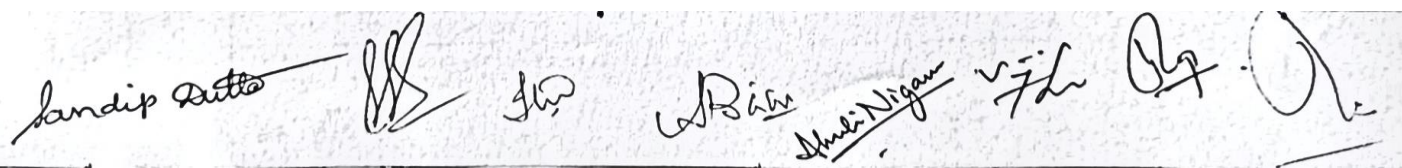
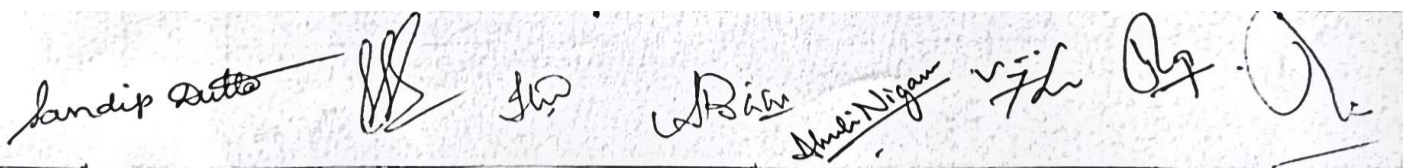


BIRLA INSTITUTE OF TECHNOLOGY- MESRA, RANCHI
NEW COURSE STRUCTURE - To be effective from academic session 2021- 22
Based on CBCS system & OBE model
Recommended scheme of study
(For B.Tech in Information Technology)

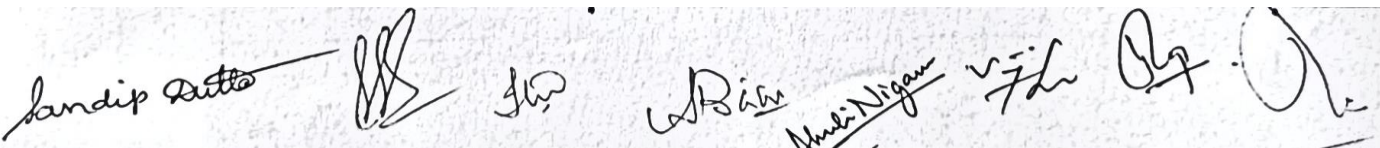
Course Level	Semester of Study (Recommended)	Course Code	Course Name	Mode of delivery & credits <i>L-Lecture; T-Tutorial;P-Practicals</i>			Total Credits C- Credits	
				L (Periods/week)	T (Periods/week)	P (Periods/week)		C
FIRST	FS	MA 103	Mathematics - I	3	1	0	4	
		CH101	Chemistry	3	1	0	4	
	GE	EC101	Basics of Electronics and Communication Engineering	3	1	0	4	
		ME101	Basics of Mechanical Engineering	3	1	0	4	
	FS	CE101	Environmental Science	2	0	0	2	
	LABORATORIES							
	FS	CH102	Chemistry Lab	0	0	3	1.5	
	GE	EC102	Electronics and Communication Lab	0	0	3	1.5	
		ME102	Engineering Graphics	0	0	4	2	
	MC	MC101/102/103/104	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA)	0	0	2	1	
	TOTAL (Theory + Labs)							24



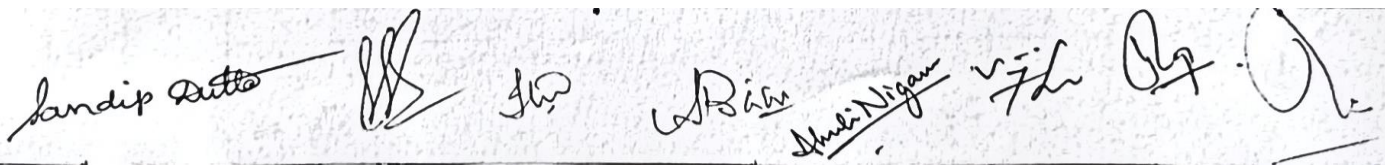
SECOND	THEORY						
	D	FS	MA107	Mathematics - II	3	1	0
PH113			Physics	3	1	0	4
BE101			Biological Science for Engineers	2	0	0	2
GE		CS101	Programming for problem Solving	3	1	0	4
		EE101	Basics of Electrical Engineering	3	1	0	4
LABORATORIES							
HSS		MT132	Communication Skills - I	0	0	3	1.5
FS		PH114	Physics Lab	0	0	3	1.5
GE		CS102	Programming for Problem Solving laboratories	0	0	3	1.5
		PE101	Workshop Practice	0	0	3	1.5
MC	MC105/106/107/108	Choice of : NCC/NSS/PT & Games/ Creative Arts (CA)	0	0	2	1	
TOTAL (Theory + Labs)						25	
THIRD	THEORY						
	PC	MA205	Discrete Mathematics	3	1	0	4
EC203		Digital System Design	3	0	0	3	
CS231		Data Structures	3	1	0	4	
CS233		Object Oriented Programming and Design Pattern	3	0	0	3	



