
12.	<p>Reference(s):</p> <ol style="list-style-type: none"> Jain V K, <i>Micromanufacturing Processes</i>, CRC Press (2013). McGeough J A, <i>Advanced Methods of Machining</i>, Springer (1988). Mishra P K, <i>Nonconventional Machining</i>, Narosa Publishing House (1997). Pandey P C and Shan H S, <i>Modern Machining Processes</i>, McGraw Hill Education (2017). 	