ACADEMIC AFFAIRS OFFICE
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE
Roorkee – 247667

No. Acd./4559 /Senate-96 Dated: June 26 , 2023

Subject: Department wise Program Structures as per the new UG curriculum and ESC, BSC and OEC Courses (Item No. 96.3)

The Senate in its 96th meeting held on 07.06.2023 considered and approved the course baskets of ESC, BSC, OEC and ESSC **(Appendix A)** along with the Department wise UG Program Structures.

The structure consists of the complete Teaching Scheme, Credit requirements for different programs, semester wise credit distribution with Institute Core Courses (ICCs), Programme Core Courses (PCCs), Programme Elective Courses (PECs), Open Elective Courses (OECs), Community Outreach (CORE), Talent Enhancement Baskets (TEBs), Minor Specialization & Honours Courses. The approved department wise UG curricula are placed at **Appendix -B.**

Further, the Senate approved that the ESSC be read as Environmental Science and Sustainability Course. Also, it was decided to include the Deptt. of HRE in the group of ESSC along with CE, AR, ES which was missed in the Minutes of the 94th Senate.

The Senate also decided that Teaching Assistants/UGTAs be allowed for conducting the Practical classes of the department specific PCC course on Computer Programming.

Assistant Registrar
(Curriculum)

Copy to (through e-mail):-

1. Chairman Senate & Director
2. All faculty
3. Head of all Departments/ Centres/ School
4. Dean, Academic Affairs
5. ADoAA (IT Systems & Admission)/ (Curriculum)/ (Evaluation)
6. Assistant Registrar (Evaluation)
7. Meeting Section
8. Channel i/ AIS (acad.iitr.ac.in)/ Academic webpage of iitr.ac.in

Offer by Department	Category	S_No	Course Code	Course_Title	Credit	L	T	P	Course_Offered	Opted by	Year	Semester	No of Students
HRE-Hydro and Renewable Energy	OEC	1	HRO-101	Alternate Fuels for Transportation	3	3	0	0	Both				
		2	HRO-102	Energy Resources, Economics and Sustainability	3	3	0	0	Both				
		3	HRO-103	Renewable Energy Resource Development Technology	3	3	0	0	Both				
		4	HRO-104	Small Hydro Power Development	3	3	0	0	Both				
BE-Biosciences and Bioengineering	BSC	1	BEB-101	Introduction to Bioanalytical Techniques.	4	3	1	0	Spring				
		2	BEB-102	Biosciences for engineers	4	3	1	0	Autumn	CH	II	AUTUMN	117
		3	BEB-103	Public Health and Emerging Diseases	4	3	1	0	Autumn				
		4	BEB-104	Fundamentals of Neuroscience	3	2	1	0	Autumn				
		5	BEB-105	Basic Chemistry for Life Science	4	3	1	0	Spring				
	ESC	1	BEE-101	Biomedical Nanomaterials	4	3	0	2	Autumn				
		2	BEE-102	Introduction to Computational Biology	4	3	1	0	Spring	BSMSCY	I	SPRING	35
		3	BEE-103	Introduction to Biological Engineering	4	3	1	0	Autumn				
		4	BEE-104	Introduction to Bio-catalysis	3	3	0	0	Spring				
		5	BEE-105	Introduction to Biophotonics	3	3	0	0	Spring	BSMSCY	I	SPRING	35
	OEC	1	BEO-101	Intellectual Property Rights, Biosafety and Bioethics	4	3	1	0	Both				
CE-Civil Engineering	ESC	1	CEE-101	Building Services	3	2	1	0	Spring				
		2	CEE-102	Mechanics of Solids	4	3	1	0	Spring	ME	I	SPRING	208
										IN	I	SPRING	
		3	CEE-103	Theory of Structures	4	3	1	0	Autumn	AR	II	AUTUMN	30
		4	CEE-104	Design of Reinforced Concrete Elements	4	3	1	2/2	Autumn	AR	III	AUTUMN	30
		5	CEE-105	Design of Steel Elements	3	2	1	0	Spring	AR	III	SPRING	30
		6	CEE-106	Geospatial Techniques and Programming	4	3	0	2	Both	BSMSHS	II	SPRING	33
	ESSC	1	ESS-101	Environmental Science and Sustainability Course-1	3	3	0	0	Spring	CE, AR, GT, GPT	I	SPRING	283
	OEC	1	CEO-101	Probability Methods in Engineering Problems	3	3	0	0	Both				
		2	CEO-102	Simulation of Behavior-Induced Mobility	3	2	1	0	Both				
		3	CEO-103	Water Resources Engineering	3	3	0	2/2	Both				
CH--Chemical Engineering	ESC	1	CHE-101	Energy Engineering	4	3	1	0	Autumn	GT	I	AUTUMN	114
										GPT	I	AUTUMN	
										BSMSCY	I	AUTUMN	
		2	CHE-102	Introduction to Process Technology	4	3	1	0	Spring				
	OEC	1	CHO-101	Computational Fluid Dynamics	4	3	1	0	Autumn				

