MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA
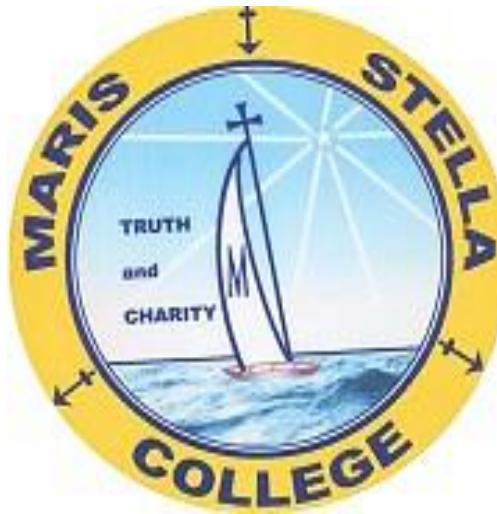## A College with Potential for Excellence
NAAC Accredited & ISO 9001: 2015 Certified

PROGRAMME REGISTER
2020-2023
DEPARTMENT OF ELECTRONICS

INDEX

UG PROGRAMME OFFERED

S. No.	Programme	Combination offered	Programme Code
1	B.Sc.	Mathematics, Electronics, Computer Science (MECs)	306

PROGRAMME OUTCOMES (POs) 2020-2023

At the end of the programme students will:

PO1: Essential Knowledge:
Have comprehensive discipline knowledge and understanding, the ability to engage with different schools of thought and to apply their knowledge in practice including in multi-disciplinary or multi-professional contexts.

PO2: Creative and critical thinking and problem solving abilities:
Be effective problem solvers, able to apply critical and evidence-based thinking to conceive innovative responses to future challenges.

PO3: Teamwork and communication skills:
Be able to convey ideas and information effectively to a range of audiences for a variety of purposes and contribute in a positive and collaborative manner to achieving common goals.

PO4: Motivation and preparation in life-long learning:
Exhibit life-long skills; broad based multiple career oriented general skills; self and field based learning skills; digital skills; social responsibility and compassionate commitment; preparedness for living, learning and working in any environment.

PO5: Professionalism and leadership readiness:
Be able to engage in professional behaviour and have the potential to be entrepreneurial and take leadership roles in their chosen occupations and communities.

PO6: Intercultural and ethical competency:
Be responsible and effective global citizens whose personal values and practices are consistent with their roles as responsible members of society.

PO7: Self-awareness and emotional intelligence:

Be self- aware and reflective, flexible and resilient and act with integrity and take responsibility for their actions as empowered women.

PO8: Social responsibility:

Be sensitive to and demonstrate agency in matters of environment, gender and other social issues to promote an equitable society.

PROGRAMME SPECIFIC OUTCOMES (PSOs) 2020-2023

At the end of the programme the student will be able to:

PSO1: Interpret the principles, classifications, concepts, theories and mechanisms.

PSO2: Analyze hypothesis, procedures, properties, experimental facts and draw conclusions.

PSO3: Apply techniques in solving problems, results, sample analysis and production.

PSO4: Develop communicative competence, creative and critical thinking, practical, technical and employability skills, social sensibility and responsibility.

Course Outcomes (COs) 2020-2023

S. No.	Sem	Course Code	Course Title	Course Outcomes (COs)
1	I	20ETCCNA13	Network Analysis & Analog Electronics	CO1: Explain the basic concepts of electrical quantities and use circuit laws to simplify resistive circuits.
				CO2: Apply reduction techniques using network theorems, nodal and mesh analysis.
				CO3: Demonstrate the functioning of various solid-state devices.
				CO4: Examine the principle and operation of rectifiers, feedback amplifiers and oscillators.
2	I	20ETP1AE12	Analog Electronics- Practical	CO1: Explain the role of basic electronic components.
				CO2: Apply network theorems to find the various parameters for a given circuit.
				CO3: Understand the voltage-current characteristics of different electronic devices.
3	II	20ETCCLD23	Linear & Digital Integrated Circuits	CO1: Explain the fundamentals of integrated circuits and describe their applications.
				CO2: Categorise number system and perform number conversions.
				CO3: Examine the operation of basic logic gates and perform systematic reduction of Boolean expressions.
				CO4: Construct and implement combinational and sequential logic circuits of medium complexity.

4	II	20ETP2DE22	Digital Electronics-Practical	**CO1:** Understand the function of linear and digital ICs to build circuits.
				CO2: Apply the knowledge of linear ICs to construct basic circuits and their applications.
				CO3: Implement various combinational and sequential digital circuits using various logic gates.
5	III	20ETCCCE33	Communication Electronics	**CO1:** Explain the fundamental concepts of analog communication systems.
				CO2: Illustrate different modulation and demodulation techniques used in analog communication.
				CO3: Summarize various digital modulation systems.
				CO4: Demonstrate the concepts of mobile communication and cellular technologies.
6	III	20ETP3AD 32	Analog & Digital Communication-Practical	**CO1:** Use the knowledge of analog communication techniques to construct modulation and demodulation circuits.
				CO2: Construct pulse modulation circuits for generation and detection.
				CO3: Apply the basics of digital modulation techniques and understand their generation and detection.
7	IV	20ETCCMP43	Microprocessors	**CO1:** Explain the basics, internal architecture and operation of microprocessors.
				CO2: Exhibit programming proficiency using various instructions.
				CO3: Design and develop assembly language programs using microprocessors.
				CO4: Examine the internal structure and organization of ARM processor.

