SCHEME OF TEACHING

Computer Science & Engineering Stream – for students of CSE, ISE, CSE (AI&ML), CSE (Cyber Security), AI&ML, AI&DS and BT

(Effective from the Academic Year 2023-24)

SL. No.	Course Code	Course Title	Teaching Department	Category	Credits L	T	P	Total	Total Contact hours / week
			I SEMESTER (PHYSICS CYCLE)						
1	MAC11	Advanced Calculus and Modular Arithmetic	Mathematics	ASC(IC)	2	1	1	4	6
2	PYC12	Engineering Physics	Physics	ASC	2	1	0	3	4
3	ESC13x	Engineering Science Course-I	CV,ME,EEE,ECE	ESC	3	0	0	3	3
4	PLC14x	Programming Language Courses	Any Department	PLC	2	0	1	3	4
5	HSCP15/25	Communicative English	Humanities	HSMC	1	0	0	1	2
6	HSCP16/26	Kannada Kali/ Kannada Manasu	Humanities	HSMC	1	0	0	1	1
7	AECP17/27	A Scientific Approach to Health	Respective Departments	AEC	1	0	0	1	1
8	PPC18	Principles of Programming Using C	CSE, ISE, CSE (CS), AI&ML,AI&DS,ISE	ESC(IC)	2	0	1	3	4
9	PYLC19	Engineering Physics Laboratory	Physics	ASC	0	0	1	1	2
				Total	14	2	4	20	27

Where x= 1,2,3,4

One-hour Lecture (L) per week=1Credit   Two hours Tutorial(T) per week=1Credit   Two hours Practical / Drawing (P) per week=1 Credit

NOTE: Students of Computer Science & Engineering, Information Science & Engineering, Computer Science & Engineering (AI&ML), Computer Science & Engineering (Cyber Security), Artificial Intelligence &Machine Learning, Artificial Intelligence & Data Science and Biotechnology shall opt for any one of the courses from the ESC-I group except, ESC145-Introduction to C Programming

ASC-Applied Science Course, **ESC**- Engineering Science Courses, **AEC**- Ability Enhancement Course, **HSMC**-Humanity and Social Science and Management Course, **PLC**- Programming Language Courses, **IC** – Integrated Course (Theory Course Integrated with Practical Course)

	Engineering Science Courses-I				**Programming Language Courses**		
SL. No.	Subject Code	Subject	Teaching Department	SL. No.	Subject Code	Subject	Teaching Department
1	ESC131	Introduction to Civil Engineering	CV	1	PLC141	Introduction to Web Programming	Any Department
2	ESC132	Introduction to Electrical Engineering	EEE	2	PLC142	Introduction to Python Programming	
3	ESC133	Introduction to Electronics Engineering	ECE,ETE	3	PLC143	Basics of JAVA programming	
4	ESC134	Introduction to Mechanical Engineering	ME	4	PLC144	Introduction to C++ Programming	
5	ESC135	Introduction to C Programming	Any Department				

Student's Induction Program:
The main aim of the induction program is to provide newly admitted students a broad understanding of society, relationships, and values. Along with the knowledge and skill of his/her study. Students' character needs to be nurtured as an essential quality by which he/she would understand and fulfill the responsibility as an engineer. The following Motivating (Inspiring)
Activities are to be covered over a period of 21 days: Physical Activity, Creative Arts, Universal Human Values, Literary, Proficiency Modules, Lectures by Eminent People, Visits to Local areas, Familiarization with Department/Branch and Innovation, etc.

