BIRLA INSTITUTE OF TECHNOLOGY- MESRA, RANCHI
NEWCOURSE STRUCTURE - To be effective from academic session 2018- 19
Based on CBCS & OBE model
Recommended scheme of study
(*For MSc. in Mathematics*)

Semester/ Session of Study (Recomended)	Level	Category of course	Course Code	Courses	Mode of delivery & credits *L-Lecture; T-Tutorial;P-Practicals*			Total Credits *C- Credits*
					L *(Periods/ week)*	**T** *(Periods/ week)*	**P** *(Periods/ week)*	**C**
FIRST Monsoon	1			**THEORY**				
		PC Program Core	MA401	Real Analysis and Measure Theory	3	1	0	4
			MA402	Advanced Complex Analysis	3	1	0	4
			MA420	Probability and Statistical Analysis	3	1	0	4
			MA422	Abstract Algebra	3	0	0	3
			CA401	Programming with C	3	0	0	3
		PE* Program Electives	Dept. Codes	PE-X[a]	3	0	0	3
		OE* Open Electives		OE-III	3	0	0	3
				LABORATORIES				
		PC	CA402	Programming with C Lab.	0	0	3	1.5
			MA421	Probability and Statistics Lab.	0	0	3	1.5
				TOTAL				**27**
SECOND Spring	1			**THEORY**				
		PC	MA412	Topology	3	1	0	4
			MA424	Numerical Analysis	3	1	0	4
			MA414	Advanced Operation Research	3	1	0	4
			MA426	Fluid Dynamics	3	0	0	3
		PE*	Dept. Codes	PE-XI[b]	3	0	0	3
		OE*		OE-IV	3	0	0	3
				LABORATORIES				
		PC	MA425	Numerical Analysis Lab	0	0	3	1.5
			MA415	Advanced Operation Research Lab.	0	0	3	1.5
				TOTAL				**24**
THIRD Monsoon	2			**THEORY**				
		PC	MA 501	Functional Analysis	3	1	0	4
			MA 502	Number Theory	3	1	0	4
			MA 510	Advanced Differential Equations	3	0	0	3
		PE*	Dept. Codes	PE-XII[c]	3	0	0	3
			Dept. Codes	PE-XIII[d]	3	0	0	3
		MC	MT204	Constitution of India	2	0	0	0
				TOTAL				**17**
FOURTH Spring	2	**RP Research Project / Industry Internship**	MA500	**Dissertation**	0	0	0	12
				Total				**12**
				Minimum requirement for Degree award of M. Sc. in Mathematics (1st - 4th Semester)				**80**

*Course Code and Course Name of Program Electives and Open Electives will depend on the choice of the subjects from that group.

DEPARTMENT OF MATHEMATICS
PROGRAMME ELECTIVES: PE
OFFERED FOR SEMESTER / LEVEL I - IV

PE / LEVEL	Level	Code no.	Name of the PE courses	Prerequisites courses with code	L	T	P	C
PE X[a] **I Sem.**	**1**	MA405	Mathematical Modelling	Differential Equations	3	0	0	3
		MA406	Computational Combinatorics	Discrete Mathematics	3	0	0	3
		MA407	Survey Sampling	Probability and Statistics	3	0	0	3
		MA410	Differential Geometry	Vector Calculus	3	0	0	3
		MA411	Computational Mathematics	Differential Equations	3	0	0	3
		MA423	Graph Theory	Discrete Mathematics	3	0	0	3
PE XI[b] **II Sem.**	**1**	MA416	Statistical Inference	Probability and Statistics	3	0	0	3
		MA417	Numerical Solutions of Boundary Value Problems	Differential Equations	3	0	0	3
		MA418	Mechanics	Differential Equations	3	0	0	3
		MA419	Mathematical Ecology	Differential Equations	3	0	0	3
		MA427	Operator Theory	Linear Algebra	3	0	0	3
PE XII[c] **III Sem.**	**2**	MA408	Theory of Elasticity	Differential Equations	3	0	0	3
		MA505	Calculus of Variations and Optimal Control	Differential Equations	3	0	0	3
		MA506	Advanced Difference Equations	Differential Equations	3	0	0	3
		MA508	Qualitative Theory of Differential Equations	Differential Equations	3	0	0	3
PE XIII[d] **III Sem.**	**2**	MA404	Mathematical Epidemiology	Differential Equations	3	0	0	3
		MA503	Statistical Computing	Probability and Statistics	3	0	0	3
		MA504	Finite Element Methods	Differential Equations	3	0	0	3
		MA507	Computational Fluid Dynamics	Differential Equations	3	0	0	3

DEPARTMENT OF MATHEMATICS
OPEN ELECTIVES (OE)*
OFFERED FOR LEVEL UG &PG

Programme	Level	Code no.	Name of the Courses	Prerequisites Courses with code	L	T	P	C
UG/MO	**3**	MA304	Integral Equations and Green's Function	NIL	3	1	0	4
		MA305	Fuzzy Logic	NIL	3	1	0	4
		MA306	Special Functions	NIL	3	1	0	4
		MA307	Integral Transforms and Applications	NIL	3	0	0	3
		MA308	Difference Equations	NIL	3	0	0	3
PG/MO	**4**	MA407	Survey Sampling	NIL	3	0	0	3
		MA411	Computational Mathematics	NIL	3	0	0	3
		MA428	Numerical and Statstical Methods	NIL	3	0	0	3
		MA430	Discrete Mathematical Structure	NIL	3	0	0	3

* OPEN ELECTIVES TO BE OPTED ONLY BY OTHER DEPARTMENT STUDENTS

DEPARTMENT OF MATHEMATICS
UG COURSE for BTech, BArch, IMSc Physics, Chemistry and Food Technology
OFFERED FOR LEVEL 1-4

Semester	Level	Programme	Code No.	Name of the courses	Prerequisites courses with code	L	T	P	C
First	**1**	BE	MA103	Mathematics I	NIL	3	1	0	**4**
		BArch	MA104	Mathematics for Architect	NIL	3	0	0	**3**
Second	**1**	BE	MA107	Mathematics II	NIL	**3**	**1**	**0**	**4**
		IMSc	MA108	Mathematics III	NIL	**5**	**1**	**0**	**6**
Third	**2**	BE	MA203	Numerical Methods	NIL	**2**	**0**	**0**	**2**
			MA204	Numerical Methods Lab.	NIL	**0**	**0**	**2**	**1**
			MA303	Discrete Mathematics	NIL	**3**	**1**	**0**	**4**
Fourth	**2**	IMSc	MA207	Mathematics IV	NIL	**5**	**1**	**0**	**6**