

SRI KRISHNA ARTS AND SCIENCE COLLEGE

An Autonomous College Affiliated to Bharathiar University
Coimbatore -641008,Tamil Nadu, India.

LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK (LOCF)

BACHELOR OF DATA SCIENCE (B.Sc DS)

For 2022-23 admitted students

DEPARTMENT OF COMPUTER SCIENCE



SRI KRISHNA ARTS AND SCIENCE COLLEGE
COIMBATORE – 641008

DEPARTMENT OF COMPUTER SCIENCE

(2022-2023)

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 B.Sc Data Science 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)
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 VSTAXONOMY 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 (PSO's)

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

VII. Curriculum Structure for BCA**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	11	1100	30
III & IV	2	DSC – Discipline Specific Courses	16	1500	60
	3	DSE – Discipline Specific Electives	11	1000	36
	4	GEC – Generic Elective Courses	5	400	14
IV	5	ANCC I & II – Audit Non-Credit Courses	3	Completed	
V		ANCC III – 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)(11 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	22AEC02/ 22AEC07/ 22AEC11/ 22AEC17/ 22AEC21/	AEC Part I: Language – I: Tamil-I – Tamizhum Ariviyalum/ Hindi-I/ French-I/ Malayalam-I Sanskrit – I	I	Language Dept.	6	3	100
2	22AEC26	AEC Part II: English-I: English for Professional Communication	I	English Dept.	6	3	100
3	22AEC41	AEC Part III: Probability and Statistics	I	Mathematics Dept.	5	3	100

4	22AEC04/ 22AEC08/ 22AEC12/ 22AEC18/ 22AEC22	AEC Part I: Language – II: Tamil-II - Panpattu Padhivugalum Ariviyalargalum/ Hindi-II/ French-II/ Malayalam-II/ Sanskrit – II	II	Language Dept.	6	3	100
5	22AEC28	AEC Part II: English – II: Campus to Corporate	II	English Dept	6	3	100
6	22AEC33	AEC Part III: Academic Skills for Computer Studies	II	CS Dept.	3	3	100
7	22AEC53	AEC Part V: Capstone Project for Computer Studies	III	CS Dept.	-	4	100
8	22AEC81/ 22AEC83/ 22AEC85	AEC Part IV: Tamil-III – Neelakkurinchi/ Hindi-III – Pryojanmoolak Hindi/ Advanced French-I	III	Language Dept.	3	2	100
9	22AEC91	AEC Part IV: English III - Creative Writing	III	Language Dept.	3	2	100
10	22AEC82/ 22AEC84/ 22AEC86	AEC Part IV: Tamil-IV – Semmullai/ Hindi-IV – Takneeki Hindi Basha/ Advanced French-II	IV	Language Dept.	3	2	100
11	22AEC92	AEC Part IV: English III - English for Digital Media	IV	Language Dept.	3	2	100
Total						30	1100

Group 2. Discipline Specific Courses (DSCs) (16 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	22CSU01/ 22ITU01/ 22CTU01/ 22CAU01/ 22SAU01/ 22SSU01/ 22DSU01/ 22AIU01	DSC 1: Digital Computer Fundamentals	I	4	4	100
2	22CSU02A/ 22ITU02A/	DSC 2A: Programming in C	I	3	2	50

	22CTU02A/ 22CAU02A/ 22SAU02A/ 22SSU02A/ 22DSU02A/ 22AIU02A					
	22CSU02B/ 22ITU02B/ 22CTU02B/ 22CAU02B/ 22SAU02B/ 22SSU02B/ 22DSU02B/ 22AIU02B	DSC 2B: Practical: C Programming		3	2	50
3	22CSU03/ 22ITU03/ 22CTU03/ 22CAU03/ 22SAU03/ 22SSU03/ 22DSU03/ 22AIU03	DSC 3: Data Structures and Algorithms	II	4	4	100
4	22CSU04A/ 22ITU04A/ 22CTU04A/ 22CAU04A/ 22SAU04A/ 22SSU04A/ 22DSU04A/ 22AIU04A	DSC 4A: Object Oriented Programming using C++	II	3	2	50
	22CSU04B/ 22ITU04B/ 22CTU04B/ 22CAU04B/ 22SAU04B/ 22SSU04B/ 22DSU04B/ 22AIU04B	DSC 4B: Practical: C++ Programming		3	2	50
5	22CSU05/ 22ITU05/ 22CTU05/ 22CAU05/ 22SAU05/ 22SSU05/ 22DSU05/ 22AIU05	DSC 5: Operating Systems	III	3	3	100
6	22CSU06/ 22ITU06/ 22CTU06/ 22CAU06/ 22SAU06/ 22SSU06/ 22DSU06/ 22AIU06	DSC 6: Programming in Java	III	4	4	100

