

## **Massive Open Online Courses (MOOCs) scheme at MAKAUT, WB (Applicable from the session 2020-21)**

All India Council for Technical Education (AICTE) has introduced Model Curriculum for Bachelor of Technology programme with 160 credits in the entire programme of 4 years, and additional 20 credits will be required to be achieved through Massive Open Online Courses (MOOCs) from different platform for the degree of Bachelor of Technology with Honours. These additional 20 credits will have to be acquired with online courses (MOOCs) as per AICTE. Students of B Tech program will have to complete additional 20 credits through MOOCs within 4 years of time. 16 credit points is applicable for 3 year UG programs. This creates an excellent opportunity for students to acquire the necessary additional skill set for employability through massive open online courses where the rare expertise of world famous experts from academics and industry are available. Maulana Abul Kalam Azad University of Technology, West Bengal (MAKAUT,WB) has thus decided to introduce AICTE model curriculum for its B.Tech Programmes and allow students to choose courses from any established online platform as per following revised guidelines from academic year 2020-21.

### **GUIDELINES FOR MOOCs**

MOOCs (Massive Open Online Courses) have been inducted in University curriculum and academic activities in the following ways:

1. MOOCs for Honours Degree at Undergraduate Level.
2. MOOCs for mandatory Coursework of Research Scholars for Ph.D. degree
3. MOOCs are also used for credit transfer as equivalent to theory courses of Curriculum under recommendation of BoS.
4. MOOCs for Mandatory Additional Requirements (MAR)

#### **1 (A) MOOCs for B.Tech Honours Degree**

For B.Tech Honours Degree, a B.Tech student will have to earn 20 credits from MOOCs from any established MOOCs platform addition to 160 credits for B.Tech degree.

The total of 20 credits that is required to attain eligibility for B.Tech Honours degree is distributed over four years in the following way:

**1<sup>st</sup> year: 4-8 credits**

**3<sup>rd</sup> year: 4-8 credits**

**2<sup>nd</sup> year: 4-8 credits**

**4<sup>th</sup> year: 4 credits**

A student of first year has to cover courses from at least three skills:

1. Computer Programming with Python /R
2. Softskill
3. Ethics

Students of all streams are to be equipped with Programming skill in the language that is in high demand worldwide in the first year itself so that they can apply this skill in the subsequent semesters in their different areas including their core area of study.

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Soft skill is very essential for grooming of the student and student must be exposed to it in the very beginning of the 4 year long program.

Ethics is something that one should practice. Students are to be made aware of the ethics right in the beginning of the 4 year long program so that they can practice at least some of the ethical norms as applicable to Institutional environment and society, and be prepared to practice ethics in their working life.

**All of the MOOCs courses are to be taken any MOOCs platform as per following scheme of credit points. There would not be any concept of fixed basket anymore. However, during choosing courses in the online platform students would essentially avoid the courses taught/offered through the curriculum in the offline / class room mode.**

**For NPTEL/Swayam platform: Credit points as specified in the platform**  
**For other MOOCs platforms like Coursera, edX, Udemy, Simpilearn etc**  
**Courses of 4 weeks to 7 weeks: 1 credit point**  
**Courses of 8 weeks to 11 weeks: 2 credit point**  
**Courses of 12 weeks to 15 weeks: 3 credit point**  
**Courses of 16 weeks or more: 4 credit point**

**1 (B) MOOCs for B. Pharm Program**

For B. Pharm Honours degree, **8 credits** will have to be obtained by students in addition to the credits specified for B.Pharm degree curriculum during entire period of 4 years. These credits have to be obtained through the MOOCs platforms.

**1 (C) MOOCs for UG Architecture Degree**

For B. Arch Honours degree, **8 credits** will have to be obtained by the students in addition to B. Arch Curriculum during entire period of 5 years from MOOCs platform.

**1 (D) MOOCs for Non-AICTE UG Programs (Non CBCS curriculums)**

For Non-AICTE programs, a student will have to earn 16 credits from MOOCs in addition to 120 credits for UG degree.

The total of 16 credits that is required to attain eligibility for Honours degree is distributed over four years in the following way:

**1st year: 4-8 credits                      2ndyear: 4-8 credits                      3rdyear: 4 credits**

As mentioned earlier, Student has to cover courses in the first year:  
MOOCs on R or Python Programming Language, MOOCs on Soft skill and MOOCs on Ethics for the reason already mentioned.

**The scheme of credit calculation would be same as mentioned above for different MOOCs platforms.**

## **2. MOOCs for Research Scholars for Ph.D. degree**

Research scholars have to take MOOCs as mandatory as a part of coursework for Ph.D. degree as per advice of the Research Supervisor. The credits for the course will be as per the assignment of credit for the course in the University website according to the length (in weeks) of the course, even if there is different credit assignment in the MOOCs platforms.

