MAHATMA GANDHI VIDYAMANDIR'S						
M.S.G., ARTS, SCIENCE AND COMMERCE COLLEGE MALEGAON CAMP, NASHIK-5						
	Department of Electronic Science					
	Name: of Programme : Bachelor of Science (B. Sc.)					
PO.	Program Outcomes Craduate Attributes					
No.	After successful completion of this program, a student will be able to	Graduate Auribules				
PO1	Demonstrate comprehensive knowledge and understanding of one or more disciplines which form a part of an undergradu	Disciplinary knowledge				
PO2	Express thoughts and ideas effectively in writing and orally.	Communication Skills				
PO3	Evaluate practices, policies and theories by following scientific approach to knowledge development.	Critical thinking				
PO4	Apply one's learning to real life situations.	Problem solving				
PO5	Draw valid conclusions and support them with evidence and examples.	Analytical reasoning				
PO6	Plan, execute and report the results of an experiment or investigation.	Research-related skills				
PO7	Work effectively and respectfully with diverse teams.	Cooperation/Team work				
PO8	Critically evaluate ideas, evidence and experiences from an open-minded and reasoned perspective.	Scientific reasoning				
PO9	Work independently, identify appropriate resources required for a project, and manage a project through to completion.	Self-directed learning				
PO10	Effectively engage in a multicultural society and interact respectfully with diverse groups.	Multicultural competence				
PO11	Adopt objective, unbiased and truthful actions in all aspects of work.	Moral and ethical				
FOII		awareness/reasoning				
PO12	Have a capability for mapping out the tasks of a team or an organization.	Leadership readiness/qualities				
PO13	Acquire skills to learn how to learn.	Lifelong learning				
PO14	Develop social, cultural and national integrity.	Reflective thinking				

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	Department of Electronic Science					
	Name of Program (with Specialization) - Bacher of Science in Electronic science					
PO. No.	Program Outcomes Graduate Attr					
	After successful completion of this program, a student will be able to					
PSO1	To frame the syllabus with specific focus on technical learning areas.	Digital and technical literate				
PSO2	To cultivate students with necessary basic concepts and knowledge of electronics science and technology.	Critical thinking				
PSO3	To develop practical skills among students such as handling, using various electronics gadgets.	Lifelong learning				
PSO4	To train students to develop skills so that they can design, analyze, build and test various electronic gadgets.	Problem solving				
PSO5	To develop skills among the students to demonstrate the acquired knowledge	communication skill ,Reflective thinking & Cooperation/Team work				
PSO6	To encourage students to accept the challenges and threats of upcoming technological advancements.	Moral and ethical awareness/reasoning				

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M.S.G., ARTS, SCIENCE AND COMMERCE COLLEGE MALEGAON CAMP, NASHIK-5

Department of Electronic Science

Name of Program (with Specialization) - Bachlelor of Science in Electronic science

Title of Course	CO.	Course Outcomes
The of Course	No.	After successful completion of this Course a student will be able to
Paper-I (FL-111): Basics of	CO1	To identify different parameters/functions/specifications of components used in electronic circuits. (Understanding)
Applied Electronics	CO2	To solve problems based on network theorems. (Analyzing)
	CO3	To perform simulations using simulator for analyzing network performance. (Understanding, thinking, Applying and reasoning
	CO1	To analyze performance parameters based on study of characteristics of electronic devices like diode, transistors etc.(Understanding)
Paper-II (EL-112): Electronic	CO2	To choose proper electronic devices as per the need of application (Remembering)
Devices and Circuits	CO3	To perform simulations for designing and analyzing diode/transistor circuits. (Understanding,thinking,Applying, reasoning and Evaluating)
	CO4	To build and test the circuits like street light controller using electronic devices. (Understanding, Applying and Evaluating)
	CO1	To identify different components and devices as well as their types. (Remembering)
	CO2	To understand basic parameters associated with each device. (Understanding)
Practical Course-I (EL- 113):	CO3	To know operation of different instruments used in the laboratory. (Remembering)
ELECTRONICS LAB Sem-I	CO4	To connect circuit and do required performance analysis.(Understanding)
	CO5	To compare simulated and actual results of given particular experiment. (Understanding, thinking, Applying, reasoning and Evaluating)
Paper-I (EL-121):	CO1	To solve problems based on inter conversion of number systems. (Understanding)
Fundamentals of Digital	CO2	To reduce the expression using Boolean theorems.(Analyzing)
Electronics Sem-II	CO3	To reduce expressions using K maps in SOP and POS forms(Understanding, Remembering)
	CO4	To understand how to use flip flops to build modulus counter(Creating, analyzing)
	CO5	To familiarize with applications of counters like ring counter or event counter.(Evaluating)

