Course Structure and Syllabus

CHOICE BASED CREDIT SYSTEM

IN

M.Sc. ELECTRONICS PROGRAMME

FACULTY OF SCIENCE

Approved by Board of Studies in Electronics

(Academic Session July 2019 and onwards)

School of Studies in Electronics and Photonics

Pt. Ravishankar Shukla University

Raipur (C.G.) 492010

www.prsu.ac.in

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School of Studies in Electronics & Photonics, Pt. Ravishankar Shukla University, Raipur

M. Sc. Electronics CBCS

Scheme & Syllabus

Session 2019-21

Sr. No.	Paper Code	Title of Elective Paper	Marks			Credit
			External	Internal	Total	
1.	ELCBCS-1	Basics of Electronics[a]	80	20	100	3
2.	ELCBCS-2	Fundamentals of Biomedical Equipments[b]	80	20	100	3

[a] **For all students except students of Electronics and Physics**

[b] **For all students**

- **Each elective paper comprises of three units and carries a total of 3 credits.**
- **Note: Student can earn maximum of 6 credits or minimum of 3 credits out of the aforesaid elective papers.**
- **Enrolment of 10 students is minimum requirement for switching on the course for a particular semester with the maximum limit of 30 students**
- **The courses will be offered either during the second or the third semester.**
- **Classes will be held on 3pm to 4pm or 4pm to 5 pm.**
- **Basis of Selection: First come and first serve basis.**

Name of the Department - **SOS in Electronics and Photonics, PRSU, Raipur**

Course - Choice Based Course **ELCBCS-1, Second Semester**

Name of Question Paper - **ELCBCS-1 Basics of Electronics**

Total Credit - **03** ; Total Marks - **100**

Course Details- This course introduces students to the basic components of electronics: diodes, transistors, and op amps. It covers the basic operation and some common applications.

EL1 Basics of Electronics

Basic electronics- Introduction, Applications, Concepts of charge, potential, voltage, current, power and their units, Active and passive components,

Basic concepts and resistor circuits Resistor and its color codes, AC signals

AC circuits Introduction, Capacitors, Inductors, RC circuits, Response to a sine wave

Overview of Analog circuitry- Introduction to semiconductors, Conductors, Insulators, Diode and its type, Transistor and its types- NPN & PNP, Transistor as an amplifier and switch. Introduction to MOSFETS, Operational Amplifiers and Integrated Circuits.

Digital Electronics- Analog vs digital signals, Concept of amplitude and frequency, Number system and their conversions, Boolean arithmetic, De – Morgan laws, basic logic gates: their realization, Universal gates, Exclusive – OR and Exclusive NOR-gates.

Text Books

[1.] Basic Electronics for Scientists and Engineers, Dennis L. Eggleston, Cambridge University Press.

[2.] Basic Electronics and Linear Circuit by N. N. Bhargava, DC Kulshreshtha and S. C. Gupta, Tata McGraw-Hill

[3.] Electronic Devices and Circuit Theory, 9th ed. Boylestad & Nashelsky , PHI

[4.] Digital Principal and Application - Malvino Leach, Tata Macgraw Hill

[5.] Modern Digital Electronics - R.P. Jain, Tata Mcgraw

References

[6.] Basic Electronics Solid State by B. L. Thereja, S Chand

[7.] Electronic Devices & Circuit Analysis – K Lal Kishore, BS Publications

Name of the Department - **S.O.S. in Electronics and Photonics, PRSU, Raipur**

Course - Choice Based Course **ELCBCS-2, Third Semester**

Name of Question Paper - **ELCBCS-2 Fundamentals of Biomedical Equipments**

Total Credit - **03** ; Total Marks - **100**

Course Details-

EL2 Fundamentals of Biomedical Equipments

Basics of measuring instruments of electronics- Overview of electricity, Circuit basics, Concept of various measuring parameters- voltage, current, power, ohm's law, Kirchhoff's law.

Biomedical equipment overview- Electronics and Medicine, medical electronics, Importance of measuring instruments in Biomedical, Overview of Electrocardiograph- operation, origin of the ECG waveform

Electroencephalography (EEG) - Signal sources, Recording modes, Applications of the EEG; Techniques to Aid observation- X-ray and Radiography, Diagnostic Ultrasound.

Text Books-

- Principles of Medical Electronics and Biomedical Instrumentation- C. Raja Rao, S. K. Guha, Universities Press (India Limited)
- Introduction to Biomedical Instrumentation- Mandeep Singh, PHI Learning Pvt. Ltd.

Reference Books-

- Biomedical instrumentation and measurements – Leslie Cromwell, Fred J. Weibell, Erich A. Pfeiffer
- Measurements And Instrumentation- A.V.Bakshi U.A.Bakshi, Technical publication, Pune
- Biomedical Instrumentation and Measurment- R. Anandanatarajan, PHI