## **3. MOOCs for Credit Transfer**

University had already introduced provision of credit transfer through MOOCs courses. Therefore, different courses of curriculum could be taken from MOOCs platform and credits could be transferred, if offered through online and credits are earned. However, to offer courses of curriculum through MOOCs platform like NETEL/SWAYAM/Coursera/edX/Simplilearn etc, offering institute must get the course mapping (Mapping between the University course and that offered from the online platform) approved from the University for appropriate Credit Transfer Scheme.

If a student of the university is unable to attend a theory course due to attending internship or any other justified reason, the student may be allowed with special permission of the University to pursue equivalent MOOCs for against the theory course. However, content mapping to be completed preferably by BoS or appropriate authority is essential before opting the courses in MOOCs platform. More than one MOOCs courses may be necessary to be mapped to cover the syllabus of the theory course and the student has to complete all the MOOCs to cover the course. Credits earned in total in all the courses will be considered for equivalence and credit transfer.

## **Evaluation of the MOOCs course**

Evaluation of the MOOCs courses would be done by the organization by whom it is being offered. In extraordinary circumstances, the modality of evaluation through certified personnel, online or offline, will be decided by the appropriate authority.

## **Uploading of MOOCs Data**

Every Affiliated Institution has to upload the details of MOOCs data in respect of each student time to time in University's examinations portal and/or hard/soft copy as per instruction of the Controller of Examinations of the University. This is applicable for University's In-House Programs also.

## **4. MOOCs for Mandatory Additional Requirements (MAR)**

MOOCs in MAR is provided for encouraging every student to enter in Digital Content form of Education from well-known Universities or organizations.

Students can choose any MOOCs course as per their interest area. There is no credit system for MOOCs in MAR as points could be earned as specified in the scheme and the MOOCs courses which are taken for earning credits for Honours degree will not be considered in MAR purpose.

This notification supersedes all earlier instructions regarding MOOCs courses.

Controller of Examinations

**MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, West Bengal**  
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**MOOCS For B. Tech (Hons)**  
**(1<sup>st</sup> Year)Jan 2020**

Module	Course	Provider	Duration (Weeks)	Credits
Ethics	Ethics in Engineering Practice	NPTEL	8	2
	Ethics and Law in Data and Analytics	edX	6	2
	A Life of Happiness and Fulfilment	Coursera	6	2
	Introduction to Philosophy	Coursera	5	2
	Ethical Leadership Through Giving Voice	Coursera	4	1
Soft Skills	Enhancing Soft Skills and Personality	NPTEL	8	2
	Soft Skill Development	NPTEL	8	2
	Psychology at Work	Coursera	6	2
	Communication in the 21st Century Workplace	Coursera	4	1
	Successful Career Development	Coursera	7	2
	Working in Teams: A Practical Guide	edX	4	1
	Communication theory: bridging academia and practice	Coursera	9	3
	Write Professional Emails in English	Coursera	5	2
	Effective Writing	NPTEL	4	1
	Technical Writing	Coursera	5	2
	Interpersonal Communication for Engineering Leaders	Coursera	4	1
	Enhancing Soft Skill and Personality	NPTEL	8	2
	Employment Communication A Lab based course	NPTEL	8	2
	Speaking Effectively	NPTEL	8	2
	English Language for Competitive Exams	NPTEL	12	3
Programming Skills	Introduction to Programming with MATLAB	Coursera	9	3
	Introduction to Computer Science and Programming Using Python	edX	9	3
	Introduction to R for Data Science	edX	4	1
	Java Programming: Solving Problems with Software	Coursera	4	1
	Responsive Website Basics: Code with HTML, CSS, and JavaScript	Coursera	4	1
	Joy of computing using Python	NPTEL	12	3
	Programming, Data Structures and Algorithm Using Python	NPTEL	8	2
	Web Design for Everybody (Basics of Web Development and Coding) Specialization	Coursera	15	4
Statistics	Inferential Statistics	Coursera	7	2
	Introduction to Data Analysis using Excel	edX	4	1
	Multivariable Calculus	NPTEL	8	2
Environmental Studies	The Science of Well Being	Coursera	6	2
	Ecology: Ecosystem Dynamics and Conservation	Coursera	5	2
	Effective Problem-solving Decision- Making	Coursera	4	1
	Moralities of Everyday Life	Coursera	6	2
	Introduction to Logic	Coursera	10	3
	Digital Security and Human Rights	edX	3	1

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**MOOCs For B.TECH (Hons.) CSE/IT**

