

**M.Sc. (Electronic Science/Electronics)**  
(Semesters I, II, III and IV)

Each paper will be of 5 credits meaning there by that the Total course will be of 100 credits. Maximum of 10 hours will be devoted to each credit

In Post Graduate course there will be four semesters in all, each of six months duration. The structure of M.Sc. Course in Electronic Science/Electronics is shown in Table as per CBCS ordinance and regulation for 2 year Post Graduate degree course in the faculty of science. This course of M.Sc. in Electronic Science/Electronics shall consist of 20 papers spread over four semesters. There shall be five papers in first semester, 6 papers in 2<sup>nd</sup> and 3<sup>rd</sup> semester each and three papers in 4<sup>th</sup> semester carrying 100 marks in each paper. The entire curriculum shall be of 2000 marks taken together. However, the class shall be awarded on the performance of the candidate on 16 papers including 14 CC and 2 EC papers having an aggregate of 1600 marks

**Table-01 Description of Papers for M.Sc. (Electronic Science/Electronics) under CBCS**

SEMESTER	COURSE/PAPER CODE	Name of Course/Paper	Credit	Marks	Marks of CIA	Marks of ESE	Passing Criteria	Qualifying Criteria
I	ELECC-01	Engineering Mathematics	5	100	30	70	45% in CIA, 45% in ESE	Marks decide class CGPA
	ELECC-02	Solid State Electronics	5	100	30	70	45% in CIA, 45% in ESE	Marks decide class CGPA
	ELECC-03	Fundamentals of Computer Programming	5	100	30	70	45% in CIA, 45% in ESE	Marks decide class CGPA
	ELECC-04	Practical Based on E, E, E, E, E	5	100	30	70	45% in CIA, 45% in ESE	Marks decide class CGPA
	ELECC-05	Mobile, Emerging Compulsory Elective	5	100	30	70	45% in CIA, 45% in ESE	Qualify
II	ELECC-06	Computer Electronics and Environmental Impacts	5	100	30	70	45% in CIA, 45% in ESE	Marks decide class CGPA
	ELECC-07	Microprocessor and Microcontroller	5	100	30	70	45% in CIA, 45% in ESE	Marks decide class CGPA
	ELECC-08	Advanced Analog and Digital Electronics	5	100	30	70	45% in CIA, 45% in ESE	Marks decide class CGPA
	ELECC-09	Signals and Systems	5	100	30	70	45% in CIA, 45% in ESE	Marks decide class CGPA

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	ELECC-09	Practical (Based on 16.10,17 &18)	5	100	30	70	45% in CIA 45% in ESE	Marks decide class CGPA	
	AEE-4	Ability Enhancing Elective Paper	5	100	30	70	45% in CIA 45% in ESE		
III	ELECC-10	Control Theory and Instrumentation	5	100	30	70	45% in CIA 45% in ESE	Marks decide class CGPA	
	ELECC-11	Electronic Communication System	5	100	30	70	45% in CIA 45% in ESE	Marks decide class CGPA	
	ELECC-12	Electromagnetic and Radiating Systems	5	100	30	70	45% in CIA 45% in ESE	Marks decide class CGPA	
	ELECC-13	Microelectronics	5	100	30	70	45% in CIA 45% in ESE	Marks decide class CGPA	
	ELECC-14	Practical (Based on 16.11,12 &13)	5	100	30	70	45% in CIA 45% in ESE	Marks decide class CGPA	
	AEEC-8	Ability Enhancing Compulsory Elective	5	100	30	70	45% in CIA 45% in ESE	Qualifying	
IV	ELECC-01	1. Artificial Intelligence and Robotics 2. Theory and operation of Telecommunication II 3. Digital Communications 4. Internet Applications 5. Embedded Systems 6. Speech Processing 7. Computer Networking and web programming 8. Nanotechnology 9. Or other special papers decided by the respective departments/Departments/colleges	10				Will be decided by the Department/ DECS Will be decided by the Department/ DECS	45% in CIA 45% in ESE	
	ELECC-02	Project Work in any branch of Electronics, Computer, Information and Communication Science	5	100			Will be decided by the Department/ DECS Will be decided by the Department/ DECS	45% in CIA 45% in ESE	Marks decide class CGPA
	DEEC-1		5	100	30	70			Qualifying
	DEEC-2		5	100	30	70			Qualifying

