DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING TEZPUR UNIVERSITY Offered Courses (Autumn 2022)

Offered Courses (Autumn 2023)

28 July, 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.

	MCA 1 st Sen	nester									
Course	Course Title		Credit		Credit		Credit		Credit	Course	Course
Code		St	ructure			Туре	Instructor				
		L	Т	Р							
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					
			Tota	al	21						
	Choose the Electives from the following grou	ps (On	ly on	e elec	tive from (one group)					
	Group-1	l									
CS421	Graph Theory	3	0	0	3	E					
CS502	System Software	2	0	1	3	E					
	Group-2	2									
CS422	Numerical Methods	3	0	1	4	E					
CS509	Data Communication	3	0	1	4	E					
	Group-3	3									
CS522	Computer Graphics	3	0	1	4	E					
CS424	Formal Language and Automata	3	0	0	3	E					
	MCA 1 st Semester (After Comple	tion c	of Br	idge	Semeste	rs)					
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					
			Tota	al	19						
	Choose the Electives from the following grou	ps (On	lv on	e elec	tive from (ne group)	1				

	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 3 rd Seme	ster					
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	Е	
=	Elective-7	3	0	0	3	Е	
-	Open Elective-2	3	0	0	3	OE	
			Tota	ı	23		
							1
Cho	ose Electives from the following Elective Groups (Only Open Electives can be taken from MC Group-I	one					OCs list.
Cho	Open Electives can be taken from MC	one					OCs list.
CS522	Open Electives can be taken from MC Group-I	one	s Op	en El	ective List		OCs list.
CS522 CS504	Open Electives can be taken from MC Group-I Computer Graphics	one OC'	s Op	en El	ective List	E	OCs list.
	Open Electives can be taken from MC Group-I Computer Graphics Natural Language Processing	one OOC'	0 0	en El	ective List 4 3	E E	OCs list.
CS522 CS504 CO519	Open Electives can be taken from MC Group-I Computer Graphics Natural Language Processing Internet of Things	one OOC'	0 0	en El	ective List 4 3	E E	OCs list.
CS522 CS504 CO519	Open Electives can be taken from MC Group-I Computer Graphics Natural Language Processing Internet of Things Group-II	3 3 3	0 0 0	1 0 0	4 3 3	E E E	OCs list.
CS522 CS504 CO519	Open Electives can be taken from MC Group-I Computer Graphics Natural Language Processing Internet of Things Group-II Fundamentals of Speech Processing	3 3 3	0 0 0 0	1 0 0	4 3 3	E E E	OCs list.
CS522 CS504 CO519 CO513 CS525	Open Electives can be taken from MC Group-I Computer Graphics Natural Language Processing Internet of Things Group-II Fundamentals of Speech Processing Artificial Intelligence	3 3 3 3	0 0 0 0 0 0 0	1 0 0 1 0	4 3 3 4 3	E E E	OCs list.
CS522 CS504 CO519 CO513 CS525	Open Electives can be taken from MC Group-I Computer Graphics Natural Language Processing Internet of Things Group-II Fundamentals of Speech Processing Artificial Intelligence Image Processing	3 3 3 3 3 3 3 3	0 0 0 0 0	1 0 0 1 0 0 0	4 3 3 4 3 3	E E E E	OCs list.
CS522 CS504 CO519 CO513 CS525 CS602	Open Electives can be taken from MC Group-I Computer Graphics Natural Language Processing Internet of Things Group-II Fundamentals of Speech Processing Artificial Intelligence Image Processing Cloud Computing	3 3 3 3 3 3 3 3	0 0 0 0 0	1 0 0 1 0 0 0	4 3 3 4 3 3	E E E E	OCs list.
CS522 CS504 CO519 CO513 CS525 CS602 CO518	Open Electives can be taken from MC Group-I Computer Graphics Natural Language Processing Internet of Things Group-II Fundamentals of Speech Processing Artificial Intelligence Image Processing Cloud Computing M. Tech. (IT) 1st Se	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0 0 0 0 0	1 0 0 1 0 0 0 0	4 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	E E E E E	OCs list.
