

# **SRI KRISHNA ARTS AND SCIENCE COLLEGE**

An Autonomous College Affiliated to Bharathiar University

Coimbatore -641008,Tamil Nadu, India.

## **LEARNING OUTCOMES BASED CURRICULUM FRAMEWORK (LOCF)**

**B.Sc. Artificial Intelligence and Machine Learning  
(III and IV Semesters)**

**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)**

<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.

**II. PROGRAMME LEARNING OUTCOMES (PLOs)**

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

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

**VI. PROGRAMME SPECIFIC OUTCOMES (PSO's)**

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

**VII. Curriculum Structure for B.Sc. Artificial Intelligence and Machine Learning****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
<b>Total</b>				<b>4000</b>	<b>140</b>

**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/	<b>AEC Part I: Language – I:</b> Tamil-I – Tamizhum Ariviyalum/ Hindi-I/ French-I/ Malayalam-I Sanskrit – I	I	Language Dept.	6	3	100

2	22AEC26	<b>AEC Part II:English-I:</b> English for Professional Communication	I	English Dept.	6	3	100
3	22AEC41	<b>AEC Part III:</b> Probability and Statistics	I	Mathematics Dept.	5	3	100
4	22AEC04/ 22AEC08/ 22AEC12/ 22AEC18/ 22AEC22	<b>AEC Part I:</b> <b>Language – II:</b> Tamil-II - Panpattu Padhivugalum Ariviyalalargalum/ Hindi-II/ French-II/ Malayalam-II/ Sanskrit – II	II	Language Dept.	6	3	100
5	22AEC28	<b>AEC Part II:English – II:</b> Campus to Corporate	II	English Dept	6	3	100
6	22AEC33	<b>AEC Part III:</b> Academic Skills for Computer Studies	II	CS Dept.	3	3	100
7	22AEC53	<b>AEC Part V:</b> Capstone Project for Computer Studies	III	CS Dept.	-	4	100
8	22AEC81/ 22AEC83/ 22AEC85	<b>AEC Part IV: Tamil-III –</b> Neelakkurinchi/ <b>Hindi-III -</b> Pryojanmoolak Hindi/ Advanced French-I	III	Language Dept.	3	2	100
9	22AEC91	<b>AEC Part IV: English III -</b> Creative Writing	III	Language Dept.	3	2	100
10	22AEC82/ 22AEC84/ 22AEC86	<b>AEC Part IV:</b> <b>Tamil-IV –</b> Semmullai/ <b>Hindi-IV -</b> Takneeki Hindi Basha/ Advanced French-II	IV	Language Dept.	3	2	100
11	22AEC92	<b>AEC Part IV:</b> <b>English III -</b> English for Digital Media	IV	Language Dept.	3	2	100
<b>Total</b>						<b>30</b>	<b>1100</b>

### 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/	<b>DSC 1:</b> Digital Computer Fundamentals	I	4	4	100

	22SAU01/ 22SSU01/ 22DSU01/ 22AIU01					
2	22CSU02A/ 22ITU02A / 22CTU02A/ 22CAU02A/ 22SAU02A/ 22SSU02A/ 22DSU02A/ 22AIU02A	<b>DSC 2A:</b> Programming in C	I	3	2	50
	22CSU02B/ 22ITU02B/ 22CTU02B/ 22CAU02B/ 22SAU02B/ 22SSU02B/ 22DSU02B/ 22AIU02B	<b>DSC 2B:</b> Practical: C Programming		3	2	50
3	22CSU03/ 22ITU03/ 22CTU03/ 22CAU03/ 22SAU03/ 22SSU03/ 22DSU03/ 22AIU03	<b>DSC 3:</b> Data Structures and Algorithms	II	4	4	100
4	22CSU04A/ 22ITU04A/ 22CTU04A/ 22CAU04A/ 22SAU04A/ 22SSU04A/ 22DSU04A/ 22AIU04A	<b>DSC 4A:</b> Object Oriented Programming using C++	II	3	2	50
	22CSU04B/ 22ITU04B/ 22CTU04B/ 22CAU04B/ 22SAU04B/ 22SSU04B/ 22DSU04B/ 22AIU04B	<b>DSC 4B:</b> Practical: C++ Programming		3	2	50
5	22CSU05/ 22ITU05/ 22CTU05/ 22CAU05/ 22SAU05/ 22SSU05/ 22DSU05/ 22AIU05	<b>DSC 5:</b> Operating Systems	III	3	3	100
6	22CSU06/	<b>DSC 6:</b> Programming in Java	III	4	4	100

