

	A	B	C	D	E	F	G	H	I	J	K	
		Details of the Swayam NPTEL-MOOC Courses Approved for Department of Mathematics (as on13-August-2026)										
	Sl. No	Course Title	Name of the Developer	Name of the Institute	No. of weeks	Course URL	Programme	Specialization(if any)	Department Elective/Open Elective	Remarks on Open Elective/prerequisite/Eligibility	Senate Meeting	
	1	Introduction to Queuing theory	Prof. N. Selvaraju	IT Guwahati	12	https://nptel.ac.in/courses/111103159	BTech (M&C), MSc (M&C), Ph.D.	NIL	Department Elective	For UG/PG. PREREQUISITES : Calculus-based Probability Theory +J3/J35/J613/J34I3/J38I3/J34	166, 170	
	2	Deep Learning	Prof. P. K. Biswas	IT Kharagpur	12	https://nptel.ac.in/courses/106105215	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG/PG. PREREQUISITES : Knowledge of Linear Algebra, DSP, PDE will be helpful	166	
	3	Getting Started with Competitive Programming	Prof. Neelidhara Misra	IT Gandhinagar	12	https://onlinecourses.nptel.ac.in/noc24_cs29/preview	BTech (M&C)	NIL	Department Elective	For UG. PREREQUISITES : Data Structures and Algorithms, Familiarity with a programming language (Ideally C++ or Java)	166, 170	
	4	Introduction to Machine Learning	Prof. Balaraman Ravindran	IT Madras	12	https://onlinecourses.nptel.ac.in/noc24_cs51/preview	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG/PG. PREREQUISITES : We will assume that the students know programming for some of the assignments.	166, 170	
	5	Blockchain and Its Applications	Prof. Sandip Chakraborty, Prof. Shamik Saha	IT Kharagpur	12	https://nptel.ac.in/courses/106105235	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG/PG. PREREQUISITES : Computer Networks; Operating Systems; Cryptography and Network Security	166, 170	
	6	Data analytics with python	Prof. A. Ramesh	IT Roorkee	12	https://nptel.ac.in/courses/106107220	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG/PG. PREREQUISITES : Nil	166, 170	
	7	An introduction to Artificial Intelligence	Prof. Mausam	IT Delhi	12	https://nptel.ac.in/courses/106102220	BTech (M&C)	NIL	Department Elective	For UG/PG. PREREQUISITES : Data Structures, Probability	166, 170	
	8	Natural Language Processing	Prof. Pawan Goyal	IT Kharagpur	12	https://onlinecourses.nptel.ac.in/noc23_cs80/preview	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG/PG. PREREQUISITES : Basic knowledge of probabilities for the lectures and python for programming	166, 170	
	9	Introduction to Internet of things	Prof. Sudip Misra	IT Kharagpur	12	https://onlinecourses.nptel.ac.in/noc23_cs83/preview	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG/PG. PREREQUISITES : Nil	166, 170	
	10	Essentials of Data Science with R software-1:Probability and Statistical Inference	Prof. Shalabh	IT Kanpur	12	https://nptel.ac.in/courses/111104164	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG/PG. PREREQUISITES : "Introduction to R Course" is preferred. Mathematics background up to class 12 is needed. Some minor statistics background is desirable.	166, 170	
	11	Cloud Computing	Prof. Soumya Kanti Ghosh	IT Kharagpur	12	https://onlinecourses.nptel.ac.in/noc24_cs17/preview	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG. PREREQUISITES : Basics of Computer Architecture and Organization, Networking	170	
	12	Computer Networks and Internet Protocol	Prof. Soumya Kanti Ghosh, Prof. Sandip Chakraborty	IT Kharagpur	12	https://nptel.ac.in/courses/106105183	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG/PG. PREREQUISITES : Nil	170	
	13	Privacy and Security in Online Social Media	Prof. Ponnurangam Kumaraguru	IIIT Hyderabad	12	https://nptel.ac.in/courses/106106146	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG/PG. PREREQUISITES : Basic / Intermediate programming course, Understanding of Python will be helpful	170	
	14	Artificial Intelligence: knowledge representation and reasoning	Prof. Deepak Khemani	IT Madras	12	https://nptel.ac.in/courses/106106140	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG/PG. PREREQUISITES : Some exposure to formal languages, logic and programming	170	
	15	Machine learning and Science application	Prof. Balaji Srinivasan, Prof. Ganapathy	IT Madras	12	https://nptel.ac.in/courses/106106198	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG/PG. PREREQUISITES : Familiarity with Multivariable Calculus, Linear Algebra, Probability, Statistics.	170	