CS522 CS504 CO519 CO513 CS525 CS602 CO518 CS531 CS601	Open Electives can be taken from MC Group-I Computer Graphics Natural Language Processing Internet of Things Group-II Fundamentals of Speech Processing Artificial Intelligence Image Processing Cloud Computing M. Tech. (IT) 1st Se	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0 0 0 0 0 0	1 0 0 0 0 0 1 1 1	4 3 3 3 3 3 5 5	E E E E Core	OCs list.
CS522 CS504 CO519 CO513 CS525 CS602 CO518 CS531 CS601 CS634	Open Electives can be taken from MC Group-I Computer Graphics Natural Language Processing Internet of Things Group-II Fundamentals of Speech Processing Artificial Intelligence Image Processing Cloud Computing M. Tech. (IT) 1st Se Object Oriented Programming & Design Design and Analysis of Algorithms	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0 0 0 0 0 0 0	1 0 0 0 0 1 1 0 0	4 3 3 3 3 3 5 5 3 3	E E E E Core Core	OCs list.
CS522 CS504 CO519 CO513 CS525 CS602 CO518	Open Electives can be taken from MC Group-I Computer Graphics Natural Language Processing Internet of Things Group-II Fundamentals of Speech Processing Artificial Intelligence Image Processing Cloud Computing M. Tech. (IT) 1st Se Object Oriented Programming & Design Design and Analysis of Algorithms Selected Topics in Computer Networks	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0 0 0 0 0 0 0 0 0 0	1 0 0 0 0 1 0 1 0 1 1 0 1 1	4 3 3 3 3 3 5 3 4 4 4	E E E E Core Core Core	OCs list.
CS522 CS504 CO519 CO513 CS525 CS602 CO518 CS601 CS634 CS543 XXxxx	Open Electives can be taken from MC Group-I Computer Graphics Natural Language Processing Internet of Things Group-II Fundamentals of Speech Processing Artificial Intelligence Image Processing Cloud Computing M. Tech. (IT) 1st Se Object Oriented Programming & Design Design and Analysis of Algorithms Selected Topics in Computer Networks Advanced Programming Lab I	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0 0 0 0 0 0 0 0 0 0	1 0 0 0 0 1 0 1 0 1 1 0 1 1	4 3 3 3 3 5 3 4 3 3 4 3 3	E E E E Core Core Core Core	OCs list.
CS522 CS504 CO519 CO513 CS525 CS602 CO518 CS531 CS601 CS634 CS543	Open Electives can be taken from MC Group-I Computer Graphics Natural Language Processing Internet of Things Group-II Fundamentals of Speech Processing Artificial Intelligence Image Processing Cloud Computing M. Tech. (IT) 1st Se Object Oriented Programming & Design Design and Analysis of Algorithms Selected Topics in Computer Networks Advanced Programming Lab I Elective 1	3 3 3 3 3 3 3 3 3 3 0	0 0 0 0 0 0 0 0 0 0	1 0 0 0 0 1 0 1 2 1 2	4 3 3 3 3 5 3 4 3 3 3 3 3	E E E E Core Core Core Core E	OCs list.
CS522 CS504 CO519 CO513 CS525 CS602 CO518 CS601 CS634 CS543 XXxxx	Open Electives can be taken from MC Group-I Computer Graphics Natural Language Processing Internet of Things Group-II Fundamentals of Speech Processing Artificial Intelligence Image Processing Cloud Computing M. Tech. (IT) 1st Se Object Oriented Programming & Design Design and Analysis of Algorithms Selected Topics in Computer Networks Advanced Programming Lab I Elective 1	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0 0 0 0 0 0 0 0 Total	1 0 0 0 1 0 1 2 1 1 2	4 3 3 3 3 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3	E E E E Core Core Core Core E	OCs list.
CS522 CS504 CO519 CO513 CS525 CS602 CO518 CS531 CS601 CS634 CS543 XXxxx	Open Electives can be taken from MC Group-I Computer Graphics Natural Language Processing Internet of Things Group-II Fundamentals of Speech Processing Artificial Intelligence Image Processing Cloud Computing M. Tech. (IT) 1st Se Object Oriented Programming & Design Design and Analysis of Algorithms Selected Topics in Computer Networks Advanced Programming Lab I Elective 1 Open Elective 1	3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	0 0 0 0 0 0 0 0 Total	1 0 0 0 1 0 1 2 1 1 2	4 3 3 3 3 4 3 3 3 3 3 3 3 3 3 3 3 3 3 3	E E E E Core Core Core Core E	OCs list.