	CO1	To compare different op-amp as per specifications or performance parameters.(Remembering)
Paner-II (EL-122): Analog and	CO2	To understand op-amp circuits and its usefulness indifferent applications. (Understanding, Remembering)
Digital Device applications	CO3	To know operating principle of IC 555 indifferent configurations.
Digital Defice applications	CO4	To understand different types of DAC and their performance parameters.(Analyzing)
	CO5	To study different types of ADC and their performance parameters.(Analyzing)
	CO1	To connect op-amp circuits and analyze the output.(creating, analyzig)
Practical Course-II (EL-123):	CO2	To build application circuits of op-amp.(creating, analyzig)
ELECTRONICS LAB	CO3	To design the output frequency of IC 555 as a astable/monostable multivibrator.
	CO4	To compare simulated and actual results of given circuit. (Understanding, thinking, Applying and reasoning)
S V B Sc (CBCS):	CO1	Understand basics of communication electronics.
9. 1. D . 5C. (CDC3). Paner – I (EL-231):	CO2	Understand techniques of communication.
Communication Electronics	CO3	Able to differentiate between different modulation techniques(creating, analyzig)
Communication Electromes	CO4	Identify the application areas of each communication technique(remembering)
Paper – II (EL-232):	CO1	Able to compare different logic families.(remembering)
Digital Circuit Design	CO2	Understand design procedure of combination logic circuit.(Understanding)
	CO3	Understand design procedure of sequential logic circuit.(Understanding)
	CO4	Able to understand types of DAC and ADC.(thinking)
	CO1	Understand basic skill development techniques.(applying)
Practical Course-I (EL-233):	CO2	Able to design and develop different analog and digital systems as per application.(Creating)
ELECTRONICS LAB	CO3	Familiarity with different communication systems and techniques of modulation and demodulation.(understanding)
	CO4	Skill and logic development through different activities like project or PLE (Understanding, thinking, Applying, reasoning and
	0.04	Evaluating)
	CO1	
Paper-I (EL-241): Analog	~~~	Develop an ability to design amplifier circuit with given specification. (Understanding, thinking, Applying, reasoning and Evaluating)
Circuit Design	CO2	Understand and able to differentiate different types of power amplifier and their applications.(evaluation)
	CO3	Able to design different application circuits using operational amplifier.(creating, analyzing)
	CO4	Understand systematic approach of designing analogy systems. (Understanding)

Paper-II (EL-242):	CO1	Understand basics of Arduino board architecture.(Understanding)
Microcontroller and Python	CO2	Understand programming technique of Arduino.(Understanding)
Programming	CO3	Understand basics of python programming.(Understanding)
	CO4	Able to develop an Arduino based applications using python programming.(Creating)
	CO1	Understand basic skill development techniques.(Understanding)
Practical Course-II(EL-243):	CO2	Able to design and develop different analog and digital systems as per application.(Creating)
ELECTRONICS LAB	CO3	Familiarity with different communication systems and techniques of modulation and demodulation.(Understanding)
	CO4	Skill and logic development through different activities like project or PLE.(critical thinking)
	CO1	Know and understand structure of HDL and Verilog. (understanding)
T.Y.B.Sc: EL 351: Paper I:	CO2	Understand different modeling styles in Verilog (understanding)
Digital Design using VERILOG	CO3	Use Verilog effectively for simulation, verification and synthesis of digital system(critical thinking)
	CO4	Understand basics of programmable logic devices. (understanding)
EL 352:Paper II:	CO1	Understand the basics of microcontroller. (understanding)
Microcontroller Architecture	CO2	Acquire basic programming skills in C language. (analysis)
and Programming	CO3	Understand and acquire basic programming skills for AVR microcontroller. (Understanding, applying)
	CO1	Understand basics of analog circuit design. (remembering)
EL 353 Paper III: Analog	CO2	Analyze waveform generators required for testing different circuits.(analysis)
circuit Design and Applications	CO3	Build application circuits using specialized ICs.(remembering)
	CO4	Design analog systems using available ICs. (applying)
	CO1	Understand basic concepts of nano electronic devices and nano- technology.(understanding)
EL 354: Paper IV:	CO2	Understand the electron transport mechanism in nanostructures.(understanding)
Nanoelectronics	CO3	Understand techniques of characterization of nanostructures.(remembering)
	CO4	Understand different devices constructed using nanotechnology(understanding)
EL 355: Paper V: Signals and	CO1	Know basics of electronic signals.(understanding)
Systems	CO2	Know different types of systems.(understanding)
	CO3	Analyze systems using Laplace and Fourier analysis.(analyzing)
	CO4	Understand digital signal processing system. (understanding)