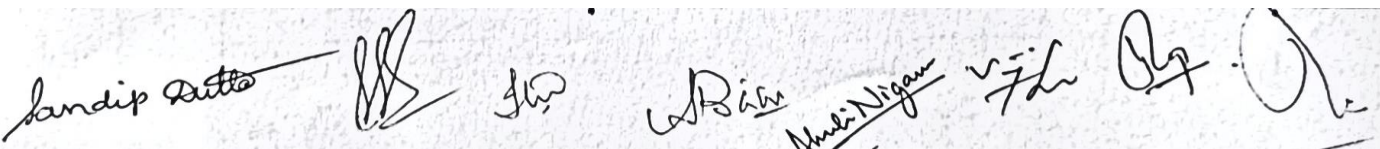
		CS235	Computer Organization and Architecture	3	0	0	3	
LABORATORIES								
PC		EC204	Digital System Design Lab	0	0	3	1.5	
		CS232	Data Structures Lab	0	0	3	1.5	
		CS234	OOPDP Lab	0	0	3	1.5	
GE		EE102	Electrical Engineering lab	0	0	3	1.5	
MC		MC201/202/203/204	Choice of: NCC/NSS/PT & Games/Creative Arts (CA)	0	0	2	1	
TOTAL (Theory + Labs)							24	
THEORY								
FOURTH	FS	MA203	Numerical Methods	2	0	0	2	
	HSS	MT131	UHV2: Understanding Harmony	3	0	0	3	
	PC/PE		CS237	Database Management System	3	0	0	3
			CS241	Design and Analysis of Algorithm	3	0	0	3
			CS239	Operating System	3	1	0	4
	OE		Open Elective-I / MOOC	3	0	0	3	
	LABORATORIES							
	PC		CS238	DBMS Lab	0	0	3	1.5
			CS242	Design and Analysis of	0	0	2	1




			Algorithm Lab				
		CS240	Shell and Kernel Programming Lab	0	0	3	1.5
	FS	MA204	Numerical Methods Lab	0	0	2	1
	MC	MC205/206/207/208	Choice of : NCC/NSS/ PT & Games/ Creative Arts (CA)	0	0	2	1
TOTAL (Theory + Labs)							24
FIFTH	PC/PE	IT331	Image Processing	3	0	0	3
		IT333	Data Communication & Computer Network	3	0	0	3
		IT335	Data Mining Concepts and Techniques	3	0	0	3
			PROGRAM ELECTIVE-I	3	0	0	3
			PROGRAM ELECTIVE-II	3	0	0	3
	OE		Open Elective-II / MOOC	3	0	0	3
LABORATORIES							
	PC/PE	IT332	Image Processing Lab	0	0	3	1.5
		IT334	DCCN Lab	0	0	3	1.5
		IT336	Data Mining Concepts and Techniques Lab	0	0	3	1.5
		IT340	Internet and Web Technology Lab	0	0	3	1.5



TOTAL (Theory + Labs)							24	
THEORY								
SIXTH	PC/PE	IT337	Software Engineering	3	1	0	4	
		CS335	Artificial Intelligence & Machine Learning	3	1	0	4	
			PROGRAM ELECTIVE-III	3	0	0	3	
	OE		Open Elective-III / MOOC	3	0	0	3	
	HSS	MT204	Constitution of India	2	0	0	NC	
	PROJ	MC300	Summer training				2	
	LABORATORIES							
	PC/PE		IT338	Software Engg. & Testing Lab	0	0	3	1.5
			CS336	Artificial Intelligence & Machine Learning Lab	0	0	3	1.5
				PROGRAM ELECTIVE LAB-III	0	0	3	1.5
HSS		MT133	Communication Skills - II	0	0	3	1.5	
TOTAL (Theory + Labs)							22	
THEORY								
SEVENTH	PE		PROGRAM ELECTIVE-IV	3	0	0	3	
			PROGRAM ELECTIVE-V	3	0	0	3	
	OE		Open Elective-IV / MOOC	3	0	0	3	
	PROJ	IT400M	Minor Project				3	
	LABORATORIES							



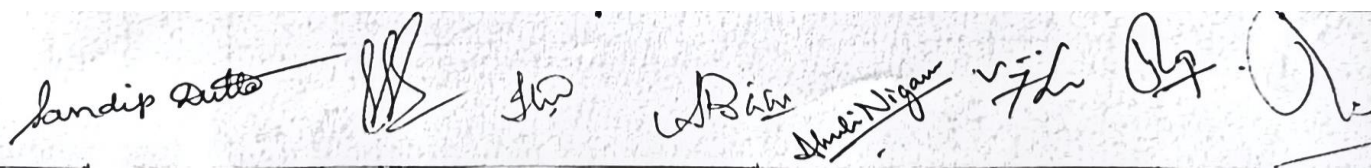
			PROGRAM ELECTIVE LAB-IV	0	0	3	1.5
			PROGRAM ELECTIVE LAB-V	0	0	3	1.5
TOTAL (Theory + Labs)							15
EIGHTH	PROJ	IT400	Research Project / Industry Internship				10
GRAND TOTAL							168



