

**SRI KRISHNA ARTS AND SCIENCE COLLEGE**  
COIMBATORE – 641 008

**DEPARTMENT OF COMPUTER SCIENCE AND APPLICATIONS**  
**(2021-2024)**

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

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

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
1	√											√	
2		√										√	
3			√										√
4				√									√
5					√								√
56						√							√
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 SCIENCE AND APPLICATIONS****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
<b>Total</b>				<b>4000</b>	<b>140</b>

**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	<b>AEC PART I: Language – I</b> Tamil-I - Tamil Aruvi – I/ Hindi-I/ French-I/ Malayalam-I	I	Language Dept.	6	3	100
2.	21AEC22	<b>AEC PART II:</b> English-I : English for Professional Communication	I	English Dept.	6	3	100
3	21AEC41	<b>AEC PART III:</b> Probability and Statistics	I	Maths Dept.	5	3	100

4.	21AEC04/ 21AEC08/ 21AEC12/ 21AEC18	<b>AEC PART I:</b> Language – II Tamil-II - Tamil Aruvi – II/ Hindi-II/ French-II/ Malayalam-II	II	Language Dept.	6	3	100
5.	21AEC24	<b>AEC PART II:</b> English-II : Campus to Corporate	II	English Dept.	6	3	100
6.	21AEC33	<b>AEC PART III:</b> Academic Skill for Computer Studies	II	CA Dept.	3	3	100
7.	21AEC60	<b>AEC PART III:</b> Developing Thinking Skills	V	CA Dept.	3	3	100
8.	21AEC50	<b>AEC PART III:</b> Capstone Project	IV	CA Dept.	-	4	100
9.	21AEC51	<b>AEC PART IV:</b> Environmental Studies	III	Bioscience Dept.	3	3	100
10.	21AEC56	<b>AEC PART IV :</b> Cyber Ethics	VI	CA Dept.	3	3	100
<b>Total</b>						<b>31</b>	<b>1000</b>

### 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	<b>DSC 1:</b> Digital Computer Fundamentals	I	4	4	100
2.	21CDC02A	<b>DSC 2A:</b> Programming in C	I	3	2	50
	21CDC02B	<b>DSC 2B:</b> Practical : C Programming		3	2	50
3	21CDC03	<b>DSC 3:</b> Data Structures and	II	4	4	100
4.	21CDC04A	<b>DSC 4A:</b> Object Oriented Programming using C++	II	3	2	50
	21CDC04B	<b>DSC 4B:</b> Practical :C++ Programming		3	2	50
5	21CDC05	<b>DSC 5:</b> Operating Systems	III	4	3	100
6.	21CDC06	<b>DSC 6:</b> Programming in Java	III	5	5	100

7.	21CDC07	<b>DSC 7:</b> Practical :Java Programming	III	3	2	100
8.	21CDC08A	<b>DSC 8A:</b> Software Engineering	III	3	2	50
	21CDC08B	<b>DSC 8B:</b> Practical :Software Testing using Selenium		2	2	50
9.	21CDC09	<b>DSC 9:</b> Computer Networks	IV	3	3	100
10.	21CDC10	<b>DSC 10:</b> Relational Database Management Systems	IV	5	4	100
11.	21CDC11	<b>DSC 11:</b> Practical : SQL and PL/SQL	IV	3	2	100
12.	21CDC12	<b>DSC 12:</b> Machine Learning using Python	V	5	4	100
13.	21CDC13	<b>DSC 13:</b> Practical : Machine Learning using Python	V	3	2	100
14.	21CDC14	<b>DSC 14:</b> Major Project	VI	6	4	100
15.	21CDC15A	<b>DSC 15A:</b> Data Mining	VI	3	2	50
	21CDC15B	<b>DSC 15B:</b> 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	<b>DSE 1:</b> Practical : Excel Macro	CA Dept.	3	2	100
2.	21CDE02	<b>DSE 1:</b> Practical : Spreadsheet for Data Scientists	CS Dept.	3	2	100
3.	21CDE03	<b>DSE 2:</b> Mathematical Foundation for Computer Science	Maths Dept.	5	3	100
4.	21CDE04	<b>DSE 3:</b> Operations Research for Computer Studies	Maths Dept.	5	3	100
5.	21CDE05	<b>DSE 3:</b> Statistics for Data Science	CS Dept.	5	3	100
6.	21CDE06A	<b>DSE 4A:</b> PHP and MySQL	CA Dept.	3	3	50
	21CDE06B	<b>DSE 4B:</b> Practical: PHP and MySQL		3	2	50
7.	21CDE07A	<b>DSE 4A:</b> Data Visualization	CS Dept.	3	3	50
	21CDE07B	<b>DSE 4B:</b> Practical : Data Visualization		3	2	50

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

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

**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
<b>Total</b>			<b>50</b>

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 Myclassroom 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.

<b>Part IV - Semester I - ANCC 1 &amp; Semester II - ANCC 2</b>		
<b>S. No.</b>	<b>Course Code</b>	<b>Course Name</b>
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.

