

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. Computer Science
(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

I. Programme Educational Objectives (PEOs)

Post Graduates from the Computer Science Programme are expected to achieve the following PEOs within two years of graduation

PEO 1	Develop programme with area of specialization with software skills through modern IT methods in the field with wider research knowledge.
PEO 2	Become a team leader and work with a group in solving complex problems through up-to-date domain knowledge of the relevant areas including the software and hardware skills through effective communicative skills.
PEO 3	Keep up-to-date information in advanced knowledge for lifelong learning and provide professional services with competence in the relevant field.
PEO 4	Demonstrate ethical and professional values in providing services in the relevant field including entrepreneurial skills.

II. Programme Learning Outcomes (PLOs)

The following Programme Learning Outcomes have been identified for M.Sc. Computer Science:

PLO 1	Knowledge: Apply the comprehensive knowledge to real life problems to meet the core competency with continuous up graduation (Cognitive)
PLO 2	Critical Thinking Skills: Learn the technological advancements and understand the usage of modern design and development tools. (Cognitive)
PLO 3	Practical Skills: Ability to become proficient in the concepts and applications in the key areas of computer science like Web designing and development, Mobile applications, Network and communication technologies by exploring the scope in the field of research (Psychomotor)
PLO 4	Team-work Skills: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings with management principles, required to work in a team with stewardship of the society (Affective)
PLO 5	Communication Skills: Communicate in both oral and written forms, demonstrating the practice of professional ethics and the concerns for social welfare (Affective)

PLO 6	Digital Skills: Ability to model, analyze, design, visualize and realize physical systems or processes of increasing size and complexity (Affective)
PLO 7	Numeracy Skills: Demonstrate the extended investigation of mathematical models to resolve real time problems (Cognitive)
PLO 8	Leadership Skills: Develop technical and managerial skills needed to be an effective leader as an entrepreneur or in a software concern (Affective)
PLO 9	Lifelong Learning Skills: Recognize the need and ability to involve independent and life-long learning in the changing era of technology (Affective)
PLO 10	Entrepreneurial Skills: Apply designing skills to address various social problems identified in private and public sectors and to take up entrepreneurship in business applications (Affective)
PLO 11	Ethics & Professional Skills: Demonstrate professionally with social, cultural and ethical responsibility as an individual as well as in multifaceted teams with positive attitude (Affective)

III. Programme Learning Outcomes Vs Graduate Attributes Vs Taxonomy of Verbs

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

Mapping of PEOs and PLOs

	PLO1	PLO2	PLO3	PLO4	PLO5	PLO6	PLO7	PLO8	PLO9	PLO10	PLO11
PEO1	3		3			3					
PEO2		3					3				
PEO3				3				3		2	3
PEO4					3				2		

Additional Programme Outcomes (APOs)

The Additional Programme Outcomes for M.Sc. Computer Science are:

APO 1	The students will have an ability to build networks and broaden horizons and engaging authentically through social intelligence Quotient and Emotional Quotient
APO 2	Ability to translate vast data into abstract concepts and to understand data base reasoning
APO 3	Ability to develop working in virtual collaborating platforms to transfer different 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

Programme Specific Outcomes (PSOs)

On the completion of M.Sc. Computer Science, the graduates will able to

PSO 1	Design, Build and maintain projects with the ability to practice and improve as computer professionals
PSO 2	Ability to utilize Computing knowledge and skills for the betterment of society.

Curriculum Structure for M.Sc. Computer Science

Course Components, Credits & Marks Distribution

Course Type	Number of Courses	Credits per Course	Total Credits	Marks	Semester
Discipline Specific Courses (DSC)	18	2-8	70	1750	I to IV

Discipline Specific Elective Courses (DSE)	3	4	12	300	II & III
Generic Electives Courses (GEC)	3	2-4	8	200	II & III
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				I to IV
Total			90	2250	

Discipline Specific Courses (DSC) – I & II

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	23CSP01/ 23ITP01	DSC I: Advanced Java Programming	I	5	4	100
2	23CSP02	DSC II: Block Chain and Cryptocurrency	I	5	4	100
3	23CSP03/ 23ITP03	DSC III: Design and Analysis of Algorithms	I	5	4	100
4	23CSP04/ 23ITP04	DSC Practical-I: Advanced Java Lab	I	5	4	100
5	23CSP05/ 23ITP05	DSC IV: Data Mining	I	5	4	100
6	23CSP06/ 23ITP06	DSC V: Cryptography and Network Security	II	5	4	100
7	23CSP07A/ 23ITP07A	DSC VI: Linux Programming	II	3	2	50
8	23CSP07B/ 23ITP07B	DSC Practical-II: Programming in Linux	II	2	2	50
9	23CSP08/ 23ITP08	DSC VII: Compiler Design	II	5	4	100
10	23CSP09/ 23ITP09/	DSC Practical-III: Cryptography and Network Security Using NS3	II	3	3	100

Project Work

During the fourth semester, each student has to undertake a Project Work individually. A guide will be allotted to each student by the department. Student can select any relevant

topic in discussion with the guide. The project report shall be subject to internal evaluation followed by a viva-voce. The project should be demonstrated at the time of examination.

