SRI KRISHNA ARTS AND SCIENCE COLLEGE
COIMBATORE – 641 008

DEPARTMENT OF COMPUTER APPLICATIONS
(2021-2024)

I. PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)	
PEO 1	Prepare industry relevant quality graduates with programming and critical thinking skills to serve the domestic and global community.
PEO 2	Disseminate the conceptual knowledge in the concerned discipline for societal development and transformation.
PEO 3	Develop as a capable technical industry leader with outstanding communication skills.
PEO 4	Become technically competent in the field of computer science with a passion for lifelong learning.

II. PROGRAMME LEARNING OUTCOMES (PLOS)	
No.	The Graduates of Bachelor of Computer Application Programme will be able to :
PLO1	Identify the programming and technical knowledge acquired in the current computational demands. (Cognitive)
PLO2	Analyze the complex problems and identify solutions through critical thinking skills. (Cognitive)
PLO3	Adapt to the latest tools and techniques used to develop domain based innovative solutions with the acquired technical and operational skills.(Psychomotor Skills)
PLO4	Function and contribute as a team in the diversified environment in taking competitive decision.(Affective)
PLO5	Communicate effectively with the computing community as well as society to comprehend effective documentation and presentation.(Affective)
PLO6	Incorporate advanced digital skills in designing, developing, managing and deploying in media and technical field.(Affective)
PLO7	Apply quantitative, numerical and statistical skills to solve challenging problems with effective solutions.(Cognitive)
PLO8	Articulate leadership skills in motivating the team towards the target in a multi-disciplinary environment. (Affective)
PLO9	Recognize the need and ability to involve independent and life-long learning in the changing era of technology.(Affective)
PLO10	Interpret the impact of professional business solutions on business environment for sustainable development. (Affective)
PLO11	Follow ethical principles and commit to professional responsibilities for a relevant technical practice. (Affective)

III. PROGRAMME LEARNING OUTCOMES VS GRADUATE ATTRIBUTES VS TAXONOMY OF VERBS

PLO	Graduate Attributes											Blooms		
	Knowledge	Critical Thinking	Practical Skills	Team work	Communication skills	Digital skills	Numeracy	Leadership skills	Lifelong learning	Entrepreneurial skills	Ethics & Professionalism	Cognitive	Psychomotor	Affective
1	√											√		
2		√										√		
3			√										√	
4				√										√
5					√									√
6						√								√
7							√					√		
8								√						√
9									√					√
10										√				√
11											√			√

IV. PROGRAMME LEARNING OUTCOMES VS PROGRAMME EDUCATIONAL OBJECTIVES

PLO	PEO 1	PEO 2	PEO 3	PEO 4
PLO 1	√			
PLO 2	√			
PLO 3		√		
PLO 4			√	
PLO 5			√	
PLO 6		√		
PLO 7		√		
PLO 8			√	
PLO 9				√
PLO 10				√
PLO 11		√		

V. ADDITIONAL PROGRAMME OUTCOMES (APOs)

APO 1	The students will have an ability to be socially intelligent with intelligent quotient and emotional quotient.
APO 2	They will be having virtual collaborating ability.
APO 3	They will have the ability to use the social media effectively for productive use.
APO 4	They will have critical thinking and innovative skills.
APO 5	They will be provided with good digital footprint.

VI. PROGRAMME SPECIFIC OUTCOMES (PSOs)

PSO 1	Ability to understand the programming concepts, methodologies and algorithms to solve computational problems.
PSO 2	Ability to apply emerging software development techniques and tools in providing real-time solutions.