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		
Cho	ose Electives from the following Elective Groups (On	ly one	elect	ive fr	om one gr	oup) or MO	OCs 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	Е	
CS610	Bioinformatics	3	0	0	3	E	
CS638	Software Defined Networking & Network	3	0	0	3	E	
	Function Virtualization						
CO518	Cloud Computing	3	0	0	3	E	
	M. Tech. (CSE) 1 st	Seme	ster				
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	
C3034	Science Topics III Computer Networks	1	Total		18	COIC	
					10		
	M.Tech. (CSE) 3 rd	Seme	ster				
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		
Cho	ose Electives from the following elective Groups (On	ly one	electi	ve fro	m one gro	oup) or MO	OCs list.
	Group-I						
CS504	Natural Language Processing	3	0	0	3	Е	
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	Е	
CS610	Bioinformatics	3	0	0	3	E	
CS638	Software Defined Networking & Network	3	0	0	3	E	
	Function Virtualization						
CO518	Cloud Computing	3	0	0	3	Е	
	B.Tech. 3 rd Sen	neste	r	<u> </u>	ı	I	ı
MS205	Mathematics - III	3	0	0	3	Core	
5205		٦	J			2010	

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. 5 th Sen	neste	r						
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	Е			
XXxxx	Open Elective-I (OEC01)	3	0	0	3	E			
			Total	'	22				
,	Choose Elective from the following	lowing	g elect	ive lis	t.		,		
CO318	Cryptography	3	0	0	3	Е			
CO434	Image Processing	3	0	0	3	E			
	B. Tech. 7 th Ser	neste	er						
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	Е			
XXxxx	Elective III	3	0	1	4	Е			
XXxxx	Elective IV	3	0	0	3	Е			
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			
Cho	ose Electives from the following elective Groups (On	•			_		OCs list.		
	Open Electives may be taken from M Group-I	OUC	s Ope	en Ele	ctive List	•			
CO513	Fundamentals of Speech Processing	3	0	1	4	E			
CO522	Bioinformatics	3	0	0	3	E			
CUJZZ	Dominormatics)	U	U	3	L			

