SRI KRISHNA ARTS AND SCIENCE COLLEGE

An Autonomous College Affiliated to Bharathiar University
Coimbatore – 641 008, Tamil Nadu, India.

Master of Science in Software Systems
(M.Sc SS)
(III to VI Semester)

for 2021-22 admitted students

Program Educational Objectives(PEOs)

At the end of this program the graduates will be able to

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

Program Learning Outcomes(PLOs)

At the end of this program the students will be able to

- **PLO 1:** Acquire knowledge in the core theoretical and practical concepts in the computer science domain.
- **PLO 2:** Able to critically think, analyse and provide feasible solutions to real life problems in computing area.
- **PLO 3:** Acquire proficiency in the key areas of computer science like object oriented programming, mobile and open source technologies.
- **PLO 4:** Function effectively as a member and leader in a team, to manage projectsand in multidisciplinary environments.
- **PLO 5:** Communicate effectively while developing and presenting effective solutionsto the problems.
- **PLO 6:** Select and apply appropriate techniques, resources, tools for prediction and providing solutions to complex real time problems.
- **PLO 7:** An ability to apply mathematical foundations, algorithmic principles, and computer science theory in the modeling and design of computational systems.
- **PLO 8:** The ability to work independently on a substantial software project and as an effective team member.
- **PLO 9:** An ability to engage in life-long learning in the context of technological change.

- **PLO 10:** Acquire skills to design, develop and provide effective solutions to becomean entrepreneur
- **PLO 11:** Apply ethical principles and commit to professional ethics and social responsibilities.

Program Learning Outcomes Vs Graduate Atrributes Vs Taxonomy of Verbs

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

Mapping of PEOs andPLOs

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
PEO1	√	√									
PEO2				√	√		√	√			
PEO3			√			√			√		
PEO4										√	√

Additional Program Outcomes (APOs)

- **APO 1:** Ability to build networks and broaden horizons and engaging authenticallythrough Social Intelligence Quotient and Emotional Quotient.

- **APO 2:** Ability to translate vast data into abstract concepts and to understand database reasoning.
- **APO 3:** Ability to develop working in virtual collaborating platforms to transferdifferent types of information and work towards a common goal
- **APO 4:** Ability to develop critical thinking and innovative skills as a potential to advance career.
- **APO 5:** Having a good digital foot print.

Program Specific Objectives (PSOs)

On completion of M.Sc. SS Program, graduates will have the

- **PSO 1:** Ability to use software development tools, computing platforms and other advanced tools for lifelong learning.
- **PSO 2:** Ability to apply computing knowledge to produce effective designs and solutionsfor real-time applications.

Curriculum Structure For M.Sc. SS

Course Components, Credits & Marks Distribution

Group	Basic Structure: Distribution of Courses	Number of Courses	Total Marks	Total Credits
1	Discipline Specific Courses (**DSC**)	47	4400	**165**
2	Discipline Specific Elective Courses (**DSE**)	4/8	400	**15**
3	Generic Electives Courses (**GEC**)	7	700	**19**
4	Mini Project/Project	3	500	**35**
5	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		
	Total	**65**	**6000**	**234**

1. Discipline Specific Courses (DSC)

These courses are to be studied compulsorily by the students as a core requirement. The students are required to take DSCs across four 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.	21SSI01	DSC 1: English	I	4	3	100
2.	21SSI02	DSC 2: C Programming	I	5	4	100
3.	21SSI03	DSC 3: Algebra for Software Systems	I	4	3	100
4.	21SSI04	DSC 4: Computer Organization and Architecture	I	5	4	100
5.	21SSI05	DSC 5: Practical -Programming Lab- C	I	4	3	100
6.	21SSI06	DSC 6: Self Study Paper –PC Software Lab	I	1	1	50
7.	21SSI07	DSC 7: Calculus and Applications	II	4	3	100
8.	21SSI08	DSC 8: Object Oriented Programming using C++	II	5	4	100
9.	21SSI09	DSC 9: Data Structures and Algorithms	II	5	4	100
10.	21SSI10	DSC 10: Practical- C++ with Data Structures Lab	II	4	3	100
11.	21SSI11	DSC 11: Numerical and Statistical Methods	III	4	4	100
12.	21SSI12	DSC 12: Computer Networks	III	5	5	100
13.	21SSI13	DSC 13: Python Programming	III	4	4	100
14.	21SSI14	DSC 14: System Software and Operating System	III	4	4	100
15.	21SSI15	DSC 15: Practical- Python Programming Lab	III	3	2	100
16.	21SSI16	DSC 16: Practical-System Software Lab (C & C++)	III	3	2	100
17.	21SSI17	DSC 17: Discrete Structures	IV	4	4	100
18.	21SSI18	DSC 18: Java Programming	IV	5	5	100
19.	21SSI19	DSC 19: Database Management Systems	IV	5	5	100
20.	21SSI20	DSC 20: Compiler Design	IV	5	5	100
21.	21SSI21	DSC 21: Practical – Java Programming Lab	IV	4	3	100
22.	21SSI22	DSC 22: Practical-Database Management Systems Lab	IV	4	2	100
23.	21SSI23	DSC 23: Practical- Compiler Design Lab	IV	3	2	100

