Sardar Vallabhbhai National Institute of Technology (SVNIT) Surat
Department of Mathematics
Five Years Integrated B.Sc. and M.Sc. Mathematics

Sr. No.	Subject	Code	Scheme L-T-P	Credits (Min.)	Notional hours of Learning (Approx.)
	First Semester (1st year of Integrated BSc and MSc)				
1	Foundation Course in Mathematics-I	MA101	3-1-0	4	70
2	Calculus-I	MA103	3-1-0	4	70
3	Computer Programming using C/C++	MA131	3-0-2	4	85
4	English and Professional Communication	HS110	3-1-0	4	70
5	Fundamentals of Physics	PH113	3-0-2	4	85
			Total	**20**	**380**
6	Vocational Training / Professional Experience (Optional) (mandatory for exit)	MAV01 / MAP01	0-0-10	5	200 (20 x 10)
	Second Semester (1st year of Integrated BSc and MSc)				
1	Foundation Course in Mathematics-II	MA102	3-1-0	4	70
2	Calculus-II	MA104	3-1-0	4	70
3	Python Programming	MA132	3-0-2	4	85
4	Fundamentals of Physics-II	PH106	3-0-2	4	85
5	Chemistry	CY112	3-0-2	4	85
6	Indian Value System and Social Consciousness	HS120	2-0-0	2	35
			Total	**22**	**430**
7	Vocational Training / Professional Experience (Optional) (mandatory for exit)	MAV02 / MAP02	0-0-10	5	200 (20 x 10)
	Third Semester (2nd year of Integrated BSc and MSc)				
1	Element of Analysis	MA201	3-1-0	4	70
2	Analytical Geometry	MA203	3-1-0	4	70
3	Discrete Mathematical Structure	MA205	3-1-0	4	70
4	Data Structure	MA231	3-0-2	4	85
5	English and Professional Communication – II	HS201	3-1-0	4	70
			Total	**20**	**365**
6	Mathematical Software-I/ Vocational Training / Professional Experience (Optional) (mandatory for exit)	MAV03 / MAP03	0-0-10	5	200 (20 x 10)
	Fourth Semester (2nd year of Integrated BSc and MSc)				
1	Numerical Analysis	MA202	3-1-0	4	70
2	Linear Algebra	MA204	3-1-0	4	70
3	Elementary Number theory	MA232	3-1-0	4	70
4	Computational Life Science	MA233	3-1-0	4	70
5	Computer Networks	CS208	3-0-2	4	85
			Total	**20**	**365**
6	Mathematical Software-II Vocational Training / Professional Experience (Optional) (mandatory for exit)	MAV04 / MAP04	0-0-10	5	200 (20 x 10)
	Fifth Semester (3rd year of Integrated BSc and MSc)				
1	Ordinary Differential Equations	MA301	3-1-0	4	70
2	Mechanics	MA303	3-1-0	4	70

