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. Electronics and Communication Systems

(I and II Semester)

For 2023-24admitted Students

DEPARTMENT OF ELECTRONICS AND COMMUNICATION SYSTEMS

SRI KRISHNA INSTITUTIONS COIMBATORE

SRI KRISHNA ARTS AND SCIENCE COLLEGE
KNOWLEDGE LOVE & SERVICE
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COIMBATORE – 641008

DEPARTMENT OF ELECTRONICS AND COMMUNICATION SYSTEMS

2023-2024

I. Programme Educational Objectives (PEOs)

Post Graduates from the M.Sc. Electronics and Communication SystemsProgramme are expected to achieve the following PEOs

PEO 1	Graduates will be scientific designers in the field of Electronics and Communication Systems by applying modern tools and design strategies.
PEO 2	Graduates with an ability to solve complex scientific or engineering problems related to the needs of society and industry by adopting advanced technologies.
PEO 3	Graduates will be team leaders or entrepreneurs capable of working effectively with diverse teams and governing professional ethics practices.
PEO 4	Graduates will communicate effectively and gain knowledge through continuous learning to set up their career paths in service/manufacturing companies or teaching or research.

II. Programme Learning Outcomes (PLOs)

The Graduates of B.Sc. Electronics and Communication Systems programme will be able to:

PLO 1	**Knowledge:** Apply the knowledge of Electronic Science, Mathematics, Computer Fundamentals and Communication specialization to the solution of complex scientific problems. ***(Cognitive)***
PLO 2	**Critical Thinking Skills:** Use critical thinking to carry out research /investigation and development work to solve complex engineering problems. ***(Cognitive)***
PLO 3	**Practical Skills:** Develop a passion for hardware and software design and be part of the electronic design industry/software company to become leaders in indigenous product development. ***(Psychomotor)***
PLO 4	**Teamwork Skills:** Function effectively on teams to accomplish a common goal and build a team for group work in various settings. ***(Affective)***
PLO 5	**Communication Skills:** Exhibit good communication skills in writing reports, documenting complex scientific activities and give presentations to scientific communities. ***(Affective)***
PLO 6	**Digital Skills:** Design electronic systems which are in tune with current digital technology and adaptable for future changes. ***(Affective)***
PLO 7	**Numeracy Skills:** Capture the credibility of mathematics in digital world through development of mathematical model of the systems. ***(Cognitive)***

PLO 8	**Leadership Skills:** Function effectively as a leader and as well as team member in diverse/ multidisciplinary environments. ***(Affective)***
PLO 9	**Lifelong Learning Skills:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change. ***(Affective)***
PLO 10	**Entrepreneurial Skills:** Emerge as socially responsible entrepreneur. ***(Affective)***
PLO 11	**Ethics &Professional Skills:** Apply professional and ethical principles and function with responsibility. ***(Affective)***

III. Programme Learning Outcomes Vs Graduate Attributes 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											√			√

IV. Mapping of PEOs and PLOs

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

V. Additional Programme Outcomes (APOs)

The Additional Programme Outcomes for M.Sc. Electronics and Communication Systems are:

APO 1	Graduates will have ability with social intelligence with good Intelligent Quotient (IQ) and Emotional Quotient (EQ).
APO 2	Graduates will have a sense of creating and observing unique insights in what is seen and observed.
APO 3	Graduates will have design thinking capabilities.
APO 4	Graduates will have computational thinking capabilities (ability to translate vast data in the abstract concept) and understand database reasoning.
APO 5	Graduates will have virtual collaborative ability.
APO 6	Graduates will have ability to use social and open source media effectively for productive use.
APO 7	Graduates will have critical thinking and innovative skills.
APO 8	Graduates will have good digital foot prints.

VI. Programme Specific Outcomes (PSOs)

On the completion of M.Sc. Electronics and Communication Systems, the graduates will able to

PSO 1	Graduates will be able to design and develop applications for Information Technology, Communication Systems, Signal Processing, Embedded Systems, Control Systems, VLSI, Nano Electronics, Networking, IoT, Industrial Automation, Automotive Electronics and Robotics.
PSO 2	Graduates will be able to understand the ethical and environmental constraints in scientific and engineering practises and deal with social and safety issues.
PSO 3	Graduates will be able to find research gaps in different fields in their domain and come up with solutions for new ideas and innovations.

VII. Mapping of PEOs with PSOs

	PSO 1	**PSO 2**	**PSO 3**
PEO 1	3		2
PEO 2	3	3	3
PEO 3		2	
PEO 4	2		2

VIII. Curriculum Structure for M.Sc. Electronics and Communication Systems

Course Components, Credits & Marks Distribution

Course Type	Number of Courses	Credits per Course	Total Credits	Marks	Semester
Discipline Specific Courses (DSCs)	17	4-5	70	1750	I to IV
Discipline Specific Elective Courses (DSEs)	3	4	12	300	II & III
Generic Electives Courses (GECs)	3	2-3	8	200	II & III
Drive Through Courses (DTCs) - (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**	