**2<sup>nd</sup> to 4<sup>th</sup> Year JAN 2020**

No	Basket of Courses	Duration	Credit	Offered by
1.	AP Computer Science A: Java Programming Polymorphism and Advanced Data Structures	6 weeks	2	edX
2.	Build your very first iOS app	8 weeks	3	edX
3.	Gameplay Programming for Video Game Designers	5 weeks	2	edX
4.	Introduction to Computer Science & Programming Specialization	8 weeks	3	Coursera
5.	Introduction to scripting in Python	8 weeks	3	Coursera
6.	Foundation of Data Structures	6 weeks	2	edX
7.	Synthesis of Digital Systems	12 weeks	3	MIT online course
8.	Bayesian Statistics: Techniques and Models	5 weeks	2	Coursera
9.	Mathematical Modelling Basics	9 weeks	3	edX
10.	Animation and CGI Motion	12 weeks	3	edX
11.	Web Application Development	6 weeks	2	Coursera
12.	Web Design for Everybody Specialization	12 weeks	3	Coursera
13.	The Bits and Bytes of Computer Networking	4 weeks	1	Coursera
14.	Introduction to Cisco Networking	4 weeks	1	Coursera
15.	Introduction to Computing for Data Analysis with Python	6 weeks	2	edX
16.	Introduction to data science in python	3 weeks	1	Coursera
17.	What is Data Science?	3 weeks	1	Coursera
18.	Introduction to Big Data	3 weeks	1	Cousera
19.	The Data Science Tool Box	2 weeks	1	Cousera
20.	Data Driven Decision Making	2weeks	1	Cousera
21.	A Crash Course in Data Science	1weeks	1	Cousera
22.	Digital Security and Human Rights	3 weeks	1	edX
23.	Data Analysis and Presentation Skills : the PWC approach Specialization	12 weeks	3	Cousera
24.	Introduction to Design Thinking	5 weeks	2	edx
25.	Introduction to Soft Computing	8 weeks	2	SWAYAM
26.	Introduction to Data Modelling	4 weeks	1	edX
27.	Java Fundamentals for Android Development	6 weeks	2	edX
28.	Using Databases with Python	5 weeks	2	Coursera
29.	Data Base Management System	8 weeks	2	NPTEL
30.	Discrete Mathematics	12 Weeks	3	NPTEL
31.	Programming, Data Structures and Algorithms using Python	8 weeks	2	NPTEL
32.	Design and Analysis of Algorithms	8 weeks	2	NPTEL
33.	Algorithm Specialization	16 weeks	4	Coursera
34.	Divide and conquer ,Sorting, Searching and Randomized Algorithm	4weeks	1	Coursera
35.	Cloud Computing	8 weeks	2	NPTEL
36.	Cloud Computing	5 weeks	2	Coursera
37.	Bitcoin and Cryptocurrency Technologies	11 weeks	3	Coursera
38.	Ethical Hacking	8 weeks	2	Udemy
39.	Cybersecurity and its 10 domains	7 weeks	2	Coursera
40.	Introduction to Internet of Things	12Weeks	3	NPTEL

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41.	Introduction to the Internet of Things	6 weeks	2	edX
42.	IoT Programming and Big Data	5 weeks	2	edX
43.	Data Communications and Network Services	4 weeks	1	Coursera
44.	UML Class Diagrams for Software Engineering	3 weeks	1	edX
45.	Formal Software Verification	8 weeks	2	edX
46.	Software testing	12 weeks	3	Coursera
47.	Software Project Management	12 weeks	3	
48.	Software Engineering	12 weeks	3	edx
49.	Software Product Management Specialization	16 weeks	4	Coursera
50.	Entrepreneurship in Emerging Economies	6 weeks	2	edX
51.	Patent Drafting for Beginners	4 weeks	1	
52.	Patent Law for Engineers and Scientists	12 weeks	3	
53.	Introduction to Computational Thinking and Data Science	10 weeks	3	edX
54.	Data Mining: Theories and Algorithms for Big Data	14 weeks	4	edX
55.	Big Data Fundamentals	10 weeks	3	edX
56.	Big Data Analytics	10 weeks	3	edX
57.	Foundations of Data Science: Computational Thinking with Python	5 weeks	2	edX
58.	How to win a Datascience Competition : Learn from Top Kagglers	5weeks	2	Coursera
59.	Virtual Reality	4 weeks	1	Coursera
60.	Principles of Machine Learning	6 weeks	2	edX
61.	Machine Learning	12 weeks	4	Coursera
62.	AI For Everyone	4 weeks	1	Coursera
63.	Robotics: Aerial Robotics	6 weeks	2	Coursera
64.	Deep learning in Computer Vision	5weeks	2	Coursera
65.	Deep Learning – Part 1	12 weeks	3	Coursera
66.	Artificial Intelligence Search Methods For Problem Solving	12 weeks	3	Coursera
67.	Machine Learning for Engineering and Science Applications	12 weeks	3	
68.	Computer Vision	12 weeks	3	Edx
69.	Introduction to Machine Learning	12 weeks	3	Coursera
70.	Introduction to Machine Learning	8 weeks	2	Coursera
71.	Functional Programming in Scala	6 weeks	2	Coursera
72.	Using python to access web data	6 weeks	2	Coursera
73.	Python Data Structures	2weeks	1	Coursera
74.	Object oriented analysis and design	8 weeks	2	coursera
75.	Python 3 Programming Specialization	8 weeks	2	Cousera
76.	Natural Language Processing	5 weeks	2	Coursera
77.	Applied Natural Language Processing	12 weeks	3	Edx
78.	Natural Language Processing	12 weeks	3	Edx
79.	Embedded Systems	12 weeks	3	NPTEL
80.	Introduction to Industry 4.0 and Industrial Internet of Things	12Weeks	3	NPTEL
81.	A System View of Communications: From Signals to Packets (Part 2)	6 weeks	2	edX
82.	Software Testing fundamentals	8	2	edX
83.	Software Testing and Management	8	2	edX
84.	Neural Network & Deep Learning	4	1	Coursera
85.	Teamwork and Collaboration	3	1	edX
86.	Demystifying Networking	4	1	
87.	Cyber security and Privacy in the IoT	5	2	

