



School of Science
Course Structure-B.Sc. Computational Mathematics and Data Science

School of Science													
Department of Mathematics													
Programme Name : Bachelor of Science (B.Sc. Computational Mathematics and Data Science)													
Programme Code :										With Effect From Academic Year: 2025-26			
Duration of Programme: 3 Years/ Honours													
Semester: I (Level 4.5)													
Course Category	Course Code	Course Title	Scheme of Study (Hours/Week)						Assessment Scheme (Marks)				Total Marks (TA+L A)
			Classroom Instruction (CI)		Lab Instruction (LI)	Hours (CIA+ SL)	Total No- tional Hours (CI+LI+CIA +SL)/ for 15 weeks)	Total Credits (C)	Theory Assessment (TA)		Lab Assessment (LA)		
			L	T					Continuous Internal & Self-Learning Assessment (CIAs & SL)	End Semes- ter Examina- tion (ESE)	Continuous Internal & Self-Learning Assessment (CIAs & SL)	End Se- mester Examina- tion (ESE)	
PCC	NYMT102	Algebra and Calculus - I	2	1	-			3	50	100	-	-	100
PCC	NYMT103	Statistics - I	2	1	-			3	50	100	-	-	100
PCC	NYMT104	Data Analysis - I	3	-	-			3	50	100	-	-	100
OE	NSSO....	Open Elective – I (SWAYAM)	4	-	0			4	-	100	-	-	100
VSEC / PCC	NYMT111	Algebra and Calculus Laboratory	-	-	2			1	-	-	50	50	100
	NYMT112	Fundamental of Computer Science Laboratory	-	-	2			1	-	-	50	50	100
	NYMT113	Introduction to Programming La- boratory	-	-	2			1	-	-	50	50	100
	NYMT114	Python Programming - I	-	-	2			1	-	-	50	50	100
	NYMT115	Data Analysis in MS Excel	-	-	2			1	-	-	50	50	100



School of Science													
AEC- I	NHSA...	Ability Enhancement Courses - I	--	--	4			2	-	-	50	50	100
VEC - I	NSSV....	Value Education Courses- I	--	--	4			2	-	-	50	50	100
IKS	NSSI0...	Indian Knowledge System - I	-	-	4			2	-	-	50	50	100
CC - I	NSSC....	Co-Curricular Course- I	-	-	4			2	-	-	50	50	100
Total			11	2	16			26	150	400	450	450	1300

Legend:

- CI Classroom Instruction (Includes different instructional/implementation strategies, i.e., Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem-based learning, Activity-based learning, Experiential learning etc., to deliver theoretical concepts)
- LI Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)
- CIA** Continuous Internal Assessment (includes assignments, seminars, micro projects, industrial visits, book reviews, and any other student activities)
- SL Self-learning, MOOCs, spoken tutorials, SWAYAMPRAKSHA, online educational resources, institute LMS etc.
- Notional Hours Hours of engagement by learners, which include classroom instruction hours, laboratory instruction hours, continuous internal assessment hours, and self-learning hours.
- C Credits: 1 credit is equivalent to 30 Notional hrs.
- Note
- CIAs and SL have to be planned by the teacher and performed by the learner under the continuous guidance and feedback of the teacher to ensure the outcome of learning.
 - Notional Learning hours for the semester are (CL+LL+TL+SL) hrs* 15 Weeks.