CIA marks: 40% of the total marks

Review1 – 40 Marks

Review2 – 40 Marks

Work diary – 20 Marks

Total – 100 Marks.

End Semester Viva-Voce will be conducted for 120 (External) Marks.

(Dissertation - 80 Marks & Viva-voce - 40 Marks)

Discipline Specific Electives (DSE) (1 Course)

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 THREE courses from the following list. Students can opt one course from each group.

S. No.	Course Code	Course Title	Semester	Contact Hours	Credits	Marks
1	23CSP21/ 23ITP21	DSE I: Cloud Services / Data Science and Big Data Analytics	II	5	4	100
Total				5	4	100

Generic Elective Courses (GEC) (2 Courses)

Generic Elective Courses are interdisciplinary in nature. They are additional courses based on expertise, specialization, requirements, scope, and need of the department. The students will have the choice of taking THREE GECs.

List of Courses Offered by Computer Science Department

Group	Course Code	Course Title	Semester	Contact Hours	Credits	Marks
I	23GEP07	PC Software Lab	II	4	3	100
	23GEP08	RDBMS using Oracle	II	4	2	50
	23GEP09	RDBMS using Oracle Lab	II	2	2	50
Total					07	200

4. Drive Through Course (DTC)**i. (DTC) I & II – Online Certification - 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.

- a. SWAYAM-NPTEL
- b. Coursera
- c. Any courses certified by statutory bodies.

ii. (DTC – III) – Article Publication - To be Completed

Students individually or with the maximum of four members per batch are asked to publish article in Scopus or Web of Science Journals (Or) publish book chapters. Additional 4 credits per Course will be given on submission of proof of the published paper (or) book chapter.

Semester-wise Scheme

Semester I										
Course Code	Course Title	T/P	Ins. Hrs/ week	Examination				Credits	SD/EM/EN	L/R/N/G
				Dur Hrs	CIA	ES	Total Marks			
23CSP01/ 23ITP01	DSC-I: Advanced Java Programming	T	5	3	25	75	100	4	SD	G
23CSP02	DSC-II: Blockchain and Cryptocurrency	T	5	3	25	75	100	4	SD	G
23CSP03/ 23ITP03	DSC-III: Design and Analysis of Algorithms	T	5	3	25	75	100	4	SD	G
23CSP04/ 23ITP04	DSC Practical-I: Advanced Java Lab	P	5	3	40	60	100	4	SD/EM/EN	G
23CSP05/ 23ITP05	DSC-IV: Data Mining	T	5	3	25	75	100	4	SD/EM/EN	G
23GEP01	GEC-I: Discrete Mathematical Structures	T	5	3	25	75	100	4	SD	G
DTC I - Additional Credit Courses (NPTEL/ Coursera)										
Total			30				600	24		
Semester II										
Course Code	Course Title	T/P	Ins. Hrs/ week	Examination				Credits	SD/EM/EN	L/R/N/G
				Dur Hrs	CIA	ES	Total Marks			
23CSP06/ 23ITP06	DSC- V: Cryptography and Network Security	T	5	3	25	75	100	4	EM	G
23CSP07A / 23ITP07A	DSC VI: Linux Programming	T	3	3	10	40	50	2	SD/EM	G
23CSP07B / 23ITP07B	DSC Practical-II: Programming in Linux	P	2	2	10	40	50	2	EM	G
23CSP08/ 23ITP08	DSC-VII: Compiler Design	T	5	3	25	75	50	4	EM	G
23CSP09/ 23ITP09	DSC Practical-III: Cryptography and Network Security Using NS3	T	5	3	25	75	100	4	SD	G
23CSP21/ 23ITP21	DSE I: Cloud Services / Data Science and Big Data Analytics	T	5	3	25	75	100	3	SD	G

23GEP25	GEC-II: Robotics Programming	T	4	3	10	40	50	3	EM	G
23GEP26	GEC-II: Practical Robotics Programming Lab	P	3	3	20	30	50	2	EM	G
DTC II - Additional Credit Courses (NPTEL/ Coursera)										
Total			30				600	24		
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 IV		

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 of Marks and Credits:

Semester	Total Marks	Total Credits
I	600	24
II	600	24
Total	1200	48

List of Courses Offered by Computer Science Department

Semester	Course Code	Course Name	Programme	I/P/E	Ins. hrs	Examination				Credits
						Dur Hrs	CIA	ES	Total Marks	
II	23GEP07	PC Software Lab	MA(ENG)	P	4	3	25	75	100	3
	23GEP08	RDBMS using Oracle	MSc (MBD)	T	4	3	10	40	50	2
	23GEP09	RDBMS using Oracle Lab	MSc (MBD)	P	2	3	20	30	50	2

List of Courses Offered to CS Department

Sem	Course code	Course title	Programme	T/p/e	Ins. Hrs	Examination				Credits
						Dur Hrs	CIA	ES	Total Marks	
I	23GEP01	Discrete Mathematical Structures	M.Sc (CS)	T	5	3	25	75	100	4
II	23GEP25	Robotics Programming	M.Sc (CS)	T	4	3	10	40	50	3
II	23GEP26	Robotics Programming Lab	M.Sc (CS)	P	3	3	20	30	50	2