CO520	Software Defined Networking & Network	3	0	0	3	E	
	Function Virtualization	ļ			_		
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				2/3/4	E	
	(Not required if total credit already becomes						
	16)						
			Tota	I	16-18		
Cho	ose Electives from the following elective Groups (On	ly one	elect	ive fro	m one gro	oup) or MO	OCs list.
	Group-1						
	-						
CS504	Natural Language Processing	3	0	0	3	E	
CS504 CO519	Natural Language Processing Internet of Things	3	0	0	3	E E	
CO519	Internet of Things	3	0	0	3	E	
CO519	Internet of Things Mobile Computing	3	0	0	3	E	
CO519 CS621	Internet of Things Mobile Computing Group-2	3	0	0	3	E E	
CO519 CS621 CO513	Internet of Things Mobile Computing Group-2 Fundamentals of Speech Processing	3 3 3	0 0 0 0	0 0 1 0	3 3 4 3	E E E	
CO519 CS621 CO513 CS610	Internet of Things Mobile Computing Group-2 Fundamentals of Speech Processing Bioinformatics	3 3	0 0	0 0	3 3	E E	
CO519 CS621 CO513 CS610	Internet of Things Mobile Computing Group-2 Fundamentals of Speech Processing Bioinformatics Software Defined Networking & Network	3 3 3	0 0 0 0	0 0 1 0	3 3 4 3	E E E	
CO519 CS621 CO513 CS610	Internet of Things Mobile Computing Group-2 Fundamentals of Speech Processing Bioinformatics Software Defined Networking & Network Function Virtualization	3 3 3	0 0 0 0	0 0 1 0	3 3 4 3	E E E	
CO519 CS621 CO513 CS610 CS638	Internet of Things Mobile Computing Group-2 Fundamentals of Speech Processing Bioinformatics Software Defined Networking & Network Function Virtualization Open Electives (for Non-CSE, i.e., students for	3 3 3 3 Trom of	0 0 0 0	0 0 0	3 3 4 3 3	E E E	
CO519 CS621 CO513 CS610 CS638 CS537	Internet of Things Mobile Computing Group-2 Fundamentals of Speech Processing Bioinformatics Software Defined Networking & Network Function Virtualization Open Electives (for Non-CSE, i.e., students for Natural Language Processing Computer Applications and Information Management	3 3 3 3 crom of 3 2	0 0 0 0 0 ther	0 0 0 0 0 Depa	3 3 3 3 rtments 3 3	E E E O O E O E	
CO519 CS621 CO513 CS610 CS638 CS638	Internet of Things Mobile Computing Group-2 Fundamentals of Speech Processing Bioinformatics Software Defined Networking & Network Function Virtualization Open Electives (for Non-CSE, i.e., students for Natural Language Processing Computer Applications and Information	3 3 3 3 7 om 0 3	0 0 0 0 0	0 0 0 1 0 0 Depa	3 3 4 3 srtments 3	E E E D OE	
CO519 CS621 CO513 CS610 CS638 CS537	Internet of Things Mobile Computing Group-2 Fundamentals of Speech Processing Bioinformatics Software Defined Networking & Network Function Virtualization Open Electives (for Non-CSE, i.e., students for Natural Language Processing Computer Applications and Information Management	3 3 3 3 7 com o	0 0 0 0 0 ther 0	0 0 0 0 0 Depa	3 3 3 rtments 3 3	E E E F OE OE	
CO519 CS621 CO513 CS610 CS638 CS537	Internet of Things Mobile Computing Group-2 Fundamentals of Speech Processing Bioinformatics Software Defined Networking & Network Function Virtualization Open Electives (for Non-CSE, i.e., students for Natural Language Processing Computer Applications and Information Management Bioinformatics	3 3 3 3 7 com o	0 0 0 0 0 ther 0	0 0 0 0 0 Depa	3 3 3 rtments 3 3 3	E E E F OE OE	

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	Prof. Ponnurangam	2	
C3032	110025-0309	Media	Kumaraguru, IIITH	2	
CS654	noc23-cs95	Programming, data structures and	Prof. Madhavan Mukund,		
C3034	110025-0395	algorithms using Python	СМІ	2	
CS658	noc23-cs107	Social Networks	Prof. Sudarshan Iyengar	2	
C3036	110025-05107	Social Networks	Prof. Yayati Gupta, IIT Ropar	3	
CS660	noc23-cs74	Programming in Java	Prof. Debasis Samanta,		
C3000	110025-0574	Programming in Java	IITKGP	3	
			Prof. Ragunathan Rengasamy		
CS661	noc23-cs97	Data Science for Engineers	and Prof. Shankar	2	
			Narasimhan		
CS669	noc23-cs82	Introduction to Industry 4.0 and	Prof. Sudip Misra, IIT KGP		
C3009	110023-0582	Industrial Internet of Things	Prof. Sudip Wista, ITT KGP	3	
CS670	noc23-cs110	Deep Learning	Prof. Sudarshan Iyengar	2	
C3070	110025-05110	Deep Learning	Prof. Padmavati, IIT Ropar	3	
CS671	noc23-cs100	Reinforcement Learning	Prof. Balaraman Ravindran,	3	
C30/1	110025-05100	Remorcement Learning	IIT Madras	3	
CS672	noc23-cs75	Ethical Hacking	Prof. Indranil Sengupta,	3	
C3072	110023-0373	Littical Hacking	IITKGP	3	
CS673	noc23-cs124	Domustifying naturaling	Prof. Sridhar Iyer	4	
C30/3	110023-03124	Demystifying networking	Prof. Ashutosh Raina, IITB	1	
CS674	noc23-cs70	Theory of Computation	Prof. Raghunath Tewari, IITK	2	
			Prof. Balaraman Ravindran,		
CS677	noc23-cs98	Introduction to Machine Learning	IIT	3	
			Madras		
FC424		The level Community of the D. U.	Prof. Sudarshan Iyengar, IIT		
EC431	noc23-cs108	The Joy of Computing using Python	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,	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