7	22CSU07/ 22ITU07/ 22CTU07/ 22CAU07/ 22SAU07/ 22SSU07/ 22DSU07/ 22AIU07	DSC 7: Practical: Java Programming	III	3	3	100
8	22CSU10A/ 22ITU10A/ 22CTU10A/ 22CAU10A/ 22SAU10A/ 22SSU10A/ 22DSU10A/ 22AIU10A	DSC 10A: Software Engineering and UML Data Mining	III	3	3	50
	22CSU10B/ 22ITU10B/ 22CTU10B/ 22CAU10B/ 22SAU10B/ 22SSU10B/ 22DSU10B/ 22AIU10B	DSC 10B: Practical: Software Testing and UML	III	2	2	50
9	22CSU11/ 22ITU11/ 22CTU11/ 22CAU11/ 22SAU11/ 22SSU11/ 22DSU11/ 22AIU11	DSC 11: Computer Networks	III	4	4	100
10	22CSU08/ 22ITU08/ 22CTU08/ 22CAU08/ 22SAU08/ 22SSU08/ 22DSU08/ 22AIU08	DSC 8: Relational Database Management Systems	IV	5	5	100
11	22CSU09/ 22ITU09/ 22CTU09/ 22CAU09/ 22SAU09/ 22SSU09/ 22DSU09/ 22AIU09	DSC 9: Practical: SQL and PL/SQL	IV	4	2	100
12	22CSU12/ 22ITU12/ 22CTU12/ 22CAU12/ 22SAU12/ 22SSU12/	DSC 12: Artificial Intelligence	V	5	4	100

	22DSU12/ 22AIU12					
13	22CSU13/ 22ITU13/ 22CTU13/ 22CAU13/ 22SAU13/ 22SSU13/ 22DSU13/ 22AIU13	DSC 13: Machine Learning using Python	V	5	4	50
14	22CSU46/ 22ITU46/ 22CTU46/ 22CAU46/ 22SAU46/ 22SSU46/ 22DSU46/ 22AIU46	DSC 16: Practical: Machine Learning using Python	V	4	2	50
15	22CSU14/ 22ITU14/ 22CTU14/ 22CAU14/ 22SAU14/ 22SSU14/ 22DSU14/ 22AIU14	DSC 14: Major Project	VI	6	4	100
16	22DSU15A/ 22AIU15A/	DSC 15 A: Data Analytics using PySpark	VI	3	2	50
	22DSU15B/ 22AIU15B	DSC 15 B: Practical: Data Analytics using PySpark		3	2	50
Total					60	1500

Group 3. Discipline Specific Elective (DSEs) (11 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	22CSU16/ 22ITU16/ 22CTU16/ 22CAU16/ 22SAU16/ 22SSU16/ 22DSU16/ 22AIU16	DSE 1: Practical: Excel Macro	CS Dept	3	2	100
	22CSU17/ 22ITU17/					

	22CTU17/ 22CAU17/ 22SAU17/ 22SSU17/ 22DSU17/ 22AIU17	DSE 1: Practical: Spreadsheet				
2	22CSU18/ 22ITU18/ 22CTU18/ 22CAU18/ 22SAU18/ 22SSU18/ 22DSU18/ 22AIU18	DSE 2: Computer Forensics	ICT Dept.	5	4	100
	22CSU19/ 22ITU19/ 22CTU19/ 22CAU19/ 22SAU19/ 22SSU19/ 22DSU19	DSE 2: Green Computing				
	22CSU20/ 22ITU20/ 22CTU20/ 22CAU20/ 22SAU20/ 22SSU20/ 22DSU20/ 22AIU20	DSE 2: Cyber Threat Intelligence				
3	22CSU21/ 22ITU21/ 22CTU21/ 22CAU21/ 22SAU21/ 22SSU21/ 22DSU21/ 22AIU21	DSE 3: Computer Vision	CS Dept	5	4	100
	22CSU22/ 22ITU22/ 22CTU22/ 22CAU22/ 22SAU22/ 22SSU22/ 22DSU22/ 22AIU22	DSE 3: Search Engine Optimization				
	22DSU23A	DSE 3A: Data Visualization				