<b>Part V- ANCC 3 - Extension Activities</b>		
<b>S. No.</b>	<b>Course Code</b>	<b>Course Name</b>
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	Credit s	SD/ EM/ EN	G/L/ R/N
21AEC02/ 21AEC07/ 21AEC11/ 21AEC17/ 21AEC61	<b>AEC PART I:</b> 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	<b>AEC PART II:</b> <b>English I:</b> English for Professional Communication	T	3	6	50	50	100	3	SD	G
21CDC01	<b>DSC 1:</b> Digital Computer Fundamentals	T	3	4	50	50	100	4	SD	G
21CDC02A	<b>DSC 2A :</b> Programming in C	E	2	3	25	25	50	2	SD/ EM	G
21CDC02B	<b>DSC 2B :</b> Practical: C Programming		2	3	25	25	50	2	SD/ EM	G
21CDE01/ 21CDE02	<b>DSE 1:</b> Practical: Excel Macro / Practical : Spreadsheet for Data Scientists	P	3	3	50	50	100	2	SD	G
21AEC41	<b>AEC PART III:</b> Probability and Statistics	T	3	5	50	50	100	3	SD/ EM	G
	<b>ANCC-1 (NF2F)</b>	T	2	-	-	-	Completed		EN	G
<b>Total</b>				<b>30+2</b>			<b>600</b>	<b>19</b>		

Semester II										
Course Code	Course Title	T/ P/E	ESE Dur. Hrs	Ins. Hrs/ Week	CIA Marks	ES Marks	Total Marks	Credit s	SD/ EM/ EN	G/L/ R/N
21AEC04/ 21AEC08/ 21AEC12/ 21AEC18/ 21AEC62	<b>AEC PART I:</b> <b>Language II:</b> 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

21AEC24	<b>AEC PART II</b> <b>English II:</b> Campus to Corporate	T	3	6	50	50	100	3	SD	G
21AEC33	<b>AEC PART III</b> Academic Skill for Computer Studies	T	3	3	50	50	100	3	SD	G
21CDC03	<b>DSC 3:</b> Data Structures and Algorithms	T	3	4	50	50	100	4	SD/ EM	G
21CDC04A	<b>DSC 4A:</b> Object Oriented Programming using C++	E	2	3	25	25	50	2	SD/ EM	G
21CDC04B	<b>DSC 4B:</b> Practical: C++ Programming		2	3	25	25	50	2	SD/ EM	G
21CDE03	<b>DSE 2:</b> Mathematical Foundation for Computer Science	T	3	5	50	50	100	3	SD/ EM	G
	<b>ANCC-2 (NF2F)</b>	T	2	-	-	-	Completed			R
<b>Total</b>				<b>30+2</b>			<b>600</b>	<b>20</b>		
<b>Semester III</b>										
Course Code	Course Title	T/ P/E	ESE Dur. Hrs	Ins. Hrs/ Week	CIA Marks	ES Marks	Total Marks	Credit s	SD/ EM/ EN	G/L/ R/N
21CDC05	<b>DSC 5:</b> Operating Systems	T	3	4	50	50	100	3	SD/ EM	G
21CDC06	<b>DSC 6:</b> Programming in Java	T	3	5	50	50	100	5	SD/ EM	G
21CDC07	<b>DSC 7:</b> Practical: Java Programming	P	3	3	50	50	100	2	SD/ EM	G
21CDC08A	<b>DSC 8A:</b> Software Engineering	E	2	3	25	25	50	2	SD/ EM	G
21CDC08B	<b>DSC 8B:</b> Practical: Software Testing Using Selenium		2	2	25	25	50	2	SD/ EM	G
21AEC51	<b>AEC PART IV:</b> Environmental Studies	T	3	3	50	50	100	3	SD	G

21CGE01/ 21CGE02/ 21CGE03	<b>GEC I:</b> Agile Software Development/ Social Media Mining/ Big Data Analytics	T	3	5	50	50	100	4	SD/ EM	G
21CDE04 / 21CDE05	<b>DSE 3:</b> Operations Research for Computer Studies / Statistics for Data Science	T	3	5	50	50	100	3	SD/ EM	G
<b>Total</b>				<b>30</b>			<b>700</b>	<b>24</b>		

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	<b>DSC 9:</b> Computer Networks	T	3	3	50	50	100	3	SD/ EM	G
21AEC50	<b>AEC PART III:</b> Capstone Project	-	3	-	50	50	100	4	SD/ EM / EN	N
21CDC10	<b>DSC 10:</b> Relational Database Management Systems	T	3	5	50	50	100	4	SD	G
21CDC11	<b>DSC 11:</b> Practical: SQL and PL/SQL	P	3	3	50	50	100	2	EM	G
21CDE06A / 21CDE07A	<b>DSE 4A:</b> PHP and MySQL / Data Visualization	E	2	3	25	25	50	3	SD	G
21CDE06B / 21CDE07B	<b>DSE 4B:</b> Practical: PHP and MySQL / Practical : Data Visualization using Power BI		2	3	25	25	50	2	EM	G
21CDE08 / 21CDE09 / 21CDE10	<b>DSE 5:</b> Embedded System / Robotics and Applications / PC Hardware	T	3	5	50	50	100	3	SD	N
21GEC01/ 21GEC02/ 21GEC03/ 21GEC04/ 21GEC05	<b>GEC 2:</b> Spoken Tamil/ Spoken Hindi / Spoken Telugu / Spoken Malayalam/ Spoken French	T	3	3	100	-	100	3	SD	R/ N/ R/ R/ G

