



University of Madras

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Undergraduate Programme

Curriculum and Syllabus for **B.Sc. Electronics & Communication Science** (With effect from the Academic Year 2023-24)

JUNE 2023

Note: The Board of Studies designed the syllabus as per Common Model Syllabus provided by TANSCHÉ based on Learning Outcome based Curriculum Framework (LOCF) as prescribed by the UGC.

Preamble

Electronics has become an integral part of our daily existence, making it challenging to envision a world without its presence. Virtually every facet of our everyday lives relies, in some way, on electronics or electronic components.

The field of electronics encompasses a wide range of studies and continually evolves with the emergence of new technologies. Therefore, it is imperative to incorporate recent technological advancements into the curriculum while upholding the foundational principles of electronics. In turn, there must be a harmonious equilibrium between the fundamentals and the latest applications of electronics.

The healthcare sector, for instance, has seamlessly integrated electronic devices, not only for diagnostics and identifying medical conditions but also for cutting-edge research aimed at treating diseases and rectifying genetic anomalies. Medical electronic equipment plays a pivotal role in swiftly and accurately conducting tests for conditions like diabetes, cholesterol levels, and blood components. Furthermore, the routine use of implanted devices like pacemakers underscores the profound impact of electronics in modern medicine.

The designed curriculum includes provisions aimed at fostering the holistic development of students. It offers opportunities for students to engage with core courses, electives, and skill enhancement courses. These courses place particular emphasis on the enhancement of technical, communication, and subject-specific skills through innovative teaching methods, including practical exercises. The curriculum adheres to a learning outcome-based approach and explicitly outlines expected program outcomes. Additionally, each course within the curriculum specifies its unique learning outcomes, providing students with clear objectives at the outset.

Therefore, this B.Sc. Electronics and Communication Science program engages with the fundamentals and complexity of electronics as it provides the foundation for future innovations that will shape the ever-evolving landscape of technology.

COURSE STRUCTURE:**FIRST SEMESTER**

Part	Name of the Course	Ins. Hrs	Credits	Int. Marks	Ext. Marks	Total
Part I	Language Paper – I	6	3	25	75	100
Part II	100L1Z: English I	6	3	50	50	100
Part III	129C1A: Core Course I – Circuit Theory	5	5	25	75	100
	129C1B: Core Course II– Core Practical I	5	5	40	60	100
	129E1A: Elective I Generic/Discipline Specific – Mathematics I	4	3	25	75	100
Part IV	129S1A: Skill Enhancement Course I – Home Appliances and Wiring*	2	2	25	75	100
	100L1L: Basic Tamil-I (Other Language Students) *					
	100L1M: Advanced Tamil-I (Other Language Students) *					
	109B1A: Skill Enhancement (Foundation Course) – Handling of Domestic Appliances	2	2	25	75	100
		30	23			

* **PART-IV: Skill Enhancement Course I / Basic Tamil / Advanced Tamil (Any one)**

1. Students who have studied Tamil upto XII STD and also have taken Tamil in Part I shall take Skill Enhancement Course I.
2. Students who have not studied Tamil upto XII STD and have taken any Language other than Tamil in Part-I shall take Basic Tamil comprising of Two Courses (level will be at 6th Std.).
3. Students who have studied Tamil upto XII STD and have taken any Language other than Tamil in Part-I shall take Advanced Tamil comprising of Two Courses.

SECOND SEMESTER

Part	Name of the Course	Ins. Hrs.	Credits	Int. Marks	Ext. Marks	Total
Part I	Part- 1: Language – II	6	3	25	75	100
Part II	Part – 2: English – II	6	3	50	50	100
Part III	129C2A: Core Course III – Electronic Devices	5	5	25	75	100
	129C21: Core Course IV– Electronic Devices Practical	4	5	40	60	100
	129E2A: Elective II Generic / Discipline Specific - Mathematics II	5	3	25	75	100
Part IV	129S2A:Skill Enhancement Course SEC – 2 Printed Circuit Board Design	2	2	25	75	100
	100S2A: Basic Tamil-II (Other Languages Students) *					
	100S2B:Advanced Tamil- II (Other Languages Students) *					
	129S2B: Skill Enhancement Course – SEC 3 Soldering Practices	2	2	25	75	100
		30	25			

* Part- IV: Skill Enhancement Course 2 and 3/ Basic Tamil/Advanced Tamil (Any one)

4. Students who have studied Tamil Up to XII STD and also have taken Tamil in Part II shall take Skill Enhancement Course 2.
5. Students who have not studies Tamil up to XII STD and have taken any Language other than Tamil in Part- II shall take Basic Tamil comprising of Two courses (level will be at 6th Std.).
6. Students who have studies Tamil up to XII and have taken any Languages other than Tamil in Part- II shall take Advanced Tamil comprising of Two Courses.