	22DSU23B	DSE 3B: Practical: Data Visualization		2	2	50
4	22CSU27/ 22ITU27/ 22CTU27/ 22CAU27/ 22SAU27/ 22SSU27/ 22DSU27/ 22AIU27	DSE 5: Industrial Exposure Training	CA Dept	4 Weeks	5	100
5	22CSU24/ 22ITU24/ 22CTU24/ 22CAU24/ 22SAU24/ 22SSU24/ 22DSU24/ 22AIU24	DSE 4: Big Data Analytics	CS Dept	5	4	100
	22CSU25/ 22ITU25/ 22CTU25/ 22CAU25/ 22SAU25/ 22SSU25/ 22DSU25	DSE 4: Block Chain and Crypto currency				
	22CSU26/ 22ITU26/ 22CTU26/ 22CAU26/ 22SAU26/ 22SSU26/ 22DSU26/ 22AIU26	DSE 4: Design Thinking Methodology				
6	22CSU28/ 22ITU28/ 22CTU28/ 22CAU28/ 22SAU28/ 22SSU28/ 22DSU28/ 22AIU28	DSE 6: Ethical Hacking	CS/ ICT/CA Dept	5	3	50
	22CSU30/ 22ITU30/ 22CTU30/ 22CAU30/ 22SAU30/ 22SSU30/ 22DSU30/ 22AIU30	DSE 6: Web Intelligence				

	22DSU44/ 22AIU44	DSE 6: Time Series Analysis				
7	22CSU29/ 22ITU29/ 22CTU29/ 22CAU29/ 22SAU29/ 22SSU29/ 22DSU29/ 22AIU29	DSE 11: Practical: Ethical Hacking	CS/ ICT/CA Dept	4	2	50
	22CSU31/ 22ITU31/ 22CTU31/ 22CAU31/ 22SAU31/ 22SSU31/ 22DSU31/ 22AIU31	DSE 11: Practical: Web Intelligence				
	22DSU45/ 22AIU45	DSE 11: Practical: Scientific Programming using R				
8	22CSU32/ 22ITU32/ 22CTU32/ 22CAU32/ 22SAU32/ 22SSU32/ 22DSU32/ 22AIU32	DSE 7: Wireless Technology	CA Dept	5	4	100
	22CSU33/ 22ITU33/ 22CTU33/ 22CAU33/ 22SAU33/ 22SSU33/ 22DSU33/ 22AIU33	DSE 7: Internet of Things				
	22DSU34/ 22AIU34	DSE 7: Reinforcement Learning				
9	22CSU35/ 22ITU35/ 22CTU35/ 22CAU35/ 22SAU35/ 22SSU35/ 22DSU35/ 22AIU35	DSE 8: Mobile Application Development	CT/CA Dept	4	3	100
	22CSU36/ 22ITU36/	DSE 8: Linux Programming				

	22CTU36/ 22CAU36/ 22SAU36/ 22SSU36/ 22DSU36/ 22AIU36					
	22DSU37	DSE 8: Next Generation Databases - NoSQL				
10	22CSU38/ 22ITU38/ 22CTU38/ 22CAU38/ 22SAU38/ 22SSU38/ 22DSU38/ 22AIU38	DSE 9: Practical: Mobile Application Development	CT/CA Dept	2	2	100
	22CSU39/ 22ITU39/ 22CTU39/ 22CAU39/ 22SAU39/ 22SSU39/ 22DSU39/ 22AIU39	DSE 9: Practical: Linux Programming				
	22DSU40	DSE 9: Practical: Next Generation Databases - NoSQL				
11	22CSU41/ 22ITU41/ 22CTU41/ 22CAU41/ 22SAU41/ 22SSU41/ 22DSU41/ 22AIU41	DSE 10: Cognitive Computing	CS Dept	4	3	100
	22CSU42/ 22ITU42/ 22CTU42/ 22CAU42/ 22SAU42/ 22SSU42/ 22DSU42/ 22AIU42	DSE 10: Malware Analysis				
	22CSU43/ 22ITU43/ 22CTU43/ 22CAU43/ 22SAU43/ 22SSU43/ 22DSU43	DSE 10: Mobile Forensics				
				Total	36	1000

