

STELLA MARIS COLLEGE (AUTONOMOUS), CHENNAI**COURSE PLAN (June - November 2026)**

Department : Physics
Name/s of the Faculty : Ms. Panimaya Peshija. A
Course Title : Basic Instrumentation Skills
Course Code : 25PH/SE/BI32
Shift : I

COURSE OUTCOMES (COs)

COs	Description						CL
CO1	be familiar with the characteristics of measurement and identify the types of errors in measurement devices.						K1
CO2	summarize the operating principle and applications of alternating current, direct current measurement device, oscilloscopes, and transducers.						K2
CO3	apply the knowledge of the measurement techniques to evaluate the influencing parameters and to make an accurate measurement						K3
Week	Unit No.	Content	Cognitive Level	Teaching Hours	COs	Teaching Learning Methodology	Assessment Methods
Jun 15 – 22, 2026 (Day Order 1- 6)							

Jun 23 – July 1, 2026 (Day Order 1- 6)	I	Basics of measurement 1.1 Definition – Direct and indirect measurement - Accuracy – sensitivity - linearity, precision Resolution - accuracy and precision – fidelity - speed of response	K1-K3	2	CO1- CO3	Blackboard, Lecture	Short quiz
July 2 – July 8, 2026 (Day Order 1- 6)	I	Basics of measurement 1.1 Definition – Direct and indirect measurement - Accuracy – sensitivity - linearity, precision Resolution - accuracy and precision – fidelity - speed of response	K1-K3	2	CO1- CO3	Object based learning, demonstration	worksheet
July 9 – 16, 2026 (Day Order 1- 6)	I	1.2 True or Expected Value - types of errors - systematic errors - instrumental errors -environmental errors - random errors - loading errors - random errors - source of errors in measuring instruments -limiting errors	K1-K3	2	CO1- CO3	Flowchart, lecture	Error hunt activity

July 17 – 24, 2026 (Day Order 1- 6)	I	1.2 True or Expected Value - types of errors - systematic errors - instrumental errors -environmental errors - random errors - loading errors - random errors - source of errors in measuring instruments -limiting errors	K1-K3	2	CO1- CO3	Concept mapping, case analysis	Mind map activity
July 25 – 28, 2026 (Day Order 1- 3)	I	1.3 Demonstration of parallax error, zero error and calibration error	K1-K3	2	CO1- CO3	Demonstration, Hands- on training	Component - Skill Assessment test - K1 level-15 marks
July 29 – Aug 3, 2026	C.A. Test - I						
Aug 4 - 6, 2026 (Day Order 4 - 6)							
Aug 7 – 14, 2026 (Day Order 1- 6)	II	AC and DC measurement devices 2.1 Potentiometer – circuit diagram - working of basic (slide wire) dc Potentiometers – standardization – calibration of voltmeter	K1-K3	2	CO1- CO3	Visual learning	

Aug 17 - 24, 2026 (Day Order 1- 6)	II	AC and DC measurement devices 2.1 Potentiometer – circuit diagram - working of basic (slide wire) dc Potentiometers – standardization – calibration of voltmeter	K1-K3	2	CO1- CO3	Lab visit, demonstration	Circuit analysis test
Aug 25 – Sep 2, 2026 (Day Order 1- 6)	II	2.2 Multimeter: Principles of measurement of dc voltage, dc current - ac voltage, ac current and resistance - Specifications of a multimeter and their significance.	K1-K3	2	CO1- CO3	Demonstration, Simulation	Oral Questioning
Sep 3 – 11, 2026 (Day Order 1- 6)	II	2.3 Trouble shooting a circuit using a multimeter (checking the continuity and measurement of voltage, resistance and current).	K1-K3	2	CO1- CO3	Demonstration, Hands- on training	Demonstration Assessment component-K2 level-10marks
Sep 15-17, 2026 (Day Order 1 - 3)	III	Transducer and Oscilloscope 3.1 Transducers – Classification - selection of transducers – Linear	K1-K3	2	CO1- CO3	Simulation, Lecture	Compare and contrast table

		Variable Displacement transducer (LVDT) - Piezoelectric transducers – Thermocouples					
Sep 18 –23, 2026	C.A. Test - II						
Sep 24 - 28, 2026 (Day 4 – 6)	III	Transducer and Oscilloscope 3.1 Transducers – Classification - selection of transducers – Linear Variable Displacement transducer (LVDT) - Piezoelectric transducers – Thermocouples	K1-K3	2	CO1- CO3	Lab visit and lecture	Video presentation component-15 m- K3 level
Sep 29 – Oct 7, 2026 (Day Order 1 - 6)	III	3.2 Oscilloscope – components - Block diagram and principle of working	K1-K3	2	CO1- CO3	Lecture	Draw and label activity
Oct 8 - 14, 2026 (Day Order 1 - 6)	III	3.3 Measurement of voltage, frequency, and current using a CRO	K1-K3	2	CO1- CO3	Demonstration, Hands- on training	Waveform identification activity Demonstration Assessment

							component-K2 level-10marks
Oct 15 - 21, 2026 (Day Order 1- 4)	REVISION						