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CS--Computer Science and Engineering	ESC	1	CSE-101	Data Structures and Algorithms	4	3	1	0	Both	EE	II	AUTUMN	442
										ECE	I	AUTUMN	
										DSAI	II	AUTUMN	
										BSMSHS	I	AUTUMN	
										BSMSMA	I	AUTUMN	
										BE	II	AUTUMN	
										CH	II	SPRING	226
										BSMSPH	I	SPRING	
										MT	I	SPRING	
		2	CSE-102	Introduction to Automata Theory	4	3	1	0	Spring	BSMSMA	II	SPRING	49
CY--Chemistry	BSC	1	CYB-101	Fundamentals of Organic Chemistry	4	3	0	2	Autumn	BE	II	AUTUMN	46
		2	CYB-102	Inorganic Chemistry - I	4	3	0	2	Spring				
		3	CYB-103	Physical Chemistry-I	4	3	0	2	Spring	CH	I	SPRING	199
										MT	I	SPRING	
	ESSC	1	ESS-103	Environmental Science and Sustainability Course-3	3	3	0	0	Spring	BSMSCY, CH, BE, BSMSHS	I	SPRING	231
	OEC	1	CYO-101	Organic Electronic Materials	3	2	1	0	Both				
		2	CYO-102	Functional Materials: Preparation, Structure and Properties	3	3	0	0	Both				
		3	CYO-103	Introduction to instrumental methods of analysis	3	2	1	0	Both				
		4	CYO-104	Introduction to Computational Chemistry	3	2	1	0	Both				
EC--Electronics and Communication Engineering	ESC	1	ECE-101	Fundamentals of Electronics	4	3	1	0	Both	EE	I	AUTUMN	360
										DSAI	I	AUTUMN	
										BE	I	AUTUMN	
										BSMSPH	I	AUTUMN	
										MT	II	AUTUMN	
		2	ECE-102	Introduction to Communication System	4	3	1	0	Both	CSE	I	SPRING	199
										DSAI	II	SPRING	
										EPH	II	SPRING	
		3	ECE-103	Digital Electronics	4	3	1	0	Both	CSE	I	AUTUMN	136
										BSMSPH	II	AUTUMN	
										EE	I	SPRING	246
										GPT	I	SPRING	
										DSAI	I	SPRING	