	16	Reinforcement Learning	Prof. Balaraman Ravindran	IT Madras	12	https://onlinecourses.nptel.ac.in/noc23_cs100/preview	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG/PG. PREREQUISITES : Nil	170	
	17	Software Engineering	Prof. Rajib Mall	IT Kharagpur	12	https://onlinecourses.nptel.ac.in/noc23_cs122/preview	BTech (M&C), MSc (M&C)	NIL	Department Elective	For PG. PREREQUISITES : C Programming, Java or C++ programming	179	
	18	Cyber Security and Privacy	Prof. Saij K Mathew	IT Madras	12	https://onlinecourses.nptel.ac.in/noc23_cs127/preview	BTech (M&C), MSc (M&C)	NIL	Department Elective	For PG. PREREQUISITES : A core course on Management Information Systems desirable (not mandatory)	179	
	19	Introduction To Machine Learning - IITKGP	Prof. Sudeshna Sarkar	IT Kharagpur	8	https://onlinecourses.nptel.ac.in/noc23_cs87/preview	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG/PG. PREREQUISITES : Basic programming skills (in Python), algorithm design, basics of probability & statistics	179	
	20	Ethical Hacking	Prof. Indranil Sengupta	IT Kharagpur	12	https://onlinecourses.nptel.ac.in/noc23_cs75/preview	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG/PG. PREREQUISITES : Basic concepts in programming and networking	179	
	21	Algebra II	Prof. Sankaran Viswanath, Prof. Amritanshu Misra	IMSc	12	https://nptel.ac.in/courses/111106151	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES: Algebra-I (Highly Recommended)	146th IPPC and 180th Senate	
	22	Algebraic Combinatorics	Prof. Amritanshu Prasad, Prof. Sankaran Viswanath	IMSc	12	https://nptel.ac.in/courses/111106158	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES: Knowledge of set theory, linear algebra, and algebra at the undergraduate level, basic combinatorics	146th IPPC and 180th Senate	
	23	Algebraic Number Theory	Prof. Mahesh Kakde	IMSc Bangalore	12	https://onlinecourses.nptel.ac.in/noc23_ma08/preview	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES: Algebra, Galois theory.	146th IPPC and 180th Senate	
	24	An Introduction to Hyperbolic Geometry	Prof. Abhijit Pal	IT Kanpur	12	https://nptel.ac.in/courses/111104164	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES: Topology, Algebra (Group Theory), Complex Analysis	146th IPPC and 180th Senate	
	25	An Introduction to Point Set Topology-I	Prof. Anant R Shastri	IT Bombay	12	https://nptel.ac.in/courses/111101158	MSc (M&C)	NIL	Department Elective	For PG. PREREQUISITES: Real Analysis	146th IPPC and 180th Senate	
	26	Applied Linear Algebra in AI and ML	Prof. Swinand Khare	IT Kharagpur	12	https://nptel.ac.in/courses/111105165	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES: Some exposure to Linear Algebra	146th IPPC and 180th Senate	
	27	Applied Multivariate Statistical Modeling	Prof. Jharieswar Maiti	IT Kharagpur	12	https://nptel.ac.in/courses/111105091	BTech (M&C), MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For UG, PG. PREREQUISITES: Basic Knowledge of Probability and Statistics	146th IPPC and 180th Senate	
	28	Dynamical System and Control	Prof. N. Sukavanam, Prof. D. N. Pandey	IT Roorkee	12	https://nptel.ac.in/courses/111107118	BTech (M&C), MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For UG, PG. PREREQUISITES: Basic concepts from Linear Algebra and Ordinary Differential Equations	146th IPPC and 180th Senate	
	29	High Performance Scientific Computing	Prof. Shivasubramanian Gopalakrishnan	IT Bombay	12	https://onlinecourses.nptel.ac.in/noc25_ma27/preview	MSc (M&C), PhD	NIL	Department Elective	For PG. PREREQUISITES: Basic course on programming and applied mathematics	146th IPPC and 180th Senate	
	30	Introduction to Algebraic Geometry and Commutative Algebra	Prof. Dillip P. Patil	IMSc Bangalore	12	https://nptel.ac.in/courses/111108136	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES: Linear Algebra, Algebra-First Course	146th IPPC and 180th Senate	
	31	Introduction to Galois Theory	Prof. Krishna Hanumanthu	CMI	8	https://nptel.ac.in/courses/111106145	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES: Linear Algebra, Group Theory, Rings and Fields	146th IPPC and 180th Senate	
