Gondwana University, Gadchiroli

Syllabus
for

Bachelor of Science (B.Sc.) Electronics

Course Code: GUGSTUGELE

Semester I & II

Based on NEP – 2020

(With effect from 2024-25)

Board of Studies in Electronics

Faculty: Science and Technology

Sr. No.	Course Category	Subject Code	Subject name	Total Credit	Teaching Scheme (Hrs)			Examination Scheme									Total Marks
					Theory	Practical	Total Hrs.	Theory					Practical				
								UA	CA	Total Mark	Min. Passing	Duration of Exam (Hrs.)	UA	CA	Total Mark	Min. Passing	
1	Gr Subject-I	STUG01ELE001	**Semiconductor Devices and Circuits**	04	04	--	04	80	20	100	40	03	--	--	--	--	100
2	OE	STUG01ELE002	**Group-A** Electronic Components and Instruments	02	02	--	02	40	10	50	20	02	--	--	--	--	50
3		STUG01ELE003	**Group-B** Troubleshooting of Electronics Gadgets	02	02	--	02	40	10	50	20	02	--	--	--	--	50
4	VSC	STUG01ELE004	Semiconductor Devices Lab	02	--	04	04	--	--	--	--	--	30	20	50	25	50
5	SEC	STUG01ELE005	E- Waste Management	02	02	--	02	40	10	50	20	02	--	--	--	--	50
6	VEC	STUG01ELE006	Lab View	02	--	04	04	--	--	--	--	--	--	50	50	25	50
7	AEC	STUG01ELE007	**English/Marathi/Hindi/ Bengali/Pali**	02	02	--	02	40	10	50	20	02	--	--	--	--	50
8	IKS	STUG01ELE008	**Generic IKS**	02	02	--	02	40	10	50	20	02	--	--	--	--	50
9	CC	STUG01ELE009	**NCC/NSS/Yoga/Sports**	02	--	04	04	--	--	--	--	--	--	50	50	25	50
			Total	20	14	12	26	280	70	350	140	13	30	120	150	75S	500

Note(s):

1) The Students shall undertake total three subjects which shall include one each from Group Subject –I, Group Subject-II and Group Subjects-III.

2) From Sem-III onwards out of the above three Subjects, the Students shall select one Subject as a major and one Subject as a minor as per Government letter No.क्र.एनईपी.२०२२/प्र.क्र.०९/विशि—३ शिकाना दिनांक १३ मार्च, २०२४. As per AEC is concerned, those Students Selected English as a AEC in 1st Sem, shall select Marathi/ Hindi/Bengali/Pali in the IInd Sem and Vis-a Versa

3) As per open elective (OE)is concerned, students shall opt one subject from Group-A and one from Group-B

4) Generic IKS will be common for all Faculties in the first Semester as per Government letter No. क्र.एनईपी.२०२२/प्र.क्र.०९/विशि—३(शिकाना) दिनांक २५जानेवारी, २०२४.

5) VSC Shall be based on Group Subject.

Gondwana University, Gadchiroli
NEP 2020 U.G. PROGRAMME SESSION 2024-25
Faculty of Science and Technology
Programme Name - B.Sc. Sem-II (ELECTRONICS)
Course Code: GUGSTUGELE