THIRD SEMESTER

Part	Name of the Course	Ins. Hrs.	Credits	Int. Marks	Ext. Marks	Total
Part I	Language – III	6	3	25	75	100
Part II	English – III	6	3	50	50	100
Part III	229C3A :Core Course CC V – Analog Electronics	5	5	25	75	100
	229C31 : Core Course CC VI – Analog Electronics (Practical)	5	5	40	60	100
	Elective III Generic/Discipline Specific 229E3A (a)Energy Physics / 229E31 (b) Programming in C (Theory + Practical)	4	3	25 /40	75 /60	100
Part IV	Skill Enhancement Course I SEC 4 229S3A: Mobile Servicing	1	1	25	75	100
	Skill Enhancement Course SEC – 5 229S3B: Trouble Shooting	2	2	25	75	100
	EVS	1	Exam in the IV semester			
		30	22			

* The Distribution of marks for Programming in C Theory and Practical which have both theory and practical (syllabus combined both theory and practical in each paper together) be followed:

Paper	Internal	External	Total
Theory	25	75	100
Practical+Theory	40	60	100

Finally, theory marks (100) are reduced to 60% and practical marks (100) be reduced to 40%.

FOURTH SEMESTER

Part	Name of the Course	Ins. Hrs.	Credits	Int. Marks	Ext. Marks	Total
Part I	Language – IV	6	3	25	75	100
Part II	English – IV	6	3	50	50	100
Part III	229C4A : Core Course CC VII – Digital Electronics	5	5	25	75	100
	229C41 : Core Course CC VIII– Digital Electronics Practical	5	5	40	60	100
	Elective IV Generic/Discipline Specific 229E4A (a) Applied Physics / 229E4B (b) Programming in JAVA	3	3	25	75	100
Part IV	Value Education	2	2	25	75	100
	Skill Enhancement Course SEC – 6 229S4A : Programming in C++	2	2	25	75	100
	EVS	1	2	25	75	100
		30	25			

FIFTH SEMESTER

Part	Name of the Course	Ins. Hrs.	Credits	Int. Marks	Ext. Marks	Total
Part III	329C5A: Core Course CCIX – Microprocessor and interfacing	5	4	25	75	100
	329C5B: Core Course CCX – Artificial Intelligence	5	4	25	75	100
	329C5C: Core Course XI – Sensor Technology for Artificial Intelligence	5	4	25	75	100
	329C51: Core Course XII – Microprocessor Practical	5	4	40	60	100
	Elective V – Generic/Discipline Specific 329 E5A (a)Python Programming with Raspberry Pi/ 329E5B: (b)Industrial Electronics	4	3	25	75	100
	Elective VI – Generic/Discipline Specific 329E5C: (a)Computer Networks/ 329E5D: (b)Industrial Internet of Things	4	3	25	75	100
Part IV	Skill Enhancement Course SEC 7 329S5A: MAT Lab	2	2	25	75	100
	Summer Internship / Industrial Training		2	25	75	100
		30	26			

SIXTH SEMESTER

Part	Name of the Course	Ins. Hrs	Credits	Int. Marks	Ext. Marks	Total
Part III	329C6A: Core Course CCXIII – Real Time Embedded Systems	6	4	25	75	100
	329C61: Core Course CCXIV – Embedded Systems Practical	6	4	40	60	100
	329C6B: Core Course XV – Project	6	4	25	75	100
	Elective VII – Generic/Discipline Specific 329E6A (a) Medical Electronics/ 329E6B (b) Machine Learning and Data Science	5	3	25	75	100
	Elective VIII – Generic/Discipline Specific 329E6C (a) Artificial Intelligence for Robotics/ 329E6D (b) Electronic Instrumentation	5	3	25	75	100
Part IV	Extension Activity		1			
	Professional Competency Skill 329S6A:PLC Programming Lab	2	2	25	75	100
		30	21			