21CGE04/ 21CGE05/ 21CGE06	<b>GEC 3:</b> Computer Forensics / Cyber Threat Intelligence / Green Computing	T	3	5	50	50	100	4	SD/ EM	G
<b>Total</b>				<b>30</b>			<b>800</b>	<b>28</b>		
<b>Semester V</b>										
<b>Course Code</b>	<b>Course Title</b>	<b>T/ P/E</b>	<b>ESE Dur. Hrs</b>	<b>Ins. Hrs/ Week</b>	<b>CIA Marks</b>	<b>ES Marks</b>	<b>Total Marks</b>	<b>Credit s</b>	<b>SD/ EM/ EN</b>	<b>G/L/ R/N</b>
21CDE11	<b>DSE 6:</b> Industrial Exposure Training	-	3	4 Weeks	50	50	100	5	EN	G
<b>AND</b>										
21AEC60	<b>AEC PART III:</b> Developing Thinking Skills	T	3	3	50	50	100	3	SD	G
21CDC12	<b>DSC 12:</b> Machine Learning using Python	T	3	5	50	50	100	4	SD/ EM	G
21CDC13	<b>DSC 13: Practical:</b> Machine Learning using Python	P	3	3	50	50	100	2	SD/ EM	G
21CDE12/ 21CDE14/ 21CDE16/ 21CDE18/ 21CDE20/ 21CDE30/ 21CDE32	<b>DSE 7:</b> 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

21CDE13/ 21CDE15/ 21CDE17/ 21CDE19/ 21CDE29/ 21CDE31/ 21CDE33	<b>DSE 11:</b> 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	<b>DSE 8:</b> Cyber Security / Mobile Computing / Information Retrieval / Reinforcement Learning	T	3	5	50	50	100	3	SD	G
21CGE07/ 21CGE08/ 21CGE09	<b>GEC 4:</b> Wireless Technology/ Internet of things/ Cloud Computing	T	3	5	50	50	100	4	SD/ EM	G
				<b>30</b>			<b>700</b>	<b>26</b>		

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	<b>AEC PART IV :</b> Cyber Ethics	T	3	3	50	50	100	3	SD	G
21CDC14	<b>DSC 14:</b> Major Project	-	3	6	50	50	100	4	EN	G
21CDC15A	<b>DSC 15A:</b> Data Mining	E	2	3	25	25	50	2	SD	G
21CDC15B	<b>DSC 15B:</b> Practical: Data Science		2	3	25	25	50	2	EM	G
21CDE25A / 21CDE26A	<b>DSE 9A:</b> Data Analytics using R / Next Generation Databases - NoSQL	E	2	3	25	25	50	2	SD / EM	G

21CDE25B / 21CDE26B	<b>DSE 9B:</b> Practical: Data Analytics using R / Practical : Next Generation Databases – NoSQL		2	3	25	25	50	2	SD/EM	G
21CDE27 / 21CDE28	<b>DSE 10:</b> Artificial Intelligence / Artificial Intelligence and Analytics	T	3	4	50	50	100	4	SD/EM	G
21CGE10/ 21CGE11/ 21CGE12	<b>GEC 5:</b> Organizational Behavior/ Human Resource Management/ Management Information System	T	3	5	50	50	100	4	SD	G
	<b>ANCC 3:</b> Extension Activities	-	3	-	-	-	Grade	-	SD	N
<b>Total</b>				<b>30</b>			<b>600</b>	<b>23</b>		
<b>Total</b>							<b>400</b>			<b>140</b>
<b>Drive-Through Course (DTC):</b> 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
<b>Total</b>	<b>4000</b>	<b>140</b>

**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	<b>AEC PART III:</b> Probability and Statistics	B.Sc.CSA	T	5	50	50	100	3
II	21CDE03	<b>DSE 2:</b> Mathematical Foundation for Computer Science	B.Sc.CSA	T	5	50	50	100	3
III	21CDE04	<b>DSE 3:</b> Operations Research for Computer Studies	B.Sc.CSA	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
5 IV	21CDE08	<b>DSE 5:</b> Embedded System	B.Sc.CSA	T	5	50	50	100	3
IV	21CDE09	<b>DSE:5</b> Robotics and Applications	B.Sc.CSA	T	5	50	50	100	3
IV	21CDE10	<b>DSE 5:</b> PC Hardware	B.Sc.CSA	T	5	50	50	100	3

**OFFERED TO****List of Courses Offered to B.Sc.(Costume Design and Fashion) Department**

Semester	Course Code	Course Name	Programme	T/P /E	Ins. hrs	CIA	ES	Total Marks	Credit
III	21DDE02	Graphic Designing	B.Sc. (CDF)	P	4	50	50	100	3



## Amendments in 2021 Batch Undergraduate Programme ( 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.