SN	Course Category	Subject Code	Subject name	Total Credit	Teaching Scheme (Hrs)			Examination Scheme										Total Marks
								Theory					Practical					
					Theory	Practical	Total Hrs.	UA	CA	Total Mark	Min. Passing	Duration of Exam (Hrs.)	UA	CA	Total Mark	Min. Passing	
1	Groups Subject-II	STUG02ELE001	Digital Electronics-I	04	04	--	04	80	20	100	40	03	--	--	--	--	100
2	Group Subject-III	STUG02ELE002	Basic Electronics	04	04	--	04	80	20	100	40	03	--	--	--	--	100
3	OE	STUG02ELE003	Group-A Domestic Equipment Maintenance	02	02	--	02	40	10	50	20	02	--	--	--	--	50
4		STUG02ELE004	Group-B Renewable Energy and Energy Harvesting	02	02	--	02	40	10	50	20	02	--	--	--	--	50
5	VSC	STUG02ELE005	Digital Electronics Lab	02	--	04	04	--	--	--	--	--	30	20	50	25	50
6	SEC	STUG02ELE006	Fundamentals of Electronics	02	02	--	02	40	10	50	20	02	--	--	--	--	50
7	VEC	STUG02ELE007	SciLab	02	--	04	04	--	--	--	--	--	--	50	50	25	50
8	AEC	STUG02ELE008	English/Marathi/Hindi/ Bengali/Pali	02	02	--	02	40	10	50	20	02	--	--	--	--	50
9	CC	STUG02ELE009	NCC/NSS/Yoga/Sports	02	--	04	04	--	--	--	--	--	--	50	50	25	50
		Total		22	16	12	28	320	80	400	160	14	30	120	150	75	550

Note(s):

1) The Students shall undertake total three subjects which shall include one each from Group Subject –I, Group Subject-II and Group Subjects-III

2) From Sem-III onwards out of the above three Subjects, the Students shall select one Subject as a major and one Subject as a minor as per Government letter No.क्र. एनईपी.२०२२/प्र.क्र.०९/विशि—३ शिकानादिनांक १३ मार्च, २०२४. As per AEC is concerned, those Students Selected English as a AEC in 1st Sem, shall select Marathi/ Hindi/Bengali/Pali in the IInd Sem and Vice- Versa

3) As per open elective (OE)is concerned, students shall opt one subject from Group-A and one from Group-B

4) Generic IKS will be common for all Faculties in the first Semester as per Government letter No. क्र.एनईपी.२०२२/प्र.क्र.०९/विशि—३(शिकाना)दिनांक२५जानेवारी, २०२४.

5) VSC Shall be based on Group Subject.

Board of Studies in Electronics
(Faculty of Science and Technology)
(NEP 2020 Syllabus)
(W.E. F. 2024-25)

Semester – I
Group Subject - I (Credit: 04)
Semiconductor Devices and Circuits
Paper Code: STUG01ELE001

Course outcome:

At the end of this course students will demonstrate the ability to

1. Understand the fundamentals of semiconductor components such as diode, BJT, FET and MOSFET.
2. Plot V-I characteristics of electronic components to observe its performance parameters.
3. Understand the simple applications of circuit made using these semiconductor components.
4. Analyse and solve circuits of electronic devices.

Unit 1:

Diode and Circuits:

V-I Characteristics of P-N Junction Diode, load line concepts, DC Analysis and models of P-N Junction Diode, Applications of PN junction diode ─ Rectifier, Clipper, Clamper; Zener Diode circuits ─ shunt regulator, DC power supply.

Unit II:

Transistor and Circuits

BJT Construction and working, Current Components in BJT, Input-Output and Transfer characteristics in CB, CC and CE configuration, Load line concept, Biasing techniques, BiasStability, Applications of BJT.

Unit III:

FET and MOSFET

FET, MOSFET – Classification, Construction, working, Volt-Ampere Characteristics, DC operatingpoint, biasing the MOSFET; Applications of MOSFET: Switch, Amplifier.

Unit IV:

Thyristor

UJT, SCR, Diac, Triac, Construction, Characteristics, and applications.