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EE--Electrical Engineering	ESC	1	EEE-101	Control System Engineering	4	3	1	0	Both	ECE	II	SPRING	109
		2	EEE-102	Basic Electrical Engineering	4	3	1	2/2	Both	EPH	I	AUTUMN	340
										ME	I	SPRING	
										IN	I	SPRING	
										MT	II	SPRING	
		3	EEE-103	Measurements and Transducers	4	3	1	0	Both	EPH	I	SPRING	50
EQ--Earthquake Engineering	ESC	1	EQE-101	Solid Mechanics	4	3	1	0	Both	CE	I	SPRING	174
ES--Earth Sciences	BSC	1	ESB-101	Geological Processes	4	3	1	0	Both	GT	I	SPRING	79
										GPT	I	SPRING	
		2	ESB-102	Global Geophysics	4	3	1	0	Both	GT	II	AUTUMN	79
										GPT	II	AUTUMN	
	ESC	1	ESE-101	Geology for Engineers	4	3	1	0	Autumn	CE	II	AUTUMN	174
	OEC	1	ESO-101	Fractals and Applications	3	2	1	0	Both				
		2	ESO-102	Glaciology	3	2	1	0	Both				
		3	ESO-103	Planetary Geosciences	3	2	1	0	Both				
		4	ESO-104	Carbon Sequestration	3	2	1	0	Both				
HY--Hydrology	ESC	1	HYE-101	Engineering Hydrology	4	3	1	0	Spring	CE	II	SPRING	174
	OEC	1	HYO-101	Desalination and membrane technology	3	1	0	3	Autumn				
MA--Mathematics	BSC	1	MAB-103	Numerical Methods	4	3	1	0	Autumn	EE	II	AUTUMN	839
										ECE	II	AUTUMN	
										ME	II	AUTUMN	
										IN	II	AUTUMN	
										BSMSMA	II	AUTUMN	
										CSE	II	AUTUMN	
										DSAI	II	AUTUMN	
		2	MAI-101	Mathematics I	4	3	1	0	Autumn	ALL UG PROGRAMMES	I	AUTUMN	1353
		3	MAI-102	Mathematics II	4	3	1	0	Spring	ALL UG PROGRAMMES	I	SPRING	1353
		4	MAB-104	Mathematical Methods	4	3	1	0	Autumn	BSMSHS	II	AUTUMN	159
										EPH	II	AUTUMN	
										BSMSPH	II	AUTUMN	
										BSMSMA	II	AUTUMN	
	OEC	1	MAO-101	Optimization Techniques	4	3	1	0	Spring				
		2	MAO-102	Advanced Engineering Mathematics	4	3	1	0	Autumn				

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ME--Mechanical and Industrial Engineering	ESC	1	MIE-103	Engineering Thermodynamics	4	3	1	2/2	Both					
		2	MIE-102	Manufacturing Processes	4	3	0	2	Both					
		3	MIE-101	Engineering Mechanics	4	3	1	0	Both	CH	I	AUTUMN	373	
										CE	I	AUTUMN		
										MT	I	AUTUMN		
MT--Metallurgical and Materials Engineering	ESC	1	MTE-101	Non Destructive Testing	4	3	1	0	Autumn					
		2	MTE-102	Materials Characterization	4	3	1	0	Spring	BE	I	SPRING	84	
										GT	I	SPRING		
		3	MTE-103	Materials Science	4	3	1	0	Both	ME	I	AUTUMN	208	
										IN	I	AUTUMN		
	OEC	1	MTO-101	Introduction to Nanomaterials	3	2	0	2	Both					
		2	MTO-102	Thin Film Technology	3	3	0	0	Both					
PH--Physics	BSC	1	PHB-102	Quantum and Statistical Mechanics	4	3	1	0	Spring	ECE	II	SPRING	109	
		2	PHI-101	PHI-101 Physics-I	4	3	1	2/2	Autumn	ALL UG PROGRAMMES	I	AUTUMN	1353	
		3	PHB-103	Modern Physics	4	3	1	0	Spring	BSMSHS	I	SPRING	68	
										BSMSCY	I	SPRING		
		4	PHB-104	Engineering Optics	4	3	1	0	Spring					
DMA-Disaster Mitigation & Management	OEC	1	DMO-101	Participatory Nature-based Risk Resilience	4	3	1	0	Both					
		2	DMO-102	Introduction to Climate Change	4	3	1	0	Both					
	ESSC	1	ESS-101	Environmental Science and Sustainability Course	3	3	0	0	Spring	CE,AR,ES,HRE	I	SPRING	283	
		2	ESS-102	Environmental Science and Sustainability Course	3	3	0	0	Spring	EE,ECE,CSE,BSMSPH,EPH,DSAI,MA	I	SPRING	549	
		3	ESS-103	Environmental Science and Sustainability Course	3	3	0	0	Spring	BSMSCY,CH,BSBE,HSS	I	SPRING	231	
		4	ESS-104	Environmental Science and Sustainability Course	3	3	0	0	Spring	ME,PI,MT	I	SPRING	290	