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88.	IoT System Design: Software and Hardware Integration	4	1	edX
89.	Blockchain and Fin Tech: Basics, Applications, and Limitations	6	2	edX
90.	Block Chain Specialization	8	2	
91.	A System View of Communications: From Signals to Packets (Part 3)	5	2	edX
92.	Internet of Things	12	3	NPTEL
93.	Computational Thinking for Modeling and Simulation	6	2	edX
94.	Mathematics For Machine Learning: Multivariate Calculas	6	2	Coursera
95.	Becoming an Entrepreneur	6	2	edX
96.	Marketing Fundamentals	4	1	edX
97.	IBM Data Science Professional Certificate	8	2	Cousera
98.	Data Science with Python	10	3	edX
99.	Artificial Intelligence	12	3	NPTEL
100.	Foundations of Data Science: Prediction and MachineLearning	6	2	edX
101.	Robotics: Vision Intelligence & Machine Learning	12	3	edX
102.	Deep Learning Specialization	12	3	Cousera
103.	Machine learning with Tensor Flow on Google Cloud Platform Specialization	4	1	Cousera
104.	Applied Machine Learning with Python	3	1	
105.	Convolution Neural Network	4	1	Cousera
106.	Sequence Model	2	1	Cousera
107.	Deep Learning	6	2	edX
108.	Deep Learning	12	3	NPTEL
109.	Reinforcement Learning	12	3	Edx
110.	Neural Networks for Machine Learning	16	4	Coursera
111.	Cloud Computing for Enterprises	8	2	edX
112.	Cloud Computing Management	8	2	edX
113.	Cloud Computing Infrastructure	8	2	edX
114.	Data Engineering on Google Cloud Platform Specialization	4	1	Coursera
115.	Security in Google Cloud Platform Specialization	4	1	Coursera
116.	AWS Fundamental: Going Cloud Native	5	2	Coursera
117.	Google cloud Platform Big data and Machine Learning Platform	2	1	Coursera
118.	Remote Sensing	12	3	
119.	Remote Sensing and Digital Image Processing of Satellite Data	8	2	NPTEL
120.	Leadership for Engineers	6	2	edX
121.	Computer Forensics	8	2	edX
122.	Compliance in Office 365: Data Governance	4	1	edX
123.	Human Computer Interactions	8	2	edx
124.	Social Networks	12	3	NPTEL
125.	Fuzzy Sets, Logic and System Application	12	3	NPTEL
126.	Electronic Systems for Cancer Diagnostics	12	3	NPTEL
127.	Data Analytics with Python	12	3	NPTEL
128.	Optical Engineering	12	3	NPTEL
129.	Machine Learning	8	2	NPTEL
130.	Introduction to Machine Learning	12	3	NPTEL
131.	An Introduction to Artificial Intelligence	12	3	NPTEL
132.	Artificial Intelligence: Knowledge Representation andReasoning	12	3	NPTEL

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133.	Deep Learning	12	3	NPTEL
134.	Data Science for Engineers	8	2	NPTEL
135.	Embedded Systems Design	12	3	NPTEL
136.	Introduction to Internet of Things	12	3	NPTEL
137.	Introduction to Industry 4.0 and Industrial Internet of Things	12	3	NPTEL
138.	Introduction to Block Chain Technology and Applications	8	2	NPTEL
139.	User-Centric Computing for Human-Computer Interaction	8	2	NPTEL
140.	Reinforcement Learning	12	3	NPTEL
141.	VLSI Physical Design	12	3	NPTEL
142.	Randomized Algorithms	12	3	NPTEL
143.	Embedded System Design with ARM	8	2	NPTEL

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**MOOCs for Civil Engineering & Civil and Environmental Engineering**  
**(2<sup>nd</sup> to 4<sup>th</sup> Year)**

No.	Course Name	Duration (Weeks)	Credit	Name of the Moocs websites	Link
1.	Economic Growth and Development	8	2	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
2.	Energy Resources, Economics and Environment	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
3.	Quality Design and Control	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
4.	Industrial Automation and Control	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
5.	Characterization of Construction Materials	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
6.	Introduction to Civil Engineering Profession	8	2	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
7.	Environmental Geomechanics	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
8.	Modern Construction Materials	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
9.	Fire Protection services and Maintenances Management of Building	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
10	Geotechnical Engineering II Foundation Engineering	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
11	Landscape Architecture and Site Planning- Basic Fundamentals	8	2	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
12	Introduction to Geographic Information system	4	1	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
13	Structural Dynamics	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
14	Soil Structure Interaction	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
15	Water Supply Engineering	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
16	Geo Spatial Analysis in Urban Planning	4	1	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
17	Maintenance and Repair of Concrete Structure	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
18	Remote Sensing Essentials	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
19	Hydraulic Engineering	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
20	Environmental Remediation of Contaminated Site	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
21	Introduction to Accounting and Finance for Civil Engineering	8	2	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>