Books:

1. J. Millman and C. C. Halkias, Integrated Electronics: Tata McGraw Hill (2001).
2. David A. Bell, 5th Edition 2015, Electronic Devices and Circuits, Oxford University Press.
3. B. L. Theraja, Basic Electronics (Solid State): S. Chand & Company, 2000.
4. R. S. Sedha,A Textbook of Applied Electronics:, S. Chand Publications.
5. Bhargava and Gupta, Basic Electronics and linear circuits, TMH.
6. D.L. Schilling and C. Belove, Electronic Circuits: Discrete and Integrated, TMH.
7. A.S. Sedra, K.C. Smith, A.N. Chandorkar, Learning Microelectronic circuits:, 2014

Semester – I
Open Elective (OE1) (Credit: 02)
Electronic Components and Instruments
Paper Code: STUG01ELE002

Course outcome:

At the end of this course students will have ability to

1. Identify various passive and active components
2. Make series and parallel combinations of components.
3. Design various types of simple linear power supply.
4. Demonstrate knowledge and use of various instrument used in electronics lab.

Syllabus

1. Components Identification: Resistor, Capacitor, Inductor, Transformer, Switches, Semiconductors, IC types and Packages.

2. Serial and parallel connection of Resistor, capacitor, and inductor.

3. Working with LED. Design of Zener regulated power supply, 3-terminal fixed and variable power supply. Voltmeter, ammeter.

4. Study and application of CRO, Function Generator, Multimeter, Voltmeter, ammeter

Books:

1. Charles Platt, Make: Electronics, O'Reilly Publications
2. Paul Scherz, Practical Electronics for Invertors, McGraw-Hills Publications
3. J. M. Hughes, Practical Electronics, O'Reilly Publications
4. B. L. Theraja, Basic Electronics (Solid State): S. Chand & Company

Semester – I
Open Elective (OE 2) (Credit:02)
Troubleshooting of Electronics Gadgets
Subject Code: STUG01ELE003

Course outcome:

At the end of this course students will have ability to

1. to identify various electronic components.

2. to identify and use of various Measuring tools

3. learn testing and repair the power supply.

4. learn testing and repair of various Electronic Gadgets.

Unit I:

Introduction of electronics components (resistor, capacitor, inductor, transformer), diode, LED, transistor), identification of the component, switches, connectors, cable and its type.

Unit II:

Introduction of Measuring Tools: Voltmeter, Ammeter, ohmmeter, Multimeter (analog & digital), CRO, Clamp meter etc., measurement of voltage, current, and resistance, testing of cable and switches testing.

Unit III:

Testing of Power Supply: AC Power Supply, DC Power Supply, Batteries, solar cell, Switch Mode Power Supply(SMPS)

Unit IV:

Equipment Testing & troubleshooting: Audio Amplifier, Microphone, Loud Speaker, FM radio, LED Bulb & Tube light, Laptop charger, Desktop PC, Printer, Inverter, television, Fan Regulator, Adaptor, Television set-top box etc.

References:

1. Troubleshooting Electronic Equipment: R. Khandpur, McGraw-Hill Education.
2. Trouble Shooting & Maintenance of Electronic Equipments: K. Sudeep Singh, S.K. Kataria & Sons.

Vocational Skill Corse (VSC 1) (Credit: 02)

Lab Course on Semiconductor Devices and Circuits

Subject Code: STUG01ELE004

Practical on Group Subject -I

Practicals: Student will have to perform at least 6 practicals.

1. Study of VI Characteristics of Silicon and Germanium diode, LED, and Zener diode.

2. Study of Diode as clipper and clamper.

3. Construction and study of Zener diode regulated power supply

4. Study of characteristics of BJT in CE mode.

5. Study of characteristics of BJT in CB mode.

6. Study of characteristics of FET transfer and drain characteristics.

7. Study of characteristics of MOSFET (D and E Type) transfer and drain characteristics.

8. Study of BJT as switch and amplifier

9. Study of BJT as amplifier and find the gain of amplifier and plot its frequency response.

10. To calculate the total harmonic distortion in transistor amplifier

11. Study of UJT Characteristics.

12. Study of Diac Characteristics.

13. Study of SCR Characteristics.

14. Study of Triac Characteristics.

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Semester – I
Skill Enhancement Course (SEC 1) (Credit:02)
E- Waste management
Subject Code: STUG01ELE005

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Course outcome:

At the end of this course students will have ability to

1. Know about the environmental impacts of e-waste.
2. Apply various concept learned under e-waste management hierarchy.
3. Distinguished the role of various national and internal act and laws applicable for e-waste management and handling.
4. Analyse the e – waste management measures proposed under national and global legislations

Unit I:

What is E-Waste, Indian and global scenario of e-Waste, Growth of Electrical and Electronics industry in India, E-waste generation in India, Composition of e-waste, Possible hazardous substances present in e-waste, Environmental and Health implications.