	22ITU06/ 22CTU06/ 22CAU06/ 22SAU06/ 22SSU06/ 22DSU06/ 22AIU06					
7	22CSU07/ 22ITU07/ 22CTU07/ 22CAU07/ 22SAU07/ 22SSU07/ 22DSU07/ 22AIU07	<b>DSC 7:</b> Practical: Java Programming	III	3	3	100
8	22CSU10A/ 22ITU10A/ 22CTU10A/ 22CAU10A/ 22SAU10A/ 22SSU10A/ 22DSU10A/ 22AIU10A	<b>DSC 10A:</b> Software Engineering and UML Data Mining	III	3	3	50
	22CSU10B/ 22ITU10B/ 22CTU10B/ 22CAU10B/ 22SAU10B/ 22SSU10B/ 22DSU10B/ 22AIU10B	<b>DSC 10B:</b> Practical: Software Testing and UML	III	2	2	50
9	22CSU11/ 22ITU11/ 22CTU11/ 22CAU11/ 22SAU11/ 22SSU11/ 22DSU11/ 22AIU11	<b>DSC 11:</b> Computer Networks	III	4	4	100
10	22CSU08/ 22ITU08/ 22CTU08/ 22CAU08/ 22SAU08/ 22SSU08/ 22DSU08/ 22AIU08	<b>DSC 8:</b> Relational Database Management Systems	IV	5	5	100
11	22CSU09/ 22ITU09/ 22CTU09/ 22CAU09/ 22SAU09/ 22SSU09/	<b>DSC 9:</b> Practical: SQL and PL/SQL	IV	4	2	100

	22DSU09/ 22AIU09					
12	22CSU12/ 22ITU12/ 22CTU12/ 22CAU12/ 22SAU12/ 22SSU12/ 22DSU12/ 22AIU12	<b>DSC 12: Artificial Intelligence</b>	V	5	4	100
13	22CSU13/ 22ITU13/ 22CTU13/ 22CAU13/ 22SAU13/ 22SSU13/ 22DSU13/ 22AIU13	<b>DSC 13: Machine Learning using Python</b>	V	5	4	50
14	22CSU46/ 22ITU46/ 22CTU46/ 22CAU46/ 22SAU46/ 22SSU46/ 22DSU46/ 22AIU46	<b>DSC 16: Practical: Machine Learning using Python</b>	V	4	2	50
15	22CSU14/ 22ITU14/ 22CTU14/ 22CAU14/ 22SAU14/ 22SSU14/ 22DSU14/ 22AIU14	<b>DSC 14: Major Project</b>	VI	6	4	100
16	22DSU15A/ 22AIU15A	<b>DSC 15 A: Data Analytics using PySpark</b>	VI	3	2	50
	22DSU15B/ 22AIU15B	<b>DSC 15 B: Practical: Data Analytics using PySpark</b>		3	2	50
<b>Total</b>					<b>60</b>	<b>1500</b>