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	23ECP01	Telecommunication and Fiber Optics	I	4	4	100
2	23ECP02	Advanced Java Programming	I	5	4	100
3	23ECP03	Nano Electronics	I	4	4	100
4	23ECP04	ASIC Design	I	5	4	100
5	23ECP05	Industrial Automation and Control	I	5	4	100
6	23ECP06	Advanced Java Programming Lab	I	3	2	100
7	23ECP07	ASIC and PLC Programming Lab	I	4	3	100
8	23ECP08	Wireless Communications and Networks	II	4	4	100
9	23ECP09	Digital Image and Video Processing	II	5	4	100
10	23ECP10	Embedded Systems	II	5	4	100
11	23ECP11	Communication Systems Lab	II	4	3	100
12	23ECP12	Embedded Systems Lab	II	4	3	100
Total					**43**	**1200**

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 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	23ECP18	Robotics Engineering	II	4	4	100
	23ECP19	Virtual Instrumentation				
Total					**4**	**100**

3. Generic Elective Courses (GEC)

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 IT Department

Group	Course Code	Course Title	Semester	Contact Hours	Credits	Marks
I	23GEP10/ 23GEP11	Web Application Development/ Introduction to Data Analytics	II	4	3	50
Total					**3**	**50**

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.

1. SWAYAM-NPTEL
2. Coursera
3. Any courses certified by statuary bodies.

ii. DTC III: Article Publication

Students individually or with the maximum of four members per batch are asked to publish article in Scopus/ Web of Science/UGC Care Journals or publish book chapter. Additional 4 credits per course will be given on submission of proof of the published paper or book chapter.

IX. 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			
23ECP01	**DSC1** Telecommunication and Fiber Optics	T	4	3	25	75	100	4	EM	G
23ECP02	**DSC2** Advanced Java Programming	T	5	3	25	75	100	4	SD	G
23ECP03	**DSC3** Nano Electronics	T	4	3	25	75	100	4	SD	G
23ECP04	**DSC4** ASIC Design	T	5	3	25	75	100	4	EM	G
23ECP05	**DSC5** Industrial Automation and Control	T	5	3	25	75	100	4	EM	G
23ECP06	**DSC6** Advanced Java Programming Lab	P	3	4	40	60	100	2	EM	G
23ECP07	**DSC7** ASIC and PLC Programming Lab	P	4	4	40	60	100	3	EM	G
Drive Through Course I: Additional Credit Courses (NPTEL/Coursera)							Completed			
Total			**30**				**700**	**25**		

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			
23ECP08	**DSC8** Wireless Communications and Networks	T	4	3	25	75	100	4	EM	G
23ECP09	**DSC9** Digital Image and Video Processing	T	5	3	25	75	100	4	EN	G
23ECP10	**DSC10** Embedded Systems	T	5	3	25	75	100	4	EN	G
23ECP11	**DSC11** Communication Systems Lab	P	4	4	40	60	100	3	EM	G
23ECP12	**DSC12** Embedded Systems Lab	P	4	4	40	60	100	3	EN	G
23ECP18/ 23ECP19	**DSE1** Robotics Engineering / Virtual Instrumentation	T	4	3	25	75	100	4	EM	G

23GEP10/ 23GEP11	**GEC1** Web Application Development/ Introduction to Data Analytics	T	4	3	10	40	50	3	EM / SD	G
Drive Through Course II: Additional Credit Courses (NPTEL/Coursera)							Completed			
Total			**30**				**650**	**25**		

Drive-Through Courses (DTCs): 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 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	700	25
II	650	25
Total	**1350**	**50**

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Offered By

List of Courses Offered by IT Department for M.Sc. ECS

SEM	Course Code	Course Title	T/P	Ins. Hrs/ week	Examination				Credits	SD/ EM/ EN	L/ R/ N/ G
					Dur. Hrs	CIA	ES	Total Marks			

II	23GEP10	Web Application Development	T	4	3	10	40	50	3	EM	G
OR											
II	23GEP11	Introduction to Data Analytics	T	4	3	10	40	50	3	SD	G

Offered to

List of Courses Offered to M.Sc. (SS)

SEM	Course Code	Course Title	T/P	Ins. Hrs/ week	Examination				Credits	SD/ EM/ EN	L/ R/ N/ G
					Dur. Hrs	CIA	ES	Total Marks			
I	23GEP12	Digital Electronics	T	4	3	25	75	100	3	SD	G
I	23GEP13	Digital Electronics Lab	P	3	3	40	60	100	2	SD	G
II	23GEP16	Embedded Systems	T	4	3	25	75	100	3	EM	G
II	23GEP17	Embedded Systems Lab	P	3	3	40	60	100	2	EM	G
OR											
I	23GEP14	VLSI Design and Verilog	T	4	3	25	75	100	3	SD	G
I	23GEP15	Verilog Programming Lab	P	3	3	40	60	100	2	SD	G
II	23GEP18	Programmable Logic Controller	T	4	3	25	75	100	3	EM	G
II	23GEP19	Programmable Logic Controller Lab	P	3	3	40	60	100	2	EM	G

List of Courses Offered to M.Sc (IT), M.Sc (CT) and M.Sc (CS)

SEM	Course Code	Course Title	T/P	Ins. Hrs/ week	Examination				Credits	SD/ EM/ EN	L/ R/ N/ G
					DurHrs	CIA	ES	Total Marks			

II	23GEP20	Robotics Programming	T	4	3	10	40	50	3	EM	G
II	23GEP21	Robotics Programming Lab	P	3	3	20	30	50	2	EM	G