DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING
TEZPUR UNIVERSITY
Offered Courses (Autumn 2023)

The following are the courses being offered by the Department of Computer Science & Engineering, in the Autumn Semester, 2023 for Ph.D., M. Tech (IT), M. Tech (CSE), MCA and B.Tech. programmes. In addition, the students shall have to take Open Elective courses and SWAYAM MOOCs courses as applicable. **Number of MOOCs course taken by each student should not exceed two**.

Course Code	Course Title	Credit Structure			Credit	Course Type	Course Instructor
MCA 1st Semester							
		L	T	P			
CS411	Selected Topics in Computing	3	0	0	3	Audit	
CS405	Discrete Mathematics	2	1	0	3	Core	
CS409	Computer Organization and Architecture	3	1	1	5	Core	
CS412	Data Structures	3	1	0	4	Core	
CS416	OO Programming and Data Structures Lab	0	1	2	3	Core	
	Elective-I	3	0	0	3	E	
	Elective-II	3	0	0	3	E	
			Total		21		
Choose the Electives from the following groups (Only one elective from one group)							
Group-1							
CS421	Graph Theory	3	0	0	3	E	
CS502	System Software	2	0	1	3	E	
Group-2							
CS422	Numerical Methods	3	0	1	4	E	
CS509	Data Communication	3	0	1	4	E	
Group-3							
CS522	Computer Graphics	3	0	1	4	E	
CS424	Formal Language and Automata	3	0	0	3	E	
MCA 1st Semester (After Completion of Bridge Semesters)							
EF103	Communicative English	2	0	1	3	Audit	
CS405	Discrete Mathematics	2	1	0	3	Core	
CS412	Data Structures	3	1	0	4	Core	
CS416	OO Programming and Data Structures Lab	0	1	2	3	Core	
XXxxx	Elective-1	3	0	0	3	E	
XXxxx	Elective-2	3	0	0	3	E	
XXxxx	Elective-3				3	E	
			Total		19		
Choose the Electives from the following groups (Only one elective from one group)							

	Group-1						
CS421	Graph Theory	3	0	0	3	E	
CS502	System Software	2	0	1	3	E	
	Group-2						
CS422	Numerical Methods	3	0	1	4	E	
CS509	Data Communication	3	0	1	4	E	
	Group-3						
CS522	Computer Graphics	3	0	1	4	E	
CS424	Formal Language and Automata	3	0	0	3	E	
	MCA 3rd Semester						
CS513	Software Engineering	3	0	0	3	Core	
CS518	Software Engineering Lab	0	0	1	1	Core	
CS519	Computer Networks	3	1	0	4	Core	
CS520	Networks Lab	0	0	1	1	Core	
CS510	Minor Project	0	0	5	5	Core	
-	Elective-6	3	0	0	3	E	
-	Elective-7	3	0	0	3	E	
-	Open Elective-2	3	0	0	3	OE	
			Total		23		

**Choose Electives from the following Elective Groups (Only one elective from one group) or MOOCs list.
Open Electives can be taken from MOOC's Open Elective List.**

	Group-I						
CS522	Computer Graphics	3	0	1	4	E	
CS504	Natural Language Processing	3	0	0	3	E	
CO519	Internet of Things	3	0	0	3	E	
	Group-II						
CO513	Fundamentals of Speech Processing	3	0	1	4	E	
CS525	Artificial Intelligence	3	0	0	3	E	
CS602	Image Processing	3	0	0	3	E	
CO518	Cloud Computing	3	0	0	3	E	

M. Tech. (IT) 1st Semester

CS531	Object Oriented Programming & Design	3	1	1	5	Core	
CS601	Design and Analysis of Algorithms	3	0	0	3	Core	
CS634	Selected Topics in Computer Networks	3	0	1	4	Core	
CS543	Advanced Programming Lab I	0	1	2	3	Core	
XXxxx	Elective 1				3	E	
XXxxx	Open Elective 1				3	OE	
			Total		21		

Choose Elective from the following list.

IT510	Advanced Operating Systems	3	0	1	4	E	
CS541	Mathematical Foundation for Computer Science	3	1	0	4	E	

M. Tech. (IT) 3rd Semester

IT604	Term Project I	0	0	8	8	Core	
XXxxx	Elective 5	3	0	0	3	E	
XXxxx	Elective 6	3	0	0	3	E	
		Total			14		

Choose Electives from the following Elective Groups (Only one elective from one group) or MOOCs list.

