

# **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. Electronics and Communication Systems  
(I and II Semester)**

**For 2023-24 admitted Students**

**DEPARTMENT OF ELECTRONICS AND  
COMMUNICATION SYSTEMS**



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

**DEPARTMENT OF ELECTRONICS AND COMMUNICATION SYSTEMS**

**(2023-2024)**

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

Graduates from the B.Sc. Electronics and Communication Systems Programme are expected to achieve the following PEOs

<b>PEO 1</b>	Graduates will be practitioners and leaders in the field of Electronics and Communication Systems with effective interpersonal skills.
<b>PEO 2</b>	Graduates with an ability to solve scientific or engineering problems by using critical thinking and problem-solving skills in a multi-disciplinary setting.
<b>PEO 3</b>	Graduates will be professionals or entrepreneurs and exhibit technical, social, and ethical responsibility in service or product-based companies.
<b>PEO 4</b>	Graduates are equipped with skills in recent technologies and be receptive to attain professional competence through life-long learning.
<b>PEO 5</b>	Graduates will be successful in pursuing higher education and choosing the right career path.

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

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

<b>PLO1</b>	<b>Knowledge:</b> Apply knowledge of Mathematics and Science in solving Electronics related problems. <i>(Cognitive)</i>
<b>PLO2</b>	<b>Critical Thinking Skills:</b> Demonstrate critical thinking skills in understanding of complex problems and to develop fully reasoned opinions on such contemporary issues. <i>(Cognitive)</i>
<b>PLO3</b>	<b>Practical Skills:</b> Design and conduct electronics experiments, as well as to analyze and interpret data using scientific/engineering methods. <i>(Psychomotor)</i>
<b>PLO4</b>	<b>Teamwork Skills:</b> Function as a member of a multidisciplinary team with sense of ethics, integrity and social responsibility. <i>(Affective)</i>
<b>PLO5</b>	<b>Communication Skills:</b> Communicate effectively in both verbal and written forms. <i>(Affective)</i>
<b>PLO6</b>	<b>Digital Skills:</b> Design and manage electronic systems or processes that conforms digital skills within ethical and economic constraints. <i>(Affective)</i>
<b>PLO7</b>	<b>Numeracy Skills:</b> Identify, formulate, solve and analyze the problems in various disciplines of Electronics. <i>(Cognitive)</i>
<b>PLO8</b>	<b>Leadership Skills:</b> Become competent by applying their technical and managerial skills. <i>(Affective)</i>
<b>PLO9</b>	<b>Lifelong Learning Skills:</b> Recognize the need for, and be able to engage in higher studies, research and lifelong learning. <i>(Affective)</i>

<b>PLO10</b>	<b>Entrepreneurial Skills:</b> Pursue the opportunity to create value and wealth for the betterment of the individual and society at large. <i>(Affective)</i>
<b>PLO11</b>	<b>Ethics &amp; Professional Skills:</b> Apply ethical principles and commit to professional ethics and responsibilities, and norms of the scientific/ engineering practices. <i>(Affective)</i>

<b>III. PROGRAMME LEARNING OUTCOMES VS GRADUATE ATTRIBUTES VSTAXONOMY OF VERBS</b>														
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											√			√

<b>IV. PROGRAMME LEARNING OUTCOMES VS PROGRAMME EDUCATIONAL OBJECTIVES</b>					
	PEO 1	PEO 2	PEO 3	PEO 4	PEO 5
PLO 1	3		2		3
PLO 2		3			
PLO 3	3				
PLO 4		3			
PLO 5	3				
PLO 6				3	
PLO 7		3			
PLO 8	3				
PLO 9				3	2
PLO 10			2		2
PLO 11			3		

**V. ADDITIONAL PROGRAMME OUTCOMES (APOs)**

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

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

<b>PSO 1</b>	Graduates will be able to design and develop applications for Information Technology, Communication Systems, Signal Processing, Embedded Systems, Instrumentation and Control Systems, Networking, IoT, Automotive, Industrial Automation and Robotics.
<b>PSO 2</b>	Graduates will be able to use modern tools and programming techniques to solve problems in the field of Electronics and Communication, and IT.
<b>PSO 3</b>	Graduates will be able to pursue post-graduate or research-based programmes.