### 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.	Course	Course Title	Ownership	Contact	Credits	Marks
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No.	Code		Department	Hours		
1	22CSU16/ 22ITU16/ 22CTU16/ 22CAU16/ 22SAU16/ 22SSU16/ 22DSU16/ 22AIU16	<b>DSE 1:</b> Practical: Excel Macro	CS Dept	3	2	100
	22CSU17/ 22ITU17/ 22CTU17/ 22CAU17/ 22SAU17/ 22SSU17/ 22DSU17/ 22AIU17	<b>DSE 1:</b> Practical: Spreadsheet				
2	22CSU18/ 22ITU18/ 22CTU18/ 22CAU18/ 22SAU18/ 22SSU18/ 22DSU18/ 22AIU18	<b>DSE 2:</b> Computer Forensics	ICT Dept.	5	4	100
	22AIU19	<b>DSE 2:</b> Design and Analysis of Algorithms				
	22CSU20/ 22ITU20/ 22CTU20/ 22CAU20/ 22SAU20/ 22SSU20/ 22DSU20/ 22AIU20	<b>DSE 2:</b> Cyber Threat Intelligence				
3	22CSU21/ 22ITU21/ 22CTU21/ 22CAU21/ 22SAU21/ 22SSU21/ 22DSU21/ 22AIU21	<b>DSE 3:</b> Computer Vision	CS Dept	5	4	100
	22CSU22/ 22ITU22/ 22CTU22/ 22CAU22/	<b>DSE 3:</b> Search Engine Optimization				

	22SAU22/ 22SSU22/ 22DSU22/ 22AIU22					
	22AIU23A	<b>DSE 3A:</b> Data Mining with R		3	2	50
	22AIU23B	<b>DSE 3B:</b> Practical: R Programming		2	2	50
4	22CSU27/ 22ITU27/ 22CTU27/ 22CAU27/ 22SAU27/ 22SSU27/ 22DSU27/ 22AIU27	<b>DSE 5:</b> Industrial Exposure Training	CA Dept	4 Weeks	5	100
	22CSU24/ 22ITU24/ 22CTU24/ 22CAU24/ 22SAU24/ 22SSU24/ 22DSU24/ 22AIU24	<b>DSE 4:</b> Big Data Analytics				
5	22AIU25	<b>DSE 4:</b> Fuzzy Logic and Neural Networks	CS Dept	5	4	100
	22CSU26/ 22ITU26/ 22CTU26/ 22CAU26/ 22SAU26/ 22SSU26/ 22DSU26/ 22AIU26	<b>DSE 4:</b> Design Thinking Methodology				

6	22CSU28/ 22ITU28/ 22CTU28/ 22CAU28/ 22SAU28/ 22SSU28/ 22DSU28/ 22AIU28	<b>DSE 6: Ethical Hacking</b>	CS/ ICT/CA Dept	5	3	50
	22CSU30/ 22ITU30/ 22CTU30/ 22CAU30/ 22SAU30/ 22SSU30/ 22DSU30/ 22AIU30	<b>DSE 6: Web Intelligence</b>				
	22DSU44/ 22AIU44	<b>DSE 6: Time series Analysis</b>				
7	22CSU29/ 22ITU29/ 22CTU29/ 22CAU29/ 22SAU29/ 22SSU29/ 22DSU29/ 22AIU29	<b>DSE 11: Practical: Ethical Hacking</b>	CS/ ICT/CA Dept	4	2	50
	22CSU31/ 22ITU31/ 22CTU31/ 22CAU31/ 22SAU31/ 22SSU31/ 22DSU31/ 22AIU31	<b>DSE 11: Practical: Web Intelligence</b>				
	22DSU45/ 22AIU45	<b>DSE 11: Practical: Scientific Programming using R</b>				
8	22CSU32/ 22ITU32/ 22CTU32/ 22CAU32/ 22SAU32/ 22SSU32/ 22DSU32/ 22AIU32	<b>DSE 7: Wireless Technology</b>	CA Dept	5	4	100
	22CSU33/ 22ITU33/ 22CTU33/ 22CAU33/ 22SAU33/ 22SSU33/	<b>DSE 7: Internet of Things</b>				

