



B.Tech CSE with Honours

With Effect from 2019-23 batch

To obtain B.Tech CSE Honours Degree, an additional 20 credits are required which demonstrates ability of Self Learning and/or research.

The self learning component can be completed through SWAYAM /NPTEL /any other approved MOOC (massive open online course) platform. The courses should be selected from the list of courses approved by the CSE department.

The research component involves credits obtained by doing research in premier institutes such as IITs/IISc or at DSU.

A student has to undertake these courses from III to VIII semester over and above the normal prescribed courses comprising of 160 credits. Students will receive B.Tech with Honours degree on successful completion of these courses.

Programme objectives:

The objective of B.Tech with Honours degree is

- a) To recognize extra competencies developed by students
- b) To give opportunity for students to learn from best faculty across the world
- c) To promote the self learning capability among students
- d) To promote high quality research by students

Guidelines for Credit Calculation:

Minimum number of credits required is 20 which can be obtained through Self-learning and/or research

- **Credits for MOOC**
 - One credit is defined as 15 hours of Course Contact hours excluding assignments/capstone project time
 - Thus the total number of credits obtained is Round(total number of hours of all MOOC/15)
- **Credits for doing research work in premier institutions/DSU**
 - Minimum four full weeks during summer term etc.
 - Each full week of research will be 2 credits.
 - Can include time required for writing reports/publications/presentations in conferences etc.

By the end of the 8th semester, the student should have earned a total of 20 credits by any one or both of the above.

Management/Life Skills MOOCs are allowed up to 60Hrs (4 Credits)

Curated List of Approved MOOCs

NOTE: ANY NPTEL/SWAYAM course related to Computer Science & Engineering that is in line with the students interest is pre-approved.

The following list will be periodically reviewed and updated at the dept level.

Sl. No	Course	Provider	Duration-weeks	Contact hours	Instructors/Institute
1	An Introduction to Programming the Internet of Things (IOT) Specialization	coursera	6 months	96	Ian Harris, University of California
2	AWS IoT: Developing and Deploying an Internet of Things	edx	1 month	20	AWS
3	Internet of Things Specialization	coursera	6 months	72	Harinath, UC Sandiego
4	Introduction to Hyperledger Blockchain Technologies	edx	14 weeks	56	The Linux Foundation
5	Professional Certificate in Blockchain for Business	edx	7 months	112	The Linux Foundation
6	Professional Certificate in Blockchain Fundamentals	edx	3 months	60	BerkeleyX
7	Introduction to Cloud Computing (IBM)	Coursera	5 weeks	10	Rav Ahuja
8	Google cloud platform fundamental for AWS professional	Coursera	9 weeks	13	Google cloud

9	AWS fundamentals: Going cloud -Native	Coursera	5 weeks	9	Allen Goldberg
10	Total: Cloud computing/comp TIA/cloud+ cer(cv0-002)	Udemy	10 sections	10.5	Mike Meyers
11	Building Serverless Web Applications on AWS	Udemy	5 sections	5	AWS, a subsidiary of Amazon.com
12	Cloud Computing Management	edx	8 Weeks	80	<u>Jeff Tjiputra</u> , Jarrod Jordan
13	The Full Stack Web Development Bootcamp	Udemy	34 sections	32	Darragh O'Neill
14	The Modern Javascript Bootcamp course	Udemy	34 sections	52	Colt Steele
15	The Modern React Bootcamp (Hooks, Context, NextJS, Router)	Udemy	39 sections	39	Colt Steele
16	Django for Everybody Specialization	Coursera	5 months	80	University of Michigan
17	Python and Flask Bootcamp: Create Websites using Flask	Udemy	17 sections	20	Guillermo Barquero
18	Full-Stack Web Development with React Specialization	Coursera	4 Months	176	The Hong Kong University of Science and Technology
19	Introduction to Scripting in Python	Coursera	-	34	RICE university
20	Computational Thinking using Python - program	EDX	5 months	80	MITx
21	Introduction to Game	EDX	12	108	Harvard University

	Development				
22	Virtual Reality Specialization	Coursera	6 months	96	Goldsmiths, University of London
23	Unity XR: How to Build AR and VR Apps Specialization	Coursera	3 Months	48	Unity
24	Java Programming Masterclass	Udemy	25 sections	80	Tim Buchalka
25	Applied AI Specialization	Coursera		49	IBM
26	Deep Learning Specialization	Coursera	16 weeks	80	Andrew ng and two more
27	Natural language processing Specialization	Coursera	16 weeks	80	Younes Bensouda mourri and two more
28	Tensor flow in practice Specialization	Coursera	16 weeks	80	Laurence Moroney
29	Business Analytics Specialization	Coursera	6 months	58	Wharton school of business
30	Professional Certificate in Agile Project Management	edx	5 months	45	USMx and UMD
31	Applied Data Science Specialization	coursera	5 months	100	IBM
32	Data Science: Foundations using R Specialization	coursera	5 months	160	Jhons Hopkins University
33	Data Science Specialization	coursera	11 months	308	Jhons Hopkins University
34	Data science Professional	coursera	10 months	160	IBM

	Certificate				
35	Big data Specialization	coursera	8 months	96	UC San Diego
36	Modern Big Data Analysis with SQL Specialization	coursera	4 months	42	Cloudera
37	Data Mining Specialization	coursera	8 months	128	Illinois
38	Embedded Hardware and Operating Systems	coursera	1 month	17	Marco Ramirez, University of Turku
39	Architecting Smart IoT Devices	coursera	1.25 month	29	Martin Timmerman, EIT Digital
40	Cyber-Physical Networks	edx	4 months	30	KTHx
41	Development of Secure Embedded Systems Specialization	coursera	5 months	80	Nguyen, EIT Digital
42	Emerging Technologies: From Smartphones to IoT to Big Data Specialization	coursera	7 months	90	Jong-Moon, Yonsei University
43	5G Mobile Networks: Modern Wireless Communication	Udemy	8 sections	7	Telcoma
44	4G Network Essentials	edx	1.5 months	24	IMT
45	Quantum Computing	qiskit	2 weeks	32	Qiskit Global Summer School
46	Architecture, Algorithms, and Protocols of a Quantum Computer and Quantum Internet	edx	6 weeks	48	Delft University of Technology

47	Quantum Mechanics and Quantum Computation	edx	10 weeks	70	BerkeleyX
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Management/Life Skills courses

Sl. No	Course	Provider	Duration-weeks	Contact hours	Instructors/Institute
1	Entrepreneurship Specialization	Coursera	6 months	48	Wharton school of business
2	Dynamic Public Speaking Specialization	Coursera	5 months	60	University of Washington
3	Business Technology Management Specialization	Coursera	7 months	53	Indian School of Business
4	Business Analytics Specialization	Coursera	6 months	58	Wharton school of business
5	Professional Certificate in Agile Project Management	edx	5 months	45	USMx and UMD