FL 356(A): Paner VI(A):	CO1	To acquire Knowledge of optical fiber communication system. (understanding, analysis)
Ontics and Fiber Ontic	CO2	To understand different parameters of optical fibers.(remembering)
Communication	CO3	To learn essential optical components of Fiber Optic Communication.(remembering)
Communication	CO4	To analyze and integrate fiber optical network components in variety of networking schemes(analyze)
	CO1	Analyze different design and test procedures for analog circuits and systems.(remembering)
EL 357: Paper VII: Practical	CO2	Measure different parameters of optical fiber communication systems(understanding)
Course I	CO3	Understand importance of product design and entrepreneurship.(applying)
	CO4	Develop electronic systems for given application. (applying)
	CO1	Develop and simulate design digital systems using Verilog.(critical thinking)
EL 358: Paper VIII: Practical	CO2	Design and develop AVR microcontroller based systems.(critical thinking)
Course II	CO3	Understand different nanoelectronic devices.(remembering)
	CO4	Inculcate basic skills required for design and development of embedded. (reasoning)
	CO1	Understand basic methodology of selection of topic for project.(critical thinking)
	CO2	Understand how to do literature review for selected topic for project.(analyze)
	CO3	Apply the knowledge for design and development of the selected project.(applying)
EL 359: Paper IX: Practical	CO4	Use different software and hardware for testing, validation and verification of circuits for successful outcome of
Course III (Project)	04	project(remembering, understanding)
	CO5	Understand documentation process in the form of presentation and project report (understanding)
	COC	Understand process of systematic development of electronic system and Development of skills for successful outcome
	000	(applying)
FI SEC 351. Papar V. SEC1.	CO1	Design the electronics circuits using EDA software tools(applying)
ELSEC 331. 1 aper A. SEC1.	CO2	Simulate various analog and digital circuits using EDA software tools(applying)
Tools	CO3	Plot various waveforms.(analysis)
10015	CO4	Simulate basic electronic system blocks(evaluating)
ELSEC 352: Paper XI: SEC2:	CO1	Know the basic building blocks of IoT(understanding)
Internet of Things and	CO2	Know IoT protocols(remembering)
Applications	CO3	Understand how to Design and Develop IoT based system through case studies. (analysis)

T V B Sc: EL 361: Paper I:	CO1	Understand the digital modulation techniques.(analysis)
Modern Communication	CO2	Understand different types of pulse modulation techniques.(understanding)
Systems	CO3	Describe the evolution and importance of Mobile communication and cellular communication(evaluating)
-,	CO4	Know the basics of satellite communication systems. (analyze)
T.V.B.Sc: EL 362: Paper II:	CO1	Understand features and architecture of PIC microcontroller.(understanding)
Embedded System Design	CO2	Demonstrate how to interface PIC microcontroller with different peripherals.(evaluating)
using Microcontrollers	CO3	Understand features and architecture of ARM microcontroller.(remembering)
	CO4	Demonstrate embedded system using given microcontroller(reasoning)
	CO1	Understand basics of semiconductor power devices.(understanding)
T.Y.B.Sc: EL 363: Paper III:	CO2	Analyze basic power electronics circuits and demonstrate applications.(analyze)
Industrial Electronics	CO3	Understand basics of motor control.(remembering)
	CO4	Understand basics of Electric Vehicle systems.(understanding)
T.Y.B.Sc: EL 364: Paper IV:	CO1	Understand basics of Passive Electronic Component Manufacturing Processes(remembering, analyzing)
Manufacturing Processes for	CO2	Understand process involved in PCB manufacture and Modern Circuit Assembly(remembering)
Electronics	CO3	Know about the Semiconductor Device and IC Fabrication Process(remembering)
T.Y.B.Sc: EL 365: Paper V:	CO1	Familiar with different types of sensors and related systems(understanding)
Process Control Systems	CO2	Know different types of measurement systems.(understanding)
	CO3	Understand control parameters in process automation.(analyzing)
	CO4	Understand different types of process control systems and their characteristics(analyzing)
EL 366(A): Paper VI (A):	CO1	Know about the basics of programmable logic controllers and their components.(understanding)
PLC and SCADA	CO2	Demonstrate PLC programming using ladder programming.(critical thinking)
	CO3	Develop PLC based systems by programming different components in PLC(critical thinking)
EL 367: Paper VII:	CO1	Demonstrate power electronic circuits.(remembering)
Practical Course I	CO2	Demonstrate different types of digital communication systems.(remembering)
	CO3	Understand working principles of different power devices and their characteristics(remembering)
EL 368: Paper VIII: Practical	CO1	Design embedded systems using PIC microcontroller.(evaluating)
Course II	CO2	Design embedded systems using ARM microcontroller.(analyze, evaluating)
	CO3	Demonstrate PLC SCADA using ladder programming.(remembering, understand)
	CO4	Design and develop sensor systems for different applications(evaluating, analyzing)

EL 369: Paper IX: Practical	CO1	Understand basic methodology of selection of topic for project.(Understandiong)	
Course III (Project)	CO2	Understand how to do literature review for selected topic for project, (Understanding, remembering)	
	CO3	Apply the knowledge for design and development of the selected project.(applying)	
	CO4	Use different software and hardware for testing, validation and verification of (applying)	
ELSEC 361: Paper X	CO1	Understand basics of PCB.(understanding, remembering)	
SEC1: Design of Printed	CO2	Know about the PCB design technology.(applying)	
Circuit Boards	CO3	Know about different soldering techniques.(applying)	
ELSEC 362: Paper XI:	CO1	Understand basics of Mobile application development.(remembering)	
SEC2: Mobile Application	CO2	Develop ability to work in android development environment.(applying)	
Development	CO3	Design and develop mobile applications.(critical thinking)	