VII. CURRICULUM STRUCTURE FOR BACHELOR OF COMPUTER APPLICATION

Course Components, Credits & Marks Distribution

Part No	Group	Basic Structure: Distribution of Courses	Number of Courses	Total Marks	Total Credits
I - IV	1	AEC – Ability Enhancement Courses	10	1000	31
III & IV	2	DSC – Discipline Specific Courses	15	1500	53
	3	DSE – Discipline Specific Electives	11	1000	37
	4	GEC – General Elective Courses	5	500	19
IV	5	ANCC 1 & 2 – Audit Non-Credit Courses	3	Completed	
V		ANCC 3 – Audit Non-Credit Courses	1	Grade	-
-	6	DTC – Drive Through Courses (SWAYAM-NPTEL, Coursera, Any courses certified by statutory bodies, etc.)	Any number	-	Addl. Credits
		Total		4000	140

Group 1. Ability Enhancement Courses (AECs) (10 Courses)

AEC are the courses based upon the content that leads to knowledge enhancement. Ability Enhancement Courses (AEC) are the following.

S. No.	Course Code	Course Title	Semester	Ownership Department	Contact Hours	Credits	Marks
1.	21AEC02/ 21AEC07/ 21AEC11/ 21AEC17	**AEC PART I: Language – I** Tamil-I - Tamil Aruvi – I/ Hindi-I/ French-I/ Malayalam-I	I	Language Dept.	6	3	100
2.	21AEC22	**AEC PART II:** English-I : English for Professional Communication	I	English Dept.	6	3	100
3	21AEC41	**AEC PART III:** Probability and Statistics	I	Maths Dept.	5	3	100

S. No.	Course Code	Course Title	Semester	Dept.	Contact Hours	Credits	Marks
4.	21AEC04/ 21AEC08/ 21AEC12/ 21AEC18	**AEC PART I:** Language – II Tamil-II - Tamil Aruvi – II/ Hindi-II/ French-II/ Malayalam-II	II	Language Dept.	6	3	100
5.	21AEC24	**AEC PART II:** English-II : Campus to Corporate	II	English Dept.	6	3	100
6.	21AEC33	**AEC PART III:** Academic Skill for Computer Studies	II	CA Dept.	3	3	100
7.	21AEC60	**AEC PART III:** Developing Thinking Skills	V	CA Dept.	3	3	100
8.	21AEC50	**AEC PART III:** Capstone Project	IV	CA Dept.	-	4	100
9.	21AEC51	**AEC PART IV:** Environmental Studies	III	Bioscience Dept.	3	3	100
10.	21AEC56	**AEC PART IV:** Cyber Ethics	VI	CA Dept.	3	3	100
Total						**31**	**1000**

Group 2. Discipline Specific Courses (DSCs) (15 Courses)

These courses are to be studied compulsorily by the students as a core requirement. The students are required to take DSCs across six semesters. The courses designed under this category aim to cover the basics that a student is expected to imbibe in the particular discipline. It includes Major project.

S. No.	Course Code	Course Title	Semester	Contact Hours	Credits	Marks
1	21CDC01	**DSC 1:**Digital Computer Fundamentals	I	4	4	100
2.	21CDC02A	**DSC 2A:** Programming in C	I	3	2	50
	21CDC02B	**DSC 2B:** Practical : C Programming		3	2	50
3	21CDC03	**DSC 3:** Data Structures and	II	4	4	100
4.	21CDC04A	**DSC 4A:**Object Oriented Programming using C++	II	3	2	50
	21CDC04B	**DSC 4B:** Practical :C++ Programming		3	2	50
5	21CDC05	**DSC 5:** Operating Systems	III	4	3	100
6.	21CDC06	**DSC 6:** Programming in Java	III	5	5	100

S. No.	Course Code	Course Title		Contact Hours	Credits	Marks
7.	21CDC07	DSC 7: Practical : Java Programming	III	3	2	100
8.	21CDC08A	DSC 8A: Software Engineering	III	3	2	50
	21CDC08B	DSC 8B: Practical : Software Testing using Selenium		2	2	50
9.	21CDC09	DSC 9: Computer Networks	IV	3	3	100
10.	21CDC10	DSC 10: Relational Database Management Systems	IV	5	4	100
11.	21CDC11	DSC 11: Practical : SQL and PL/SQL	IV	3	2	100
12.	21CDC12	DSC 12: Machine Learning using Python	V	5	4	100
13.	21CDC13	DSC 13: Practical : Machine Learning using Python	V	3	2	100
14.	21CDC14	DSC 14: Major Project	VI	6	4	100
15.	21CDC15A	DSC 15A: Data Mining	VI	3	2	50
	21CDC15B	DSC 15B: Practical : Data Science		3	2	50
Total					53	1500