	22DSU33/ 22AIU33					
	22DSU34/ 22AIU34	<b>DSE 7: Reinforcement Learning</b>				
9	22CSU35/ 22ITU35/ 22CTU35/ 22CAU35/ 22SAU35/ 22SSU35/ 22DSU35/ 22AIU35	<b>DSE 8: Mobile Application Development</b>	CT/CA Dept	4	3	100
	22CSU36/ 22ITU36/ 22CTU36/ 22CAU36/ 22SAU36/ 22SSU36/ 22DSU36/ 22AIU36	<b>DSE 8: Linux Programming</b>				
	22AIU37	<b>DSE 8: Natural Language Programming</b>				
10	22CSU38/ 22ITU38/ 22CTU38/ 22CAU38/ 22SAU38/ 22SSU38/ 22DSU38/ 22AIU38	<b>DSE 9: Practical: Mobile Application Development</b>	CT/CA Dept	2	2	100
	22CSU39/ 22ITU39/ 22CTU39/ 22CAU39/ 22SAU39/ 22SSU39/ 22DSU39/ 22AIU39	<b>DSE 9: Practical: Linux Programming</b>				
	22AIU40	<b>DSE 9: Practical – Natural Language Processing Lab</b>				
11	22CSU41/ 22ITU41/ 22CTU41/ 22CAU41/ 22SAU41/ 22SSU41/ 22DSU41/ 22AIU41	<b>DSE 10: Cognitive Computing</b>	CS Dept	4	3	100
	22CSU42/					

22ITU42/ 22CTU42/ 22CAU42/ 22SAU42/ 22SSU42/ 22DSU42/ 22AIU42	<b>DSE 10: Malware Analysis</b>				
22AIU43	<b>DSE 10: Deep Learning</b>				
<b>Total</b>				<b>36</b>	<b>1000</b>

**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
<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 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:

<b>Review</b>	<b>– 25 Marks</b>
<b>Work Dairy</b>	<b>– 10 Marks</b>
<b>Report</b>	<b>– 15 Marks</b>
<b>Total</b>	<b>– 50 (Internal) Marks</b>
<b>End Semester Viva-Voce will be conducted for 50 (External) Marks.</b>	

(Dissertation - 30 Marks &amp; 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	<b>GEC 1:</b> Mathematical Structures for Computer Science	II	Maths Dept	5	3	100	SD	G
	22GEU14	<b>GEC 1:</b> Discrete Mathematics						SD	G
2	22GEU18	<b>GEC 2:</b> Operations Research for Computer Studies	III	Maths Dept	5	3	100	EM	G
	22GEU19	<b>GEC 2:</b> Numerical Methods						EM	G
3	22GEU59	<b>GEC 3:</b> Embedded System	IV	ECS Dept	5	3	100	EM	G
	22GEU60	<b>GEC 3:</b> Robotics and Applications						EM	G
	22GEU61	<b>GEC 3:</b> PC Hardware						EN	G
4	22GEU107	<b>GEC 4:</b> Developing Thinking Skills	V	CS Dept/ CA Dept	2	2	50	EN	G
	22GEU108	<b>GEC 4:</b> Computational Thinking							
5	22GEU109	<b>GEC 5:</b> Cyber Ethics	VI	CS Dept/ Commerce Dept	3	3	50	EN	G
	22GEU110	<b>GEC 5:</b> Business Ethics & Corporate Social Responsibility							

<b>Total</b>	<b>14</b>	<b>400</b>		
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### 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
<b>Semester I - ANCC I</b>		
1.	22ANC01	Environmental Studies
<b>Semester II - ANCC II - Values &amp; Ethics</b>		
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 5<sup>th</sup> 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	<b>AEC PART I: Language I:</b> 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	<b>AEC PART II: English I:</b> English for Professional Communication	T	3	6	50	50	100	3	SD	G
22CSU01/ 22ITU01/ 22CTU01/ 22CAU01/ 22SAU01/ 22SSU01/ 22DSU01/ 22AIU01	<b>DSC 1:</b> Digital Computer Fundamentals	T	3	4	50	50	100	4	SD	G
22CSU02A/ 22ITU02A/ 22CTU02A/ 22CAU02A/ 22SAU02A/	<b>DSC 2A:</b> Programming in C	E	2	3	25	25	50	2	SD/ EM	G