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				CO1: Understand the instruction set of 8086 microprocessor to write assembly language programs.
8	IV	20ETP4MP42	Microprocessor Programming-Practical	CO2: Apply the knowledge of the MASM to execute assembly language programs.
				CO3: Develop programs to convert one form of number system to the other.
9	IV	20ETCCMC43	Microcontroller & Interfacing	CO1: Explain the basics, internal architecture and operation of microcontroller.
				CO2: Exhibit programming proficiency using various instructions.
				CO3: Design and develop assembly language programs usi 8051 microcontroller.
				CO4: Summarize the interfacing of different peripheral devices to the microcontroller.
10	IV	20ETP5MC42	Microcontroller Programming-Practical	CO1: Understand the instruction set of 8051 microcontroller to write assembly language programs.
				CO2: Apply the knowledge of the KIEL to execute assembly language programs.
				CO3: Use the knowledge of interfacing and interface peripheral devices to 8051 microcontroller.
11	V/VI Set I	20ETSEC11IE3	Industrial Electronics	CO1: Explain the function of DC amplifiers and voltage regulators.
				CO2: Demonstrate the basic operation and compare performance of various types of semiconductor devices.
				CO3: Analyse the various applications and circuits based on thyristors.
				CO4: Evaluate the operation of industrial timers, motors, generators and their controls.

12	V/VI Set I	20ETP611IE2	Industrial Electronics-Practical	CO1: Outline the different types of semiconductor devices and their characteristics.
				CO2: Examine the operation of rectifiers and their performance parameters.
				CO3: Understand the operation of chopper circuits.
13	V/VI Set I	20ETSEC12EI3	Electronic Instrumentation	CO1: Explain the fundamentals of measurements and instrumentation system.
				CO2: Demonstrate the working principle of different measuring instruments.
				CO3: Examine the basic design techniques of electronic equipment.
				CO4: Assess electronic instruments more effectively for various measurements.
14	V/VI Set I	20ETP712IN2	Instrumentation – Practical	CO1: Apply the knowledge of ac and dc bridges to determine various measurements.
				CO2: Construct different types of transducers and study their characteristics.
				CO3: Analyse different parameters of various measuring instruments.
15	V/VI Set II	20ETSEC21ES3	Embedded Systems	CO1: Explain the concepts of embedded systems.
				CO2: Understand hardware and software design requirements of embedded systems.
				CO3: Design and develop assembly language programs.
				CO4: Demonstrate the interfacing of different peripheral devices and real life applications of embedded systems.

16	V/VI Set II	20ETP621EP2	Embedded Programming – Practical	**CO1:** Understand the instruction set to write programs.
				CO2: Apply the knowledge of programming to execute programs.
				CO3: Use the knowledge of interfacing and interface peripheral devices.
17	V/VI Set II	20ETSEC22CO3	Consumer Electronics	**CO1:** Explain the basics of various electrical appliances.
				CO2: Describe the operation of various types of electrical appliances.
				CO3: Handle various electronic consumer appliances effectively.
				CO4: Analyse the applications of digital devices.
18	V/VI Set II	20ETP722CO2	Consumer Electronics - Practical	**CO1:** Examine the process of installation of various audio and video systems.
				CO2: Apply the knowledge of the function of electrical appliances to conduct surveys on the usage of appliances.
				CO3: Assembly and disassembly various digital devices.
19	V/VI Set III	20ETSEC31VD 3	VLSI Design	**CO1:** Explain the basics and classification of MOS circuits.
				CO2: Understand various MOS inverters and logic structures.
				CO3: Identify different types of VHDL operators and data types.
				CO4: Exhibit programming proficiency.
20		20ETP631VH2	VHDL-Practical	**CO1:** Realize logic circuit with different design style.

	V/VI Set III			**CO2:** Draw layout of a given logical circuit.
				CO3: Design digital CMOS circuits for specified applications.
21	V/VI Set III	20ETSEC32DN 3	Data Communication & Networking	**CO1:** Interpret the basics, types and functions of various data transmission networks.
				CO2: Demonstrate the functioning of various network topologies.
				CO3: Apply relevant transmission media and data transmission techniques.
				CO4: Demonstrate an understanding of data transmission and various multiplexing techniques.
22	V/VI Set III	20ETP732DN2	Data Communication & Networking-Practical	**CO1:** Comprehend the different types of transmission media.
				CO2: Construct various network topologies.
				CO3: Examine the configuration of a modem.