Unit II:

Regulatory regime for e-waste in India, The hazardous waste (Management and Handling) rules 2003, E-waste management rules 2015, Regulatory compliance including roles and responsibility of different stakeholders – producer, manufacturer, consumer etc., Proposed reduction in the use of hazardous substances (RoHS), Extended producer responsibility (EPR).

Unit III:

Historic methods of waste disposal – dumping, burning, landfill; Recycling and recovery technologies – sorting, crushing, separation; Life cycle assessment of a product – introduction; Case study – optimal planning for computer waste.

Unit IV:

Emerging recycling and recovery technologies, Guidelines for environmentally sound management of e-waste, environmentally sound treatment technology for e-waste, Guidelines for establishment of integrated e-waste recycling and treatment facility, Case studies and unique initiatives from around the world.

References:

1. Johri R., "E-waste: implications, regulations, and management in India and current global best practices", TERI Press, New Delhi.
2. E-waste Recycling and Management: Anish Khan, Inamuddin, Abdullah M. Asiri
3. E-Waste ManagementChallenges and Opportunities in India: Varsha Bhagat-Ganguly

Vocational Education Course (VEC 1) (Credit:02)
LabView
Subject Code: STUG01ELE006

Course outcome:

At the end of this course students will have ability to

1.Implement multiple parallel loops and transfer data between the loops
2. Create an application that responds to user interface events
3. Manage configuration settings for your application
4. Develop an error handling strategy for your application
5. Package and distribute LV code for reuse
6. Identify Best Programming Practices for use in LabVIEW

UNIT-I:

LabVIEW Introduction: What Exactly is LabVIEW? Applications of LabVIEW, How does LabVIEW work? Evolution of LabVIEW, What is DAQ? Communication using Serial Port, LabVIEW addon toolkits, LabVIEW Real Time, FPGA, PDA, and Embedded.

LabVIEW Environment: Front panel, control, and indicator- Block Diagram, Nodes, Wires, Data Flow Programming- LabVIEW Projects, Project Explorer window, project Explorer Toolbars Building Application- Installers- Floating Pallets.

UNIT-II:

LabVIEW FoundationCreating VI- Basic Controls- Indicators- Booleans- String- Paths-DecorationsCustom Controls and Indicators- Automatic wire routing-Automatic Wiring – Wiring Complicated Objects- Bad Wires – Wiring Tips- adding Constants- Controls and indicators – Keyboard Shortcuts- Cloning and object

UNIT-III:

Programming Execution with Structures: For Loop, The While Loop, Placing Objects inside Objects, Counting the Loops, Shift Registers, Case registers, Dialogs, The Sequence Structures, Timing, Timed Structures: Formula Node, Expression Node.

UNIT-IV:

Virtual Display-Charts &Graphs:Waveform Charts, XY Graphs, Chart and Graph Components

Embedded combining with LabVIEW: VISA concept, Baud rate Calculation, Measurement and Automation Explorer, Serial Communication with Microcontrollers.

Suggested References:

1. Virtual Instrumentation using Lab VIEW: Jovitha Jerome, PHI Learning Pvt. Ltd., New Delhi
2. Virtual Instrumentation using Lab VIEW: Sanjay Gupta and Joseph John, TMH, New Delhi
3. Lab VIEW for Everyone:Jeffrey Travis and Jim Kring, Pearson Education, New Delhi
4. NI Lab VIEW user manual

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Semester – II

Group Subject – II (DSC2) (Credit: 04)

Digital Electronics-I

Subject Code: STUG02ELE001

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Course outcome:

At the end of this course students will demonstrate the ability to

1. Understand number systems conversions and apply the principles of Boolean algebra to manipulate, minimize and design logic circuits using logic gates.