AICTE Activity Points to be earned by students admitted to BE/ B.Tech., / B. Plan program (For more details refer to Chapter 6, AICTE Activity Point Program, Model Internship Guidelines) over and above the academic grades. Every regular student admitted to the 4 years Degree program and every student entering 4 years Degree programs through lateral entry, shall earn 100 and 75 Activity Points respectively for the award of degree through AICTE Activity Point Program. Students transferred from other Universities to the fifth semester are required to earn 50 Activity Points from the year of entry to VTU. The Activity Points earned shall be reflected on the student's eighth semester Grade Card. The activities can be spread over the years, any time during the semester weekends, and holidays, as per the liking and convenience of the student from the year of entry to the program. However, the minimum hours' requirement should be fulfilled. Activity Points (non-credit) do not affect SGPA/CGPA and shall not be considered for vertical progression. In case students fail to earn the prescribed activity points, the Eighth Semester Grade Card shall be issued only after earning the required activity points. Students shall be admitted for the award of the degree only after the release of the Eighth semester Grade Card.

SCHEME OF TEACHING
Computer Science & Engineering Stream – for students of CSE, ISE, CSE(AI&ML), CSE (Cyber Security), AI&ML, AI&DS and BT
(Effective from the academic year 2023-24)

SL. No.	Subject Code	Subject	Teaching Department	Category	Total Credits				Contact hours / week
					L	T	P	Total	
1	MAC21	Numerical Techniques and Differential Equations	Mathematics	ASC(IC)	2	1	1	4	6
2	CYC22	Engineering Chemistry	Chemistry	ASC	3	0	0	3	3
3	ESC23x	Engineering Science Course-II	CV,ME,EEE,ECE	ESC	3	0	0	3	3
4	ETC24x	Emerging Technology Course	Any Department	ETC	3	0	0	3	3
5	HSCC15/25	Professional Writing Skills in English	Humanities	HSMC	1	0	0	1	2
6	HSCC16/26	Constitution of India	Humanities	HSMC	1	0	0	1	1
7	AECC17/27	Design Thinking	Respective Departments	AEC	2	0	0	2	2
8	MELC28	Computer-Aided Engineering Drawing Laboratory	ME	ESC	0	1	1	2	4
9	CYLC29	Engineering Chemistry Laboratory	Chemistry	ASC	0	0	1	1	2
				Total	**15**	**2**	**3**	**20**	**26**

Where x= 1,2,3,4.....

One-hour Lecture (L) per week=1Credit   Two hours Tutorial(T) per week=1Credit   Two hours Practical / Drawing (P) per week=1Credit

NOTE: Students of Computer Science & Engineering, Information Science & Engineering, Computer Science & Engineering (AI&ML), Computer Science & Engineering (Cyber Security), Artificial Intelligence &Machine Learning, Artificial Intelligence & Data Science and Biotechnology shall opt for any one of the courses from the ESC-II group except, ESC245-Introduction to C Programming

ASC-Applied Science Course, **ESC**- Engineering Science Courses, **ETC**- Emerging Technology Course, **AEC**- Ability Enhancement Course, **HSMC**-Humanity and Social Science and Management Course, **IC** – Integrated Course (Theory Course Integrated with Practical Course)

SL. No.	Subject Code	Subject	Teaching Department	SL. No.	Subject Code	Subject	Teaching Department
Engineering Science Courses-II				Emerging Technology Courses			
1	ESC231	Introduction to Civil Engineering	CV	1	ETC241	Green Buildings	Any Department
2	ESC232	Introduction to Electrical Engineering	EEE	2	ETC242	Operation and Maintenance of Solar Electric Systems	
3	ESC233	Introduction to Electronics Engineering	ECE,ETE	3	ETC243	Introduction to Sustainable Engineering	
4	ESC234	Introduction to Mechanical Engineering	ME	4	ETC244	Renewable Energy Sources	
5	ESC235	Introduction to C Programming	Any Department	5	ETC245	Introduction to Internet of Things(IoT)	
				6	ETC246	Introduction to Cyber Security	