Industrial Exposure Training (IET):

Students can opt for Industrial Exposure Training during fifth semester for a period of 4 weeks; in such case one DSE course will be exempted.

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 Process	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 project report will be evaluated jointly by the internal and external examiners 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 - 20 Marks)

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

Generic Elective Courses are interdisciplinary in nature. They are additional courses based on expertise, specialization, requirements, scope, and need of the department. 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	SD/EM/EN	G/L/R/N
1	22GEU13	GEC 1: Mathematical Structures for Computer Science	II	Maths Dept	5	3	100	SD	G
	22GEU14	GEC 1: Discrete Mathematics						SD	G
2	22GEU18	GEC 2: Operations Research for Computer Studies	III	Maths Dept	5	3	100	EM	G
	22GEU19	GEC 2: Numerical Methods						EM	G
3	22GEU59	GEC 3: Embedded System	IV	ECS Dept	5	3	100	EM	G
	22GEU60	GEC 3: Robotics and Applications						EM	G
	22GEU61	GEC 3: PC Hardware						EN	G
4	22GEU107	GEC 4: Developing Thinking Skills	V	CS Dept/ CA Dept	2	2	50	EN	G
	22GEU108	GEC 4: Computational Thinking							
5	22GEU109	GEC 5: Cyber Ethics	VI	CS Dept/ Commerce Dept	3	3	50	EN	G
	22GEU110	GEC 5: Business Ethics & Corporate Social Responsibility							
Total						14	400		

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.

Part IV- ANCC		
S. No.	Course Code	Course Name
Semester I - ANCC I		
1.	22ANC01	Environmental Studies
Semester II - ANCC II - Values & Ethics		
2.	22ANC02	Human Rights
3.	22ANC03	Women's Rights
4.	22ANC04	Yoga for Human Excellence
5.	22ANC05	Indian Culture and Heritage
6.	22ANC06	Introduction to Cyber Security
7.	22ANC07	Consumer Protection
8.	22ANC08	Constitution of India
9.	22ANC09	Waste Management

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

Part V - ANCC 3 - Extension Activities		
S. No.	Course Code	Course Name
1.	22ANC10	National Service Scheme
2.	22ANC11	National Cadet Corps
3.	22ANC12	Youth Red Cross
4.	22ANC13	Red Ribbon Club
5.	22ANC14	Rotaract Club
6.	22ANC15	Sports
7.	22ANC16	Association Activities
8.	22ANC17	Club Activities

Group 6.

i) Drive-Through Course (DTC) I & II – Additional Credits

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 opportunities to the students 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.

ii) Drive-Through Course (DTC – III) – To be Completed

Internship Training/Mini Project/ Spoken Tutorial/Economic Talent test etc.

Students individually or with the maximum of four members per batch should take up

either Internship training or mini project for a period of fifteen days during IV Semester vacation. The report will be evaluated and viva-voce examination will be conducted during 5th semester. Otherwise, the students have to complete one spoken tutorial course or any certification course suggested by the department.