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22	IBM DATA SCIENCE	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
26.	Data Analysis and Presentation Skills: the PwC Approach Specialization	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
27.	Machine Learning with Python	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
28.	Data Processing Using Python	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
29.	Advanced Data Science with IBM Specialization	8	2	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
30.	Data Science: Foundations using R Specialization	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
31.	Python for Data Science and AI	8	2	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
32.	Data Science: Statistics and Machine Learning Specialization	12	3	Courera	<a href="https://www.coursera.org">https://www.coursera.org</a>
34.	Python and Statistics for Financial Analysis	4	1	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
35.	Applied Machine Learning in Python	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
36.	Machine Learning, ML	12	3	COURSERA	<a href="https://www.coursera.org">https://www.coursera.org</a>
37.	Fuzzy sets, Logic and System Applications	12	3	NPEL	
38.	Data Analytics with Python	12	3	NPTEL	
39.	Machine Learning	8	2	NPTEL	
40.	Introduction to Machine Learning	12	3	NPTEL	
41.	An Introduction to Artificial Intelligence	12	3	NPTEL	
42.	Artificial Intelligence: Knowledge Representation and Reasoning	12	3	NPTEL	
43.	Data Science for Engineers	8	2	NPTEL	
44.	Introduction to Internet of Things	12	3	NPTEL	
45.	Introduction to Industry 4.0 & Industrial Internet of Things	12	3	NPTEL	

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**MOOCS FOR ELECTRONICS AND COMMUNICATION ENGINEERING**  
(2<sup>nd</sup> to 4<sup>th</sup> Year)

No.	Course Name	Duration (Weeks)	Credit	Name of the Mooc websites	Link
1.	Programming, Data Structures And Algorithms Using Python	8	2	SWAYAM(NPTEL)	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
2.	An Introduction To Programming Through C++	12	3	SWAYAM(NPTEL)	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
3.	Introduction to Internet of Things	12	3	SWAYAM(NPTEL)	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
4.	Learn Ethical Hacking From Scratch	3	1	UDEMY	<a href="https://www.udemy.com">https://www.udemy.com</a>
5.	A brief introduction of Micro-Sensors	4	1	SWAYAM(NPTEL)	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
6.	Biomedical Signal Processing	12	3	SWAYAM(NPTEL)	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
7.	Electrical vehicles-I	4	1	SWAYAM(NPTEL)	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
8.	Evolution of Air Interface towards 5G	8	2	SWAYAM(NPTEL)	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
9.	Micro and Nanofabrication (MEMS)	7	2	EDX	<a href="https://www.edx.org">https://www.edx.org</a>
10.	The Joy of Computing Using Python	12	3	SWAYAM(NPTEL)	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
14.	Introduction to Machine Learning	12	3	SWAYAM(NPTEL)	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
15.	Linux for Developers	4	1	COURSERA	<a href="https://www.coursera.org">https://www.coursera.org</a>
16.	Qualitative Research Methods and Research Writing	12	3	SWAYAM(NPTEL)	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
17.	IBM DATA SCIENCE	12	3	Coursera	<a href="https://www.coursera.org/">https://www.coursera.org/</a>
18.	Data Analysis and Presentation Skills: the PwC Approach Specialization	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
19.	Machine Learning with Python	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
20.	Data Processing Using Python	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
21.	Advanced Data Science with IBM Specialization	8	2	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
22.	Data Science: Foundations using R Specialization	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
23.	Python for Data Science and AI	8	2	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
24.	Data Science: Statistics and Machine Learning Specialization	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
25.	Python and Statistics for Financial Analysis	4	1	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
26.	Applied Machine Learning in Python	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
27.	Machine Learning, ML	12	3	COURSERA	<a href="https://www.coursera.org">https://www.coursera.org</a>
28.	Nonlinear Adaptive Control	4	1	NPTEL	
29.	Evolution of Air Interface towards 5G	8	2	NPTEL	
30.	Electronics Equipment Integration and Prototype Building	8	2	NPTEL	
31.	Mathematical Methods and Techniques in Signal Processing	12	3	NPTEL	
32.	Multirate DSP	12	3	NPTEL	
33.	Optical Engineering	12	3	NPTEL	
34.	Electronic Systems for Cancer Diagnostics	12	3	NPTEL	

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35.	Analog IC Design	12	3	NPTEL	
36.	Digital IC Design	12	3	NPTEL	
37.	Spread Spectrum Communications and Jamming	12	3	NPTEL	
38.	Statistical Signal Processing	12	3	NPTEL	
39.	Fuzzy sets, Logic and Systems and Applications	12	3	NPTEL	
40.	Medical Image Analysis	4	1	NPTEL	
41.	A brief Introduction to micro sensors	4	1	NPTEL	
42.	Introduction to Internet of Things	12	3	NPTEL	
43.	Introduction to Industry 4.0 & Industrial Internet of Things	12	3	NPTEL	

