

# **SRI KRISHNA ARTS AND SCIENCE COLLEGE**

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

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

**M.Sc. Software Systems  
(I to II Semester)**

**For 2023-24 admitted students**

**DEPARTMENT OF COMPUTER SCIENCE**



**SRI KRISHNA ARTS AND SCIENCE COLLEGE**  
**COIMBATORE – 641008**

**DEPARTMENT OF COMPUTER SCIENCE**

**(2023-2024)**

**I. PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)**

<b>PEO 1</b>	Able to become a software architect for designing systems with research in the contemporary software platforms.
<b>PEO 2</b>	Become a team leader and work with a group in solving complex problems through domain knowledge with effective communication skills.
<b>PEO 3</b>	Able to keep up-to-date information in advanced field for lifelong learning by providing professional services with competence.
<b>PEO 4</b>	Able to demonstrate ethical and professional values in providing services including entrepreneurial skills.

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

<b>No.</b>	<b>The Graduates of M.Sc. Software Systems Program will be able to:</b>
<b>PLO1</b>	<b>Knowledge:</b> Acquire knowledge in the core theoretical and practical concepts in the computer science domain. <b>(Cognitive)</b>
<b>PLO2</b>	<b>Critical Thinking Skills:</b> Able to critically think, analyse and provide feasible solutions to real life problems in computing area. <b>(Cognitive)</b>
<b>PLO3</b>	<b>Practical Skills:</b> Acquire proficiency in the key areas of computer science like object-oriented programming, mobile and open-source technologies <b>(Psychomotor)</b>
<b>PLO4</b>	<b>Team-work Skills:</b> Function effectively as a member and leader in a team, to manage projects and in multidisciplinary environments. <b>(Affective)</b>
<b>PLO5</b>	<b>Communication Skills:</b> Communicate effectively while developing and presenting effective solutions to the problems. <b>(Affective)</b>
<b>PLO6</b>	<b>Digital Skills:</b> Select and apply appropriate techniques, resources, tools for prediction and providing solutions to complex real time problems. <b>(Affective)</b>
<b>PLO7</b>	<b>Numeracy Skills:</b> An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modelling and design of computational systems. <b>(Cognitive)</b>
<b>PLO8</b>	<b>Leadership Skills:</b> An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modelling and design of computational systems. <b>(Affective)</b>
<b>PLO9</b>	<b>Lifelong Learning Skills:</b> An ability to engage in life-long learning in the context of technological change. <b>(Affective)</b>
<b>PLO10</b>	<b>Entrepreneurial Skills:</b> Acquire skills to design, develop and provide effective solutions to become an entrepreneur. <b>(Affective)</b>
<b>PLO11</b>	<b>Ethics &amp; Professional Skills:</b> Apply ethical principles and commit to professional ethics and social responsibilities. <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>	Ability to build networks and broaden horizons and engaging authentically through Social Intelligence Quotient and Emotional Quotient.
<b>APO 2</b>	Ability to translate vast data into abstract concepts and to understand data base reasoning.
<b>APO 3</b>	Ability to develop working in virtual collaborating platforms to transfer different types of information and work towards a common goal
<b>APO 4</b>	Ability to develop critical thinking and innovative skills as a potential to advance career.
<b>APO 5</b>	Having a good digital foot print.

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

<b>PSO 1</b>	Ability to use software development tools, computing platforms and other advanced tools for lifelong learning.
<b>PSO 2</b>	Ability to apply computing knowledge to produce effective designs and solutions for real-time applications.

**VII. Curriculum Structure for M.Sc. Software Systems****Course Components, Credits & Marks Distribution**

Basic Structure: Distribution of Courses	Number of Courses	Total Marks	Total Credits
DSC – Discipline Specific Courses	48	4400	165
DSE – Discipline Specific Electives	4/8	400	15
GEC – Generic Elective Courses	7	700	19
Mini Project / Major Project	3	500	35
ANCC I - Audit Non-Credit Courses	1	Completed	
ANCC II - Audit Non-Credit Courses	1	Completed	
DTC – Drive Through Courses (SWAYAM-NPTEL, Coursera, Any courses certified by statutory bodies, etc)	Additional 4 Credits per Course will be given on submission of Certificate	-	Addl. Credits
<b>Total</b>		<b>6000</b>	<b>234</b>

### 1. Discipline Specific Courses (DSCs) (I & II Semesters)

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

S. No.	Course Code	Course Title	Semester	Contact Hours	Credits	Marks
1	23SSI01	DSC 1: English I	I	4	3	100
2	23SSI02	DSC 2: C Programming	I	4	4	100
3	23SSI03	DSC 3: Algebra	I	4	3	100
4	23SSI04	DSC 4: Computer Organization and Architecture	I	5	4	100
5	23SSI05	DSC 5: Practical - Programming Lab- C	I	3	2	50
6	23SSI06	DSC 6: Self Study Paper –PC Software Lab	I	1	1	50
7	23SSI07	DSC 7: English II	II	3	2	100
8	23SSI08	DSC 8: Calculus and Laplace Transforms	II	4	3	100
9	23SSI09	DSC 9: Object Oriented Programming using C++	II	4	4	100
10	23SSI10	DSC 10: Data Structures and Algorithms	II	4	4	100
11	23SSI11	DSC 11: Practical- C++ with Data Structures Lab	II	2	2	50

### 2. Discipline Specific Electives DSE)

Discipline Specific Elective Courses offered under the main discipline of study which may be specialized or advanced or supportive to the discipline of study.