22SSU02A/ 22DSU02A/ 22AIU02A										
22CSU02B/ 22ITU02B/ 22CTU02B/ 22CAU02B/ 22SAU02B/ 22SSU02B/ 22DSU02B/ 22AIU02B	<b>DSC 2B: Practical: C Programming</b>		2	3	25	25	50	2	SD/ EM	G
22CSU16/ 22ITU16/ 22CTU16/ 22CAU16/ 22SAU16/ 22SSU16/ 22DSU16/ 22AIU16	<b>DSE 1: Practical: Excel Macro</b>	P	3	3	50	50	100	2	SD	G
22CSU17/ 22ITU17/ 22CTU17/ 22CAU17/ 22SAU17/ 22SSU17/ 22DSU17/ 22AIU17	<b>DSE 1: Practical: Spreadsheet</b>									
22AEC41	<b>AEC PART III: Probability and Statistics</b>	T	3	5	50	50	100	3	EM	G
<b>DTC - I - Additional Credit Courses (NPTEL/Coursera)</b>								4		
22ANC01	<b>ANCC-1 (NF2F) Environmental Studies</b>	T	-	2	-	-	Completed		SD	G
<b>Total</b>				<b>30+2</b>			<b>600</b>	<b>19 + 4</b>		
<b>Semester II</b>										
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	<b>AEC PART I: Language II: Tamil-II - Panpattu Padhivugalum Ariviyalargalum/ Hindi-II/ French-II/ Malayalam-II/ Sanskrit – II</b>	T	3	6	50	50	100	3	SD	L/ N/ G/ R

22AEC28	<b>AEC PART II: English II</b> :Campus to Corporate	T	3	6	50	50	100	3	SD	G
22AEC33	<b>AEC PART III:</b> Academic Skills for Computer Studies	T	3	3	50	50	100	3	SD	G
22CSU03/ 22ITU03/ 22CTU03/ 22CAU03/ 22SAU03/ 22SSU03/ 22DSU03/ 22AIU03	<b>DSC 3:</b> Data Structures and Algorithms	T	3	4	50	50	100	4	SD/ EM	G
22CSU04A/ 22ITU04A/ 22CTU04A/ 22CAU04A/ 22SAU04A/ 22SSU04A/ 22DSU04A/ 22AIU04A	<b>DSC 4A:</b> Object Oriented Programming using C++	E	3	3	25	25	50	2	SD/ EM	G
22CSU04B/ 22ITU04B/ 22CTU04B/ 22CAU04B/ 22SAU04B/ 22SSU04B/ 22DSU04B/ 22AIU04B	<b>DSC 4B:</b> Practical: C++ Programming		3	3	25	25	50	2	SD/ EM	G
22GEU13/ 22GEU14	<b>GEC I:</b> Mathematical Structures for Computer Science/Discrete Mathematics	T	3	5	50	50	100	3	SD	G
<b>DTC II : Additional Credit Courses (NPTEL/Coursera)</b>								4		
22ANC09	<b>ANCC-2 (NF2F) Value &amp; Ethics:</b> Waste Management	T	-	2	-	-	Completed		EN	R
<b>Total</b>				<b>30+2</b>			<b>600</b>	<b>20 +4</b>		
<b>Semester III</b>										
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/	<b>AEC PART IV: Tamil III :</b>	T	3	3	50	50	100	2		L/