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
22AEC02/ 22AEC07/ 22AEC11/ 22AEC17/ 22AEC21	AEC PART I: Language I: Tamil-I – Tamizhum Ariviyalum/ Hindi - I/ French-I/ Malayalam-I Sanskrit – I	T	3	6	50	50	100	3	SD	L/ N/ G/ R
22AEC26	AEC PART II: English I: English for Professional Communication	T	3	6	50	50	100	3	SD	G
22CSU01/ 22ITU01/ 22CTU01/ 22CAU01/ 22SAU01/ 22SSU01/ 22DSU01/ 22AIU01	DSC 1: Digital Computer Fundamentals	T	3	4	50	50	100	4	SD	G
22CSU02A/ 22ITU02A/ 22CTU02A/ 22CAU02A/ 22SAU02A/ 22SSU02A/ 22DSU02A/ 22AIU02A	DSC 2A: Programming in C	E	2	3	25	25	50	2	SD/ EM	G
22CSU02B/ 22ITU02B/ 22CTU02B/ 22CAU02B/ 22SAU02B/ 22SSU02B/ 22DSU02B/ 22AIU02B	DSC 2B: Practical: C Programming		2	3	25	25	50	2	SD/ EM	G

22CSU16/ 22ITU16/ 22CTU16/ 22CAU16/ 22SAU16/ 22SSU16/ 22DSU16/ 22AIU16	DSE 1: Practical: Excel Macro	P	3	3	50	50	100	2	SD	G
22CSU17/ 22ITU17/ 22CTU17/ 22CAU17/ 22SAU17/ 22SSU17/ 22DSU17/ 22AIU17	DSE 1: Practical: Spreadsheet									
22AEC41	AEC PART III: Probability and Statistics	T	3	5	50	50	100	3	EM	G
DTC - I - Additional Credit Courses (NPTEL/Coursera)								4		
22ANC01	ANCC-1 (NF2F) Environmental Studies	T	-	2	-	-	Completed		SD	G
Total				30+2			600	19 + 4		
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
22AEC04/ 22AEC08/ 22AEC12/ 22AEC18/ 22AEC22	AEC PART I: Language II: Tamil-II - Panpattu Padhivugalum Ariviyalargalum/ Hindi-II/ French-II/ Malayalam-II/ Sanskrit – II	T	3	6	50	50	100	3	SD	L/ N/ G/ R
22AEC28	AEC PART II: English II: Campus to Corporate	T	3	6	50	50	100	3	SD	G
22AEC33	AEC PART III: Academic Skills for Computer Studies	T	3	3	50	50	100	3	SD	G
22CSU03/ 22ITU03/ 22CTU03/ 22CAU03/ 22SAU03/	DSC 3: Data Structures and Algorithms	T	3	4	50	50	100	4	SD/EM	G

22SSU03/ 22DSU03/ 22AIU03										
22CSU04A/ 22ITU04A/ 22CTU04A/ 22CAU04A/ 22SAU04A/ 22SSU04A/ 22DSU04A/ 22AIU04A	DSC 4A: Object Oriented Programming using C++	E	3	3	25	25	50	2	SD/EM	G
22CSU04B/ 22ITU04B/ 22CTU04B/ 22CAU04B/ 22SAU04B/ 22SSU04B/ 22DSU04B/ 22AIU04B	DSC 4B: Practical: C++ Programming		3	3	25	25	50	2	SD/EM	G
22GEU13/ 22GEU14	GEC I: Mathematical Structures for Computer Science/Discrete Mathematics	T	3	5	50	50	100	3	SD	G
DTC II : Additional Credit Courses (NPTEL/Coursera)								4		
22ANC09	ANCC-2 (NF2F) Value & Ethics: Waste Management	T	-	2	-	-	Completed	EN	R	
Total				30+2			600	20 +4		
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
22AEC81/ 22AEC83/ 22AEC85	AEC PART IV: Tamil III: Neelakkurinchi/ Hindi III: Pryojanmoolak Hindi/ Advanced French-I	T	3	3	50	50	100	2	SD	L/N/G/R
22AEC91	AEC PART IV: English III: Creative Writing	T	3	3	50	50	100	2	SD	G
22AEC53	AEC Part V: Capstone Project for Computer Studies	-	-	-	50	50	100	4	EN	G
22CSU05/ 22ITU05/	DSC 5: Operating Systems	T	3	3	50	50	100	3	SD	G