Department of Mathematics													
Programme Name : Bachelor of Science (B.Sc. Computational Mathematics and Data Science)													
Programme Code :										With Effect From Academic Year: 2025-26			
Duration of Programme: 3 Years/ Honours													
Semester: II (Level 4.5)													
Course Category	Course Code	Course Title	Scheme of Study (Hours/Week)						Assessment Scheme (Marks)				Total Marks (TA+L A)
			Classroom Instruction (CI)		Lab Instruction (LI)	Hours (CIA+ SL)	Total No-tional Hours (CI+LI+CIA +SL)/ for 15 weeks)	Total Credits (C)	Theory Assessment (TA)		Lab Assessment (LA)		
			L	T					Continuous Internal & Self-Learning Assessment (CIAs & SL)	End Semester Examination (ESE)	Continuous Internal & Self-Learning Assessment (CIAs & SL)	End Semester Examination (ESE)	
PCC	NYMT201	Algebra and Calculus-II	2	1	-			3	50	100	-	-	100
PCC	NYMT203	Inferential Statistics	2	1	-			3	50	100	-	-	100
PCC	NYMT204	Data Analysis –II	3	-	-			3	50	100	-	-	100
MDM	NYCIM06	Minor – I	2	-	-			2	50	100	-	-	100
OE	NSSO....	Open Elective – II (SWAYAM)	4	-	0			4	-	100	-	-	100
VSEC / PCC	NYMT211	Algebra and Calculus-II Laboratory	-	-	2			1	-	-	50	50	100
	NYMT212	Inferential Statistics Laboratory	-	-	2			1	-	-	50	50	100
	NYMT213	R-Programming	-	-	2			1	-	-	50	50	100
	NYMT214	Python Programming –II	-	-	2			1	-	-	50	50	100
	NYMT215	Advance Excel using Python	-	-	2			1	-	-	50	50	100
AEC- II	NHSA...	Ability Enhancement Courses – II	--	--	4			2	-	-	50	50	100
VEC - II	NSSV....	Value Education Courses- II	2	-	-			2	50	50	-	-	100



CC - II	NSSC....	Co-Curricular Course –II	-	-	4			2	-	-	50	50	100
Total			15	2	18			26	250	550	350	350	1300

Legend:

CI	Classroom Instruction (Includes different instructional/implementation strategies, i.e., Lecture (L), Tutorial (T), Case method, Demonstrations, Video demonstration, Problem-based learning, Activity-based learning, Experiential learning etc., to deliver theoretical concepts)
LI	Laboratory Instruction (Includes experiments/practical performances /problem-based experiences in laboratory, workshop, field or other locations using different instructional/Implementation strategies)
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Notional Hours	Hours of engagement by learners, which include classroom instruction hours, laboratory instruction hours, continuous internal assessment hours, and self-learning hours.
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Department of Mathematics													
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Programme Code :										With Effect From Academic Year: 2025-26			
Duration of Programme: 3yrs/honours													
Semester: III (Level 5.0)													
Course Category	Course Code	Course Title	Scheme of Study (Hours/Week)						Assessment Scheme (Marks)				Total Marks (TA+L A)
			Classroom Instruction (CI)		Lab Instruction (LI)	Hours (CIA+ SL)	Total Notional Hours (CI+LI+CIA +SL)/ for 15 weeks)	Total Credits (C)	Theory Assessment (TA)		Lab Assessment (LA)		
			L	T					Continuous Internal & Self-Learning Assessment (CIAs & SL)	End Semester Examination (ESE)	Continuous Internal & Self-Learning Assessment (CIAs & SL)	End Semester Examination (ESE)	
PCC	NYMT301	Abstract Algebra	2	1	-			3	50	100	-	-	100
PCC	NYMT302	Multivariate Calculus	2	1	-			3	50	100	-	-	100
PCC	NYMT303	Fundamentals of Data Science	3	-	-			3	50	100	-	-	100
MDM	NYCIM07	(Minor – II)	4	-	-			4	50	100	-	-	100
OE	NSSO....	Open Elective - III	2	-	-			2	-	100	-	-	100
VSEC / PCC	NYMT311	Abstract Algebra & Multivariate Calculus Laboratory	-	-	2			1	-	-	50	50	100
	NYMT313	Computing Mathematics Laboratory	-	-	2			1	-	-	50	50	100
	NYMT314	Data Analytics Laboratory - I	-	-	2			1	-	-	50	50	100
AEC- III	NHSA...	Ability Enhancement Courses – III	-	-	4			2	-	-	50	50	100
FP	NYMT315	Field Project	-	-	4			2	-	-	50	50	100
CC - III	NSSC....	Co-Curricular Course –III	-	-	4			2	-	-	50	50	100
Total			13	2	18			24	200	250	300	300	1100