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1-BACHELOR OF ARCHITECTURE
COMPONENT WISE DISTRIBUTION

Main Curriculum Components	Sub Components	Approved Credits for B.Arch.	Approved Credits Range	Proposed Credits for B.Arch. by Department	Proposed Credits Range
Institute Core Course	HSSC	5	52-58	5	52
	HSSEC	6		6	
	MC	3		3	
	BSC	12-20		12	
	ESC	8-20		15	
	DSC	4		4	
	ESSC	3		3	
	TM	4		4	
Program Core Course	CCCC	TBD	133	74	128
	AI/ML	2		2	
	Engg. Analysis and design (design thinking based project)/Industry Oriented Problem Solving/ Lab based Project/ Practical Problem/ Case study	TBD		12	
	Technical Communication	2		2	
	Internship/Professional Training	TBD		12	
	PEC	TBD		18	
	TEB	6-8		8	
	OEC	9-12	9-12	9-12	9-12
	CORE	2	2	2	2
	Total	190-200		191-194	
	MSC/DHC	18/20		18/20	
	Grand Total			209-214	

MEHTA FAMILY SCHOOL FOR DATA SCIENCE AND ARTIFICIAL INTELLIGENCE
INDIAN INSTITUTE OF TECHNOLOGY ROORKEE

Program Code : **125** **B. Tech. (Data Science and Artificial Intelligence)**
Department : **DSAI** **Mehta Family School for Data Science and Artificial Intelligence**

Teaching Scheme

Year	Credits in Autumn Semester	Credits in Spring Semester	Credits (Year – wise)
1	23	23	46
2	23/24	21/22	44/46
3	19/20	21	40/41
4	20	6	26
Grand Total			**156/159**
Total with MSC/DHC	With addition 18-20 credits		**174/179**

Non-Credit Elements (NCE)	Components	Maximum Units	Minimum Units	Comments
	Discipline (DIS)	**16**	**8**	To be evaluated by DoSW
	NCC/NSS/NSO	**8**	**4**	To be evaluated by DoSW
	Internship (INT)	**24**	**8**	1-week internship= 1 unit (to be coordinated by the deptt. /Centres/School)
	Participation in professional development programs by Industry experts/ field experts (PPD-1 & PPD-2)	**8**	**4**	To be coordinated by the departments/Centres/school (2^{nd}& 3^{rd} Years)
Minimum non-credit units to be earned: 24				

MEHTA FAMILY SCHOOL FOR DATA SCIENCE AND ARTIFICIAL INTELLIGENCE

Program Code : **125** **B. Tech. (Data Science and Artificial Intelligence)**
Department : **DSAI** **Mehta Family School for Data Science and Artificial Intelligence**
Year : **I**

Teaching Scheme						Contact Hours/Week			Exam Duration (Hrs.)		Relative Weights(%)				
S. No.	Subject Code	Course Title	Subject Area	Credits		L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
(Autumn)															
1	HSI-101	Soft Skills	HSSC	3		2	0	2	2	0	10-25	25	15-25	30-40	-
2	MAI-101	Mathematics-I	BSC	4		3	1	0	3	0	20-35	-	20-30	40-50	-
3	PHI-101	Physics-I	BSC	4		3	1	2/2	3	0	15-30	20	15-25	30-40	-
4	DAC-101	Computer Programming in C++	PCC	4		3	1	0	3	0	20-35	-	20-30	40-50	-
5	TMI-101	Tinkering and Mentoring	TMI	4	T-2	-	-	-	-	-	70	30	-	-	-
					M-2	2	0	0	2	-	50	-	-	50	-
6	ECE-101	Fundamental of Electronics	ESC	4		3	1	0	3	0	20-35	-	20-30	40-50	-
		Total		**23**											
(Spring)															
1	HSI-102	Indian Knowledge System	HSSC	2		2	0	0	3	0	20-35	-	20-30	40-50	-
2	MAI-102	Mathematics-II	BSC	4		3	1	0	3	0	20-35	-	20-30	40-50	-
3	ESS-102	Environmental Science and Sustainability	ESSC	3		3	0	0	3	0	20-35	-	20-30	40-50	-
4	DAC-102	Computer Organization and Architecture	PCC	4		3	1	0	3	0	20-35	-	20-30	40-50	-
5	DAC-104	Programming in Python	PCC	4		3	1	0	3	0	20-35	-	20-30	40-50	-
6	ECE-103	Digital Electronics	ESC	4		3	1	0	3	0	20-35	-	20-30	40-50	-
7.	DAC-151	Fundamentals of AI/ML	PCC	2		2	0	0	2	0	20-35	-	20-30	40-50	-
		Total		**23**											

