

Details of the Swayam NPTEL-MOOC Courses Approved for Department of Mathematics									
Sl. No	Course Title	Name of the Developer	Name of the Instit	No. of	Course URL	Programme	Spec Department Elective/Open Elective	Remarks on Open Elective/prerequisite/Eligibility	Senate Meeting
1	Introduction to Queueing theory	Prof. N. Selvaraju	IIT 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	165, 170
2	Deep Learning	Prof. P. K. Biswas	IIT 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. Neeldhara Misra	IIT 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 Python)	166, 170
4	Introduction to Machine Learning	Prof. Balaraman Ravindran	IIT 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. If not, a basic programming course is recommended.	166, 170
5	Blockchain and its Applications	Prof. Sandip Chakraborty, Prof. Shami	IIT 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	IIT Roorkee	12	https://nptel.ac.in/courses/106102220	BTech (M&C), MSc (M&C)	NIL Department Elective	For UG/PG. PREREQUISITES : Nil	166, 170
7	An Introduction to Artificial Intelligence	Prof. Mausam	IIT 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	IIT 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 or probabimms for the lectures and python for programming assignment	166, 170
9	Introduction to internet of things	Prof. Sudip Misra	IIT 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	IIT Kanpur	12	https://nptel.ac.in/courses/111104146	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	IIT 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 Misra	IIT Kharagpur	12	https://nptel.ac.in/courses/106105118	BTech (M&C), MSc (M&C)	NIL Department Elective	For UG/PG. PREREQUISITES : Nil	170
13	Privacy and Security in Online Social Media	Prof. Pomurangan Kumaraguru	IIT Hyderabad	12	https://nptel.ac.in/courses/106106146	BTech (M&C), MSc (M&C)	NIL Department Elective	necessary for the course. Should be able to quickly learn APIs, and to collect data from social networks.	170
14	Artificial intelligence: knowledge representation and reasoning	Prof. Deepak Khemani	IIT 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	IIT Madras	12	https://nptel.ac.in/courses/106106198	BTech (M&C), MSc (M&C)	NIL Department Elective	For UG/PG. PREREQUISITES : Familiarity with multivariate calculus, linear algebra, probability, statistics. Comfortable with basic programming	170
16	Reinforcement Learning	Prof. Balaraman Ravindran	IIT 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	IIT 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. Saji K Mathew	IIT 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	IIT 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	IIT 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