

*Progressive Education Society's*  
**Modern College of Arts, Science and Commerce (Autonomous),**  
**Shivajinagar, Pune 5**

**(An Autonomous College Affiliated to Savitribai Phule Pune University)**

## **Framework of Syllabus**

**For**

**B.Sc . (Electronic Science)**

(Based on NEP 2020 framework)

(To be implemented from the Academic Year 2023-24)

**Semester 1 (First Year)**

Course Type	Course	Course Code	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
<b>Major Mandatory (4 + 2)</b>	Major Paper 1 (Theory)	23ScEle1101	Fundamentals of Analog and Digital Electronics	2	4	40	60	100
	Major Paper 2 (Practical)	23ScEle1102	Lab Course on 23ScEle1101	4	2	20	30	50
<b>Major Electives</b>	-							
<b>Minor</b>	-							
<b>OE (2 + 2)</b>	Theory	23ScEle1401	Study of E- Vehicles	2	4	40	60	100
	Theory	23CoCop1402	Democracy, Election and Governance	2				
<b>VSC (2)</b>	Major Specific Practical I	23ScEle1501	Simulation of Analog and Digital circuits – I	4	2	20	30	50
<b>SEC (2)</b>	Skill Paper 1 (Practical)	23ScEle1601	Component Identification, Circuit Building and Testing	4	2	20	30	50
<b>AEC(2),</b>	MIL Theory	23CpCopU1701 / 23CpCopU1702	MIL-I (Hindi) / MIL-I (Marathi)	2	2	20	30	50
<b>VEC (2)</b>	EVS Theory	23CoCop1801	Environment Science I	2	2	20	30	50
<b>IKS (2)</b>	Generic IKS	23CpCop1901	Generic IKS	2	2	20	30	50
<b>CC (2)</b>	CC-I Course	23CoCop1001	Online Course Yoga	2	2	20	30	50
<b>Total</b>				28	22	220	330	550

**Semester 2 (First Year)**

Course Type	Course	Course Code	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
<b>Major Mandatory (4 + 2)</b>	Major Paper 3 (Theory)	23ScEle2101	Principles of Analog and Digital Circuits	2	4	40	60	100
	Major Paper 4 (Practical)	23ScEle2102	Lab Course on 23ScEle2101	4	2	20	30	50
<b>Major Electives</b>	-							
<b>Minor</b>	Minor Paper I (Practical)	23ScEle2301	Lab on Fundamental Electronics	4	2	20	30	50
<b>OE (2 + 2)</b>	Theory	23ScEle2401	Communication Electronics for Everyone: HAM Radio	2	4	40	60	100
		23CoCop2402	Fundamentals of Music	2				
<b>VSC (2)</b>	Major Specific Practical II	23ScEle2501	Lab Course on Test & Measuring Instruments	4	2	20	30	50
<b>SEC (2)</b>	Skill Paper II (Practical)	23ScEle2601	Lab Course on PCB designing & Fabrication	4	2	20	30	50
<b>AEC(2),</b>	English Theory	23CoCop2703	English Communication Skills I	2	2	20	30	50
<b>VEC (2)</b>	EVS Theory	23CoCop2801	Environment Science II	2	2	20	30	50
<b>IKS (2)</b>								
<b>CC (2)</b>	CC-II Course	23CpCopU2001/ 23CpCopU2011 / 23CpCopU2021 / 23CpCopU2031 / 23CpCopU2041 / 23CpCopU2051 / 23CpCopU2061 / 23CpCopU2071	Physical Education / Cultural Activities / NSS / NCC / Fine Arts / Applied Arts / Visual Arts / Performing Arts	2	2	20	30	50
<b>Total</b>				<b>28</b>	<b>22</b>	<b>220</b>	<b>330</b>	<b>550</b>

### Semester 3 (Second Year)

Course Type	Course	Course Code	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
<b>Major Mandatory (4 + 4)</b>	Major Core Paper 5 (Theory)	23ScEle3101	Linear and Digital Integrated Circuits	4	4	40	60	100
	Major Paper 6 (Practical)	23ScEle3102	Lab Course on 23ScEle3101	4	2	20	30	50
	Major Core Paper 7 (Theory) (Major Specific IKS)	23ScEle3103	Development of Electronic Communication in India	2	2	20	30	50
<b>Major Electives</b>	-							
<b>Minor (4)</b>	Minor Paper II (Theory +Practical)	23ScEle3301	Introduction to Analog and Digital Electronics (T+P)	2	4	40	60	100
				4				
<b>OE (2)</b>	Theory	23ScEle3401	Consumer Electronics	2	2	20	30	50
<b>VSC (2)</b>	Major Specific Practical III	23ScEle3501	Lab Course on Simulation of Analog and Digital Circuits -II	4	2	20	30	50
<b>SEC (2)</b>	--		--	--	--	--	--	--
<b>AEC(2),</b>	English Theory	23CoCop3703	English Communication Skills II	2	2	20	30	50
<b>VEC (2)</b>	--		--	--	--	--	--	--
<b>IKS (2)</b>	--		--	--	--	--	--	--
<b>FP/CEP (2)</b>	FP –I	23ScEle3002	Field Project I (E- waste Management)	4	2	20	30	50
<b>CC(2)</b>	CC III	23CoCop3001	Fitness	2	2	20	30	50
<b>Total</b>				<b>26</b>	<b>22</b>	<b>220</b>	<b>330</b>	<b>550</b>