2. Demonstrate knowledge of various combinational logic circuits like code converters, multiplexers, adders.

3. Demonstrate knowledge of combinational logic circuits Demultiplexer, encoder, decoder.

4. Demonstrate knowledge of design and analysis of Standard representation of logic functions and Minimization techniques using K-Maps.

Unit I:

Number systems and codes: Decimal, binary, octal and hexadecimal number systems, base (radix) conversions, representation of signed and unsigned numbers

Unit II

BCD code: 8421 code, Excess-3 code, gray code and parity code. Binary, octal and

hexadecimal arithmetic: addition, subtraction by 1's and 2's complement methods (Simple

numerical).

Unit III

Logic gates: Basic logic gates; AND, OR and NOT gates, Universal gates: NAND and NOR gates, combinational gates: XOR and XNOR gates,

Unit IV

Basic postulates and fundamentals theorem of Boolean algebra, Boolean Laws, Application of XOR gate as a controlled inverter.

Semester – II
Group Subject - III (Credit: 04)
Basic Electronics
Subject Code: STUG02ELE002

Unit I:

Basics of Electric Charge, Electric Current, Voltage, power, energy; A voltage source, current source, the series and parallel combination of resistor, voltage division, current division, capacitors in series and parallel.

Unit II:

Ohms law, Branch, node, loop, Mesh,Kirchhoff'svoltage law, Kirchhoff's currentlaw (simple numerical)

Unit III:

Concept of Electric Field and Magnetic Field, Capacitor &Capacitance, type of capacitor, Capacitive reactance, Inductor & inductance, type of inductor, inductivereactance, impedance, Admittance, RC time constant, L/R time constant, introduction of power in AC circuit.

Unit IV:

Construction and working of the transformer, type of transformer, Batteries& their type, a series connection of batteries, parallel connection of batteries, Battery Capacity, Introduction of regulated DC power supply, need of regulated DC power supply, Differentiate between AC & DC source.

Reference Book

1. Basic Electronics -Bernard Grob
2. Basic Electronics – B. L. Thereja
3. Principles of Electronics – V. K. Mehata
4. Electrical Circuits, M. Nahvi& J. Edminister, Schaum's Outline Series, Tata McGraw-Hill
5. Electrical Circuits, K.A. Smith and R.E. Alley, 2014, Cambridge University Press
6. A text Book of Electrical Technology - B.L. THERAJA
7. Electrical Circuit Analysis, Mahadevan and Chitra, PHI Learning

Semester – II

Open Elective (OE 3) (Credit:02)
Domestic Equipment Maintenance
Subject Code: STUG02ELE003

Unit I:

Domestic electrical wiring structure, LCB, Switches and Socket, Supply Testing, Cabletesting the importance of Earthing, series test lamp for single phase, parallel test lamp for single phase, connection of fan regulator

Unit II:

Principle, working, various parts and their use, types, specification, maintenance and troubleshooting: Electrical Press, Ceiling Fan, LED Bulb & Tube light, LED Torch, Inverter.

Unit III:

Principle, working, various parts and their use, types, specification, maintenance and troubleshooting: Water pump, Mixer & Food processor, washing Machine.

Unit IV:

Principle, working, various parts and their use, types, specification, maintenance and troubleshooting: Audio Amplifier(Home Theatre), LED Television, Water Heater &Geyser, Microwave oven.