Group 3. Discipline Specific Elective (DSEs) (10 Courses)

Discipline Specific Elective courses offered under the main discipline of study which may be specialized or advanced or supportive to the discipline of study. Students can choose any TEN courses from the following list.

S. No.	Course Code	Course Title	Ownership Department	Contact Hours	Credits	Marks
1.	21CDE01	DSE 1: Practical : Excel Macro	CA Dept.	3	2	100
2.	21CDE02	DSE 1: Practical : Spreadsheet for Data Scientists	CS Dept.	3	2	100
3.	21CDE03	DSE 2: Mathematical Foundation for Computer Science	Maths Dept.	5	3	100
4.	21CDE04	DSE 3: Operations Research for Computer Studies	Maths Dept.	5	3	100
5.	21CDE05	DSE 3: Statistics for Data Science	CS Dept.	5	3	100
6.	21CDE06A	DSE 4A: PHP and MySQL	CA Dept.	3	3	50
	21CDE06B	DSE 4B: Practical: PHP and MySQL		3	2	50
7.	21CDE07A	DSE 4A: Data Visualization	CS Dept.	3	3	50
	21CDE07B	DSE 4B: Practical : Data Visualization		3	2	50

		using Power BI				
8.	21CDE08	**DSE 5:** Embedded System	ECS Dept.	5	3	100
9.	21CDE09	**DSE 5:** Robotics and Applications	ECS Dept.	5	3	100
10.	21CDE10	**DSE 5:** PC Hardware	ECS Dept.	5	3	100
11.	21CDE11	**DSE 6 :** Industrial Exposure Training	CA Dept	-	5	100
12.	21CDE12	**DSE 7:**Ethical Hacking	CS Dept.	5	3	50
13.	21CDE13	**DSE 11:** Practical : Ethical Hacking		4	2	50
14.	21CDE14	**DSE 7:**Web Intelligence	CA Dept.	5	3	50
15.	21CDE15	**DSE 11:** Practical: Web Intelligence		4	2	50
16.	21CDE16	**DSE 7:**Android Programming	CA Dept.	5	3	50
17.	21CDE17	**DSE 11:** Practical: Mobile Application Development using Android		4	2	50
18.	21CDE18	**DSE 7:** Programming in C#.net	CA Dept.	5	3	50
19.	21CDE19	**DSE 11:** Practical : C#.net		4	2	50
20.	21CDE20	**DSE 7:**Linux and Shell Programming	CA Dept.	5	3	50
21.	21CDE29	**DSE 11:**Practical : Shell Programming		4	2	50
22.	21CDE30	**DSE 7:** Visualization Analysis and Design	CA Dept.	5	3	50
23.	21CDE31	**DSE 11:** Practical: Data Visualization Techniques		4	2	50
24.	21CDE32	**DSE 7:** Time Series Analysis	CS Dept.	5	3	50
25.	21CDE33	**DSE 11:** Practical : Scientific Programming Using R		4	2	50
26.	21CDE21	**DSE 8:** Cyber Security	CS Dept.	5	3	100
27.	21CDE22	**DSE 8:** Mobile Computing	ICT Dept.	5	3	100
28.	21CDE23	**DSE 8:** Information Retrieval	CA Dept.	5	3	100
29.	21CDE24	**DSE 8:** Reinforcement Learning	CS Dept.	5	3	100
30.	21CDE25A	**DSE 9A:** Data Analytics using R	CA Dept.	3	2	50

	21CDE25B	**DSE 9B:** Practical : Data Analytics using R		3	2	50
31.	21CDE26A	**DSE 9A :** Next Generation Databases - NoSQL	CS Dept.	3	2	50
	21CDE26B	**DSE 9B:** Practical : Next Generation Databases - NoSQL		3	2	50
32.	21CDE27	**DSE 10:** Artificial Intelligence	CA Dept.	4	4	100
33.	21CDE28	**DSE 10 :** Artificial Intelligence and Analytics	CS Dept.	4	4	100
Total						**1000**

Industrial Exposure Training (IET):

Industrial Exposure Training during fifth semester for a period of 4 weeks is mandatory for all students.