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**MOOCS for EE & EEE**  
**(For 2<sup>nd</sup> to 4<sup>th</sup> Year)Jan 2020**

No	Course name	Duration (weeks)	credits	Name of the Mooc websites	Link
1	Industry 4.0: How to Revolutionize your Business	6	2	Edx	<a href="https://www.edx.org">https://www.edx.org</a>
2	IoT Networking and Fog Layer Devices	8	2	Edx	<a href="https://www.edx.org">https://www.edx.org</a>
3	Electric Cars: Introduction	6	2	Edx	<a href="https://www.edx.org">https://www.edx.org</a>
4	Drones and Autonomous Systems I: Fundamentals	6	2	Edx	<a href="https://www.edx.org">https://www.edx.org</a>
5	INTRODUCTION TO CYBER SECURITY	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
6	Data Science for Engineers	8	2	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
7	Introduction to Machine Learning (IITM)	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
8	Python for Data Science	4	1	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
9	Introduction to Internet of Things	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
10	Artificial Intelligence (AI)	12	3	Edx	<a href="https://www.edx.org">https://www.edx.org</a>
11	Principles of Machine Learning: Python Edition	6	2	Edx	<a href="https://www.edx.org">https://www.edx.org</a>
12	Machine Learning Fundamentals	10	3	Edx	<a href="https://www.edx.org">https://www.edx.org</a>
13	Introduction to the Internet of Things (IoT)	6	2	Edx	<a href="https://www.edx.org">https://www.edx.org</a>
14	Artificial Intelligence : Knowledge Representation And Reasoning	12	3	Swayam	<a href="https://swayam.gov.in">https://swayam.gov.in</a>
15	IBM DATA SCIENCE	12	3	Coursera	<a href="https://www.coursera.org/">https://www.coursera.org/</a>
16	Data Analysis and Presentation Skills: the PwC Approach Specialization	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
17	Machine Learning with Python	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
18	Data Processing Using Python	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
19	Advanced Data Science with IBM Specialization	8	2	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
20	Python for Data Science and AI	8	2	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
21	Data Science: Statistics and Machine Learning Specialization	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
23	Python and Statistics for Financial Analysis	4	1	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
24	Applied Machine Learning in Python	12	3	Coursera	<a href="https://www.coursera.org">https://www.coursera.org</a>
25	Machine Learning, ML	12	3	COURSERA	<a href="https://www.coursera.org">https://www.coursera.org</a>
26.	Discrete Time Signal Processing	8	2	NPTEL	
27.	Electronics Equipment Integration and Prototype Building	8	2	NPTEL	

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28.	Advanced Power Electronics and Control	8	2	NPTEL	
29.	Power Quality Improvement Technique	8	2	NPTEL	
30.	Microwave Integrated Circuits	8	2	NPTEL	
31.	VLSI Signal Processing	8	2	NPTEL	
32.	CMOS Digital VLSI Design	8	2	NPTEL	
33.	Principles of Digital Communication	12	3	NPTEL	
34.	Mathematical Methods and Techniques in Signal Processing	12	3	NPTEL	
35.	Statistical Signal Processing	12	3	NPTEL	
36.	Multirate DSP	12	3	NPTEL	
37.	High Power Multilevel Converters - Analysis, Design and Operational Issues	12	3	NPTEL	
38.	Power Management Integrated Circuits	12	3	NPTEL	
39.	Nonlinear System Analysis	12	3	NPTEL	
40.	Optical Engineering	12	3	NPTEL	
41.	Biomedical Signal Processing	12	3	NPTEL	
42.	Electronic Systems for Cancer Diagnosis	12	3	NPTEL	
43.	Fuzzy Sets, Logic and Systems & Applications	12	3	NPTEL	
42.	Medical Image Analysis	4	1	NPTEL	
43.	Electric Vehicles Part 1	4	1	NPTEL	
44.	A brief Introduction to Micro-sensors	4	1	NPTEL	
45.	Design and Simulation of Power Conversion using Open Source Tools	4	1	NPTEL	
46.	Recent Advances in Transmission Insulator	4	1	NPTEL	
47.	Data Analytics with Python	12	3	NPTEL	
48.	Machine Learning	8	2	NPTEL	
49.	Embedded System Design with ARM	8	2	NPTEL	
50.	Real Time Operating System	4	1	NPTEL	
51.	Introduction to Machine Learning	12	3	NPTEL	
52.	An Introduction to AI	12	3	NPTEL	
53.	Artificial Intelligence: Knowledge Representation and Reasoning	12	3	NPTEL	
54.	Deep Learning	12	3	NPTEL	
55.	Data Science for Engineers	8	2	NPTEL	
56.	Introduction to Internet of Things	12	3	NPTEL	
57.	Introduction to Industry 4.0 & Industrial Internet of Things	12	3	NPTEL	

