MARIS STELLA COLLEGE (AUTONOMOUS), VIJAYAWADA

A College with Potential for Excellence

ISO 9001: 2015 Certified

PROGRAMME REGISTER

2017-2020

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)

2017-2020

At the end of the programme students will have:

PO1: Essential Knowledge:
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: Digital capabilities:
Demonstrate preparedness for living, learning and working in a digital society.

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)
2017-2020

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

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

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

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

PSO4: Discuss the latest trends and applications pertinent to higher studies and employability.

PSO5: Exhibit communicative competence and apply skills in computers, creative and critical thinking, interpersonal relationships and managing emotions in real life situations.

Course Outcomes (COs)

2017-2020

S. No.	Semester	Course Code	Course Title	Course Outcomes (COs)
1	I	ELEC038	Network Analysis & Analog Electronics	**CO1:** Explain the basic concepts of electrical quantities using circuit laws and simplify resistive circuits.
				CO2: Apply reduction techniques using network theorems, nodal analysis and mesh analysis.
				CO3: Demonstrate the functioning of various solid-state devices such as diodes, bi- polar junction transistors and field-effect transistors.
				CO4: Examine the principle and operation of rectifiers, feedback amplifiers and oscillators.
2	II	ELEC040	Linear & Digital Integrated Circuits	**CO1:** Understand the fundamentals of integrated circuits and their applications.
				CO2: Apply the concepts of number system and perform conversions from one number system to another.
				CO3: Analyze the operation of basic logic gates and the methods of systematic reduction of Boolean expressions.
				CO4: Design and implement combinational and sequential logic circuits of medium complexity.
3	III	ELEC042	Communication Electronics	**CO1:** Identify the fundamental concepts and various components of analog communication system.
				CO2: Illustrate different modulation and demodulation techniques used in analog communication.
				CO3: Analyze various digital modulation systems.
				CO4: Apply the concepts of mobile communication and cellular technologies.
4	IV	ELEC044	Microprocessor & Microcontroller	**CO1:** Explain the basics, internal architecture and operation of microprocessor and microcontroller.
				CO2: Apply the knowledge and exhibit programming proficiency using various instructions.
				CO3: Design and develop assembly language programs using 8051 microcontroller.
				CO4: Evaluate the interface of different peripheral devices to the microcontroller.
5	V	ELEC052	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.

6	V	ELEC053	Power Electronics	**CO1:** Relate basic semiconductor physics to properties of power devices.
				CO2: Demonstrate the basic operation and compare performance of various power semiconductor devices.
				CO3: Analyze the performance of various types of chopper circuits and power inverters.
				CO4: Evaluate the operation of electric machines, such as motors, generators and their controls.
7	VI	ELEC056	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 with microcontrollers.
8	VI	ELEC058	Opto Electronic Devices	**CO1:** Interpret basic laws and phenomena that define behaviour of optoelectronic devices.
				CO2: Identify key performance parameters of lasers, LEDs, and optical detection devices.
				CO3: Apply the basic concepts to characterize optoelectronic sources and detectors.
				CO4: Demonstrate an understanding of the basic design requirements for optoelectronic integration.
9	VI	ELEC059	Fundamentals of Solid State Lighting	**CO1:** Compare the basics of different types of lighting.
				CO2: Demonstrate the importance of solid state lighting, specifications of lighting sources and energy efficiencies.
				CO3: Examine the transformation of an LED chip into LED lamp by way of driver circuitry.
				CO4: Assess the energy consumption of traditional and SSL-based lighting approaches.
10	VI	ELEC060	Optical Fiber Communication	**CO1:** Identify the structure of optical fiber and their types.
				CO2: Discuss the channel impairments like losses and dispersion.
				CO3: Classify the optical sources and detectors and discuss their principle.
				CO4: Analyse the fiber optic sensors and assess the modern optical systems and networks.

