गुरु घासीदास विश्वविद्यालय
(केंद्रीय विश्वविद्यालय अधिनियम 2009 क्र. 25 के अंतर्गत स्थापित केंद्रीय विश्वविद्यालय)
कोनी, बिलासपुर – 495009 (छ.ग.)

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Koni, Bilaspur – 495009 (C.G.)

List of Courses which focuses on Professional Ethics, Gender, Human Values, Environment & Sustainability and other value framework

Department	: Pure and Applied Physics

Programme Name	: *B.Sc (Electronics)*

Academic Year : 2021-2022

Courses which focuses on Professional Ethics, Gender, Human Values, Environment & Sustainability and other value framework:

Sr. No.	Course Code	Name of the Course
01.	AECPL01	Electronics in daily life
02.	SECPL02	Simulation and Design of Digital Circuit Components

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Scheme and Syllabus

Sem	Course	Course Code	Course Name	Credits	Credits (T+L+P)	Internal Marks/	ESE Max. Marks	Total Marks
I	Core 1	PLUATT1	Mathematical Foundation for Electronics	5	4+1+0	30	70	100
	Core 2	PLUATT2	Basic Circuit Theory and Network Analysis	3	3+0+0	30	70	100
		PLUALT2	Basic Circuit Theory and Network Analysis Lab	2	0+0+2	30	70	100
	GE-1		Opted from the pool course and offered by sister Departments	5		30	70	100
	AEC-1		Opted from the pool course and offered by University	2		30	70	100
	SEC-1		Opted from the pool course and offered by University	2		30	70	100
	Total			**19**				**600**
II	Core 3	PLUBTT1	Semiconductor Devices	3	3+0+0	30	70	100
		PLUBLT1	Semiconductor Devices Lab	2	0+0+2	30	70	100
	Core 4	PLUBTT2	Applied Physics	3	3+0+0	30	70	100
		PLUBLT2	Applied Physics Lab	2	0+0+2	30	70	100
	GE-2		Opted from the pool course and offered by sister Departments	5		30	70	100
	AEC-2		Opted from the pool course and offered by University	2		30	70	100
	SEC 2		Opted from the pool course and offered by University	2		30	70	100
	Total			**19**				**700**
Ability Enhancement Course (AEC) offered by Department								
1	AEC	AECPL01	Electronics in daily life	2	2+0+0	30	70	100
2	AEC	AECPL02	Organic Electronics	2	2+0+0	30	70	100
Skill Enhancement Courseoffered by Department								
1	SEC	SECPL01	Network Circuit Analysis	2	1+0+1	30	70	100
2	SEC	SECPL02	Simulation and Design of Digital Circuit Components	2	1+0+1	30	70	100

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AEC - 1: Electronics in daily life
Course Code: AECPL01   **Credits = 2 (2+0+0)**

Unit – I: History of Electronics: The vacuum tube era, The semiconductor revolution, Integrated circuits, Compound Semiconductor, Digital electronics Materials, Optoelectronics, Superconducting electronics, Flat-panel displays

Unit – II: Different Electronic Components / Semiconductor Components, Passive Components-Resistors: specifications and colour coding. Capacitors: Principle, specifications and colour coding. Inductors: Principle, specifications and classification, Battery, Battery holders and connectors ,Fuses ,Transistors, Oscillation, thyristors ,Light-emitting diodes (LEDs) AC fundamentals: Generation of alternating voltages, Basic electronic functions Rectification, Amplification Using n-p-n transistor, Multimeters, MOSFETs.

Unit – III: Application of Electronics: Consumer Electronics Office Gadgets like calculators, Personal computers, Digital Camera, FAX machines, Printers, Scanners, Front Projector, etc. Home appliances Robot Vacuum Cleaner, Electric Deep Fryer Refrigerator, AC, Coffee Maker Machine, Hair dryer Water Purifier/Dispenser, Storage Devices
Advanced Consumer Electronic Devices: Smart Phones, iPod and Tablets, Wi-Fi and the Internet, barcode scanners, ATM, Dishwasher and POS terminals.

Medical Electronics: Stethoscope, Respiration Monitors Glucose meter, The Pacemaker, MRI, CT scan
Unit – IV: Industrial and Automotive Electronics: Power Windows, Electronic Control Unit (ECU),Airbag control , all vehicles etc. Meteorological and Oceanographic Electronics: Barometer: .Anemometer: Anemometer Hygrometer ,Data logger Smart Grid Systems Image Processing, Entertainment and Communication Electronics:Smart TVs, Set Top Boxes, Speakers , receivers etc.
Defence Application: RADAR technology, Electronic Warfare Systems, Military electronic equipments etc.

Reference Books:
1. Getting Started in Electronics by Forrest, M.Mims, Master Publishing, Inc
2. Make Electronics – Learning by Discovery by Charles Platt ,Maker Media Publishers
3. Practical Electronics for Inventors , Paul Scherz, McGraw-Hill Education
4. Everyday Electronics and You: A Guide to Maintaining and Getting the Best Out of Your Everyday Electronics Devon A. Smith Kindle Edition ,

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SEC - 1: Simulation and Design of Digital Circuit Components
Course Code: SECPL02   **Credits = 1 (1+0+0)**

Course Objectives
- To acquaint students with various basic digital gates used in digital system and develop logical circuits using Boolean gates, construction of various logic circuits using basic gates.
- To impart practical working knowledge of Simulation and Analysis of digital circuits using MATLAB and/or SCILAB.

Learning Outcomes:
On successful Completion of the course, students will be able to:
- Understand the main features and importance of the MATLAB/SCI LAB mathematical programming environment.
- Apply working knowledge of MATLAB/SCI LAB package to simulate and solve Digital Electronics circuits and Applications.

Basics of the circuit components
Basics of Voltage, Current, Resistance and Power, Ohm's law, Series and parallel combinations of electrical components.Basics of electrical instruments such as multimeter, voltmeter and ammeter.

Basics and Applications of the MATLAB
Fundamentals of the MATLAB software. Logic Circuits,Equivalent circuits of an NOT Gate, Exclusive OR Gate, , NOR Gate as Universal Gate, NAND Gate, NAND Gate as Universal Gate, XNOR Gate,Half Adder, Full Adder, Half Adder using NAND Gate, Full Adder using NAND Gate, Comparator.

Reference Books:
1. Electrical Circuits, K.A. Smith and R.E. Alley
2. Modern Digital Electronics by R.P. Jain
3. Digital Electronics by Malvino and Leech
4. Digital Signal Processing with Examples in MATLAB by Samuel D. Strearns and Don R. Hush