22AEC83/ 22AEC85	Neelakkurinchi/ <b>Hindi III :</b> Pryojanmoolak Hindi/ Advanced French-I								SD	N/ G/ R
22AEC91	<b>AEC PART IV:</b> <b>English III:</b> Creative Writing	T	3	3	50	50	100	2	SD	G
22AEC53	<b>AEC Part V:</b> Capstone Project for Computer Studies	-	-	-	50	50	100	4	EN	G
22CSU05/ 22ITU05/ 22CTU05/ 22CAU05/ 22SAU05/ 22SSU05/ 22DSU05/ 22AIU05	<b>DSC 5:</b> Operating Systems	T	3	3	50	50	100	3	SD	G
22CSU06/ 22ITU06/ 22CTU06/ 22CAU06/ 22SAU06/ 22SSU06/ 22DSU06/ 22AIU06	<b>DSC 6:</b> Programming in Java	T	4	4	50	50	100	4	SD/ EM	G
22CSU07/ 22ITU07/ 22CTU07/ 22CAU07/ 22SAU07/ 22SSU07/ 22DSU07/ 22AIU07	<b>DSC 7:</b> Practical: Java Programming	P	3	3	50	50	100	3	SD/ EM	G
22CSU10A/ 22ITU10A/ 22CTU10A/ 22CAU10A/ 22SAU10A/ 22SSU10A/ 22DSU10A/ 22AIU10A	<b>DSC 10A:</b> Software Engineering and UML	E	2	3	25	25	50	3	SD/ EM	G
22CSU10B/ 22ITU10B/ 22CTU10B/ 22CAU10B/ 22SAU10B/ 22SSU10B/ 22DSU10B/ 22AIU10B	<b>DSC 10B:</b> Practical: Software Testing and UML		2	2	25	25	50	2	SD/ EM	G

22CSU11/ 22ITU11/ 22CTU11/ 22CAU11/ 22SAU11/ 22SSU11/ 22DSU11/ 22AIU11	<b>DSC 11:</b> Computer Networks	T	3	4	50	50	100	4	SD/ EM	G
22GEU18/ 22GEU19	<b>GEC 2:</b> Operations Research for Computer Studies/ Numerical Methods	T	3	5	50	50	100	3	SD/ EM	G
<b>Total</b>				<b>30</b>			<b>900</b>	<b>30</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
22AEC82/ 22AEC84/ 22AEC86	<b>AEC PART IV</b> <b>Tamil IV</b> :Semmullai/ <b>Hindi IV</b> :Takneeki Hindi Basha/ Advanced French-II	T	3	3	50	50	100	2	SD	L/ N/ G/ R
22AEC92	<b>AEC PART IV</b> <b>English III</b> : English for Digital Media	T	3	3	50	50	100	2	SD	G
22CSU08/ 22ITU08/ 22CTU08/ 22CAU08/ 22SAU08/ 22SSU08/ 22DSU08/ 22AIU08	<b>DSC 8:</b> Relational Database Management Systems	T	3	5	50	50	100	5	SD	G
22CSU09/ 22ITU09/ 22CTU09/ 22CAU09/ 22SAU09/ 22SSU09/ 22DSU09/ 22AIU09	<b>DSC 9:</b> Practical: SQL and PL/SQL	P	3	4	50	50	100	2	EM	G
22CSU18/ 22ITU18/ 22CTU18/ 22CAU18/ 22SAU18/ 22SSU18/	<b>DSE 2:</b> Computer Forensics	T	3	5	50	50	100	4	SD/ EM	G

22DSU18/ 22AIU18											
22AIU19	<b>DSE 2: Design and Analysis of Algorithms</b>										
22CSU20/ 22ITU20/ 22CTU20/ 22CAU20/ 22SAU20/ 22SSU20/ 22DSU20/ 22AIU20	<b>DSE 2: Cyber Threat Intelligence</b>										
22CSU21/ 22ITU21/ 22CTU21/ 22CAU21/ 22SAU21/ 22SSU21/ 22DSU21/ 22AIU21	<b>DSE 3: Computer Vision</b>										
22CSU22/ 22ITU22/ 22CTU22/ 22CAU22/ 22SAU22/ 22SSU22/ 22DSU22/ 22AIU22	<b>DSE 3: Search Engine Optimization</b>	T	3	5	50	50	100	4	SD	G	
22AIU23A	<b>DSE 3A: Data Mining with R</b>		3	3	25	25	50	2	EN/ EM	G	
22AIU23B	<b>DSE 3B: Practical: R programming</b>	E	3	2	25	25	50	2	EN/ EM	G	
22GEU59/ 22GEU60/ 22GEU61	<b>GEC 3: Embedded System/ Robotics and Applications/ PC Hardware</b>	T	3	5	50	50	100	3	EM	G	
<b>Total</b>				<b>30</b>			<b>700</b>	<b>22</b>			
<b>Semester V</b>											
Course Code	Course Title	T/ P/ E	ESE Dur ·	Ins. Hrs/ Week	CIA Marks	ES Marks	Total Marks	Credits	SD/ EM/ EN	G/ L/ R/ N	