	32	Introduction to Lie Algebras	Prof. R. Venkatesh	IMSc Bangalore	12	https://nptel.ac.in/courses/111108414	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES: First Course in Linear Algebra	146th IPPC and 180th Senate	
	33	Advanced Course on Partial Differential Equations-I	Prof. A. K. Nandakumaran, Prof. P. S. Datt	IMSc Bangalore	8	https://onlinecourses.nptel.ac.in/noc23_ma79/preview	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES: Measure and Integration, Functional Analysis, PDE	146th IPPC and 180th Senate	
	34	Advanced Course on Partial Differential Equations-II	Prof. A. K. Nandakumaran, Prof. P. S. Datt	IMSc Bangalore	8	https://nptel.ac.in/courses/111108412	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES: Measure and Integration, Functional Analysis, PDE	146th IPPC and 180th Senate	
	35	Computational Number Theory and Algebra	Prof. Nitin Saxena	IT Kanpur	12	https://nptel.ac.in/courses/1111104138	BTech (M&C), MSc (M&C), MSc (Maths)	NIL	Department Elective	For UG, PG, PREREQUISITES: Preferable but not necessary - Theory of Computation, Algorithms, Algebra	146th IPPC and 180th Senate	
	36	Computer Networks and Internet Protocol	Prof. Soumya Kanti Ghosh, Prof. Sandip Chakraborty	IT Kharagpur	12	https://nptel.ac.in/courses/106105183	MSc (M&C)	NIL	Department Elective	For PG. PREREQUISITES:	146th IPPC and 180th Senate	
	37	Cryptography and Network Security	Prof. Sourav Mukhopadhyay	IT Kharagpur	12	https://nptel.ac.in/courses/106105162	BTech (M&C), MSc (M&C), MSc (Maths)	NIL	Department Elective	For UG, PG, PREREQUISITES: Preferable but not necessary - Theory of Computation, Algorithms, Algebra	146th IPPC and 180th Senate	
	38	Data Analytics with Python	Prof. A. Ramesh	IT Roorkee	12	https://nptel.ac.in/courses/106107220	MSc (M&C)	NIL	Department Elective	For PG. PREREQUISITES: Nil	146th IPPC and 180th Senate	
	39	Introduction to Database Systems	Prof. Sreenivasa Kumar	IT Madras	12	https://nptel.ac.in/courses/106106220	MSc (M&C)	NIL	Department Elective	For PG. PREREQUISITES: Discrete Mathematics, Data Structures	146th IPPC and 180th Senate	
	40	Fundamental of Object Oriented Programming	Prof. Balasubramanian Raman	IT Roorkee	12	https://onlinecourses.nptel.ac.in/noc25_cs34/preview	MSc (M&C)	NIL	Department Elective	For PG. PREREQUISITES: Nil. However, having a basic understanding of programming concepts will be beneficial.	146th IPPC and 180th Senate	
	41	Introduction to Industry 4.9 and Industrial Internet of Things	Prof. Sudip Misra	IT Kharagpur	12	https://nptel.ac.in/courses/106105195	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG, PG. PREREQUISITES: Basic Knowledge of Computer and Internet	146th IPPC and 180th Senate	
	42	Quantum Algorithms and Cryptography	Prof. Shweta Agrawal	IT Madras	12	https://nptel.ac.in/courses/106106241	BTech (M&C), MSc (M&C)	NIL	Department Elective	For UG, PG. PREREQUISITES: Theory of Computation, Design and Analysis of Algorithms, Foundations of	146th IPPC and 180th Senate	
	43	Sobolev Spaces and Partial Differential Equations	Prof. S. Kesavan	IMSc	12	https://nptel.ac.in/courses/111106154	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES : MSc Level Real Analysis, Topology, Linear Algebra; Measure Theory, Functional Analysis	146th IPPC and 180th Senate	
	44	Introduction to Fourier Analysis	Prof. Parasara Mohanty	IT Kanpur	12	https://nptel.ac.in/courses/111104519	BTech (M&C), MSc (M&C), MSc (Maths)	NIL	Department Elective	For UG/PG. PREREQUISITES : Basic Calculus, Riemann Integration	146th IPPC and 180th Senate	
	45	Galois Theory	Prof. Dillip Patil	IT Bombay	12	https://nptel.ac.in/courses/111101117	BTech (M&C), MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For UG/PG. PREREQUISITES : Linear Algebra ; Algebra – First Course	146th IPPC and 180th Senate	
	46	Computational Commutative Algebra	Prof. Manoj Kummini	CMI	12	https://nptel.ac.in/courses/111106138	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES : Introduction to basic theory of rings, modules	146th IPPC and 180th Senate	
	47	Deep Learning - IIT Rorpar	Prof. Sudarshan Iyengar, Prof. Padmavati	IT Rorpar	12	https://nptel.ac.in/courses/106106184	MSc (M&C), PhD	NIL	Department Elective	For PG. PREREQUISITES : Working knowledge of Linear Algebra, Probability Theory. It would be beneficial if the participants have done a course on Machine Learning.	146th IPPC and 180th Senate	