22CTU05/ 22CAU05/ 22SAU05/ 22SSU05/ 22DSU05/ 22AIU05										
22CSU06/ 22ITU06/ 22CTU06/ 22CAU06/ 22SAU06/ 22SSU06/ 22DSU06/ 22AIU06	DSC 6: Programming in Java	T	4	4	50	50	100	4	SD/ EM	G
22CSU07/ 22ITU07/ 22CTU07/ 22CAU07/ 22SAU07/ 22SSU07/ 22DSU07/ 22AIU07	DSC 7: Practical: Java Programming	P	3	3	50	50	100	3	SD/ EM	G
22CSU10A/ 22ITU10A/ 22CTU10A/ 22CAU10A/ 22SAU10A/ 22SSU10A/ 22DSU10A/ 22AIU10A	DSC 10A: Software Engineering and UML	E	2	3	25	25	50	3	SD/ EM	G
22CSU10B/ 22ITU10B/ 22CTU10B/ 22CAU10B/ 22SAU10B/ 22SSU10B/ 22DSU10B/ 22AIU10B	DSC 10B: Practical: Software Testing and UML		2	2	25	25	50	2	SD/ EM	G
22CSU11/ 22ITU11/ 22CTU11/ 22CAU11/ 22SAU11/ 22SSU11/ 22DSU11/ 22AIU11	DSC 11: Computer Networks	T	3	4	50	50	100	4	SD/ EM	G
22GEU18/ 22GEU19	GEC 2: Operations Research for Computer Studies/ Numerical Methods	T	3	5	50	50	100	3	SD/ EM	G
Total				30			900	30		

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
22AEC82/ 22AEC84/ 22AEC86	AEC PART IV Tamil IV :Semmullai/ Hindi IV :Takneeki Hindi Basha/ Advanced French-II	T	3	3	50	50	100	2	SD	L/ N/ G/ R
22AEC92	AEC PART IV English III : English for Digital Media	T	3	3	50	50	100	2	SD	G
22CSU08/ 22ITU08/ 22CTU08/ 22CAU08/ 22SAU08/ 22SSU08/ 22DSU08/ 22AIU08	DSC 8: Relational Database Management Systems	T	3	5	50	50	100	5	SD	G
22CSU09/ 22ITU09/ 22CTU09/ 22CAU09/ 22SAU09/ 22SSU09/ 22DSU09/ 22AIU09	DSC 9: Practical: SQL and PL/SQL	P	3	4	50	50	100	2	EM	G
22CSU18/ 22ITU18/ 22CTU18/ 22CAU18/ 22SAU18/ 22SSU18/ 22DSU18/ 22AIU18	DSE 2: Computer Forensics									
22CSU19/ 22ITU19/ 22CTU19/ 22CAU19/ 22SAU19/ 22SSU19/ 22DSU19	DSE 2: Green Computing	T	3	5	50	50	100	4	SD/ EM	G
22CSU20/ 22ITU20/ 22CTU20/ 22CAU20/ 22SAU20/ 22SSU20/ 22DSU20/ 22AIU20	DSE 2: Cyber Threat Intelligence									

22CSU21/ 22ITU21/ 22CTU21/ 22CAU21/ 22SAU21/ 22SSU21/ 22DSU21/ 22AIU21	DSE 3: Computer Vision	T	3	5	50	50	100	4	SD	G
22CSU22/ 22ITU22/ 22CTU22/ 22CAU22/ 22SAU22/ 22SSU22/ 22DSU22/ 22AIU22	DSE 3: Search Engine Optimization									
22DSU23A	DSE 3A: Data Visualization	E	3	3	25	25	50	2	SD/ EM	G
22DSU23B	DSE 3B: Practical: Visualization		3	2	25	25	50	2	SD/ EM	G
22GEU59/ 22GEU60/ 22GEU61	GEC 3: Embedded System/ Robotics and Applications/ PC Hardware	T	3	5	50	50	100	3	EM	G
Total				30			700	22		
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
22CSU27/ 22ITU27/ 22CTU27/ 22CAU27/ 22SAU27/ 22SSU27/ 22DSU27/ 22AIU27	DSE 5: Industrial Exposure Training	-	3	4 Weeks	50	50	100	5	EN	G
22CSU12/ 22ITU12/ 22CTU12/ 22CAU12/ 22SAU12/ 22SSU12/ 22DSU12 22AIU12	DSC12: Artificial Intelligence	T	3	5	50	50	100	4	SD	G