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Program Code : **125** **B. Tech. (Data Science and Artificial Intelligence)**
Department : **DSAI** **Mehta Family School for Data Science and Artificial Intelligence**
Year : **II**

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs.)		Relative Weights (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
(Autumn)														
1	DAI-101	Data Science	DSC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2	OEC-I	Open Elective Course	OEC	3/4										
3	MAB-103	Numerical Methods	BSC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4	DAC-201	Discrete Structures	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5	DAC-203	Artificial Intelligence	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6	CSE-101	Data Structure and Algorithm	ESC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
		Total		**23/24**										
(Spring)														
1	HSSEC-I	HSS Elective Course-I	HSSEC	3										
2	MSI-101	Fundamentals of Management	MC	3	3	0	0	3	0	20-35	-	20-30	40-50	-
3	OEC-II	Open Elective Course-II	OEC	3/4										
4	DAC-202	Applied Machine Learning	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5	DAC-204	Programming for DS and AI	PCC	2	0	0	4	-	-	-	100	-	-	-
6	ECE-102	Introduction to Communication Systems	ESC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
7	DAT-I	Talent Enhancement Course-I	TEB	2	0	0	3	-	-	-	-	-	100	-
		Total		**21/22**										

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MEHTA FAMILY SCHOOL FOR DATA SCIENCE AND ARTIFICIAL INTELLIGENCE

Program Code : **125** **B. Tech. (Data Science and Artificial Intelligence)**
Department : **DSAI** **Mehta Family School for Data Science and Artificial Intelligence**
Year : **III**

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs.)		Relative Weights (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
(Autumn)														
1	OEC-III	Open Elective Course	OEC	3/4										
2	DAC-301	Deep Learning	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3	DAC-303	Computer Network	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4	DAC-305	Principle of Databases	PCC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5	DAC-399	Community Outreach	CORE	2							100			
6	DAT-II	Talent Enhancement Course-II	TEB	2	0	0	3	-	-	-	-	-	100	-
		Total		**19/20**										
(Spring)														
1	HSSEC-II	HSS Elective Course-II	HSSEC	3										
2	DAC-300	Case Study (Industry Oriented Problem/ Lab Based Project)*	PCC	4	0	0	8	0	0	50	-	-	-	50
3	DAC-391	Technical Communication	PCC	2	0	0	4	0	-	-	100	-	-	-
4	DAC-304	AI/ML Lab	PCC	2	0	0	4	0	-	-	100	-	-	-
5	DAL-I	Program Elective Course- I	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6	DAL-II	Program Elective Course- II	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
7	DAT-III	Talent Enhancement Course-III	TEB	2	0	0	3	-	-	-	-	-	100	-
8	MSC/DHC - I	Minor Specialization Course - I / Departmental Honours Course - I	MSC/ DHC	3/4										
		Total		**21/ 24-25**										

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MEHTA FAMILY SCHOOL FOR DATA SCIENCE AND ARTIFICIAL INTELLIGENCE

Program Code : 125 B. Tech. (Data Science and Artificial Intelligence)
Department : DSAI Mehta Family School for Data Science and Artificial Intelligence
Year : IV

Teaching Scheme					Contact Hours/Week			Exam Duration (Hrs.)		Relative Weights (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
(Autumn)														
1	DAP-400A/ DAL	Project (BTP-I)/Entrepreneurship**/Project-based Internship/PEC*	PCC/PEC*	4						100				
2	DAL-III	Program Elective Course -III	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3	DAL-IV	Program Elective Course -IV	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4	DAL-V	Program Elective Course -V	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5	DAL-VI	Program Elective Course -VI	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6	MSC/DHC-2	Minor Specialization Course –II/ Departmental Honours Course - II	MSC/ DHC	3/4										
7	MSC/DHC-3	Minor Specialization Course –III/ Departmental Honours Course - III	MSC/ DHC	3/4										
		Total		**20/26-28**										
(Spring)														
1	DAP-400B/ DAL	Project (BTP-I)/Entrepreneurship**/Project-based Internship/PEC*	PCC/PEC*	6						100				
2	MSC/DHC-IV	Minor Specialization Course –IV / Departmental Honours Course – IV	MSC/ DHC	3/4										
3	MSC/DHC-V	Minor Specialization Course -V/ Departmental Honours Course -V	MSC/ DHC	3/4										
		Total		**6/12-14**										