The Continuous Internal Assessment mark distribution for IET is as follows:

Component	Mode of Conduct	Project Coverage	Marks
3 Reviews	Presentation	Phase by Phase	25
Work Diary	Written	Phase by Phase	10
Report	Submission	Entire Phases	15
Total			**50**

Viva-voce Marks for the Industrial Exposure Training will be given based on the report and viva-voce examination, conducted by the Department.

Report   : 30 Marks
Viva-voce   : 20 Marks

Major Project:

During the Sixth semester each student should undertake a project work and submit the report. A guide will be allotted to each student by the Department. A student can select any research topic in discussion with the guide. The internal and external examiners will evaluate the Project report jointly for **50 Marks** and Viva-voce examination shall be conducted jointly for **50 Marks.**

Three reviews should be conducted and marks have to be entered in Myklassroom portal as follows:

Review   : 25 Marks
Work Dairy   : 10 Marks
Report   : 15 Marks
Total   : 50 (Internal) Marks

End Semester Viva-Voce will be conducted for 50 (External) Marks.

(Dissertation - 30 Marks & Viva-voce - 20Marks)

Group 4. Generic Elective Courses (GECs) (5 Courses)

Generic Elective Courses are advanced level course for the discipline. They are not specialization specific. No overlapping with specialization courses. A student of specific discipline of any specialization can subscribe. These courses are future and recent developments in the respective discipline. The student has to subscribe any 5 courses in the following list:

Sl.No.	Course Code	Course Title	Semester	Ownership Department	Contact Hours	Credits	Marks
1.	21CGE01	Agile Software Development	III	CA Dept.	5	4	100
	21CGE02	Social Media Mining					
	21CGE03	Big Data Analytics					
2.	21GEC01	Spoken Tamil	IV	Language Dept.	3	3	100
	21GEC02	Spoken Hindi					
	21GEC03	Spoken Telugu					
	21GEC04	Spoken Malayalam					
	21GEC05	Spoken French					
3.	21CGE04	Computer Forensics	IV	CA Dept.	5	4	100
	21CGE05	Cyber Threat Intelligence					
	21CGE06	Green Computing					
4.	21CGE07	Wireless Technology	V	CA Dept.	5	4	100
	21CGE08	Internet of Things					
	21CGE09	Cloud Computing					
5.	21CGE10	Organizational Behaviour	VI	Management Science Dept.	5	4	100
	21CGE11	Human Resource Management					
	21CGE12	Management Information System					
Total						**19**	**500**

Group 5. Audit Non-Credit Courses (ANCC)

Non Credit Courses are intended for students who want to gain general knowledge, learn a new skill, upgrade existing skills, enrich their understanding of a wide range of topics, or develop personal interests. A student has to complete any two courses during Semester I and II.

S. No.	Course Code	Course Name
Part IV - Semester I - ANCC 1 & Semester II - ANCC 2		
1.	21ANC01	Human Rights
2.	21ANC02	Women's Rights
3.	21ANC03	Yoga for Human Excellence
4.	21ANC04	Indian Culture and Heritage
5.	21ANC05	Introduction to Cyber Security
6.	21ANC06	Consumer Protection
7.	21ANC07	Constitution of India
8.	21ANC08	Waste Management

Student has to take part in any one extension activity during their course of study.