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## SEMESTER - I

### ELECC-03

#### Fundamentals of Computer Programming

- 1. Fundamentals of computers & OS** Software & hardware, system software/applications software, generation of languages, machine language, high level language and assembly language, compilers and interpreters, boot strap loader and booting sequence, operating system, DOS, Windows OS administration and installation, Introduction to Unix/Linux, Commands and statements
- 2. Data Structure with C** Introduction to C/C++, Data Types and Operators, Statement and Control Flow, Function and Program Structure, Strings, the Processor, Pointers, Memory Allocation, Input and Output, Subprogram, Return, File Access  
Data structure- Linked Lists, Trees, Stack, Queue, Graph, Related operation, Traversing, Inserting, Deletion, Merging, Binary Search, Sorting Algorithms/Bubble sort, Quick sort, Heap sort, Merge sort,
- 3. Programming Languages** Flow Charting and basic concept of programming, Development of an algorithm, Design of an Algorithm, analysis of complexity of an algorithm, flow-Chart, Top-Down programming and Bottom-Up programming techniques, Structured programming Programming in FORTRAN & MATLAB, Their Applications in problems involving solutions of Polynomial - simultaneous - Matrix - differential - equations and use in Electric Circuit analysis.
- 4. Introduction to Software Engineering** Characteristics of Software Engineering, Differences with Conventional Engineering Software requirement specification, Software Life Cycle, Software Design Approach Function and Object Oriented Software, Software testing, Open Source Software
- 5. Organisation, Modelling and Mathematical Programming** Formulation of linear programming and dynamic programming problems, Simplex method, Duality, Introduction to queuing theory.

#### Books recommended:

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|---|-----------------------|
| 1. Fundamentals of Computer   | - Rajaraman, PII      |
| 2. Programming in BASIC   | - E Balagurusamy, PII |
| 3. IT Tools   | - Tazal               |
| 4. Essential MATLAB for Engineers and Scientists Brian Hahn D V John Wright |                       |
| 5. Computer Programming in Fortran 90 & 95                                  | - Rajaraman - PII     |
| 6. UNIX operating Systems   | - Sumitabha Das , TMM |

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SEMESTER-I

ELECC-02

Solid State Electronics

1. Crystal Structure and Theory of Solids Introduction to Crystal, Free electron theory of metal, Band theory of solids, Bloch Theorem, Kronig-Penney Model, Introduction to Superconductivity, Ferro-electricity, Pizo-electricity.
2. Semiconductor Physics Energy Band and Carrier concentration, Carrier transport phenomena: drift, diffusion, injection, Generation & recombination of processes, Continuity equations and its application
3. Solid State Devices MOSFET, CMOS, Gunn, Read, IMPATT, TRAPATT diodes, Tunnel Diode, Microwave BJT and FET, Structure and Characteristics
4. MASERS and LASERS Development of Masers, Einstein's A and B coefficients (Spontaneous and stimulated transitions), Possibility of amplifications, Two- and three-level MASER System, Optical Pumping, Population inversion, LASER Action, Fabry - Perot Lasing, Oscillation frequency, Three and four level Lasers, Solid State Lasers (Ruby laser, YAG laser, ND Glass Laser), Semiconductor laser, Liquid laser (Dye laser), Laser properties, Laser power, Laser detection
5. Dielectric and Magnetic Materials Dielectric materials, Ferroelectric materials, piezoelectric materials, Introduction to diamagnetic, paramagnetic and ferromagnetic materials

Books recommended :

1. Kittel C., Introduction to Solid State Physics, John Wiley
2. Dekker A. J., Solid State Physics, Macmillan, India.
3. Streetman, Ben G. And Sanjay Banerjee, Solid State Electronic Devices, Prentice Hall Pub. N.A.
4. Udo Samuel Y., Microwave Devices and Circuits, Prentice Hall Pub. N. D.
5. See S.M. Semiconductor Devices, Wiley Pub.

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## SEMESTER - I

### ELECC-03

#### Fundamentals of Computer Programming

- Fundamentals of computers & OS** Software & hardware, system software, application software, generation of languages, machine language, high level language and assembly language, compilers and interpreters, boot strap loader and booting sequence, operating system, DOS, Windows OS administration and installation, Introduction to Unix/Linux, Commands and statements
- Data Structure with C** Introduction to C/C++, Data Types and Operators, Statement and Control Flow, Function and Program Structure, Strings, the Processor, Pointers, Memory Allocation, Input and Output, Subprogram, Recursion, File Access  
Data structure- Linked Lists, Trees, Stack, Queue, Graph, Related operation, Inverting, Inserting, Deletion, Merging, Binary Search, Sorting Algorithms, Bubble sort, Quick sort, Heap, sort, Merge sort,
- Programming Language** Flow Charting and basic concept of programming, Development of an algorithm, Design of an Algorithm, analysis of complexity of an algorithm, flow-Chart, Top-Down programming and Bottom - Up programming techniques, Structured programming Programming in FORTRAN & MATLAB, Their Applications in problems involving solution of Polynomials - simultaneous - Matrix - differential - equations and use in Electric Circuit analysis.
- Introduction to Software Engineering** characteristics of Software Engineering, Differences with Conventional Engineering, Software requirement specification, Software Life Cycle, Software Design Approach, Function and Object Oriented Software, Software testing, Open Source Softwares
- Optimization, Modelling and Mathematical Programming** formulation of linear programming and dynamic programming problems, Simplex method, Duality, Introduction to queuing theory.

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| 3. IF Tools   | - Tutorials           |
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SEMESTER - I

ELECC-03

Practical based on papers ELECC-01,02,03

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