22CSU13/ 22ITU13/ 22CTU13/ 22CAU13/ 22SAU13/ 22SSU13/ 22DSU13/ 22AIU13	DSC 13: Machine Learning using Python	T	3	5	25	25	50	4	SD/ EM	G
22CSU46/ 22ITU46/ 22CTU46/ 22CAU46/ 22SAU46/ 22SSU46/ 22DSU46/ 22AIU46	DSC 16: Practical: Machine Learning using Python	P	3	4	25	25	50	2	SD/ EM	G
22CSU28/ 22ITU28/ 22CTU28/ 22CAU28/ 22SAU28/ 22SSU28/ 22DSU28/ 22AIU28	DSE 6: Ethical Hacking									
22CSU30/ 22ITU30/ 22CTU30/ 22CAU30/ 22SAU30/ 22SSU30/ 22DSU30/ 22AIU30	DSE 6: Web Intelligence	T	3	5	25	25	50	3	EN/ SD	G
22DSU44/ 22AIU44	DSE 6: Time Series Analysis									
22CSU29/ 22ITU29/ 22CTU29/ 22CAU29/ 22SAU29/ 22SSU29/ 22DSU29/ 22AIU29	DSE 11: Practical: Ethical Hacking									
22CSU31/ 22ITU31/ 22CTU31/ 22CAU31/ 22SAU31/ 22SSU31/ 22DSU31/ 22AIU31	DSE 11: Practical: Web Intelligence	P	3	4	25	25	50	2	EN	G
22DSU45/ 22AIU45	DSE 11: Practical: Scientific Programming using R									

22CSU24/ 22ITU24/ 22CTU24/ 22CAU24/ 22SAU24/ 22SSU24/ 22DSU24/ 22AIU24	DSE 4: Big Data Analytics										
22CSU25/ 22ITU25/ 22CTU25/ 22CAU25/ 22SAU25/ 22SSU25/ 22DSU25	DSE 4: Block Chain and Cryptocurrency	T	3	5	50	50	100	4	SD/ EM	G	
22CSU26/ 22ITU26/ 22CTU26/ 22CAU26/ 22SAU26/ 22SSU26/ 22DSU26/ 22AIU26	DSE 4: Design Thinking Methodology										
22CSU47/ 22ITU47/ 22CTU47/ 22CAU47/ 22SAU47/ 22SSU47/ 22DSU47/ 22AIU47/ 22CSU48/ 22ITU48/ 22CTU48/ 22CAU48/ 22SAU48/ 22SSU48/ 22DSU48/ 22AIU48/ 22CSU49/ 22ITU49/ 22CTU49/ 22CAU49/ 22SAU49/ 22SSU49/ 22DSU49/ 22AIU49	Drive Through Course III – Internship/ Mini Project/ Spoken Tutorial						Completed				
22GEU107/ 22GEU108	GEC 4: Developing Thinking Skills/ Computational Thinking	T	3	2	25	25	50	2	SD	G	
Total				30			550	26			

Semester VI										
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
22GEU109/ 22GEU110	GEC 5: Cyber Ethics/ Business Ethics & Corporate Social Responsibility	T	3	3	25	25	50	3	SD	G
22CSU14/ 22ITU14/ 22CTU14/ 22CAU14/ 22SAU14/ 22SSU14/ 22DSU14/ 22AIU14	DSC 14: Major Project	-	3	6	50	50	100	4	EN	G
22DSU15A/ 22AIU15A	DSC15A: Data Analytics using PySpark	E	3	3	25	25	50	2	SD	G
22DSU15B/ 22AIU15B	DSC15B: Practical: Data Analytics using PySpark		3	3	25	25	50	2	SD	G
22CSU35/ 22ITU35/ 22CTU35/ 22CAU35/ 22SAU35/ 22SSU35/ 22DSU35/ 22AIU35/	DSE 8: Mobile Application Development									
22CSU36/ 22ITU36/ 22CTU36/ 22CAU36/ 22SAU36/ 22SSU36/ 22DSU36/ 22AIU36	DSE 8: Linux Programming	T	3	4	50	50	100	3	EN	G
22DSU37	DSE 8: Next Generation Databases - NoSQL									
22CSU38/ 22ITU38/ 22CTU38/ 22CAU38/ 22SAU38/ 22SSU38/	DSE 9: Practical: Mobile Application Development	P	3	2	50	50	100	2	EN	G