S. No.	Course Code	Course Name
Part V- ANCC 3 - Extension Activities		
1.	21ANC09	National Service Scheme
2.	21ANC10	National Cadet Corps
3.	21ANC11	Youth Red Cross
4.	21ANC12	Red Ribbon Club
5.	21ANC13	Rotaract Club
6.	21ANC14	Sports
7.	21ANC15	Association Activities

Group 6. Drive-Through Course (DTC)

These courses are intended to bring out and promote the self-learning initiative of the students – where their own motivation is what drives them to complete the course and not external compulsions. This fosters the habit of keeping oneself updated always by means of self-study. It gives the students the opportunities to explore new areas of interest and earn additional credits. Students can take any number of courses under this cafeteria system. The credits will not be taken for CGPA calculation. Additional 4 credits per course will be given on submission of certificate.

1. SWAYAM-NPTEL

2. Coursera

3. Any courses certified by statutory bodies

VIII:SEMESTER-WISE SCHEME

Semester I

Course Code	Course Title	T/P/E	ESE Dur. Hrs	Ins. Hrs/Week	CIA Marks	ES Marks	Total Marks	Credits	SD/EM/EN	G/L/R/N
21AEC02/ 21AEC07/ 21AEC11/ 21AEC17/ 21AEC61	**AEC PART I:** Tamil-I:Tamil Aruvi-I/ Hindi - I/ French – I/ Malayalam - I/ Sanskrit –I	T	3	6	50	50	100	3	SD	R/ N/ G/ R/ G
21AEC22	**AEC PART II:** **English I:**English for Professional Communication	T	3	6	50	50	100	3	SD	G
21CDC01	**DSC 1:** Digital Computer Fundamentals	T	3	4	50	50	100	4	SD	G
21CDC02A	**DSC 2A :** Programming in C	E	2	3	25	25	50	2	SD/ EM	G
21CDC02B	**DSC 2B :** Practical: C Programming	E	2	3	25	25	50	2	SD/ EM	G
21CDE01/ 21CDE02	**DSE 1:** Practical: Excel Macro / Practical : Spreadsheet for Data Scientists	P	3	3	50	50	100	2	SD	G
21AEC41	**AEC PART III:** Probability and Statistics	T	3	5	50	50	100	3	SD/ EM	G
	ANCC-1 (NF2F)	T	2	-	-	-	Completed		EN	G
Total				30+2			600	19		

Semester II

Course Code	Course Title	T/P/E	ESE Dur. Hrs	Ins. Hrs/Week	CIA Marks	ES Marks	Total Marks	Credits	SD/EM/EN	G/L/R/N
21AEC04/ 21AEC08/ 21AEC12/ 21AEC18/ 21AEC62	**AEC PART I:** **Language II:** TAMIL-II: Tamil Aruvi – II/ Hindi - II/ French – II/ Malayalam – II Sanskrit –II	T	3	6	50	50	100	3	SD	R/ N/ G/ R/ G

Course Code	Course Title	T/P/E	ESE Dur. Hrs	Ins. Hrs/Week	CIA Marks	ES Marks	Total Marks	Credits	SD/EM/EN	G/L/R/N
21AEC24	**AEC PART II** **English II:** Campus to Corporate	T	3	6	50	50	100	3	SD	G
21AEC33	**AEC PART III** Academic Skill for Computer Studies	T	3	3	50	50	100	3	SD	G
21CDC03	**DSC 3:** Data Structures and Algorithms	T	3	4	50	50	100	4	SD/EM	G
21CDC04A	**DSC 4A:** Object Oriented Programming using C++	E	2	3	25	25	50	2	SD/EM	G
21CDC04B	**DSC 4B:** Practical: C++ Programming		2	3	25	25	50	2	SD/EM	G
21CDE03	**DSE 2:** Mathematical Foundation for Computer Science	T	3	5	50	50	100	3	SD/EM	G
	ANCC-2 (NF2F)	T	2	-	-	-	Completed			R
Total				30+2			600	20		

