

**RAYAT SHIKSHAN SANSTHA'S
SHREE SADGURU GANGAGEER MAHARAJ SCINCE, GAUTAM ARTS & SANJIVANI
COMMERCE COLLEGE, KOPARGAON DIST AHMEDNAGAR**

Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Electronic Science

Program outcome : B.Sc. Electronic Science	
PO1:	<ul style="list-style-type: none">• Student acquires adequate knowledge of Analog systems design, digital system design, communication systems, basics of nanotechnology, nanoelectronics
PO2:	<ul style="list-style-type: none">• Student design and test Analog and design digital system
PO3:	<ul style="list-style-type: none">• Student learns various methods to analyse working of systems
PO4:	<ul style="list-style-type: none">• Students learn the applications of various circuit blocks
PO5:	<ul style="list-style-type: none">• Student learn some consumer products block diagrams, working and specifications,
PO6:	<ul style="list-style-type: none">• Students write the program in C language and uses MATLAB tool to solve different task
PO7:	<ul style="list-style-type: none">• Students acquire more practical knowledge and circuit building skill by completing their project.
PO8:	<ul style="list-style-type: none">• Use modern techniques, equipments, devices and software's to design, develop and test their projects

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Electronic Science

Program Specific outcome : B.Sc. (Electronic Science)	
PO1:	<ul style="list-style-type: none">• Gain the knowledge of Electronics through theory and practical's.
PO2:	<ul style="list-style-type: none">• Students design, build, test and explain the working of electronic analog and digital circuits.
PO3:	<ul style="list-style-type: none">• Students learn the analysis using different theorems.

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Program Outcomes, Program Specific Outcomes and Course Outcome

Department of Electronic Science

Course Outcomes of BSc. (Electronic Science)

Class	Course title	Outcome
F.Y.B.Sc. (Paper-I)	EL-101: Principles of Analog Electronics	<ul style="list-style-type: none"> • Students are able to understand importance of Electronics in day today life • Student could identify different parameters/functions/specifications of components used in electronic circuits • Students are able to solve problems based on different laws and network theorems. • Students performed simulations using simulator for analyzing network performance • Student aware of basics of Semiconductor Devices-Diode, Transistor, MOSFET etc. • Students are able to build and test the circuits like streetlight controller using electronic devices • Students are able to know basics of operational amplifier and opamp applications. • Students get familiar with operating principle of IC 555 and types of DAC/ADC and their performance.
F.Y.B.Sc. (Paper-II)	EL- 102: Principles of Digital Electronics	<ul style="list-style-type: none"> • Student studied different number systems and codes • To understand logic gates and truth tables • Students are able to understand combinational logical circuits and sequential logical circuits. • Students are able to reduce the expression using Boolean theorems • Students get familiar with applications of counters liker ring counter or event counter • Student acquired the skill to design the UP/DOWN counters. • Student get familiar with different integration technology and logic families.

F.Y.B.Sc. (Paper-III)	EL-103 Practical	<ul style="list-style-type: none"> • Students are able to identify different components and devices as well as their types • Understood basic parameters associated with device-diode, transistor. • Studied the operation of different instruments used in the laboratory • Student could connect circuit and did required performance analysis • Students learn amplifier, rectifier experiments. • Acquired knowledge of basic logic gates, derived logic gates, interconversion. • Learn half adder, full adder, half subtractor etc. logic circuits. • Students are ready to assemble analog and digital circuits using bread board.
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Course Outcomes of BSc. (Computer Science)

Class	Course title	Outcome
F.Y.B.Sc. (Paper-I)	EL-101:Paper-I Principles of Analog Electronics	<ul style="list-style-type: none"> • Students get familiar with basic circuit elements and passive components. • Student understood DC circuit theorems and their use in circuit analysis. • Student studied various active components. • They studied elementary electronic circuits. • Students studied semiconductor materials. • Students studied various semiconductor devices & their characteristics. • Students studied operational amplifier basic & application.
F.Y.B.Sc. (Paper-II)	ELC 102: Principles of Digital Electronics:	<ul style="list-style-type: none"> • Familiar with concepts of digital electronics • Learned number systems and their representations • Understood basic logic gates, Boolean algebra and K-maps • Studied arithmetic circuits, combinational circuits and sequential circuits • Students are able to design digital circuit designed • Student are able to make short projects on digital electronics circuits