### Semester 4 (Second Year)

Course Type	Course	Course Code	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
<b>Major Mandatory (4 + 4)</b>	Major Core Paper 8 (Theory)	23ScEle4101	Microcontroller and its Interfacing	2	4	40	60	100
	Major Paper 9 (Practical)	23ScEle4102	Lab Course on 23ScEle4101	4	4	40	60	100
<b>Major Electives</b>	-							
<b>Minor (4)</b>	Minor Paper III (Theory + Practical)	23ScEle4301	Sensors, Actuators and Data converters (T + P)	2	4	40	60	100
				4				
<b>OE (2)</b>	Theory	23ScEle4401	Security and Surveillance Systems	2	2	20	30	50
<b>VSC (2)</b>	--		--	--	--	--	--	--
<b>SEC (2)</b>	Skill Paper III (Practical)	23ScEle4601	Lab Course on Design, Build and Test Electronic Systems	4	2	20	30	50
<b>AEC(2),</b>	MIL Theory	23CoCop4701/ 23CoCop4702	MIL-II (Hindi ) / MIL-II (Marathi)	2	2	20	30	50
<b>VEC (2)</b>	--		--	--	--	--	--	--
<b>IKS (2)</b>	--		--	--	--	--	--	--
<b>FP / CEP(2)</b>	CEP -I	23ScEle4003	Community Engagement Project I	4	2	20	30	50
<b>CC(2)</b>	CC-4	23CoCop4001	Health and Wellness	2	2	20	30	50
<b>Total</b>				<b>26</b>	<b>22</b>	<b>220</b>	<b>330</b>	<b>550</b>

### Semester 5 (Third Year)

Course Type	Course	Course Code	Course / Paper Title	Hours / Week	Credit	CIA	ESE	Total
<b>Major Mandatory (4 + 4 + 2)</b>	Major Core Paper 10 (Theory)	23ScEle5101	Electronic Instrumentation and Process Control	2	4	40	60	100
	Major Paper 11 (Theory)	23ScEle5102	Digital systems design using Verilog	2	4	40	60	100
	Major Paper 12 (Practical)	23ScEle5103	Lab Course on 23ScEle5101 & 23ScEle5102	4	2	20	30	50
<b>Major Electives</b>	Elective I (Theory + Practical)	23ScEle5201	C and MATLAB programming (T + P)	2	4	40	60	100
				4				
	Elective II (Theory + Practical)	23ScEle5202	Power Electronics (T + P)	2	4	40	60	100
				4				
<b>Minor (4)</b>	Minor Paper IV (Theory + Practical)	23ScEle5301	C- programming for Arduino (T + P)	2	4	40	60	100
				4				
<b>OE (2)</b>	--		--	--	--	--	--	--
<b>VSC (2)</b>	Major Specific Practical IV	23ScEle5501	Lab Course on Industrial Automation with PLC and HMI	4	2	20	30	50
<b>SEC (2)</b>	--		--	--	--	--	--	--
<b>AEC(2),</b>	--		--	--	--	--	--	--
<b>VEC (2)</b>	--		--	--	--	--	--	--
<b>IKS (2)</b>	--		--	--	--	--	--	--
<b>FP / CEP(2)</b>	FP –II	23ScEle5002	Electronics Project II	4	2	20	30	50
<b>Total</b>				<b>30</b>	<b>22</b>	<b>220</b>	<b>330</b>	<b>550</b>

### Semester 6 (Third Year)

Course Type	Course	Course Code	Course / Paper Title	Hours / Week	Credit	CIA	ES E	Total
<b>Major Mandatory (4 + 4 + 2)</b>	Major Core Paper 13 (Theory) Section 1	23ScEle6101	<b>Electronics Communication and Fundamentals of Nano-electronics</b>	2	4	40	60	100
	Major Core Paper 14 (Theory) Section 2			2				
	Major Paper 15 (Theory)	23ScEle6102	<b>Advanced Microcontroller : PIC</b>	2	4	40	60	100
	Major Paper 14 (Practical)	23ScEle6103	<b>Lab Course on 23ScEle6101 &amp; 23ScEle6102</b>	4	2	20	30	50
<b>Major Electives</b>	Elective III (Theory + Practical)	23ScEle6201	<b>Advanced Communication &amp; IoT (T + P)</b>	2	4	40	60	100
				4				
	Elective IV (Theory + Practical)	23ScEle6202	<b>Python programming for Raspberry Pi (T + P)</b>	2	4	40	60	100
				4				
<b>Minor (4)</b>	Minor Paper V (Theory + Practical)	23ScEle6301	<b>Electronics Technology in Agriculture (T + P)</b>	2	4	40	60	100
				4				
<b>OE (2)</b>	--		--	--	--	--	--	--
<b>VSC (2)</b>	--		--	--	--	--	--	--
<b>SEC (2)</b>	--		--	--	--	--	--	--
<b>AEC(2),</b>	--		--	--	--	--	--	--
<b>VEC (2)</b>	--		--	--	--	--	--	--
<b>IKS (2)</b>	--		--	--	--	--	--	--
<b>FP / CEP(2)</b>	--		--	--	--	--	--	--
<b>OJT(4)</b>	OJT	23ScEle6004	<b>On Job Training</b>	8	4	40	60	100
<b>Total</b>				<b>30</b>	<b>22</b>	<b>220</b>	<b>330</b>	<b>550</b>

OE : Open Elective AEC: Ability Enhancement Course

VEC: value Education Courses CC : Co-Curricular Courses

IKS : Indian Knowledge System OJT : On Job Training

FP : Field Project VSC : Vocational Skill Courses CEP : Community Engagement Project