Semester III										
Course Code	Course Title	T/P/E	ESE Dur. Hrs	Ins. Hrs/Week	CIA Marks	ES Marks	Total Marks	Credits	SD/EM/EN	G/L/R/N
21CDC05	**DSC 5:** Operating Systems	T	3	4	50	50	100	3	SD/EM	G
21CDC06	**DSC 6:** Programming in Java	T	3	5	50	50	100	5	SD/EM	G
21CDC07	**DSC 7:** Practical: Java Programming	P	3	3	50	50	100	2	SD/EM	G
21CDC08A	**DSC 8A:** Software Engineering	E	2	3	25	25	50	2	SD/EM	G
21CDC08B	**DSC 8B:** Practical: Software Testing Using Selenium		2	2	25	25	50	2	SD/EM	G
21AEC51	**AEC PART IV:** Environmental Studies	T	3	3	50	50	100	3	SD	G

Course Code	Course Title	T/P/E	ESE Dur. Hrs	Ins. Hrs/ Week	CIA Marks	ES Marks	Total Marks	Credits	SD/ EM/ EN	G/L/ R/N
21CGE01/ 21CGE02/ 21CGE03	**GEC I:** Agile Software Development/ Social Media Mining/ Big Data Analytics	T	3	5	50	50	100	4	SD/ EM	G
21CDE04 / 21CDE05	**DSE 3:** Operations Research for Computer Studies / Statistics for Data Science	T	3	5	50	50	100	3	SD/ EM	G
Total				**30**			**700**	**24**		

Semester IV										
Course Code	**Course Title**	**T/P/E**	**ESE Dur. Hrs**	**Ins. Hrs/ Week**	**CIA Marks**	**ES Marks**	**Total Marks**	**Credits**	**SD/ EM/ EN**	**G/L/ R/N**
21CDC09	**DSC 9:** Computer Networks	T	3	3	50	50	100	3	SD/ EM	G
21AEC50	**AEC PART III:** Capstone Project	-	3	-	50	50	100	4	SD/ EM / EN	N
21CDC10	**DSC 10:** Relational Database Management Systems	T	3	5	50	50	100	4	SD	G
21CDC11	**DSC 11:** Practical: SQL and PL/SQL	P	3	3	50	50	100	2	EM	G
21CDE06A / 21CDE07A	**DSE 4A:** PHP and MySQL / Data Visualization	E	2	3	25	25	50	3	SD	G
21CDE06B / 21CDE07B	**DSE 4B:** Practical: PHP and MySQL / Practical : Data Visualization using Power BI		2	3	25	25	50	2	EM	G
21CDE08 / 21CDE09 / 21CDE10	**DSE 5:** Embedded System / Robotics and Applications / PC Hardware	T	3	5	50	50	100	3	SD	N
21GEC01/ 21GEC02/ 21GEC03/ 21GEC04/ 21GEC05	**GEC 2:** Spoken Tamil/ Spoken Hindi / Spoken Telugu / Spoken Malayalam/ Spoken French	T	3	3	100	-	100	3	SD	R/ N/ R/ R/ G

Course Code	Course Title	T/P/E	ESE Dur. Hrs	Ins. Hrs/ Week	CIA Marks	ES Marks	Total Marks	Credits	SD/ EM/ EN	G/L/ R/N
21CGE04/ 21CGE05/ 21CGE06	**GEC 3:** Computer Forensics / Cyber Threat Intelligence / Green Computing	T	3	5	50	50	100	4	SD/ EM	G
	Total			30			800	28		
		Semester V								
Course Code	**Course Title**	**T/ P/E**	**ESE Dur. Hrs**	**Ins. Hrs/ Week**	**CIA Marks**	**ES Marks**	**Total Marks**	**Credits**	**SD/ EM/ EN**	**G/L/ R/N**
21CDE11	**DSE 6:** Industrial Exposure Training	-	3	4 Weeks	50	50	100	5	EN	G
		AND								
21AEC60	**AEC PART III:** Developing Thinking Skills	T	3	3	50	50	100	3	SD	G
21CDC12	**DSC 12:** Machine Learning using Python	T	3	5	50	50	100	4	SD/ EM	G
21CDC13	**DSC 13:** Practical: Machine Learning using Python	P	3	3	50	50	100	2	SD/ EM	G
21CDE12/ 21CDE14/ 21CDE16/ 21CDE18/ 21CDE20/ 21CDE30/ 21CDE32	**DSE 7:** Ethical Hacking/ Web Intelligence/ Android Programming/ Programming in C#.net/ Linux and Shell Programming/ Visualization Analysis and Design / Time Series Analysis	T	3	5	25	25	50	3	EN	G