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Programme Name : Bachelor of Science (B.Sc. Computational Mathematics and Data Science)													
Programme Code: Year: 2025-26											With Effect From Academic		
Duration of Programme: 3 Years/ Honours													
Semester: IV (Level 5.0)													
Course Category	Course Code	Course Title	Scheme of Study (Hours/Week)						Assessment Scheme (Marks)				Total Marks (TA+LA)
			Classroom Instruction (CI)		Lab In-struction (LI)	Hours (CIA+SL)	Total Notional Hours (CI+LI+CIA+SL)/ for 15 weeks)	Total Credits (C)	Theory Assessment (TA)		Lab Assessment (LA)		
			L	T					Continuous Internal & Self-Learning Assessment (CIAs & SL)	End Semes-ter Exami-nation (ESE)	Continuous Internal & Self-Learning Assessment (CIAs & SL)	End Semes-ter Exami-nation (ESE)	
PCC	NYMT401	Linear Algebra	2	1	-			3	50	100	-	-	100
PCC	NYMT402	Discrete Mathematics	2	1	-			3	50	100	-	-	100
PCC	NYMT403	Data Structures and Algo-rithms	3	-	-			3	50	100	-	-	100
MDM	NYCIM08	Minor – III	4	-	-			4	50	100	-	-	100
OE	NSSO...	Open Elective – IV (SWAYAM)	2	-	-			2	-	100	-	-	100
VSEC / PCC	NYMT414	Linear Algebra Lab	-	-	2			1	-	-	50	50	100
	NYMT415	Discrete Mathematics Lab	-	-	2			1	-	-	50	50	100
	NYMT416	Data Structure Lab	-	-	2			1	-	-	50	50	100
	NYMT417	Data Analytics Lab-II	-	-	2			1	-	-	50	50	100
	NYMT418	Internet and web Technol-ogy Laboratory	-	-	-			1	-	-	50	50	100



AEC- IV	NHSA....	Ability Enhancement Course - IV	0	0	4			2	-	-	50	50	100
CEP	NYMT4...	Community Engagement Programme	0	0	4			2	-	-	50	50	100
CC- IV	NSSC..._	Co - curricular Course - IV	0	0	4			2	-	-	50	50	100
Total			13	2	20			26	200	500	400	400	1300

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Programme Code :										With Effect From Academic Year: 2025-26			
Duration of Programme: 3 Years/ Honours													
Semester: V (Level 5.5)													
Course Category	Course Code	Course Title	Scheme of Study (Hours/Week)						Assessment Scheme (Marks)				Total Marks (TA+L A)
			Classroom Instruction (CI)		Lab Instruction (LI)	Hours (CIA+ SL)	Total No-tional Hours (CI+LI+CIA +SL)/ for 15 weeks)	Total Credits (C)	Theory Assessment (TA)		Lab Assessment (LA)		
			L	T					Continuous Internal & Self-Learning Assessment (CIAs & SL)	End Semester Examination (ESE)	Continuous Internal & Self-Learning Assessment (CIAs & SL)	End Semester Examination (ESE)	
PCC	NYMT501	Real Analysis	2	1	-			3	50	100	-	-	100
PCC	NYMT502	Data Base Management System	3	-	-			3	50	100	-	-	100
PCC	NYMT503	Big Data Architecture	3	-	-			3	50	100	-	-	100
ME	NYMTE_	Major Elective – I	4	-	-			4	50	100	-	-	100
MDM	NYCIM09	Minor – IV	4	-	-			4	50	100	-	-	100
VSEC / PCC	NYMT511	Data Analytics with Python	-	-	2			1	-	-	50	50	100
	NYMT512	Data Base Management System Laboratory	-	-	2			1	-	-	50	50	100
	NYMT513	Big Data Architecture Laboratory	-	-	4			2	-	-	50	50	100
	NYMT514	Linear Programming Laboratory	-	-	2			1	-	-	50	50	100
AEC-V	NHSA....	Ability Enhancement Courses – V	-	-	4			2	-	-	50	50	100
FP/CEP	NYMT515	Filed Project /Community Engagement Project	-	-	4			2	-	-	50	50	100



Total	16	1	18			26	250	500	300	300	1100
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Legend:

