



## DEPARTMENT OF MATHEMATICS & HUMANITIES

### MINOR IN MATHEMATICS (MMA)

1. **Minor in Engineering:** A minor in engineering is an additional credential a student may earn, if he/she does additional learning for 20 credits *in a discipline other than his/her major discipline* of B.Tech programme. These additional credits shall be acquired through MOOCs from the *list of courses for a Minor Engineering* prescribed by the respective departments. On successful accumulation of these additional credits, at the time of graduation, it shall be mentioned in the degree certificate as “*Bachelor of Technology in XXX Engineering/Technology, with Minor in YYY Engineering/Technology*”
2. A Minor in Engineering allows students to officially explore interested engineering programme other than their own and thus an opportunity to expand their breadth of study in engineering disciplines
3. This facility for additional learning leading to Minor in Engineering is applicable for the batches admitted from AY 2018-19
4. A **Minor in Mathematics** is advantageous to those who wish to augment their major engineering discipline with **Mathematics** courses. It can add value to their academic background for higher studies, allows them to take up interdisciplinary research and throws good opportunities in industry
5. The students of other departments opting to pursue a **Minor Degree in Mathematics**, have to earn 20 credits by choosing six (6) to nine (9) theory courses and two (2) laboratory courses prescribed in the Minor Curriculum

**MINOR IN MATHEMATICS (MMA)  
MINOR CURRICULUM**

S.No	Course Type	Course Code	Course Name	Credits
1	<b>Minor Compulsory Courses</b>	U18MMA1001	Linear Algebra	<b>18</b>
2		U18MMA1002	Probability and Statistics	
3		U18MMA1003	Numerical Methods	
	<b>Minor Elective Courses</b>	<b>Elective courses (any 3 to 6 courses)</b>		
4		U18MMA1004	Numerical Linear Algebra	
5		U18MMA1005	Essential Mathematics for Machine Learning	
6		U18MMA1006	Descriptive Statistics with R Software	
7		U18MMA1007	Transform Calculus and its applications in Differential Equations	
8		U18MMA1008	Integral Transforms and their Applications	
9		U18MMA1009	Integral and Vector calculus	
10		U18MMA1010	Introduction to Fuzzy set theory Arithmetic and logic	
11		U18MMA1011	Operations Research	
12		U18MMA1012	Computational Commutative Algebra	
13		U18MMA1013	Ordinary and Partial Differential Equations and Applications	
14		U18MMA1014	Advanced Engineering Mathematics	
15		U18MMA1015	Introduction to Methods of Applied Mathematics	
16		U18MMA1016	Real Analysis	
17		U18MMA1017	Matrix Analysis with Applications	
18	U18MMA1018	Multivariable calculus		
<p>I. In exigency situations such as the student already completed the listed compulsory courses(s) or elective course(s) on his/her own interest during previous semesters through valid MOOCs etc, the HoD in consultation with Dean-AA shall propose an alternative course(s) for the specific scenario, after verification of relevant documents.</p> <p>II. By the end of April of every academic year, the department in consultation with Dean-AA, shall</p> <ol style="list-style-type: none"> <li>1. notify the list of equivalent courses in SWAYAM-NPTEL MOOCs / other standard MOOCs against the courses listed under Minor curriculum</li> <li>2. propose a new course(s) in the place of any course(s) listed under Minor curriculum, in case no equivalent course is found in MOOCs</li> </ol>				
-		<b>Laboratory Courses ( any 2 courses)</b>		

19	<b>Minor Laboratory Courses</b>	U18MMA1019	Solution to Boundary Value Problems through MATLAB		<b>2</b>
20		U18MMA1020	Numerical Techniques through MATLAB		
21		U18MMA1021	Optimization Techniques through MATLAB		
22		U18MMA1022	Statistical Methods through MATLAB		
				<i><b>Total Credits</b></i>	<b>20</b>