	48	An Introduction to Point Set Topology-II	Prof. Anant R Shastri	IT Bombay	12	https://nptel.ac.in/courses/1111011160	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES: Topology/ Point Set Topology-I	146th IPPC and 180th Senate	
	49	An Introduction to Riemann Surfaces and	Prof. T. E. Venkata Balaji	IT Madras	12	https://nptel.ac.in/courses/111106044	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES: Topology, Complex Analysis	146th IPPC and 180th Senate	
	50	Advanced Complex Analysis Part-1: Zeros of Analytic Functions, Analytic Continuation,	Prof. T. E. Venkata Balaji	IT Madras	12	https://nptel.ac.in/courses/111106084	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES: Real Analysis, Complex Analysis	146th IPPC and 180th Senate	
	51	Advanced Complex Analysis Part-2: Compactness of Meromorphic Functions in the Spherical Metric, Spherical Derivative, Normality, Theorems of Marty - Zalcman - Montel - Picard - Royden - Schottky	Prof. T. E. Venkata Balaji	IT Madras	4	https://nptel.ac.in/courses/111106094	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES: Real Analysis, Complex Analysis	146th IPPC and 180th Senate	
	52	Representation Theory of General Lie Algebra - IMSc Bangalore	Prof. R. Venkatesh	IMSc Bangalore	12	https://nptel.ac.in/courses/111108520	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG. PREREQUISITES: Abstract Algebra, Linear Algebra	146th IPPC and 180th Senate	
	53	Category Theory	Prof. Amit Kuber	IT Kanpur	12	https://nptel.ac.in/courses/111104524	MSc (M&C), MSc (Maths), PhD	NIL	Department Elective	For PG, PREREQUISITES: None but mathematical maturity is necessary. For understanding and appreciating examples, domain-specific knowledge would be required.	146th IPPC and 180th Senate	
	54	Foundations of Machine Learning	Prof. J. SakethaNath	IT Hyderabad	12	https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_ma08/preview	BTech(M&C), MSc(M&C), MSc(Maths)	NIL	Department Elective/Open Elective	Good understanding of basic engineering math	161st IPPC	
	55	Theory and Practice of Modern Cryptography	Prof. Sourav Mukhopadhyay	IT Kharagpur	12	https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_ma08/preview	MSc(M&C), MSc(M&C), MSc(Maths)	NIL	Department Elective/Open Elective	Higher Secondary Mathematics knowledge	161st IPPC	
	56	Fractals and Multifractals	Prof. M. Guru Prem Prasad Prof. A. Gowrisankar	IT Guwahati & VIT, Vellore	12	https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_ma08/preview	BTech(M&C), MSc(M&C), MSc(Maths)	NIL	Department Elective/Open Elective	Basic Calculus or Real Analysis	161st IPPC	
	57	Wavelets and Applications	Prof. CS Sastry	IT Hyderabad	12	https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_ma08/preview	MSc(M&C), MSc(Maths)	NIL	Department Elective/Open Elective	Basic Functional Analysis	161st IPPC	
	58	The Geometry of Möbius Transformations	Prof. Krishnendu Gongopadhyay	ISER Mohali	12	https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_ma08/preview	MSc(M&C), MSc(Maths)	NIL	Department Elective/Open Elective	Basic linear algebra, general topology and group theory.	161st IPPC	
	59	Introduction to Algebraic Structures	Prof. Mahesh Kakde,	IMSc Bangalore	12	https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_ma08/preview	BTech(M&C), MSc(M&C), MSc(Maths)	NIL	Department Elective/Open Elective	Basic Algebra	161st IPPC	
	60	Introduction to Methods of Applied Mathematics	Prof. Mani Mehra, Prof. Vivek Kumar Aggarwal	IT Delhi, DTU	12	https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_ma08/preview	MSc(M&C), MSc(Maths)	NIL	Department Elective/Open Elective	Prerequisite: Some basic knowledge of Calculus, Differential Equations, Topics related to Mathematics - I. It will be an advantage.	IPPC Circulation dated 12.08.26	
	61	Programming in Java	Prof. Debasis Samanta	IT Kharagpur	12	https://onlinecourses.nptel.ac.in/e-learning/preview/noc26_cs153/preview	MSc(M&C), MSc(Maths)	NIL	Department Elective/Open Elective	Prerequisite: This course requires that the students are familiar with programming language such as C/C++ and data structures, algorithms.	IPPC Circulation dated 12.08.26	
	62											
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