Mapping of COs with PSOs & POs

S. No.	Sem	Course Code	Course Title	COs	PSOs	POs
1	I	20ETCCNA14	Network Analysis & Analog Electronics	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
2	I	20ETP1AE11	Analog Electronics- Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
3	II	20ETCCLD24	Linear & Digital Integrated Circuits	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
4	II	20ETP2DE21	Digital Electronics- Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
5	III	20ETCCCE34	Communication Electronics	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
6	III	20ETP3AD 31		CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4

			Analog & Digital Communication-Practical	CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
7	IV	20ETCCMP44	Microprocessors	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
8	IV	20ETP4MP41	Microprocessor Programming-Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
9	IV	20ETCCMC44	Microcontroller & Interfacing	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
10	IV	20ETP5MC41	Microcontroller Programming-Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
11	V/VI Set I	20ETSEC11IE3	Industrial Electronics	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4

				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
12	V/VI Set I	20ETP611IE2	Industrial Electronics-Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
13	V/VI Set I	20ETSEC12EI3	Electronic Instrumentation	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
14	V/VI Set I	20ETP712IN2	Instrumentation – Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
15	V/VI Set II	20ETSEC21ES3	Embedded Systems	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
16	V/VI Set II	20ETP621EP2	Embedded Programming – Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4

				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
17	V/VI Set II	20ETSEC22CO3	Consumer Electronics	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
18	V/VI Set II	20ETP722CO2	Consumer Electronics - Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
19	V/VI Set III	20ETSEC31VD3	VLSI Design	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
20	V/VI Set III	20ETP631VH2	VHDL-Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
21	V/VI Set III	20ETSEC32DN3	Data Communication & Networking	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4

				CO4	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
22	V/VI Set III	20ETP732DN2	Data Communication & Networking-Practical	CO1	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO2	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4
				CO3	PSO1, PSO2, PSO3, PSO4	PO1, PO2, PO3, PO4

Mapping of Courses with PSOs

Course Title	PSO1	PSO2	PSO3	PSO4
Network Analysis & Analog Electronics	✓	✓	✓	✓
Analog Electronics-Practical	✓	✓	✓	✓
Linear & Digital Integrated Circuits	✓	✓	✓	✓
Digital Electronics-Practical	✓	✓	✓	✓
Communication Electronics	✓	✓	✓	✓
Analog & Digital Communication-Practical	✓	✓	✓	✓
Microprocessors	✓	✓	✓	✓
Microprocessor Programming-Practical	✓	✓	✓	✓
Microcontroller & Interfacing	✓	✓	✓	✓
Microcontroller Programming-Practical	✓	✓	✓	✓
Industrial Electronics	✓	✓	✓	✓

Industrial Electronics-Practical	✓	✓	✓	✓
Electronic Instrumentation	✓	✓	✓	✓
Instrumentation – Practical	✓	✓	✓	✓
Embedded Systems	✓	✓	✓	✓
Embedded Programming – Practical	✓	✓	✓	✓
Consumer Electronics	✓	✓	✓	✓
Consumer Electronics - Practical	✓	✓	✓	✓
VLSI Design	✓	✓	✓	✓
VHDL-Practical	✓	✓	✓	✓
Data Communication & Networking	✓	✓	✓	✓
Data Communication & Networking-Practical	✓	✓	✓	✓

Mapping of Courses with POs

Course	PO1 Essential Knowledge	PO2 Creative and critical thinking and problem solving abilities	PO3 Teamwor k and communication skills	PO4 Motivation and preparation in l ife- long learning	PO5 P rofessionalism and l eadership readiness	PO6 Intercultural and ethical competency	PO7 Self- awareness and emotional intelligence	PO8 Social Responsibility
Network Analysis & Analog Electronics	✓	✓	✓	✓	-	-	-	-
Analog Electronics- Practical	✓	✓	✓	✓	-	-	-	-
Linear & Digital Integrated Circuits	✓	✓	✓	✓	-	-	-	-
Digital Electronics- Practical	✓	✓	✓	✓	-	-	-	-
Communication Electronics	✓	✓	✓	✓	-	-	-	-
Analog & Digital Communication- Practical	✓	✓	✓	✓	-	-	-	-

Microprocessors	✓	✓	✓	✓	-	-	-	-
Microprocessor Programming-Practical	✓	✓	✓	✓	-	-	-	-
Microcontroller & Interfacing	✓	✓	✓	✓	-	-	-	-
Microcontroller Programming-Practical	✓	✓	✓	✓	-	-	-	-
Industrial Electronics	✓	✓	✓	✓	-	-	-	-
Industrial Electronics-Practical	✓	✓	✓	✓	-	-	-	-
Electronic Instrumentation	✓	✓	✓	✓	-	-	-	-
Instrumentation – Practical	✓	✓	✓	✓	-	-	-	-
Embedded Systems	✓	✓	✓	✓	-	-	-	-
Embedded Programming – Practical	✓	✓	✓	✓	-	-	-	-
Consumer Electronics	✓	✓	✓	✓	-	-	-	-

Consumer Electronics - Practical	✓	✓	✓	✓	-	-	-	-
VLSI Design	✓	✓	✓	✓	-	-	-	-
VHDL-Practical	✓	✓	✓	✓	-	-	-	-
Data Communication & Networking	✓	✓	✓	✓	-	-	-	-
Data Communication & Networking-Practical	✓	✓	✓	✓	-	-	-	-