Mapping of Cos with PSOs

S. No.	Sem	Course Code	Course Title	COs	PSOs
1	I	ELEC038	Network Analysis & Analog Electronics	CO1	PSO1,PSO3
				CO2	PSO1,PSO3
				CO3	PSO1, PSO2, PSO3
				CO4	PSO1,PSO3, PSO4, PSO5
2	II	ELEC040	Linear & Digital Integrated Circuits	CO1	PSO1,PSO3, PSO4
				CO2	PSO1,PSO3
				CO3	PSO2,PSO3, PSO4, PSO5
				CO4	PSO2,PSO3, PSO4
3	III	ELEC042	Communication Electronics	CO1	PSO1
				CO2	PSO1, PSO3
				CO3	PSO2,PSO4, PSO5
				CO4	PSO2,PSO4
4	IV	ELEC044	Microprocessor & Microcontroller	CO1	PSO1,PSO2
				CO2	PSO2,PSO3
				CO3	PSO2,PSO3
				CO4	PSO2,PSO4, PSO5
5	V	ELEC052	Electronic Instrumentation	CO1	PSO1, PSO3
				CO2	PSO1,PSO2, PSO3
				CO3	PSO1,PSO2
				CO4	PSO3,PSO4, PSO5

6	V	ELEC053	Power Electronics	CO1	PSO1
				CO2	PSO1,PSO2
				CO3	PSO2, PSO3
				CO4	PSO2,PSO4, PSO5
7	VI	ELEC056	Embedded Systems	CO1	PSO1
				CO2	PSO1,PSO2
				CO3	PSO2,PSO3
				CO4	PSO2,PSO4, PSO5
8	VI	ELEC058	Opto Electronic Devices	CO1	PSO1,PSO3
				CO2	PSO1,PSO2
				CO3	PSO1,PSO2
				CO4	PSO2,PSO4, PSO5
9	VI	ELEC059	Fundamentals of Solid-State Lighting	CO1	PSO1
				CO2	PSO1,PSO2
				CO3	PSO2,PSO4
				CO4	PSO2,PSO4, PSO5
10	VI	ELEC060	Optical Fiber Communication	CO1	PSO1,PSO3
				CO2	PSO1,PSO2
				CO3	PSO1,PSO2
				CO4	PSO2,PSO4, PSO5

Mapping of Courses with PSOs

Course	PSO1	PSO2	PSO3	PSO4	PSO5
ELE C038	✓	✓	✓		
ELE C040	✓	✓	✓		✓
ELE C042	✓	✓	✓	✓	
ELE C044	✓	✓	✓		✓
ELE C052	✓	✓	✓		✓
ELE C053	✓	✓	✓	✓	
ELE C056	✓	✓	✓	✓	✓
ELE C058	✓		✓	✓	✓
ELE C059	✓		✓	✓	✓
ELE C060	✓	✓		✓	

Mapping of PSOs with POs

PSOs	PO1 Essential Knowledge	PO2 Creative and critical thinking and problem Solving abilities	PO3 Teamwork and communication skills	PO4 Digital capabilities	PO5 Professionalism and leadership readiness	PO6 Intercultural and ethical competency	PO7 Self-awareness and emotional intelligence	PO8 Social Responsibility
PSO1	✓	✓						✓
PSO2	✓	✓						✓
PSO3	✓	✓		✓				✓
PSO4	✓	✓	✓	✓	✓		✓	✓
PSO5	✓	✓	✓	✓	✓	✓	✓	✓

Mapping of Courses with POs

Course	PO1 Essential Knowledge	PO2 Creative and critical thinking and problem solving abilities	PO3 Teamwork and communication skills	PO4 Digital capabilities	PO5 Professionalism and leadership readiness	PO6 Intercultural and ethical competency	PO7 Self-awareness and emotional intelligence	PO8 Social Responsibility
ELE C038	✓	✓		✓				✓
ELE C040	✓	✓		✓				✓
ELE C042	✓	✓		✓				✓
ELE C044	✓	✓		✓				✓
ELE C052	✓	✓		✓				✓
ELE C053	✓	✓		✓				✓
ELE C056	✓	✓	✓	✓	✓		✓	✓
ELE C058	✓	✓	✓	✓	✓		✓	✓
ELE C059	✓	✓	✓	✓	✓		✓	✓
ELE C060	✓	✓	✓	✓	✓		✓	✓