F.Y.B.Sc. (Paper-III)	ELC 103: Practical	<ul style="list-style-type: none"> • Students are able to connect opamp circuits and analyzed the output • Studied application circuits of opamp • Student designed the IC 555 as astable/monostable multivibrator. • Students are able to compare simulated and actual results of given circuit. • Students get familiar with various instruments & components in the LAB. • Conducted small practical competitions during practical sessions, has improved skills of students.
S.Y.B.Sc. (Paper-I)	EL211: Analog Circuit Design	<ul style="list-style-type: none"> • Understand the working of various analog circuits and frequency response of analog circuits • Know about the various types of amplifier like Voltage amplifier, power amplifier and multistage amplifier , and its applications like PA System • Know the concept of feedback, concept of feedback amplifiers and their characteristics and applications • Design the different oscillator circuit. • Applications of Operational Amplifiers like Adder, Subtractor, Integrator, Differentiator, Log amplifiers , Comparator etc.
S.Y.B.Sc. (Paper-II)	EL212: Digital Circuit Design	<ul style="list-style-type: none"> • Develop a Digital logic and apply it to solve real life problems. • Analyse, Design and implement combinational logic circuits like Adder, Subtractor, Parity generator, magnitude comparator. • Analyse, Design and implement sequential logic circuits like Counters, shift registers etc. • Use of k-maps in the design of combinational circuits. • Understand the design and working of various data converters • Applications of counters like Auto-parking System, totalizer , Digital clock, bank token display • Interfacing of LED's, single and multi digit 7 segment display/ driver, Switches, Keypad, Thumb, wheel switches with digital systems

S.Y.B.Sc. (Paper-I)	EL221: Electronic Instrumentation	<ul style="list-style-type: none"> • Students can design Volt meter, Current meter, Ohm meter, multi-range meters, multi-meter, AC Voltmeter. • Use of signal generation for testing various communication and instrumentation circuits, fault finding in the circuits • Students design various sensor based instruments like PH meter, energy meter, digital thermometer, Lux meter etc. • Students can manufacture different types of power supplies.
S.Y.B.Sc. (Paper-II)	EL222: Communication Electronics	<ul style="list-style-type: none"> • Understand different blocks in communication system and how noise affects communication system using different parameters. Block diagram of Telephone system. • Distinguish between different modulation schemes like AM, FM, PM etc. With their advantages, disadvantages and applications. • Understand basics of AM and FM Receivers. • Identify different Radio receiver circuits and role of AGC • Understand the digital communication system and its application like FDM, TDM, MODEM, Set Top Box etc.
S.Y.B.Sc. (Paper-III)	EL 203	<ul style="list-style-type: none"> • Students use the basic concepts for building different electronic circuits. • They understand design procedures of different electronic circuit. • Student able to build experimental setup and test the circuits. • They acquired the skills of analyzing test results of experiments.
S.Y.B.Sc. (Paper-I)	ELC 211: Digital System Hardware	<ul style="list-style-type: none"> • To study the applications of logic gates. • Students are able to design different digital circuit design using K-maps. • Understands basics of microprocessors • Students are able to understand fundamentals of multi-core technology.
S.Y.B.Sc. (Paper-II)	ELC 212: Analog Systems	<ul style="list-style-type: none"> • Understood basics of analog electronics • Learned different types of sensors • Understood different types of signal conditioning Circuits • Studied data conversion techniques • Now can apply knowledge of analog systems in different applications

SYBSc (Paper-I)	ELC 221: The 8051 Architecture, Interfacing & Programming	<ul style="list-style-type: none"> • Studied the basics of 8051 microcontroller • Students are able to study the Programming and interfacing techniques of 8051 • Students are able to apply knowledge of 8051 to design different application circuits • Studied basic concepts of advanced Microcontrollers.
S.Y.B.Sc. (Paper-II)	ELC 222: Communication Principles	<ul style="list-style-type: none"> • Understood basics of communication systems. • Understood modulation, demodulation and multiplexing of signals. • Learned digital communication techniques • Familiar with concepts in advanced wireless communication.
S.Y.B.Sc. (Paper-III)	ELC-203: Practical Course	<ul style="list-style-type: none"> • Students developed basic concepts for building various applications in electronics. • Understood design procedures of different electronic circuits as per requirement. • Students learned to build experimental setup and test the circuits. • Developed skills of analyzing test results of given experiments.
T.Y.B.Sc. (Paper-I)	EL331:Advanced Digital System Design	<ul style="list-style-type: none"> • Student studied the Verilog HDL Code of different digital system • They could design different combinational and sequential circuits • Student studied the PLDs and its applications.
T.Y.B.Sc. (Paper-II)	EL332: Microcontrollers	<ul style="list-style-type: none"> • Student learnt architecture of 8-bit microcontroller. • Students are able to use instruction set and addressing modes of microcontroller. • Student developed assembly language programming skills. • Students are able to interface memory and I/O devices.
T.Y.B.Sc. (Paper-III)	EL333: Analog Circuit Design and Applications of ICs	<ul style="list-style-type: none"> • Students study the practical design aspects while using Op-amps • Learns the basic application circuits of Op-Amps • Learns the specifications and selection criterion for linear ICs • Students acquired the information about different special purpose ICs and their applications • Students refer and understand data manuals.