			Hrs							
22CSU27/ 22ITU27/ 22CTU27/ 22CAU27/ 22SAU27/ 22SSU27/ 22DSU27/ 22AIU27	<b>DSE 5:</b> Industrial Exposure Training	-	3	4 Weeks	50	50	100	5	EN	G
22CSU12/ 22ITU12/ 22CTU12/ 22CAU12/ 22SAU12/ 22SSU12/ 22DSU12 22AIU12	<b>DSC12:</b> Artificial Intelligence	T	3	5	50	50	100	4	SD	G
22CSU13/ 22ITU13/ 22CTU13/ 22CAU13/ 22SAU13/ 22SSU13/ 22DSU13/ 22AIU13	<b>DSC 13:</b> Machine Learning using Python	T	3	5	25	25	50	4	SD/ EM	G
22CSU46/ 22ITU46/ 22CTU46/ 22CAU46/ 22SAU46/ 22SSU46/ 22DSU46/ 22AIU46	<b>DSC 16:</b> Practical: Machine Learning using Python	P	3	4	25	25	50	2	SD/ EM	G
22CSU28/ 22ITU28/ 22CTU28/ 22CAU28/ 22SAU28/ 22SSU28/ 22DSU28/ 22AIU28	<b>DSE 6:</b> Ethical Hacking	T	3	5	25	25	50	3	EN	G
22CSU30/ 22ITU30/ 22CTU30/ 22CAU30/ 22SAU30/ 22SSU30/ 22DSU30/ 22AIU30	<b>DSE 6:</b> Web Intelligence									
22DSU44/ 22AIU44	<b>DSE 6:</b> Time Series Analysis									

22CSU29/ 22ITU29/ 22CTU29/ 22CAU29/ 22SAU29/ 22SSU29/ 22DSU29/ 22AIU29	<b>DSE 11: Practical:</b> Ethical Hacking	P	3	4	25	25	50	2	EN	G
22CSU31/ 22ITU31/ 22CTU31/ 22CAU31/ 22SAU31/ 22SSU31/ 22DSU31/ 22AIU31	<b>DSE 11: Practical:</b> Web Intelligence									
22DSU45/ 22AIU45	<b>DSE 11:</b> Practical: Scientific Programming Using R									
22CSU24/ 22ITU24/ 22CTU24/ 22CAU24/ 22SAU24/ 22SSU24/ 22DSU24/ 22AIU24	<b>DSE 4:</b> Big Data Analytics	T	3	5	50	50	100	4	SD/ EM	G
22AIU25	<b>DSE 4:</b> Fuzzy Logic and Neural Networks									
22CSU26/ 22ITU26/ 22CTU26/ 22CAU26/ 22SAU26/ 22SSU26/ 22DSU26/ 22AIU26	<b>DSE 4:</b> 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	<b>Drive Through Course III – Internship/ Mini Project/ Spoken Tutorial</b>										
22GEU107/ 22GEU108	<b>GEC 4:</b> Developing Thinking Skills/ Computational Thinking	T	3	2	25	25	50	2	SD	G	
<b>Total</b>				<b>30</b>			<b>550</b>	<b>26</b>			
<b>Semester VI</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>Credits</b>	<b>SD/EM/EN</b>	<b>G/L/R/N</b>	
22GEU109/ 22GEU110	<b>GEC 5:</b> Cyber Ethics/ Business Ethics & Corporate Social Responsibility	T	3	3	25	25	50	3	SD	G	
22CSU14/ 22ITU14/ 22CTU14/ 22CAU14/ 22SAU14/ 22SSU14/ 22DSU14/ 22AIU14	<b>DSC 14:</b> Major Project	-	3	6	50	50	100	4	EN	G	