### 3. Generic Elective Courses (GECs) (I & II Semesters)

Generic Elective Courses are interdisciplinary in nature. They are additional courses based on expertise, specialization, requirements, scope, and need of the department.

Sl. No.	Course Code	Course Title	Semester	Ownership Department	Contact Hours	Credits	Marks	SD/EM/EN	G/L/R/N
1	23GEP12	Digital Electronics	I	ECS	4	3	100	SD	G
2	23GEP13	Digital Electronics Lab	I	ECS	3	2	100	SD	G
3	23GEP14	VLSI Design and Verilog	I	ECS	4	3	100	SD	G
4	23GEP15	Verilog Programming Lab	I	ECS	3	3	100	SD	G
5	23GEP16	Embedded Systems	II	ECS	4	3	100	EM	G
6	23GEP17	Embedded Systems Lab	II	ECS	3	2	100	EM	G
7	23GEP18	Programmable Logic Controller	II	ECS	4	3	100	EM	G
8	23GEP19	Programmable Logic Controller Lab	II	ECS	3	2	100	EM	G

#### 4. 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.	23ANC01	Environmental Studies
<b>Semester II - ANCC II - Values &amp; Ethics</b>		
2.	23ANC02	Human Rights
3.	23ANC03	Women's Rights
4.	23ANC04	Yoga for Human Excellence
5.	23ANC05	Indian Culture and Heritage
6.	23ANC06	Introduction to Cyber Security
7.	23ANC07	Consumer Protection
8.	23ANC08	Constitution of India
9.	23ANC09	Waste Management
10.	23ANC10	Cyber Ethics

#### 5. 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**

- 4 Additional Credits will be given on submission of the certificate.

**2. Coursera**

- 4 Additional Credits will be given on completion of Specialization Course with 7 – 8 modules
- 3 Additional Credits will be given on completion of Specialization Course with 5 – 6 modules
- 2 Additional Credits will be given on completion of Specialization Course with 3 – 4 modules

**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
23SSI01	DSC 1: English I	T	3	4	25	75	100	3	SD	G
23SSI02	DSC 2: C Programming	T	3	4	25	75	100	4	SD/EM	G
23SSI03	DSC 3: Algebra	T	3	4	25	75	100	3	SD	G
23SSI04	DSC 4: Computer Organization and Architecture	T	3	5	25	75	100	4	SD	G
23SSI05	DSC 5: Practical -Programming Lab- C	P	3	3	10	40	50	2	SD/EM	G
23SSI06	DSC 6: Self Study Paper – PC Software Lab	P	3	1	-	50	50	1	SD	G
23GEP12	GEC 1: Digital Electronics	T	3	4	25	75	100	3	SD	G
23GEP13	GEC 2: Digital Electronics Lab	P	3	3	40	60	100	2	SD	G
<b>DTC - I - Additional Credit Courses (NPTEL/Coursera)</b>										
23ANC01	<b>ANCC I -</b> Environmental Studies	T	-	2	-	-	Completed	SD		G
<b>Total</b>				<b>30</b>			<b>700</b>	<b>22</b>		
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
23SSI07	DSC 7: English II	T	3	3	25	75	100	2	SD	G
23SSI08	DSC 8: Calculus and Laplace Transforms	T	3	4	25	75	100	3	SD	G
23SSI09	DSC 9: Object Oriented Programming using C++	T	3	4	25	75	100	4	SD/EM	G



23SSI10	DSC 10: Data Structures and Algorithms	T	3	4	25	75	100	4	SD	G
23SSI11	DSC 11: Practical- C++ with Data Structures Lab	P	3	2	10	40	50	2	SD/EM	G
23GEP16	GEC 3: Embedded Systems	T	3	4	25	75	100	3	SD	G
23GEP17	GEC 4: Embedded Systems Lab	P	3	3	40	60	100	2	EM	G
23GEP22	GEC 5: Fundamentals of Accounting	T	3	4	25	75	100	4	EM	G
<b>DTC II : Additional Credit Courses (NPTEL/Coursera)</b>										
23ANC10	<b>ANCC II - Value &amp; Ethics:</b> Cyber Ethics	T	-	2	-	-	Completed	EN	R	
<b>Total</b>				<b>30</b>			<b>750</b>	<b>24</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			

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

**Semester-wise Distribution of Marks and Credits:**

<b>Semester</b>	<b>Total Marks</b>	<b>Total Credits</b>
I	700	22
II	750	24

**OFFERED BY (I & II Semesters)****List of Courses Offered by B. Com CA Department**

Semester	Course Code	Course Name	Programme	T/P/E	Ins. hrs	CIA	ES	Total Marks	Credit
III	23GEP22	Fundamentals of Accounting	M.Sc. SS	T	4	25	75	100	4