**VII. Mapping of PEOs with PSOs**

	<b>PSO 1</b>	<b>PSO 2</b>	<b>PSO 3</b>
<b>PEO 1</b>	3		3
<b>PEO 2</b>	3	3	
<b>PEO 3</b>	3		
<b>PEO 4</b>		2	2
<b>PEO 5</b>			3

## VIII. Curriculum Structure for B.Sc. Electronics and Communication Systems

### Course Components, Credits & Marks Distribution

Part No	Group	Basic Structure: Distribution of Courses	Number of Courses	Total Marks	Total Credits
I - III	1	AEC – Ability Enhancement Courses	10	1000	24
III & IV	2	DSC – Discipline Specific Courses	15	1500	60
	3	DSE – Discipline Specific Electives	10	1000	40
	4	GEC – Generic Elective Courses	4	400	12
	5	SEC – Skill Enhancement Courses	2	100	4
IV	6	ANCC I & II – Audit Non-Credit Courses	3	-	
V		ANCC III – Audit Non-Credit Courses	1	Completed	
-	7	Drive Through Courses (DTCs) – (SWAYAM-NPTEL, Coursera, any courses certified by statutory bodies, etc.)	Any number	-	Additional Credits
<b>Total</b>				<b>4000</b>	<b>140</b>

#### Group 1. Ability Enhancement Courses (AECs)(I & II Semesters)

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	23AEC02/ 23AEC07/ 23AEC11	<b>AEC Part I: Language – I:</b> Tamil-I - Tamil Aazhi/ Hindi – I/ French – I	I	Language Department	6	3	100
2	23AEC22	<b>AEC Part II: English-I:</b> English for Professional Communication	I	English Department	4	3	100
3	23AEC04/ 23AEC08/ 23AEC12	<b>AEC Part I: Language – II</b> Tamil-II - Sudar Tamil/ Hindi – II/ French – II	II	Language Department	6	3	100
4	23AEC24	<b>AEC Part II: English – II:</b> Campus to Corporate	II	English Department	4	3	100
5	23AEC34	<b>AEC Part III:</b> Academic Skills for Electronic Science	II	ECS	2	2	100

<b>Total</b>	<b>14</b>	<b>500</b>
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### Group 2. 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 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	23ECU01	ElectronicComponents and Devices	I	4	4	100
2	23ECU02	ElectronicComponents and Devices Lab	I	3	2	50
3	23ECU03	C Programming and Data Structures	I	4	3	100
4	23ECU04	C Programming and Data Structures Lab	I	3	2	50
5	23ECU05	Electronic Circuits	II	4	4	100
6	23ECU06	Electronic Circuits Lab	II	3	2	50
7	23ECU07	Python Programming	II	3	3	100
8	23ECU08	Python Programming Lab	II	2	2	50
<b>Total</b>					<b>22</b>	<b>600</b>

### Group 4. 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. The student can learn the courses in the field of language, mathematics and computer science.

Sl. No.	Course Code	Course Title	Semester	Ownership Department	Contact Hours	Credits	Marks
1	23GEU01	Mathematics - I	I	Mathematics	4	3	100
2	23GEU02	Mathematics - II	II	Mathematics	4	3	100
<b>Total</b>						<b>6</b>	<b>200</b>

### Group 5 : Skill Enhancement Courses(SEC)

SEC I : Compulsory Course : Talent Enhancement Course : Career Guidance

SEC II : A Bucket of Skill based Courses are offered for the Under Graduate programmes aimed at imparting advanced skill. A Student has to subscribe one course from list offered by the department.

