

BMAT101P	Calculus Lab			L	T	P	C
				0	0	2	1
Pre-requisite	NIL	Syllabus version					
		1.0					
Course Objectives							
1. To familiarize with the basic syntax, semantics and library functions of MATLAB which serves as a tool not only in calculus but also many courses in engineering and sciences							
2. To visualize mathematical functions and its related properties.							
3. To evaluate single and multiple integrals and understand it graphically.							
Course Outcomes							
At the end of the course the student should be able to:							
1. Demonstrate MATLAB code for challenging problems in engineering							
2. Using plots/displays, interpret and illustrate elementary mathematical functions and procedures.							
Indicative Experiments							
1.	Introduction to MATLAB through matrices and general Syntax						
2.	Plotting and visualizing curves and surfaces in MATLAB – Symbolic computations using MATLAB						
3.	Evaluating Extremum of a single variable function						
4.	Understanding integration as Area under the curve						
5.	Evaluation of Volume by Integrals (Solids of Revolution)						
6.	Evaluating maxima and minima of functions of two variables						
7.	Applying Lagrange multiplier optimization method						
8.	Evaluating Volume under surfaces						
9.	Evaluating triple integrals						
10.	Evaluating gradient, curl and divergence						
11.	Evaluating line integrals in vectors						
12.	Applying Green's theorem to real world problems						
						Total Laboratory Hours	30 hours
Text Book							
1.	Brian H. Hahn, Daniel T. Valentine, Essential MATLAB for Engineers and Scientists, Academic Press, 7th edition, 2019.						
Reference Books							
1.	Amos Gilat, MATLAB: An Introduction with Applications, Wiley, 6/e, 2016.						
2.	Maritn Brokate, Pammy Manchanda, Abul Hasan Siddiqi, Calculus for Scientists and Engineers, Springer, 2019						
Mode of assessment: DA and FAT							
Recommended by Board of Studies				24.06.2021			
Approved by Academic Council				No. 63	Date	23.09.2021	