S. No.	Course Code	Course Title	Semester	Contact Hours	Credits	Marks
24.	21SSI24	DSC 24: Operations Research	V	4	4	100
25.	21SSI25	DSC 25: Design and Analysis of Algorithms	V	5	4	100
26.	21SSI26	DSC 26: Web Technology	V	5	5	100
27.	21SSI27	DSC 27: Advanced Java Programming	V	4	4	100
28.	21SSI28	DSC 28: Practical - Algorithm Lab	V	4	2	50
29.	21SSI29	DSC 29: Practical- J2EE Lab	V	4	3	100
30.	21SSI30	DSC 30: Practical – Web Technology Lab	V	4	2	50
31.	21SSI31	DSC 31: Software Engineering	VI	4	4	100
32.	21SSI32	DSC 32: Advanced Web Technology	VI	5	5	100
33.	21SSI33	DSC 33: Android Programming	VI	5	5	100
34.	21SSI34	DSC 34: Distributed Operating Systems	VI	5	5	100
35.	21SSI35	DSC 35: Practical - Advanced Web Technology Lab	VI	4	2	50
36.	21SSI36	DSC 36: Practical - Application Development Using Android	VI	4	3	100
37.	21SSI37	DSC 37: Self Study Paper: Practical-UML and CASE Tools	VI	1	1	50
38.	21SSI40	DSC 38: Data Mining and Warehousing	VIII	5	4	100
39.	21SSI41	DSC 39: Linux Programming	VIII	5	5	100
40.	21SSI42	DSC 40: Software Testing	VIII	5	5	100
41.	21SSI43	DSC 41: Practical - Linux Programming	VIII	3	2	50
42.	21SSI44	DSC 42: Practical – Software Testing Lab	VIII	3	2	100
43.	21SSI49	DSC 43: Digital Image Processing	IX	5	5	100
44.	21SSI50	DSC 44:Crytography and Network Security	IX	5	5	100
45.	21SSI51	DSC 45: Cloud Computing	IX	4	3	100
46.	21SSI52	DSC 46: Practical – Image Processing Lab	IX	4	3	100
47.	21SSI53	DSC 47:Practical - Cryptography Lab	IX	4	3	100
				Total	**165**	**4400**

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. Students can choose any one group from the following list.

Group	Course Code	Course Title	Semester	Contact Hours	Credits	Marks
I	21SSI45	Option I – Computer Graphics	VII I	5	5	100
	21SSI47	Option II - Practical –Multimedia Techniques: Computer Graphics Lab		4	3	100
	21SSI54	Option III –Animation Techniques		5	5	100
	21SSI56	Option IV - Practical – Animation Lab		3	2	100
II	21SSI46	Option I – Machine Learning	IX	5	5	100
	21SSI48	Option II - Machine Learning Using R		4	3	100
	21SSI55	Deep Learning		5	5	100
	21SSI57	Deep Learning Lab		3	2	100
				Total	**15**	**400**

3. Generic Elective Courses (GEC)

An elective course chosen from an unrelated discipline, with an intention to seek exposure beyond discipline/s of choice is called a Generic Elective Courses. The list provided under this category are suggestive in nature and each department has complete freedom to suggest their own courses under this category based on their expertise, specialization, requirements, scope, and need. A DSCs offered in a discipline may be treated as an elective by other discipline and vice versa.