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List of Program Elective Courses

3rd Year Electives

Teaching Scheme					Contact Hours/Week			Exam. Duration		Relative Weight (%)				
S. No.	Subject Code	Course Title	Subject Area	Credits	L	T	P	Theory	Practical	CWS	PRS	MTE	ETE	PRE
1.	DAL-301	Casual Inference	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
2.	DAL-302	Information Theory and Cryptography	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
3.	DAL-303	Information Retrieval	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
4.	DAL-304	Computer Architecture for AI	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
5.	DAL-305	Intelligent Cloud Computing	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
6.	DAL-306	Intelligent and Learning Agents	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
7.	DAL-307	Intelligent Robotics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
8.	DAL-308	Applications of AI in Healthcare	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-

4th Year Electives

9.	DAL-401	E-commerce	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
10.	DAL-402	Security and Privacy	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
11.	DAL-403	AI in Neuroscience & Cognitive Behaviour	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
12.	DAL-404	AI based Diagnostics tools	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
13.	DAL-565	Computer Vision	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
14.	DAL -559	Stochastic Processes and Applications	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
15.	DAL -628	Evolutionary Algorithms	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
16.	DAL -558	Data Stream Mining	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
17.	DAL -564	AI and Medical Physics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
18.	DAL -562	AI for Investment	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
19.	DAL -567	Introduction to Materials Informatics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
20.	DAL -561	AI for Earth Observations	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
21.	DAL -519	Social Network Analysis	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
22.	DAL -568	ML and AI Applications in Earth	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-

		Sciences												
23.	DAL -571	Big Data Analytics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
24.	DAL -576	Data Science in Bioinformatics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
25.	DAL -579	Leveraging Data Science for Finance	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
26.	DAL -581	Advanced Applications of Pattern Recognition	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
27.	DAL -582	Recommended Systems	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
28.	DAL -583	Data-Driven Analytics for Smart Transportation Systems	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-
29.	DAL -5xx	AI for Fluid Mechanics	PEC	4	3	1	0	3	0	20-35	-	20-30	40-50	-

List of Talent Enhancement Course

Teaching Scheme					Contact Hours/Week			Exam Duration		Relative Weight (%)				
S. No.	Course Code	Course Title	Area	Cr.	L	T	P	Th.	Pr.	CWS	PRS	MTE	ETE	PRE
TEB-A (Computer Vision and Image Processing)														
1.	DAT-101	Computer Vision	TEB	2	0	0	4	-	-	-	-	-	100	-
2.	DAT-102	Image Enhancement Techniques	TEB	2	0	0	4	-	-	-	-	-	100	-
3.	DAT-103	AI based earth imaging	TEB	2	0	0	4	-	-	-	-	-	100	-
TEB-B (AI for Sustainable Development Goals (SDG))														
4.	DAT-104	AI for Energy	TEB	2	0	0	4	-	-	-	-	-	100	-
5.	DAT-105	AI for Healthcare	TEB	2	0	0	4	-	-	-	-	-	100	-
6.	DAT-106	AI for Smart Transportation	TEB	2	0	0	4	-	-	-	-	-	100	-
TEB-C (AI for Economics)														
7.	DAT-107	AI for e-commerce	TEB	2	0	0	4	-	-	-	-	-	100	-
8.	DAT-108	AI Data Mining and Warehousing for online market places	TEB	2	0	0	4	-	-	-	-	-	100	-
9.	DAT-109	AI for asset management	TEB	2	0	0	4	-	-	-	-	-	100	-

Minor Specialization Courses

S.No.	Code	Course title	Semester	Credits
1	DAC-102	Computer Organization and Architecture	Spring	4
2	DAC-104	Programming in Python	Spring	4
3	DAC-203	Artificial Intelligence	Autumn	4
4	DAC-202	Applied Machine Learning	Spring	4
5	DAC-303	Computer Networks	Autumn	4

Departmental Honours Courses

Sub. Code	Title	Credits
DAL-507	Advanced Data Structures and Algorithms	4
DAL-xxx	Statistical Machine Learning	4
DAL-503	Hardware Architectures for AI	4
DAL-xxx	AI Driven Non-linear Dynamics	4
DAL-xxx	Optimization in Machine Learning	4
All PG PECs / Pre-PhD courses of MFS		