Group-I

CS504	Natural Language Processing	3	0	0	3	E	
CO519	Internet of Things	3	0	0	3	E	
CS621	Mobile Computing	3	0	0	3	E	

Group-II

CO513	Fundamentals of Speech Processing	3	0	1	4	E	
CS610	Bioinformatics	3	0	0	3	E	
CS638	Software Defined Networking & Network Function Virtualization	3	0	0	3	E	
CO518	Cloud Computing	3	0	0	3	E	

M. Tech. (CSE) 1st Semester

CS541	Mathematical Foundation for Computer Science	3	1	0	4	Core	
CS542	Advanced Algorithms and Data Structures	2	1	0	3	Core	
CS543	Advanced Programming Lab I	0	1	2	3	Core	
IT510	Advanced Operating Systems	3	0	1	4	Core	
CS634	Selected Topics in Computer Networks	3	0	1	4	Core	
		Total			18		

M.Tech. (CSE) 3rd Semester

CS640	Term Project I	0	0	8	8	Core	
XXxxx	Elective III	3	0	0	3/4	E	
XXxxx	Elective IV	3	0	0	3/4	E	
XXxxx	Open Elective II	3	0	0	3	OE	
		Total			17-19		

Choose Electives from the following elective Groups (Only one elective from one group) or MOOCs list.

Group-I

CS504	Natural Language Processing	3	0	0	3	E	
CO519	Internet of Things	3	0	0	3	E	
CS621	Mobile Computing	3	0	0	3	E	

Group-II

CO513	Fundamentals of Speech Processing	3	0	1	4	E	
CS610	Bioinformatics	3	0	0	3	E	
CS638	Software Defined Networking & Network Function Virtualization	3	0	0	3	E	
CO518	Cloud Computing	3	0	0	3	E	

B.Tech. 3rd Semester

MS205	Mathematics - III	3	0	0	3	Core	

CO202	Digital Logic Design	3	0	1	4	Core	
CO209	Computing Workshop	0	0	2	2	Core	
CO210	Data Structures	3	1	0	4	Core	
CO211	Data Structures using Object Oriented Programming Lab	0	1	2	3	Core	
BA201	Economics	3	0	0	3	Core	
EC205	Signals and Systems	2	1	0	3	Core	
ES201	Environmental Science	2	0	1	0	Audit	
		Total			22		

B.Tech. 5th Semester

CO303	Computer Graphics	3	0	1	4	Core	
CO309	Operating Systems	3	0	0	3	Core	
CO310	Operating Systems Lab	0	0	1	1	Core	
CO311	Software Engineering	3	0	0	3	Core	
CO312	Database Systems	3	0	0	3	Core	
CO313	Database Systems Lab	0	1	1	2	Core	
LW301	Indian Constitution	1	0	0	0	Audit	
XXxxx	Elective-I (PEC01)	3	0	0	3	E	
XXxxx	Open Elective-I (OEC01)	3	0	0	3	E	
		Total			22		

Choose Elective from the following elective list.

CO318	Cryptography	3	0	0	3	E	
CO434	Image Processing	3	0	0	3	E	

B. Tech. 7th Semester

CO401	Artificial Intelligence	3	0	0	3	Core	
CO402	Project II	0	0	0	4	Core	
CO404	Summer Internship /Industrial Training	0	0	0	0	Audit	
CT465	Essence of Traditional Indian Knowledge	1	0	0	0	Audit	
CO405	Comprehensive Written Exam	0	0	0	0	Audit	
XXxxx	HSS/Management Elective	3	0	0	3	E	
XXxxx	Elective III	3	0	1	4	E	
XXxxx	Elective IV	3	0	0	3	E	
XXxxx	Open Elective III	3	0	0	3	OE	
		Total			20		

Choose HSS/Management Elective from the following list

BM322	Social Responsibility and professional ethics of engineering	3	0	0	3	E	

Choose Electives from the following elective Groups (Only one elective from one group) or MOOCs list. Open Electives may be taken from MOOC's Open Elective List.

Group-I

CO513	Fundamentals of Speech Processing	3	0	1	4	E	
CO522	Bioinformatics	3	0	0	3	E	