List of Courses Offered by ECS Department

SEM	Course Code	Course Title	T/P	Ins. Hrs/ week	Examination				Credits
					Dur. Hrs	CIA	ES	Total Marks	
I	21GEP19	Digital Electronics	T	4	3	50	50	100	3
I	21GEP20	Digital Electronics Lab	P	3	3	50	50	100	2
II	21GEP21	Embedded Systems	T	4	3	50	50	100	3
II	21GEP22	Embedded Systems Lab	P	3	3	50	50	100	2
III	21GEP23	Internet of Things	T	4	3	50	50	100	3
III	21GEP24	Internet of Things Lab	P	3	3	50	50	100	2

List of Courses Offered by B.Com. CA Department

SEM	Course Code	Course Title	T/P	Ins. Hrs/ week	Examination				Credits
					Dur. Hrs	CIA	ES	Total Marks	
II	21GEP28	Fundamentals of Accounting	T	4	3	50	50	100	4

List of Courses Offered to MSW Department

SEM	Course Code	Course Title	T/P	Ins. Hrs/ week	Examination				Credits
					Dur. Hrs	CIA	ES	Total Marks	
III	21GEP18	Excel Macro	P	4	3	50	50	100	4

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. Any courses certified by statutory bodies

The Courses focus on the following needs	
SD	Skill Development
EM	Employability
EN	Entrepreneurship
L	Local
R	Regional
N	National
G	Global

Semester-wise Distribution

Semester	Total Marks	Total Credits
I	750	23
II	700	23
III	800	26
IV	700	26
V	600	24
VI	700	33
VII	200	12
VIII	650	26
IX	700	26
X	200	15
Total	**6000**	**234**

Semester-wise Structure for M.Sc. Software Systems

Course Code	Course Title	Ins. hrs / week	Examination				Credits	SD/EM /EN	L/R/N/ G
			Dur. Hrs	CIA	ES	Total Marks			
Semester I									
21SSI01	DSC 1: English	4	3	50	50	100	3	SD	G
21SSI02	DSC 2: C Programming	5	3	50	50	100	4	SD/EM	G
21SSI03	DSC 3: Algebra for Software Systems	4	3	50	50	100	3	SD	G
21SSI04	DSC 4: Computer Organization and Architecture	5	3	50	50	100	4	SD	G
21SSI05	DSC 5: Practical - Programming Lab- C	4	3	50	50	100	3	SD/EM	G
21SSI06	DSC 6: Self Study Paper –PC Software Lab	1	3	-	50	50	1	SD	G
21GEP19	GEC 1: Digital Electronics	4	3	50	50	100	3	SD	G
21GEP20	GEC 2: Digital Electronics Lab	3	3	50	50	100	2	SD	G
		30				**750**	**23**		
Semester II									
21SSI07	DSC 7: Calculus and Applications	4	3	50	50	100	3	SD	G
21SSI08	DSC 8: Object Oriented Programming using C++	5	3	50	50	100	4	SD/EM	G
21SSI09	DSC 9: Data Structures and Algorithms	5	3	50	50	100	4	SD	G
21SSI10	DSC 10: Practical- C++ with Data Structures Lab	4	3	50	50	100	3	SD/EM	G
21GEP21	GEC 3: Embedded Systems	4	3	50	50	100	3	EM	G
21GEP22	GEC 4: Embedded Systems Lab	3	3	50	50	100	2	EM	G
21GEP28	GEC 5: Fundamentals of Accounting	5	3	50	50	100	4	SD	G
		30				**700**	**23**		

Course Code	Course Title	Ins. hrs / week	Examination				Credits	SD/EM /EN	L/R/N/ G
			Dur. Hrs	CIA	ES	Total Marks			
Semester III									
21SSI11	DSC 11: Numerical and Statistical Methods	4	3	50	50	100	4	SD	G
21SSI12	DSC 12: Computer Networks	5	3	50	50	100	5	SD	G
21SSI13	DSC 13: Python Programming	4	3	50	50	100	4	SD/EM	G
21SSI14	DSC 14: System Software and Operating System	4	3	50	50	100	4	SD	G
21SSI15	DSC 15: Practical- Python Programming Lab	3	3	50	50	100	2	SD/EM	G
21SSI16	DSC 16: Practical- System Software Lab (C & C++)	3	3	50	50	100	2	SD	G
21GEP23	GEC 6: Internet of Things	4	3	50	50	100	3	EN	G
21GEP24	GEC 7: Internet of Things Lab	3	3	50	50	100	2	EN	G
		30				**800**	**26**		
Semester IV									
21SSI17	DSC 17: Discrete Structures	4	3	50	50	100	4	SD	G
21SSI18	DSC 18: Java Programming	5	3	50	50	100	5	SD/EM	G
21SSI19	DSC 19: Database Management Systems	5	3	50	50	100	5	SD/EM	G
21SSI20	DSC 20: Compiler Design	5	3	50	50	100	5	SD	G
21SSI21	DSC 21: Practical – Java Programming Lab	4	3	50	50	100	3	SD/EM	G
21SSI22	DSC 22: Practical- Database Management Systems Lab	4	3	50	50	100	2	SD/EM	G
21SSI23	DSC 23: Practical- Compiler Design Lab	3	3	50	50	100	2	SD	G
		30				**700**	**26**		