SCHEME OF TEACHING III SEMESTER

Sl. No.	Subject Code	Subject	Teaching Department	Category	Credits				Total contact hours /week
					L	T	P	Total	
1	CS31	Linear Algebra and Laplace Transforms	Mathematics	BSC	2	1	0	3	4
2	CS32	Digital Design and Computer Organization	CSE	IPCC	3	0	1	4	5
3	CS33	Data Structures	CSE	PCC	3	0	0	3	3
4	CS34	Object Oriented Programming	CSE	PCC	3	0	0	3	3
5	CS35	Discrete Mathematical Structures	CSE	PCC	2	1	0	3	4
6	CSL36	Data Structures Laboratory	CSE	PCC	0	0	1	1	2
7	CSL37	Object Oriented Programming Laboratory	CSE	PCC	0	0	1	1	2
8	UHV38	Universal Human Values	CSE	UHV	2	0	0	2	2
9	CSAEC39/310	Ability Enhancement Course-III	CSE	AEC	1	0	0	1	1
				Total	16	2	3	21	26
10	PE83	Physical Education		NCMC	All students have to register compulsorily for any one of the courses with the concerned coordinator (Yoga Teacher/ Physical Education Director/ NSS Coordinator) in the beginning of the III semester. Attending the registered course from III to VIII semesters. Qualifying is mandatory for the award of the degree.				
	YO83	Yoga							
	NS83	NSS							
11	AM31	Additional Mathematics - I *		NCMC	0	0	0	0	3

SCHEME OF TEACHING IV SEMESTER

Sl. No.	Subject Code	Subject	Teaching Department	Category	Credits				Total contact hours /week
					L	T	P	Total	
1	CS41	Numerical Techniques and Probability Models	Mathematics	BSC	2	1	0	3	4
2	CS42	Microcontrollers and IoT	CSE	IPCC	3	0	1	4	5
3	CS43	Design and Analysis of Algorithms	CSE	PCC	3	0	0	3	3
4	CS44	Data Communication and Networking	CSE	PCC	3	0	0	3	3
5	CS45	Finite Automata and Formal Languages	CSE	PCC	2	1	0	3	4
6	CSL46	Design and Analysis of Algorithms Laboratory	CSE	PCC	0	0	1	1	2
7	CSL47	Data Communication and Networking Laboratory	CSE	PCC	0	0	1	1	2
8	CSL48	Data visualization with python Lab	CSE	PCC	0	0	1	1	2
9	CSAEC49/410	Ability Enhancement Course - IV	CSE	AEC	1	0	0	1	1
10	INT411	Inter/ Intra Institutional Internship		NCMC	0	0	0	0	-
				Total	14	2	4	20	26
11	AM41	Additional Mathematics II *	Mathematics	NCMC	0	0	0	0	-

SCHEME OF TEACHING

V SEMESTER

Sl. No.	Subject Code	Subject	Teaching Department	Category	Credits				Total contact hours /week
					L	T	P	Total	
1	CS51	Software Engineering and Modelling	CSE	PCC	3	0	0	3	3
2	CS52	Artificial Intelligence and Machine Learning	CSE	IPCC	2	0	1	3	4
3	CS53	Database Systems	CSE	PCC	2	1	0	3	4
4	CS54	Operating Systems	CSE	PCC	3	0	0	3	3
5	CSE55x	Program Elective Course – 1	CSE	PEC	3	0	0	3	3
6	CSL56	Database Laboratory	CSE	PCC	0	0	1	1	2
7	CSL57	Advanced Java Programming Laboratory	CSE	PCC	0	0	1	1	2
8	AL58	Research Methodology & Intellectual property rights	CSE	HSMC	3	0	0	3	3
9	AEC510	Ability Enhancement Course - V	Any Department	AEC	1	0	0	1	1
				Total				21	26
10	HS59	Environmental Studies *	Civil	NCMC	0	0	0	0	1