*Requirement of Programme Elective Courses (Theory/ Lab) : 18 credit or above

**PROGRAMME ELECTIVES (PE)*
OFFERED FOR LEVEL 1-4**

PE / LEVEL		Code no.	Name of the PE Courses	Prerequisites/ Corequisites	L	T	P	C
3	PE 1	IT345	UI Design	OOPDP CS233	3	0	0	3
3		CS445	Information and Coding Theory	Discrete Mathematics MA205	3	0	0	3
3		CS341	Optimization Techniques	Design and Analysis of Algorithm CS241	3	0	0	3
3		IT347	Introduction to Distributed System	NIL	3	0	0	3
3		IT349	Cryptography & Network Security	MA 103/ MA 107	3	0	0	3
3	PE 2	CS331	Formal Language and Automata Theory	NIL	3	0	0	3
3		IT351	Natural Language Processing	NIL	3	0	0	3
3		CS343	System Programming	NIL	3	0	0	3
3		IT353	Block Chain Technology	NIL	3	0	0	3
3	PE 3	IT355	Wireless Sensor Network	Data comm & Computer networks IT333	3	0	0	3
3		IT356	Wireless Sensor Lab	Wireless Sensor Network IT354	0	0	3	1.5



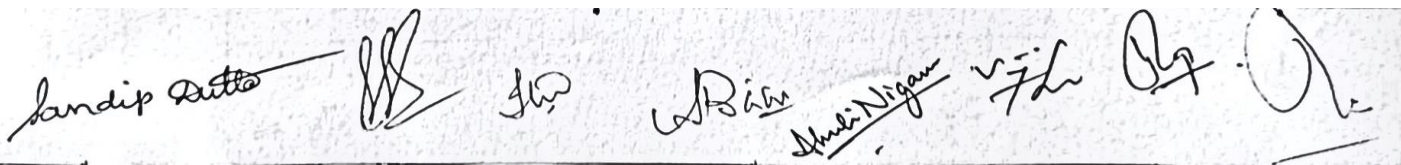
3		CS349	Simulation and Modelling	Data Structure CS231, MA 107	3	0	0	3
3		CS350	Simulation Modelling Lab	Simulation Modelling CS349	0	0	3	1.5
3		IT357	Pattern Recognition	Image Processing IT331	3	0	0	3
3		IT358	Pattern Recognition Lab	Pattern Recognition IT356	0	0	3	1.5
3		CS431	Computer Graphics	Design and Analysis of Algorithm CS241	3	0	0	3
3		CS432	Computer Graphics Lab	Computer Graphics CS432	0	0	3	1.5
4	PE 4	IT445	Internet of Things(IoT)	Data comm & Computer networks IT333	3	0	0	3
4		IT446	Internet of Things(IoT) Lab	Internet of Things(IoT) IT445	0	0	3	1.5
4		IT447	Big Data Analytics	Database Management System CS237	3	0	0	3
4		IT448	Big Data Analytics Lab	Big Data Analytics CS359	0	0	3	1.5
4		CS347	Soft Computing	Discrete Mathematics MA205	3	0	0	3
4		CS348	Soft Computing Lab	Soft Computing CS347	0	0	3	1.5
4	PE 5	IT449	Information Retrieval	Data Structure CS231	3	0	0	3

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4	OE IV	CS461	Fundamentals of Machine Learning	NIL	3	0	0	3
		IT461	Data mining concepts	NIL	3	0	0	3
	CS MINOR	IT263	Object Oriented Programming and Design pattern	NIL	3	1	0	4
		CS263	Data Structure & Algorithms	NIL	3	1	0	4
		CS265	Database Management System Concepts	NIL	3	1	0	4
		IT365	Data Communication & Networking	NIL	3	1	0	4
		CS450	Mini Project	NIL	3	1	0	4

CSE DEPARTMENT SPECIALIZATIONS

AI & ML	Code	Course Name	Semester	L	T	P	C
	AI 203	Mathematics for Data Science	5	3	0	0	3
	AI 301	Supervised Learning	6	3	0	0	3
	AI 303	Unsupervised Learning	7	3	0	0	3
	AI 307	Advanced Artificial Intelligence	8	3	0	0	3
	AI 204	Mathematics for Data Science Lab	5	0	0	3	1.5
	AI 302	Supervised Learning Lab	6	0	0	3	1.5
	AI 304	Unsupervised Learning Lab	7	0	0	3	1.5
	AI400	Mini Project	8				3



			Total Credits					19.5
	Security	IT 561	Mobile & Wireless Security	5	3	1	0	4
		IT 563	Cyber Security	6	3	1	0	4
		IT 565	Biometric Security	7	3	1	0	4
		IT 567	Digital Forensics	8	3	1	0	4
		IT 400	Mini Project	8				4
			Total Credits					20