Course Code	Course Title	Ins. hrs / week	Examination				Credits	SD/EM /EN	L/R/N/ G
			Dur. Hrs	CIA	ES	Total Marks			
Semester V									
21SSI24	DSC 24: OperationsResearch	4	3	50	50	100	4	SD	G
21SSI25	DSC 25: Design and Analysis of Algorithms	5	3	50	50	100	4	SD	G
21SSI26	DSC 26: Web Technology	5	3	50	50	100	5	SD	G
21SSI27	DSC 27: Advanced Java Programming	4	3	50	50	100	4	EN	G
21SSI28	DSC 28: Practical - Algorithm Lab	4	3	25	25	50	2	SD	G
21SSI29	DSC 29: Practical- J2EE Lab	4	3	50	50	100	3	EN	G
21SSI30	DSC 30: Practical – Web Technology Lab	4	3	25	25	50	2	SD	G
		30				**600**	**24**		
Semester VI									
21SSI31	DSC 31: Software Engineering	4	3	50	50	100	4	SD	G
21SSI32	DSC 32: Advanced Web Technology	5	3	50	50	100	5	EN	G
21SSI33	DSC 33: Android Programming	5	3	50	50	100	5	EN	G
21SSI34	DSC 34: Distributed Operating Systems	5	3	50	50	100	5	SD	G
21SSI35	DSC 35: Practical - Advanced Web Technology Lab	4	3	25	25	50	2	EN	G
21SSI36	DSC 36: Practical - Application Development Using Android	4	3	50	50	100	3	EN	G
21SSI37	DSC 37: Self Study Paper: Practical-UML andCASE Tools	1	3	-	50	50	1	SD	G
21SSI38	Mini Project Work and Viva Voce	2	-	50	50	100*	8	SD/EM/ EN	G
		30				**700**	**33**		

Course Code	Course Title	Ins. hrs / week	Examination				Credits	SD/EN /EM	L/R/N/ G
			Dur. Hrs	CIA	ES	Total Marks			
Semester VII									
21SSI39	Project Work (6 months)	-	-	100	100	200**	12	SD/EM/ EN	G
						200	**12**		
Semester VIII									
21SSI40	DSC 38: Data Mining and Warehousing	5	3	50	50	100	4	SD	G
21SSI41	DSC 39: Linux Programming	5	3	50	50	100	5	SD	G
21SSI42	DSC 40: Software Testing	5	3	50	50	100	5	SD/EM	G
21SSI43	DSC 41: Practical - Linux Programming	3	3	25	25	50	2	SD	G
21SSI44	DSC 42: Practical – Software Testing Lab	3	3	50	50	100	2	SD/EM	G
21SSI45/ 21SSI46	DSE 1/2: Option I – Computer Graphics / Machine Learning	5	3	50	50	100	5	SD/EM	G
21SSI47/ 21SSI48	DSE 3/4: Option II - Practical –Computer Graphics Lab/ Machine Learning Using R	4	3	50	50	100	3	SD/EM	G
		30				650	26		
Semester IX									
21SSI49	DSC 43: Digital Image Processing	5	3	50	50	100	5	SD	G
21SSI50	DSC 44:Crytography and Network Security	5	3	50	50	100	5	SD	G
21SSI51	DSC 45: Cloud Computing	4	3	50	50	100	3	SD/EM	G
21SSI52	DSC 46: Practical – Image Processing Lab	4	3	50	50	100	3	SD	G
21SSI53	DSC 47:Practical - Cryptography Lab	4	3	50	50	100	3	SD	G
21SSI54/ 20SSI55	DSE 5/6: Option III – Animation Techniques/ Deep Learning	5	3	50	50	100	5	SD/EM	G
21SSI56/ 21SSI57	DSE 7/8: Option IV - Practical –Animation Lab / Deep Learning Lab	3	3	50	50	100	2	SD/EM	G
		30				700	26		

Semester X									
21SSI58	Project Work (6 months)	-	-	100	100	200**	15	SD/EM/ EN	G
						200	**15**		