Course Code	Course Title	T/ P/E	ESE Dur. Hrs	Ins. Hrs/ Week	CIA Marks	ES Marks	Total Marks	Credits	EM/ SD/ EN	G/ L/N/ R
21CDE13/ 21CDE15/ 21CDE17/ 21CDE19/ 21CDE29/ 21CDE31/ 21CDE33	**DSE 11:** Practical: Ethical Hacking/ Practical: Web Intelligence/ Practical: Mobile Application Development using Android/ Practical: C#.net/ Practical: Shell Programming/ Practical: Data Visualization Techniques / Practical : Scientific Programming Using R	P	3	4	25	25	50	2	EN	G
21CDE21 / 21CDE22 / 21CDE23 / 21CDE24	**DSE 8:** Cyber Security / Mobile Computing / Information Retrieval / Reinforcement Learning	T	3	5	50	50	100	3	SD	G
21CGE07/ 21CGE08/ 21CGE09	**GEC 4:** Wireless Technology/ Internet of things/ Cloud Computing	T	3	5	50	50	100	4	SD/ EM	G
				30			**700**	**26**		

Semester VI										
Course Code	Course Title	T/ P/E	ESE Dur. Hrs	Ins. Hrs/ Week	CIA Marks	ES Marks	Total Marks	Credits	EM/ SD/ EN	G/ L/N/ R
21AEC56	**AEC PART IV :** Cyber Ethics	T	3	3	50	50	100	3	SD	G
21CDC14	**DSC 14:** Major Project	-	3	6	50	50	100	4	EN	G
21CDC15A	**DSC 15A:** Data Mining	E	2	3	25	25	50	2	SD	G
21CDC15B	**DSC 15B:** Practical: Data Science		2	3	25	25	50	2	EM	G
21CDE25A / 21CDE26A	**DSE 9A:** Data Analytics using R / Next Generation Databases - NoSQL	E	2	3	25	25	50	2	SD / EM	G

21CDE25B / 21CDE26B	**DSE 9B:** Practical: Data Analytics using R / Practical : Next Generation Databases – NoSQL		2	3	25	25	50	2	SD/ EM	G
21CDE27 / 21CDE28	**DSE 10:** Artificial Intelligence / Artificial Intelligence and Analytics	T	3	4	50	50	100	4	SD/ EM	G
21CGE10/ 21CGE11/ 21CGE12	**GEC 5:** Organizational Behavior/ Human Resource Management/ Management Information System	T	3	5	50	50	100	4	SD	G
	ANCC 3: Extension Activities	-	3	-	-	-	Grade	-	SD	N
Total				30			600	23		
Total							400			140
Drive-Through Course (DTC): Courses offered in SWAYAM-NPTEL, Coursera OR Any courses certified by statutory bodies.				Additional 4 credits per Course will be given on submission of Certificate					During Semester I to Semester VI	

Semester-wise Distribution of Marks and Credits:

Semester	Total Marks	Total Credits
I	600	19
II	600	20
III	700	24
IV	800	28
V	700	26
VI	600	23
Total	**4000**	**140**