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**MOOCs For B.TECH (Hons.) CSE/IT**

**2<sup>nd</sup> to 4<sup>th</sup> Year JAN 2020**

No	Basket of Courses	Duration	Credit	Offered by
1.	AP Computer Science A: Java Programming Polymorphism and Advanced Data Structures	6 weeks	2	edX
2.	Build your very first iOS app	8 weeks	3	edX
3.	Gameplay Programming for Video Game Designers	5 weeks	2	edX
4.	Introduction to Computer Science & Programming Specialization	8 weeks	3	Coursera
5.	Introduction to scripting in Python	8 weeks	3	Coursera
6.	Foundation of Data Structures	6 weeks	2	edX
7.	Synthesis of Digital Systems	12 weeks	3	MIT online course
8.	Bayesian Statistics: Techniques and Models	5 weeks	2	Coursera
9.	Mathematical Modelling Basics	9 weeks	3	edX
10.	Animation and CGI Motion	12 weeks	3	edX
11.	Web Application Development	6 weeks	2	Coursera
12.	Web Design for Everybody Specialization	12 weeks	3	Coursera
13.	The Bits and Bytes of Computer Networking	4 weeks	1	Coursera
14.	Introduction to Cisco Networking	4 weeks	1	Coursera
15.	Introduction to Computing for Data Analysis with Python	6 weeks	2	edX
16.	Introduction to data science in python	3 weeks	1	Coursera
17.	What is Data Science?	3 weeks	1	Coursera
18.	Introduction to Big Data	3 weeks	1	Cousera
19.	The Data Science Tool Box	2 weeks	1	Cousera
20.	Data Driven Decision Making	2weeks	1	Cousera
21.	A Crash Course in Data Science	1weeks	1	Cousera
22.	Digital Security and Human Rights	3 weeks	1	edX
23.	Data Analysis and Presentation Skills : the PWC approach Specialization	12 weeks	3	Cousera
24.	Introduction to Design Thinking	5 weeks	2	edx
25.	Introduction to Soft Computing	8 weeks	2	SWAYAM
26.	Introduction to Data Modelling	4 weeks	1	edX
27.	Java Fundamentals for Android Development	6 weeks	2	edX
28.	Using Databases with Python	5 weeks	2	Coursera
29.	Data Base Management System	8 weeks	2	NPTEL
30.	Discrete Mathematics	12 Weeks	3	NPTEL
31.	Programming, Data Structures and Algorithms using Python	8 weeks	2	NPTEL
32.	Design and Analysis of Algorithms	8 weeks	2	NPTEL
33.	Algorithm Specialization	16 weeks	4	Coursera
34.	Divide and conquer ,Sorting, Searching and Randomized Algorithm	4weeks	1	Coursera
35.	Cloud Computing	8 weeks	2	NPTEL
36.	Cloud Computing	5 weeks	2	Coursera
37.	Bitcoin and Cryptocurrency Technologies	11 weeks	3	Coursera
38.	Ethical Hacking	8 weeks	2	Udemy
39.	Cybersecurity and its 10 domains	7 weeks	2	Coursera
40.	Introduction to Internet of Things	12Weeks	3	NPTEL

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41.	Introduction to the Internet of Things	6 weeks	2	edX
42.	IoT Programming and Big Data	5 weeks	2	edX
43.	Data Communications and Network Services	4 weeks	1	Coursera
44.	UML Class Diagrams for Software Engineering	3 weeks	1	edX
45.	Formal Software Verification	8 weeks	2	edX
46.	Software testing	12 weeks	3	Coursera
47.	Software Project Management	12 weeks	3	
48.	Software Engineering	12 weeks	3	edx
49.	Software Product Management Specialization	16 weeks	4	Coursera
50.	Entrepreneurship in Emerging Economies	6 weeks	2	edX
51.	Patent Drafting for Beginners	4 weeks	1	
52.	Patent Law for Engineers and Scientists	12 weeks	3	
53.	Introduction to Computational Thinking and Data Science	10 weeks	3	edX
54.	Data Mining: Theories and Algorithms for Big Data	14 weeks	4	edX
55.	Big Data Fundamentals	10 weeks	3	edX
56.	Big Data Analytics	10 weeks	3	edX
57.	Foundations of Data Science: Computational Thinking with Python	5 weeks	2	edX
58.	How to win a Datascience Competition : Learn from Top Kagglers	5weeks	2	Coursera
59.	Virtual Reality	4 weeks	1	Coursera
60.	Principles of Machine Learning	6 weeks	2	edX
61.	Machine Learning	12 weeks	4	Coursera
62.	AI For Everyone	4 weeks	1	Coursera
63.	Robotics: Aerial Robotics	6 weeks	2	Coursera
64.	Deep learning in Computer Vision	5weeks	2	Coursera
65.	Deep Learning – Part 1	12 weeks	3	Coursera
66.	Artificial Intelligence Search Methods For Problem Solving	12 weeks	3	Coursera
67.	Machine Learning for Engineering and Science Applications	12 weeks	3	
68.	Computer Vision	12 weeks	3	Edx
69.	Introduction to Machine Learning	12 weeks	3	Coursera
70.	Introduction to Machine Learning	8 weeks	2	Coursera
71.	Functional Programming in Scala	6 weeks	2	Coursera
72.	Using python to access web data	6 weeks	2	Coursera
73.	Python Data Structures	2weeks	1	Coursera
74.	Object oriented analysis and design	8 weeks	2	coursera
75.	Python 3 Programming Specialization	8 weeks	2	Cousera
76.	Natural Language Processing	5 weeks	2	Coursera
77.	Applied Natural Language Processing	12 weeks	3	Edx
78.	Natural Language Processing	12 weeks	3	Edx
79.	Embedded Systems	12 weeks	3	NPTEL
80.	Introduction to Industry 4.0 and Industrial Internet of Things	12Weeks	3	NPTEL
81.	A System View of Communications: From Signals to Packets (Part 2)	6 weeks	2	edX
82.	Software Testing fundamentals	8	2	edX
83.	Software Testing and Management	8	2	edX
84.	Neural Network & Deep Learning	4	1	Coursera
85.	Teamwork and Collaboration	3	1	edX
86.	Demystifying Networking	4	1	
87.	Cyber security and Privacy in the IoT	5	2	