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3	Probability and Statistics-I	MA331	3-1-0	4	70
4	Analysis of Algorithms	MA332	3-1-0	4	70
5	Elective (Open Elective)	MA3AA	3-X-X	¾	55/70/85
			Total	**19-20**	**335-365**
6	Mini Project-I Preliminary Part-I Vocational Training / Professional Experience (Optional) (mandatory for exit)	MAV05 / MAP05	0-0-10	5	200 (20 x 10)
	Sixth Semester (3rd year of Integrated BSc and MSc)				
1	Complex Analysis	MA302	3-1-0	4	70
2	Continuum Mechanics	MA304	3-1-0	4	70
3	Metric Space	MA333	3-1-0	4	70
4	Fundamentals of Artificial Intelligence	CS300	3-0-2	4	85
5	Elective (Open Elective)	MA3BB	3-X-X	¾	55/70/85
			Total	**19-20**	**335-380**
6	Mini Project-I Preliminary Part-II Vocational Training / Professional Experience (Optional) (mandatory for exit)	MAV06 / MAP06	0-0-10	5	200 (20 x 10)
	Seventh Semester (4th year of Integrated BSc and MSc)				
1	Functional Analysis	MA401	3-1-0	4	70
2	Abstract Algebra	MA403	3-1-0	4	70
3	Fluid Dynamics	MA405	3-1-0	4	70
4	Optimization Techniques	MA431	3-1-0	4	70
5	Elective (Core Elective)	MA4AA	3-X-X	3/4	55/70/85
6	MOOC Course*	MA457	3-0-0/ 3-1-0	3/4	55/70/85
			Total	**23-24**	**390-450**
7	Mini Project-II Preliminary Part-I Vocational Training / Professional Experience (Optional) (mandatory for exit)	MAV07 / MAP07	0-0-10	5	200 (20 X 10)
	Eighth Semester (4th year of Integrated BSc and MSc)				
1	Topology	MA402	3-1-0	4	70
2	Higher Transcendental Functions	MA404	3-1-0	4	70
3	Partial Differential Equations	MA406	3-1-0	4	70
4	Calculus of Variations & Integral Equations	MA432	3-1-0	4	70
5	Elective (Core Elective)	MA4CC	3-X-X	4	55/70/85
6	MOOC Course*	MA458	3-0-0/ 3-1-0	3/4	**390-450**
			Total	**23-24**	**335-365**
7	Mini Project-II Preliminary Part-II Vocational Training / Professional Experience (Optional) (mandatory for exit)	MAV08 / MAP08	0-0-10	5	200 (20 X 10)
	Ninth Semester (5th year of Integrated BSc and MSc)				
1	Measure Theory and Integration	MA501	3-1-0	4	70
2	Advanced Mathematical Modelling and Simulation	MA503	3-0-2	4	85

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3	Probability and Statistics-II	MA531	3-1-0	4	70
4	Financial Mathematics	MA532	3-1-0	4	70
5	Elective (Core Elective)	MA5AA	3-X-X	4	55/70/85
			Total	**20**	**350-380**
	Tenth Semester (5th year of Integrated BSc and MSc)				
1	Dissertation**	MAP10	0-0-40	20	800 (40x 20)
			Total	**20**	**800**

*Students will be required to opt any one Massive Open Online Courses (MOOC) course through NPTEL / SWAYAM platform either in Semester- VII or Semester VIII excluding the courses of the existing curriculum of five years integrated programme in mathematics. Necessary approval from the department is required before the registration of the courses on above platform. The credit of the courses through above platform will be considered as per the norms of the institute.

** Students can continue their dissertation work along with the internship / placement, if offered by the companies through CDC of SVNIT Surat. However, student will be required to complete their dissertation work and viva voce examination as per the academic calendar of the institute.

Sr. No.	**Optional Core**	**Code**	**Scheme L-T-P**
1	Computer Programming using C/C++	MA131	3-0-2
2	Python Programming	MA132	3-0-2
3	Data Structure	MA231	3-0-2
4	Elementary Number theory	MA232	3-1-0
5	Computational Life Science	MA233	3-1-0
6	Probability and Statistics-I	MA331	3-1-0
7	Analysis of Algorithms	MA332	3-1-0
8	Metric Space	MA333	3-1-0
9	Optimization Techniques	MA431	3-1-0
10	Calculus of Variations & Integral Equations	MA432	3-1-0
11	Probability and Statistics-II	MA531	3-1-0
12	Financial Mathematics	MA532	3-1-0

Sr. No.	**Elective**	**Code**	**Scheme L-T-P**
1	Advance Mathematical Methods-I	MA351	3-1-0
2	Stochastic Differential Equations	MA352	3-1-0
3	Mathematical Modelling	MA353	3-1-0
4	Integral and Wavelet Transform	MA354	3-1-0
6	Fuzzy Set theory	MA356	3-1-0
7	Block Chain Technology	CS360	3-0-2
8	Sobolev Space	MA451	3-1-0
9	Advance Mathematical Methods-II	MA452	3-1-0
10	Natural Language Processing	CS461	3-0-2

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11	Data Analytics	MA453	3-0-2
12	Multi Objective Optimization	MA454	3-1-0
13	Evolutionary Algorithms	MA455	3-1-0
14	Advance Operations Research	MA551	3-1-0
15	Fluid Dynamics in Porous Media	MA552	3-1-0
16	Advanced Numerical Analysis	MA553	3-1-0
17	Linear Operator and Approximation Theory	MA554	3-1-0

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