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Programme Code :										With Effect From Academic Year: 2025-26			
Duration of Programme: 3 Years/ Honours													
Semester: VI (Level 5.5)													
Course Category	Course Code	Course Title	Scheme of Study (Hours/Week)						Assessment Scheme (Marks)				Total Marks (TA+L A)
			Classroom Instruction (CI)		Lab Instruction (LI)	Hours (CIA+ SL)	Total No-tional Hours (CI+LI+CIA +SL)/ for 15 weeks)	Total Credits (C)	Theory Assessment (TA)		Lab Assessment (LA)		
			L	T					Continuous Internal & Self-Learning Assessment (CIAs & SL)	End Semester Examination (ESE)	Continuous Internal & Self-Learning Assessment (CIAs & SL)	End Semester Examination (ESE)	
PCC	NYMT601	Complex Analysis	2	1	-			3	50	100	-	-	100
PCC	NYMT602	Big Data Technologies using Ha-doop	3		-			3	50	100	-	-	100
PCC	NYMT603	Data Visualization using tools	3	-	-			3	50	100	-	-	100
ME	NYMTE_	Major Elective – II	4	-	-			4	50	100	-	-	100
MDM	NYCIM10	Minor - V	4	-	-			4	50	100	-	-	100
VSEC / PCC	NYMT611	Complex Analysis Lab	-	-	2			1	-	-	50	50	100
	NYMT612	SPSS Programming	-	-	2			1	-	-	50	50	100
	NYMT613	Big Data Technologies Laboratory	-	-	2			1	-	-	50	50	100
	NYMT614	Data Visualization using tools La-boratory	-	-	4			2	-	-	50	50	100
OJT	NYMT612	On Job Training	-	-	8			4	-	-	50	50	100
Total			16	1	18			26	250	500	250	250	1000

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School of Science													
Department of Mathematics													
Programme Name : (Bachelor of Science) B.Sc. Computational Mathematics and Data Science (Honours)													
Programme Code :									With Effect From Academic Year: 2025-26				
Duration of Programme: 4 Years													
Semester: VII (Level 6.0)													
Course Category	Course Code	Course Title	Scheme of Study (Hours/Week)						Assessment Scheme (Marks)				Total Marks (TA+L A)
			Classroom Instruction (CI)		Lab Instruction (LI)	Hours (CIA+ SL)	Total Notional Hours (CI+LI+CIA +SL)/ for 15 weeks)	Total Credits (C)	Theory Assessment (TA)		Lab Assessment (LA)		
			L	T					Continuous Internal & Self-Learning Assessment (CIAs & SL)	End Semester Examination (ESE)	Continuous Internal & Self-Learning Assessment (CIAs & SL)	End Semester Examination (ESE)	
PCC	NYMT701	Differential Equations	3	1	-			4	50	100	-	-	100
PCC	NYMT702	Linear Algebra for Machine Learning	3		-			3	50	100	-	-	100
PCC	NYMT703	Introduction to AI	3	-	-			3	50	100	-	-	100
ME	NYMTE_	Major Elective - III	4	-	-			4	50	100	-	-	100
MDM	17RDP101	Research Methodology	4	-	-			4	50	100	-	-	100
VSEC / PCC	NYMT712	Linear Algebra for Machine Learning Lab	-	-	4			2	-	-	50	50	100
	NYMT711	Introduction to AI Lab	-	-	4			2	-	-	50	50	100
Total			17	1	8			22	250	500	100	100	700

Legend:

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School of Science													
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Programme Code :										With Effect From Academic Year: 2025-26			
Duration of Programme: 4 Years													
Semester: VIII (Level 6.0)													
Course Category	Course Code	Course Title	Scheme of Study (Hours/Week)						Assessment Scheme (Marks)				Total Marks (TA+L A)
			Classroom Instruction (CI)		Lab Instruction (LI)	Hours (CIA+ SL)	Total No-tional Hours (CI+LI+CIA +SL)/ for 15 weeks)	Total Credits (C)	Theory Assessment (TA)		Lab Assessment (LA)		
			L	T					Continuous Internal & Self-Learning Assessment (CIAs & SL)	End Semester Examination (ESE)	Continuous Internal & Self-Learning Assessment (CIAs & SL)	End Semester Examination (ESE)	
PCC	NYMT801	Numerical Analysis	3	1	-			4	50	100	-	-	100
PCC	NYMT802	Operational Research	3		-			3	50	100	-	-	100
PCC	NYMT803	Deep Learning	3	-	-			3	50	100	-	-	100
ME	NYMTE_	Major Elective - IV	4	-	-			4	50	100	-	-	100
VSEC / PCC	NYMT811	Numerical Analysis Lab	-	-	4			2	-	-	50	50	100
	NYMT711	Operational Research Lab	-	-	4			2	-	-	50	50	100
	NYMT812	Deep Learning Laboratory	-	-	4			2	-	-	50	50	100
OJT	NYMT813	On Job Training	-	-	8			4	-	-	50	50	100
Total			17	1	8			24	200	400	400	400	800