V Semester-List of Courses for Program Elective Course-1

Sl. No	Course Code	Course Name	Credits				Contact Hours/ Week
			L	T	P	Total	
1.	CSE551	Secure Programming	2	0	1	3	4
2.	CSE552	Computer Graphics and Virtual Reality	2	0	1	3	4
3.	CSE553	Operation Research	2	1	0	3	4
4.	CSE554	Advanced Algorithms	2	1	0	3	4
5.	CSE555	Cryptography and Network Security	3	0	0	3	3

SCHEME OF TEACHING

VI SEMESTER

Sl. No.	Subject Code	Subject	Teaching Department	Category	Credits				Total contact hours /week
					L	T	P	Total	
1	AL61	Management & Entrepreneurship	CSE	HSMC	3	0	0	3	3
2	CS62	Compiler Design	CSE	PCC	2	1	0	3	4
3	CSE63x	Program Elective Course – 2	CSE	PEC	3	0	0	3	3
4	CSE64x	Program Elective Course – 3	CSE	PEC	3	0	0	3	3
5	CSL65	Web Technologies Laboratory	CSE	PCC	0	0	1	1	2
6	CSL66	Unix System Programming Laboratory	CSE	PCC	0	0	1	1	2
7	CSOE0x*	Institutional Open Elective - 1	Any Department	IOE	3	0	0	3	3
8	CSP67	Mini Project	CSE	PW	0	0	3	3	-
9	INT68	Innovation/Societal/ Entrepreneurship based Internship	Any Department	INT	0	0	2	2	-
		Total						22	20

VI Semester-List of Courses for Programme Elective Course-2

Sl. No	Course Code	Course Name	Credits				Contact Hours/ Week
			L	T	P	Total	
1.	CSE631	Introduction to Deep Learning	2	0	1	3	4
2.	CSE632	Software Defined Networks	2	1	0	3	4
3.	CSE633	Linux Kernel Programming	3	0	0	3	3
4.	CSE634	Information Retrieval	2	0	1	3	4
5.	CSE635	Block chain and Distributed App Development	3	0	0	3	3

SCHEME OF TEACHING

VII SEMESTER

SI. No	Course Code	Course Name	Page No.	Category	Credits				Contact Hours
					L	T	P	Total	
1.	CS71	Cloud Computing and Big data	1-3	PCC	4	0	0	4	56
2.	CS72	Multi Core Architecture and Programming	4-5	PCC	3	1	0	4	42+28
3.	CS73	Economics and Management	6-7	HSMC	3	0	0	3	42
4.	CSE74x	Professional Elective-4	8-17	PEC	*	*	*	3	--
5.	CSE75x	Professional Elective-5	19-31	PEC	*	*	*	3	--
6.	CSL76	Big Data Laboratory	32-33	PCC	0	0	1	1	28
7.	CSL77	MicroServices laboratory	34-35	PCC	0	0	1	1	28
8.	CSSE	Seminar	36	PCC	0	0	1	1	28
		Total			-	-	-	20	

List of Professional Elective for VII Semester

SI. No	Professional Elective-4		Page No.	Professional Elective-5		Page No.
	Course Code	Course Name		Course Code	Course Name	
1.	CSE742	Storage Area Networks	8-9	CSE751	Distributed Systems	18-20
2.	CSE743	Introduction to Devops	10-12	CSE752	Cyber Physical Systems	21-22
3.	CSE744	Network Management	13-14	CSE753	Software Testing	23-24
4.	CSE745	Multimedia Computing	15-16	CSE754	Introduction to Deep Learning	25-26
5.	CSE746	Blockchain Essentials & DApps	17-18	CSE756	Soft Computing	29-30

NOTE: *All electives are 3 credits; The Course Teaching Faculty shall define the split up L:T:P in the Lesson plan

VIII SEMESTER

SI. No	Course Code	Course Name	Page No.	Category	Credits			
					L	T	P	Total
1	CSIN	Internship	37-38	IN	*	*	*	3
2	CSP	Project Work	39-44	PW	0	0	14	14
	Total				- -	- -	--	17