Reference Books:

1. Maintenance of Domestic Appliances – R. B. Lal
2. Aludels Home appliances servicing – Edwin P. Anderson
3. Small Appliances Servicing – P.T. Brook Woll Jr.
4. How to repair small Appliances – Jack Darr
5. S. Samaddar, Textbook of Electric Wiring, New Central Book Agency (P) Ltd., Calcutta.
6. Study of Home Appliances-K.B.Bhatiya
7. Home Appliances-Anwari
8. Home Appliances Services-E.P.Andersons

Semester – II
Open Elective (OE 4) (Credit: 02)
Renewable Energy and Energy Harvesting
Subject Code: STUG02ELE004

UNIT-I:

Fossil fuels and Alternate Sources of Energy: Fossil fuels and nuclear energy, their limitation, need of renewable energy, non-conventional energy sources. An overview of developments in Offshore Wind Energy, Tidal Energy, Wave energy systems, Ocean Thermal Energy Conversion, solar energy, biomass, biochemical conversion, biogas generation, geothermal energy tidal energy, Hydroelectricity.

UNIT-II:

Solar Energy: Solar energy, its importance, storage of solar energy, solar pond, non-convective solar pond, applications of solar pond and solar energy, solar water heater, flat plate collector, solar distillation, solar cooker, solar green houses, solar cell, absorption air conditioning. Need and characteristics of photovoltaic (PV) systems.

UNIT-III:

Wind Energy harvesting: Fundamentals of Wind energy, Wind Turbines and different electrical machines in wind turbines, Power electronic interfaces, and grid interconnection topologies.

UNIT-IV:

Ocean Energy: Ocean Energy Potential against Wind and Solar, Wave Characteristics, and Statistics, Wave Energy Devices. Tide characteristics and Statistics, Tide Energy Technologies, Ocean Thermal Energy, Osmotic Power, Ocean Bio-mass.

Suggested References:

1. Non-conventional energy sources, B.H. Khan, McGraw Hill., 3rd Edition, 2017
2. Solar energy- Principles of Thermal collection and Storage. Suhas P Sukhatme, 15th Edition, TMH., 2006
3. Renewable Energy, Power for a Sustainable Future, Godfrey Boyle, Oxford University Press. 3rd edition, 2012
4. Renewable Energy Sources and Emerging Technologies, Kothari D P, Singhal K C, Ranjan Rakesh, 2nd Edition, PHI Learning, New Delhi, 2011
5. Solar Energy: Resource Assessment Handbook, P. Jayakumar, e-book., 2009.

Semester – II

Vocational Skill Course (VSC 2) (Credit: 02)
Lab Course on Digital Electronics-I
Subject Code: STUG02ELE005
Practical's on Group Subject - II

Practical – 1 Student will have to perform at least 6 practicals
1. Study of Basic gates.
2. Study of NOR gate.
3. Study of NAND gate.
4. Verification of NAND as universal gates.
5. Verification of NOR as universal gates.
6. Study of X-OR gate.
7. Study of XNOR gate
8. Verification of De Morgan's theorem.
9. Verification of Boolean Laws.
10. Study of Controlled Inverter using XOR gate.

Books:
1. A. Anand Kumar, Fundamentals of digital circuits, Prentice-Hall of India
2. R.P. Jain, Modern digital Electronics, Tata McGraw Hill
3. Malvino, Digital Electronic Principles, PHI, 3rd Edition.
4. Venugopal, Digital Circuits and systems, Tata McGraw Hill.
5. R. J. Tocci, N. S. Widmer, Digital Systems: Principles & Applications
6. Thomas L. Flyod, Digital Fundamentals, Pearson Education Asia
7. R. L. Tokheim, Digital Principles, Schaum's Outline Series, Tata McGraw- Hill

Semester – II
Skill Enhancement Course (SEC 2) (Credit: 2)
Fundamentals of Electronics
Subject Code: STUG02ELE006

Course Outcome (CO)

After completion of this course, students are able to

1. Understand the basic concept of voltage and current.
2. Measure the AC as well as DC voltage.
3. Understand the working of electronic components.
4. Identify the components and its type.
5. Understand the concept of AC & DC supply

Unit I:

Introduction of Conductor, Insulator, Semiconductor; Concept of Voltage, Current, andpower;Introduction of voltmeter, ammeter, and analog & digital multimeter.