22DSU38/ 22AIU38										
22CSU39/ 22ITU39/ 22CTU39/ 22CAU39/ 22SAU39/ 22SSU39/ 22DSU39/ 22AIU39	DSE 9: Practical: Linux Programming									
22DSU40	DSE 9: Practical: Next Generation Databases - NoSQL									
22CSU32/ 22ITU32/ 22CTU32/ 22CAU32/ 22SAU32/ 22SSU32/ 22DSU32/ 22AIU32	DSE 7: Wireless Technology									
22CSU33/ 22ITU33/ 22CTU33/ 22CAU33/ 22SAU33/ 22SSU33/ 22DSU33/ 22AIU33	DSE 7: Internet of Things	T	3	5	50	50	100	4	SD/ EM	G
22DSU34/ 22AIU34	DSE 7: Reinforcement Learning									
22CSU41/ 22ITU41/ 22CTU41/ 22CAU41/ 22SAU41/ 22SSU41/ 22DSU41/ 22AIU41	DSE 10: Cognitive Computing									
22CSU42/ 22ITU42/ 22CTU42/ 22CAU42/ 22SAU42/ 22SSU42/ 22DSU42/ 22AIU42	DSE 10: Malware Analysis	T	3	4	50	50	100	3	SD/ EM	G
22CSU43/ 22ITU43/ 22CTU43/ 22CAU43/ 22SAU43/ 22SSU43/	DSE 10: Mobile Forensics									

22DSU43											
22ANC10/ 22ANC11/ 22ANC12/ 22ANC13/ 22ANC14/ 22ANC15/ 22ANC16/ 22ANC17	ANCC-III (NF2F): Extension Activities: National Service Scheme/ National Cadet Corps/ Youth Red Cross/ Red Ribbon Club/ Rotaract Club/ Sports/ Association Activities/ Club Activities	-	3	-	-	-	Grade	-	SD	N	
Total				30			650	23			
Total							4000	140 +8			
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				

The Courses focuses the following needs :				
Needs	G- Global	N –Regional	R-Regional	L-Local
SD	Skill Development			
EM	Employability			
EN	Entrepreneurship			

Semester-wise Distribution of Marks and Credits:

Semester	Total Marks	Total Credits
I	600	19+4
II	600	20+4
III	900	30
IV	700	22
V	550	26
VI	650	23
Total	4000	140+8

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	SD/EM/EN	G/L/R/N
I	22AEC41	AEC PART III: Probability and Statistics	B.Sc. DS	T	5	50	50	100	3	EM	G

II	22GEU12	GEC I: Mathematical Foundation for Computer Science	B.Sc. DS	T	5	50	50	100	3	SD	G
II	22GEU16	GEC I: Discrete Mathematics	B.Sc. DS	T	5	50	50	100	3	SD	G
III	22GEU13	GEC 2: Operations Research for Computer Studies	B.Sc. DS	T	5	50	50	100	3	EM	G
III	22GEU14	GEC 2: Numerical Method	B.Sc. DS	T	5	50	50	100	3	EM	G

List of Courses Offered by Electronics and Communication Department

Seme ster	Course Code	Course Name	Programme	T/P/ E	Ins. hrs	CIA	ES	Total Marks	Credit	SD/ EM/ EN	G/ L/ R/ N
IV	22GEU59	GEC 3: Embedded System	B.Sc. DS	T	5	50	50	100	3	EM	G
IV	22GEU60	GEC 3: Robotics and Applications	B.Sc. DS	T	5	50	50	100	3	EM	G
IV	22GEU61	GEC 3: PC Hardware	B.Sc. DS	T	5	50	50	100	3	EN	G

List of Courses Offered by Commerce Department

Seme ster	Course Code	Course Name	Programme	T/P/ E	Ins. hrs	CIA	ES	Total Marks	Credit	SD/ EM/ EN	G/ L/ R/ N
VI	22GEU110	GEC 5: Business Ethics & Corporate Social Responsibility	B.Sc. DS	T	3	25	25	50	3	SD	G