Legend:

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ABILITY ENHANCEMENT COURSE (AEC) BASKET

Sr. No.	COURSE CODE	NAME OF THE COURSE	SEMESTER
1	NHSA01	Communicative English	I
2	NHSA06	Organizational Behavior	
3	NHSA07	Journalistic writing	
4	NHSA05	Elementary Marathi	
5	NHSA09	Linguaskills 1	
6	NHSA02	Personality Development and Soft Skills	II
7	NHSA08	Creative Writing	
8	NHSA03	Value Education	
9	NHSA04	Introduction to Sanskrit	
10	NHSA10	Linguaskills 2	
11	NSSA01	IP and Scientific writing	III
12	NSSA02	Data analysis and interpretation	
13	NSSA03	Publication Ethics	
14	NHSA11	Key Competencies for Career Growth	
15	NSSA04	Scientific policies and practices	IV
16	NSSA05	Literature and Publication	
17	NSSA06	Scientific media	
18	NHSA12	Strategic Communication for Professionals (Advanced)	
19	NHSA13	Essential Aptitude Skills	V



VALUE EDUCATION COURSE (VEC) BASKET

S.No.	COURSE CODE	NAME OF THE COURSE	SEMESTER
1	NSSV02	Sustainable Development	I
2	NLWV01	The Constitution and Human Rights	
3	NSSV03	Scientific Ethics	
4	NSSV04	Science and Society	II
5	NSSV05	Waste to Wealth	
6	NSSV01	Environmental Studies	

CO-CURRICULAR COURSE (CC) BASKET

Sr.No.	COURSE CODE	NAME OF THE COURSE	SEMESTER
1	NSSC01	Physical Education and Mental Health	I
2	NYCM112	Yoga Meditation	
3	NSSC02	Ethics and Human Rights	II
4	NSSC03	SUN / Science Clubs	
5	NSSC04	Food Adulteration	
6	NSSC05	Bio-media	
7	NSSC06	Wild Life Photography	III
8	NSSC07	Awareness and Recycling of Plastic	
9	NSSC08	Health and Hygiene	
10	NSSC13	Mathematics for Environmental Studies	
11	NSSC09	Courtroom Strategies and Tactics	IV
12	NSSC10	Scientific Journalism	
13	NSSC11	Organic and Residue Free Farming	
14	NSSC12	Soil and water analysis	
15	NSSC13	SUN Clubs	



OPEN ELECTIVE (OE) BASKET

Sr.No.	COURSE CODE	NAME OF THE COURSE	SEMESTER
1	NSSO01	Fundamentals of Statistics	I
2	NSSO02	Introduction to Nano science and Nanotechnology	
3	NSSO03	Diseases and Control Measures	II
4	NSSO04	Horticulture	
5	NSSO....	SWAYAM	
6	NSSO....	SWAYAM	III
7	NSSO....	SWAYAM	IV

MAJOR ELECTIVE BASKET

B.Sc. Computational Mathematics and Data Science

Sr. No.	MAJOR ELECTIVE	COURSE CODE	NAME OF THE COURSE	SEMESTER
1.	Major Elective I	NYMTE01	Integral Transforms	V
2.		NYMTE02	Linear Programming and Game Theory	
3.		NYMTE03	Data Security and Compliances	
4.	Major Elective II	NYMTE04	Information Theory	VI
5.		NYMTE05	Number Theory	
6.		NYMTE06	Vector Calculus	
7.	Major Elective III	NYMTE07	Design and Analysis of Algorithms	VII
8.		NYMTE08	Field Theory	
9.		NYMTE09	Data Mining	
10.	Major Elective IV	NYMTE10	Big Data	VIII
11.		NYMTE11	Coding Theory	
12		NYMTE12	Web Designing	



MINOR COURSES

Note: Student from B.Sc. (Computational Mathematics and Data Science) with minor in Artificial Intelligence (AI) shall having the following courses:

Sr. No.	COURSE CODE	NAME OF THE COURSE	SEMESTER
1	NYCIM06	Introduction to AI Fundamentals	II
2	NYCIM07	Basics of Machine Learning	III
3	NYCIM08	Fundamental of AI & ML	IV
4	NYCIM09	Artificial neural network	V
5	NYCIM10	Knowledge representation using AI	VI



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