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88.	IoT System Design: Software and Hardware Integration	4	1	edX
89.	Blockchain and Fin Tech: Basics, Applications, and Limitations	6	2	edX
90.	Block Chain Specialization	8	2	
91.	A System View of Communications: From Signals to Packets (Part 3)	5	2	edX
92.	Internet of Things	12	3	NPTEL
93.	Computational Thinking for Modeling and Simulation	6	2	edX
94.	Mathematics For Machine Learning: Multivariate Calculas	6	2	Coursera
95.	Becoming an Entrepreneur	6	2	edX
96.	Marketing Fundamentals	4	1	edX
97.	IBM Data Science Professional Certificate	8	2	Cousera
98.	Data Science with Python	10	3	edX
99.	Artificial Intelligence	12	3	NPTEL
100.	Foundations of Data Science: Prediction and MachineLearning	6	2	edX
101.	Robotics: Vision Intelligence & Machine Learning	12	3	edX
102.	Deep Learning Specialization	12	3	Cousera
103.	Machine learning with Tensor Flow on Google Cloud Platform Specialization	4	1	Cousera
104.	Applied Machine Learning with Python	3	1	
105.	Convolution Neural Network	4	1	Cousera
106.	Sequence Model	2	1	Cousera
107.	Deep Learning	6	2	edX
108.	Deep Learning	12	3	NPTEL
109.	Reinforcement Learning	12	3	Edx
110.	Neural Networks for Machine Learning	16	4	Coursera
111.	Cloud Computing for Enterprises	8	2	edX
112.	Cloud Computing Management	8	2	edX
113.	Cloud Computing Infrastructure	8	2	edX
114.	Data Engineering on Google Cloud Platform Specialization	4	1	Coursera
115.	Security in Google Cloud Platform Specialization	4	1	Coursera
116.	AWS Fundamental: Going Cloud Native	5	2	Coursera
117.	Google cloud Platform Big data and Machine Learning Platform	2	1	Coursera
118.	Remote Sensing	12	3	
119.	Remote Sensing and Digital Image Processing of Satellite Data	8	2	NPTEL
120.	Leadership for Engineers	6	2	edX
121.	Computer Forensics	8	2	edX
122.	Compliance in Office 365: Data Governance	4	1	edX
123.	Human Computer Interactions	8	2	edx
124.	Social Networks	12	3	NPTEL
125.	Fuzzy Sets, Logic and System Application	12	3	NPTEL
126.	Electronic Systems for Cancer Diagnostics	12	3	NPTEL
127.	Data Analytics with Python	12	3	NPTEL
128.	Optical Engineering	12	3	NPTEL
129.	Machine Learning	8	2	NPTEL
130.	Introduction to Machine Learning	12	3	NPTEL
131.	An Introduction to Artificial Intelligence	12	3	NPTEL
132.	Artificial Intelligence: Knowledge Representation andReasoning	12	3	NPTEL

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133.	Deep Learning	12	3	NPTEL
134.	Data Science for Engineers	8	2	NPTEL
135.	Embedded Systems Design	12	3	NPTEL
136.	Introduction to Internet of Things	12	3	NPTEL
137.	Introduction to Industry 4.0 and Industrial Internet of Things	12	3	NPTEL
138.	Introduction to Block Chain Technology and Applications	8	2	NPTEL
139.	User-Centric Computing for Human-Computer Interaction	8	2	NPTEL
140.	Reinforcement Learning	12	3	NPTEL
141.	VLSI Physical Design	12	3	NPTEL
142.	Randomized Algorithms	12	3	NPTEL
143.	Embedded System Design with ARM	8	2	NPTEL