OFFERED BY
List of Courses Offered by Mathematics Department

Semester	Course Code	Course Name	Programme	T/ P / E	Ins. Hrs	CIA	ES	Total Marks	Credit
I	21AEC41	**AEC PART III:** Probability and Statistics	BCA	T	5	50	50	100	3
II	21CDE03	**DSE 2:** Mathematical Foundation for Computer Science	BCA	T	5	50	50	100	3
III	21CDE04	**DSE 3:** Operations Research for Computer Studies	BCA	T	5	50	50	100	3

List of Courses Offered by Electronics and Communication Systems Department
(Any 1 out of 3) during Semester IV

Semester	Course Code	Course Name	Programme	T/ P /E	Ins. hrs	CIA	ES	Total Marks	Credit
IV	21CDE08	**DSE 5:** Embedded System	BCA	T	5	50	50	100	3
IV	21CDE09	**DSE:5** Robotics and Applications	BCA	T	5	50	50	100	3
IV	21CDE10	**DSE 5:** PC Hardware	BCA	T	5	50	50	100	3

OFFERED TO

List of Courses Offered to Electronics and Communication System Department

Semester	Course Code	Course Name	Programme	T/ P /E	Ins. hrs	CIA	ES	Total Marks	Credit
III / IV	21EDE03	C Programming and Data Structures	B.Sc. ECS	T	4	50	50	100	3
	21EDE04	C Programming and Data Structures Lab	B.Sc. ECS	P	3	25	25	50	2
III / IV	21EDE05	Internet and Java Programming	B.Sc. ECS	T	4	50	50	100	3
	21EDE06	Internet and Java Programming Lab	B.Sc. ECS	P	3	25	25	50	2
III / IV	21EDE07	Python Programming	B.Sc. ECS	T	4	50	50	100	3

	21EDE08	Python Programming Lab	B.Sc. ECS	P	3	25	25	50	2
V	21EDE010	Introduction to Data Science	B.Sc. ECS	T	4	50	50	100	3

List of Courses Offered to Mathematics Department

Semester	Course Code	Course Name	Programme	T/P/E	Ins. hrs	CIA	ES	Total Marks	Credit	EM/SD/EN	G/L/N/R
I	21MDE01A	Programming in C++	B.Sc. Mathematics	E	3	25	25	50	2	SD/EM	G
	21EDE01B	Programming in C++ Lab		E	2	25	25	50	2	SD/EM	G
II	21MDE02A	JAVA Programming	B.Sc. Mathematics	E	3	25	25	50	2	SD/EM	G
	21EDE02B	JAVA Programming Lab		E	2	25	25	50	2	SD/EM	G
III	21MDE03A	Python Programming	B.Sc. Mathematics	E	3	25	25	50	2	SD/EM	G
	21EDE03B	Python Programming Lab		E	2	25	25	50	2	SD/EM	G

Amendments in 2021 Batch Undergraduate Programmes (B.Sc.CS / IT / CT / CSA/BCA)

- The following DSE courses are dropped in Semester V .

   DSE 6A : 21CDE12A - System Modeling using UML /
   21CDE13A - Cloud Computing

   DSE 6B : 21CDE12B - Practical :System Modeling using UML /
   21CDE13B - Practical : Cloud Computing

- **AEC Part III : 21AEC40 - Computational Thinking** is replaced by **21AEC60 - Developing Thinking Skills.**
- The **DSC12 : 21CDC12 - Programming in Python** course title amended as **Machine Learning using Python** and the instructional hours are updated from 4 hours to 5 hours.
- The following **DSE 8 courses** instructional hours are updated from 4 hours to 5 hours. **21CDE21 - Cyber Security / 21CDE22 - Mobile Computing / 21CDE23 - Information Retrieval / 21CDE24 - Reinforcement Learning**
- The **DSE 7A & 7B embedded course** is converted as individual theory and practical course. The following changes were carried out,
    - **DSE 7A** is changed as **DSE 7.**The instructional hours for DSE 7 is updated from 3 Hours to 5 Hours.
    - **DSE 7B** is changed as **DSE 11**. The instructional hours for DSE 11 is updated from 3 Hours to 4 Hours.