22DSU15A/ 22AIU15A	<b>DSC 15 A:</b> Data Analytics using PySpark	E	3	3	25	25	50	2	SD	G
22DSU15B/ 22AIU15B	<b>DSC 15 B:</b> Practical - Data Analytics using PySpark		3	3	25	25	50	2	SD	G
22CSU35/ 22ITU35/ 22CTU35/ 22CAU35/ 22SAU35/ 22SSU35/ 22DSU35/ 22AIU35/	<b>DSE 8:</b> Mobile Application Development									
22CSU36/ 22ITU36/ 22CTU36/ 22CAU36/ 22SAU36/ 22SSU36/ 22DSU36/ 22AIU36/	<b>DSE 8:</b> Linux Programming	T	3	4	50	50	100	3	EN	G
22AIU37	<b>DSE 8:</b> Natural Language Processing									
22CSU38/ 22ITU38/ 22CTU38/ 22CAU38/ 22SAU38/ 22SSU38/ 22DSU38/ 22AIU38	<b>DSE 9:</b> Practical: Mobile Application Development									
22CSU39/ 22ITU39/ 22CTU39/ 22CAU39/ 22SAU39/ 22SSU39/ 22DSU39/ 22AIU39	<b>DSE 9:</b> Practical: Linux Programming	P	3	2	50	50	100	2	EN	G
22AIU40	<b>DSE 9:</b> Practical – Natural Language Processing									

22CSU32/ 22ITU32/ 22CTU32/ 22CAU32/ 22SAU32/ 22SSU32/ 22DSU32/ 22AIU32	<b>DSE 7: Wireless Technology</b>										
22CSU33/ 22ITU33/ 22CTU33/ 22CAU33/ 22SAU33/ 22SSU33/ 22DSU33/ 22AIU33	<b>DSE 7: Internet of Things</b>	T	3	5	50	50	100	4	SD/ EM	G	
22DSU34/ 22AIU34	<b>DSE 7: Reinforcement Learning</b>										
22CSU41/ 22ITU41/ 22CTU41/ 22CAU41/ 22SAU41/ 22SSU41/ 22DSU41/ 22AIU41	<b>DSE 10: Cognitive Computing</b>										
22CSU42/ 22ITU42/ 22CTU42/ 22CAU42/ 22SAU42/ 22SSU42/ 22DSU42/ 22AIU42	<b>DSE 10: Malware Analysis</b>	T	3	4	50	50	100	3	SD/ EM	G	
22AIU43	<b>DSE 10: Deep Learning</b>										
22ANC10/ 22ANC11/ 22ANC12/ 22ANC13/ 22ANC14/ 22ANC15/ 22ANC16/ 22ANC17	<b>ANCC-III (NF2F):</b> 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	
<b>Total</b>				<b>30</b>			<b>650</b>	<b>23</b>			

	<b>Total</b>	<b>4000</b>	<b>140 +8</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			

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
<b>Total</b>	<b>4000</b>	<b>140+8</b>

**OFFERED BY**

**List of Courses Offered by Mathematics 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
I	22AEC41	<b>AEC PART III: Probability and Statistics</b>	B.Sc.AIML	T	5	50	50	100	3	EM	G
II	22GEU12	<b>GEC I: Mathematical Foundation for Computer Science</b>	B.Sc.AIML	T	5	50	50	100	3	SD	G
II	22GEU16	<b>GEC I: Discrete Mathematics</b>	B.Sc.AIML	T	5	50	50	100	3	SD	G
III	22GEU13	<b>GEC 2: Operations Research for</b>	B.Sc.AIML	T	5	50	50	100	3	EM	G

		Computer Studies									
III	22GEU14	<b>GEC 2:</b> Numerical Method	B.Sc.AIML	T	5	50	50	100	3	EM	G

#### List of Courses Offered by Electronics and Communication Department

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

#### List of Courses Offered by Commerce Department

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