Unit II:
Basics of AC Power SupplyIntroduction of AC cycle, AC generation, Representation of sinusoidal waveforms, peak and rms values, phasor representation, realpower, reactive power, apparent power, power factor.

Unit III:
Analysis of single-phase ac circuits consisting of R, L, C, RL, RC, RLC combinations (Seriesand parallel).

Unit IV:
Concept of DC Power, Difference between AC and DC Power Supply, Conversion of ACPower Supply to DC Power Supply, Introduction of Batteries and Solar Cell. Voltage and current sources, Kirchoff's current andvoltage laws.

Reference Books:

1. Basic Electronic – B. L. Theraja
2. Principle of Electronics – V. K. Mehata
3. Electronics Devices and Circuit by, Allen Mottershed
4. A Textbook of Electrical Technology – B. L. Theraja, A. K. Theraja
5. Basic electronics Linear Circuits – R.N. Bhargawa

Semester – II

Vocational Education Course (VEC 2) (Credit: 02)
SciLab
Subject Code: STUG02ELE007

Unit I:
 Introduction: Scilab, Installation of Scilab, general environment and the console, menu bar, editor, graphics window, Windows management, and workspace customization, application of Scilab.

Unit II:
Basic Element of Language: Variables, constant, operator, String, Comments line.

Unit III:
 Matrices: Create a matrix of real value, empty matrix, Accessing the elements of the matrix, and basic matrices operation.

Unit IV:
 Looping & Branching: if statement, select statement, for statement, while statement, break and continue statement, defining a function, function libraries, plotting: 2D plot, contour plots, titles, axes and legends, export.

References:

 1. Scilab by example: M. Affouf 2012, ISBN: 978-1479203444

2. Scilab (A free software to MatLab): H. Ramchandran, A.S.Nair.2011S.Chand and Company

3. Scilab for very beginners. - www.scilab-enterprises.com

4. University Algebra - N.S. Gopala Krishnan, New Age International (P) Limited

5. Theory of Matrices - B S Vatsa, New Age International Publishers.

6. Matrices - A R Vasista, Krishna Prakashana Mandir.

7. Elements of Real Analysis - Shanti Narayan, S. Chand & Company, New Delhi.

DSC Major Basket (Electronics)

Semester	Course Category	Name of Course	Credit	Subject Code
I	Group Subject -I DSC1	Semiconductor Devices and Circuits	4	STUG01ELE001
I	IKS (Generic)	IKS	2	STUG01ELE008
II	Group Subject -II DSC 2	Digital Electronics-I	4	STUG02ELE001

OE/GE Basket (Electronics)

Semester	Course Category	Name of Course	Credit	Subject Code
I	OE 1	Electronic Components and Instruments	2	STUG01ELE002
I	OE 2	Troubleshooting of Electronics Gadgets	2	STUG01ELE003
II	OE 3	Domestic Equipment Maintenance	2	STUG02ELE003
II	OE 4	Renewable Energy and Energy Harvesting	2	STUG02ELE004

VSC Basket (Electronics)

Semester	Course Category	Name of Course	Credit	Course Code
I	VSC 1	**Semiconductor Devices Lab**	2	STUG01ELE004
II	VSC 2	**Digital Electronics Lab**	2	STUG02ELE005

SEC Basket (Electronics)

Semester	Course Category	Name of Course	Credit	Course Code
I	SEC 1	E-Waste Management	2	STUG01ELE005
II	SEC2	Fundamentals of Electronics	2	STUG02ELE006

VEC Basket (Electronics)

Semester	Course Category	Name of Course	Credit	Course Code
I	VEC 1	Lab View	2	STUG01ELE006
II	VEC2	SciLab	2	STUG02ELE007