CO520	Software Defined Networking & Network Function Virtualization	3	0	0	3	E	
CO434	Image Processing	3	0	0	3	E	
CO518	Cloud Computing	3	0	0	3	E	
Group-II							
CO504	Natural Language Processing	3	0	0	3	E	
CO519	Internet of Things	3	0	0	3	E	
CO435	Mobile Computing	3	0	0	3	E	
IT510	Advanced Operating Systems	3	0	1	4	Core	
Ph.D.							
CS701	Algorithms and Complexity	4	0	0	4	Core	
CS704	Doctoral Research Methodology	4	0	0	4	Core	
RP799	Research and Publication Ethics	1	0	1	2	Core	
XXxxx	Research area based Elective I				3/4	E	
XXxxx	Research area based Elective II				2/3/4	E	
XXxxx	Research area based Elective III (Not required if total credit already becomes 16)				2/3/4	E	
				Total	16-18		
Choose Electives from the following elective Groups (Only one elective from one group) or MOOCs list.							
Group-1							
CS504	Natural Language Processing	3	0	0	3	E	
CO519	Internet of Things	3	0	0	3	E	
CS621	Mobile Computing	3	0	0	3	E	
Group-2							
CO513	Fundamentals of Speech Processing	3	0	1	4	E	
CS610	Bioinformatics	3	0	0	3	E	
CS638	Software Defined Networking & Network Function Virtualization	3	0	0	3	E	
Open Electives (for Non-CSE, i.e., students from other Departments)							
CS537	Natural Language Processing	3	0	0	3	OE	
CS536	Computer Applications and Information Management	2	0	1	3	OE	
CS610	Bioinformatics	3	0	0	3	OE	
Core Courses (for 3rd Semester Integrated M.Sc./B.Sc. B.Ed. students)							
CS535	Introduction to Scientific Computing	2	0	1	3	Core	

List of MOOCs courses offered as electives by the Dept. of CSE in Autumn-2023

Course Code	NPTEL Course id	Course Name	Course Instructor	Total Credit
CS651	noc23-cs92	Artificial Intelligence: Search	Prof. Deepak Khemani, IITM	3

		Methods for problem Solving		
CS652	noc23-cs69	Privacy And Security In Online Social Media	Prof. Ponnurangam Kumaraguru, IIITH	2
CS654	noc23-cs95	Programming, data structures and algorithms using Python	Prof. Madhavan Mukund, CMI	2
CS658	noc23-cs107	Social Networks	Prof. Sudarshan Iyengar Prof. Yayati Gupta, IIT Ropar	3
CS660	noc23-cs74	Programming in Java	Prof. Debasis Samanta, IITKGP	3
CS661	noc23-cs97	Data Science for Engineers	Prof. Ragunathan Rengasamy and Prof. Shankar Narasimhan	2
CS669	noc23-cs82	Introduction to Industry 4.0 and Industrial Internet of Things	Prof. Sudip Misra, IIT KGP	3
CS670	noc23-cs110	Deep Learning	Prof. Sudarshan Iyengar Prof. Padmavati, IIT Ropar	3
CS671	noc23-cs100	Reinforcement Learning	Prof. Balaraman Ravindran, IIT Madras	3
CS672	noc23-cs75	Ethical Hacking	Prof. Indranil Sengupta, IITKGP	3
CS673	noc23-cs124	Demystifying networking	Prof. Sridhar Iyer Prof. Ashutosh Raina, IITB	1
CS674	noc23-cs70	Theory of Computation	Prof. Raghunath Tewari, IITK	2
CS677	noc23-cs98	Introduction to Machine Learning	Prof. Balaraman Ravindran, IIT Madras	3
EC431	noc23-cs108	The Joy of Computing using Python	Prof. Sudarshan Iyengar, IIT Ropar	3

List of MOOCs courses adopted as OPEN CELECTIVES for CSE students in Autumn 2023

Course Code	NPTEL Course id	Course Name	Course Instructor	Total Credit
CE587	noc23-de17	Geographic Information System	Prof. Bharath H Aithal, IITKGP	3
EE610	noc23-ge41	Solar Energy Engineering and Technology	Prof. Pankaj Kalita, IITG	3
FE671	noc23-ch56	Aspen Plus® simulation software - a basic course for beginners	Prof. Prabirkumar Saha, IITG	3
FE676	noc23-de16	Understanding incubation and entrepreneurship	Prof. B.K. Chakravarthy, IITB	3
FT494	noc23-ch45	Chemical Engineering Thermodynamics	Prof. Jayant K. Singh, IITK	**3**
ME453	noc23-e1243	Work system design	Prof. Inderdeep Singh, IITR	**3**
ME454	noc23-m3g82	Game Theory	Prof. K.S. Mallikarjuna Rao, IITB	**3**

ME455	noc23-bt35	Genetic Engineering: Theory and Application	Prof. Vishal Trivedi, IITG	**3**
ME456	noc23-me103	Aircraft Propulsion	Prof. Vinayak N. Kulkarni, IITG	**3**
ME461	noc23-ee144	Linear Systems Theory	Prof. Ramkrishna Pasumarthy, IITM	**3**
ME462	noc23-me105	Automation in Manufacturing	Prof. Shrikrishna N. Joshi, IITG	**3**
ME463	noc23-me121	Heat Exchangers: Fundamentals and Design Analysis	Prof. Prasanta Kr Das & Prof. Indranil Ghosh, IITKGP	**3**
ME577	noc23-mg71	Operations and Supply chain management	Prof. G. Srinivasan, IITM	**3**

(S. Saharia)
Head, CSE