Courses Offered by Nan Mudhalvan Scheme/Certification in Core Area/Department offered Certification Course.

**Group 6. 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.

S. No.	Course Code	Course Name
<b>ANCC 1 (Semester I)</b>		
1	23ANC01	Environmental Studies
<b>ANCC 2 - Values &amp; Ethics (Semester II)</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

**Group 7.****i) Drive-Through Courses (DTCs) 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

- 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.

**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 V 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	Ins. Hrs/Week	ESE Dur. Hrs	CIA Marks	ES Marks	Total Marks	Credits	SD/EM/EN	L/ R/ N/ G
23AEC02/ 23AEC07/ 23AEC11	<b>AEC 1: Language I</b> Tamil-I - Tamil Aazhi/ Hindi - I/ French - I	T	6	3	25	75	100	3	SD	L/R/ N/G
23AEC22	<b>AEC 2: English I</b> English for Professional Communication	T	4	3	25	75	100	3	SD	G
23ECU01	<b>DSC 1</b> Electronic Components and Devices	T	4	3	25	75	100	4	SD	G
23ECU02	<b>DSC 2</b> Electronic Components and DevicesLab	P	3	3	20	30	50	2	SD	G
23ECU03	<b>DSC 3</b> C Programming and Data Structures	T	4	3	25	75	100	3	EM	G
23ECU04	<b>DSC 4</b> C Programming and Data StructuresLab	P	3	3	20	30	50	2	EM	G
23GEU01	<b>GEC 1</b> Mathematics – I	T	4	3	25	75	100	3	SD	G
23ANC01	<b>ANCC 1 (NF2F)</b> Environmental Studies	T	2	-	-	-	Completed		SD	G
Drive Through Course I: Additional Credit Courses (NPTEL/Coursera)							Completed			
<b>Total</b>			<b>30</b>				<b>600</b>	<b>20</b>		
Semester II										
Course Code	Course Title	T/P/E	Ins. Hrs/Week	ESE Dur. Hrs	CIA Marks	ES Marks	Total Marks	Credits	SD/EM/EN	L/ R/ N/ G
23AEC04/ 23AEC08/ 23AEC12	<b>AEC 3: Language II</b> Tamil-II - Sudar Tamil/ Hindi-II/ French - II	T	6	3	25	75	100	3	SD	L/ N/ G
23AEC24	<b>AEC 4: English II</b> Campus to Corporate	T	4	3	25	75	100	3	SD	G
23AEC34	<b>AEC 5</b> Academic Skills for Electronic Science	T	2	-	100	-	100	2	SD	G
23ECU05	<b>DSC 5</b> Electronic Circuits	T	4	3	25	75	100	4	SD	G

23ECU06	<b>DSC 6</b> Electronic CircuitsLab	P	3	3	20	30	50	2	SD	G
23ECU07	<b>DSC 7</b> Python Programming	T	3	3	25	75	100	3	EM	G
23ECU08	<b>DSC 8</b> Python Programming Lab	P	2	3	20	30	50	2	EM	G
23GEU02	<b>GEC 2</b> Mathematics - II	T	4	3	25	75	100	3	SD	G
23ANC02/ 23ANC03/ 23ANC04/ 23ANC05/ 23ANC06/ 23ANC07/ 23ANC08/ 23ANC09/ 23ANC10	<b>ANCC 2 (NF2F)</b> <b>Values &amp; Ethics:</b> Human Rights / Women's Rights / Yoga for Human Excellence / Indian Culture and Heritage / Introduction to Cyber Security / Consumer Protection / Constitution of India / Waste Management/ Cyber Ethics	T	2	-	-	-	Completed		SD	G
Drive Through Course II: Additional Credit Courses (NPTEL/Coursera)							Completed			
<b>Total</b>			<b>30</b>				<b>700</b>	<b>22</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	20
II	700	22