T.Y.B.Sc. (Paper-IV)	EL334: Principles of Semiconductors Devices	<ul style="list-style-type: none"> • Students can grow the crystal on substrate • They are able to understand the structure with reference to semiconductors. • Understood the theory of metal-semiconductor and p-n junctions • Understood the working of semiconductor devices like BJT , FETs MOSFETs etc.
T.Y.B.Sc. (Paper-V)	EL335: C programming	<ul style="list-style-type: none"> • Students become familiar with fundamentals of C language, which is powerful tool in industry. • Developed algorithm/flowcharts for problem solving and writing programs. • They learn various tools to use functions, arrays, pointers and file handling in C language. • They studied different types of algorithm. • C-subject is skilled based, industrial oriented.
T.Y.B.Sc. (Paper-VI)	EL336: Fiber Optic Communication	<ul style="list-style-type: none"> • Understand basic laws of optical communication and working of various types of optical components. • Understand FOC link structure, propagation and transmission properties of OF. • Learned about various types of optical sources, detectors and fiber types and their suitability/ choice for any applications. • Estimate the losses and analyze the propagation characteristics of an optical signal in optical fiber. • Design FOC link based on budgets. • Learned about different optical test instruments.
T.Y.B.Sc. (Paper-I)	EL341: Advanced Communication Systems	<ul style="list-style-type: none"> • Student studied the various types of antenna and its parameters • They could identify the AM and FM transmitter and receiver. • Student studied the digital modulation techniques like ASK, FSK, Delta modulation, QPSK, QAM.
T.Y.B.Sc. (Paper-II)	EL342: Microcontroller and its Applications	<ul style="list-style-type: none"> • Student used 'C' language for programming the microcontrollers • Learnt to use Timers, Interrupts and Serial Communication in Microcontroller. • Student are able to apply the knowledge in real world applications

T.Y.B.Sc. (Paper-III)	EL343: Power Electronics	<ul style="list-style-type: none"> • Students learns the basics of power electronics and • familiar with Power Electronic Devices, circuits and applications • Learns about power devices and protections of devices. • Learns various types of power circuits such as rectifiers using thyristers, Inverters, Converters etc. • Learns the applications of power electronics
T.Y.B.Sc. (Paper-IV)	EL344: Foundations of Nanoelectronics	<ul style="list-style-type: none"> • Understood the concept of cyclotron and its use • Understood the Hall effect and use of to find the types of semiconductor. • Understood the Use of Maxwell's Equations and laws of Electrodynamics, Equation of continuity, Pointing vector theorem. • Students know how to find energy transferred from sun to earth.
T.Y.B.Sc. (Paper-V)	EL345: Mathematical Methods and Circuit Analysis using MATLAB	<ul style="list-style-type: none"> • MATLAB is powerful scientific engineering tool for various designing. • Students learned features of MATLAB as a programming tool. • MATLAB used to promote new teaching model, which is used to develop programming skills and technique to solve mathematical problems. • Revision of Laplace Transform and Fourier series and its applications. • Students introduced with MATLAB as a simulation tool. • MATLAB is skilled based, industrial oriented
T.Y.B.Sc. (Paper-VI)	EL346: Industrial Automation	<ul style="list-style-type: none"> • Identify the various parameters that are measurable in electronic instrumentation. • Select appropriate passive/active transducers and ac and dc bridges for relevant physical parameter measurement • Get complete view of strategies for process control and process automation. • Understand the terms like Process Characteristics: Process equation, Process load, Process lag, self regulation • Understand Control system parameters: Error, Variable range, control parameter range, control lag, dead time, cycling.

T.Y.B.Sc. (Paper-VII)	EL347: Practical -I	<ul style="list-style-type: none"> • Students referred the various datasheets of the electronic devices and integrated circuits • They learnt how to select the devices, sensors, actuators and ICs for a particular application • Developed the basic skills required to handle the various instruments • Students acquire designing skill of analog and digital circuits/ systems
T.Y.B.Sc. (Paper-VIII)	EL348: Practical -II	<ul style="list-style-type: none"> • Student learnt the basic C-Programming & Verilog HDL to design basic combinational and sequential circuits • Student get familiar with structural, data flow and behavioural modelling • Student learnt assembly level language of 8051 microcontroller • They used cross compiler to develop C-programs for microcontroller • Student studied the various interfacing circuits to 8051 microcontroller
T.Y.B.Sc. (Paper-IX)	EL 349: Project course (Practical)	<ul style="list-style-type: none"> • Students developed projects related to Robotics, sensor based Pollution parameter measurements. • Students designed and developed projects using MATLAB tools. • Students participated in different project competitions.