



List of Revised Courses

Department : Pure and Applied Physics

Program Name : B.Sc. (Electronics)

Academic Year : 2021-22

List of Revised Courses

Sr. No.	Course Code	Name of the Course
01.	PLUATT2	Basic Circuit Theory and Network Analysis
02.	PLUALT2	Basic Circuit Theory and Network Analysis Lab
03.	PLUBLT2	Applied Physics Lab



Minutes of Meetings (MoM) of Board of Studies (BoS)

Academic Year : 2021-22

School : School of Physical Sciences

Department : Pure and Applied Physics

Date and Time : March 10, 2022 - 02:00 PM

Venue : Smart Class Room

The scheduled meeting of member of Board of Studies (BoS) of Department of Pure and Applied Physics, School of Studies of Physical Sciences, Guru Ghasidas Vishwavidyalaya, Bilaspur, was held to design and discuss the M. Sc. (Physics), scheme and syllabi.

The following members were present in the meeting:

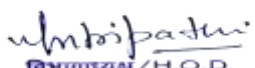
1. Dr. M. N. Tripathi
2. Prof. P. K. Bajpai
3. Prof. D. C. Gupta, External Member (Professor & Head, School of Studies in Physics, Jiwaji University, Gwalior)
4. Dr. A. K. Singh
5. Mr. P. Rambabu
6. Dr. R. P. Patel
7. Dr. M. P. Sharma

The committee discussed and approved the scheme and syllabi. The following courses were revised in the M. Sc. (Physics):

- ❖ Classical Mechanics
- ❖ Electronic and Experimental Methods
- ❖ Statistical Mechanics

The following new courses were introduced in the M. Sc. (Physics):

- ❖ Quantum Mechanics Lab (PPPALT2)
- ❖ Electronic and Experimental Methods Lab (PPPALT3)
- ❖ Nanomaterials and its Applications (OPNPPT1)
- ❖ Nanomaterials and its Applications Lab (OPNPPL1)
- ❖ Advanced Quantum Mechanics Lab (PPPBLT2)
- ❖ Computational Physics and Programming Lab (PPPBDT1)


विभागाध्यक्ष/H.O.D.
शुद्ध एवं अनुप्रयुक्त भौतिकी विभाग
Dept. of Pure & Applied Physics
गुरु घासीदास विश्वविद्यालय
Guru Ghasidas Vishwavidyalaya
बिलासपुर (छ.ग.)/Bilaspur (C.G.)

Signature & Seal of HoD



Scheme and Syllabus

Course Structure B.Sc. Electronics Syllabus 2021-22

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			
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			



Semester - I

Core -2: Basic Circuit Theory and Network Analysis

Course Code: PLUATT2

Credits = 3 (3+0+0)

Course Objectives:

- The objective of the course is that the student acquires the knowledge of basics of electrical network.
- To gain the knowledge and critical analysis of electrical circuit using network theorem.

Course Outcomes:

- Understand the basic concepts, basic laws and methods of analysis of DC and AC networks and reduce the complexity of network using different network theorems.
- Student will understand the resonance in series and parallel circuits and also the importance of initial conditions and their evaluation.

Unit – I: Circuit Analysis: Kirchhoff's Current Law (KCL), Kirchhoff's Voltage Law (KVL), Node Analysis, Mesh Analysis, Star-Delta Conversion.

Unit – II: DC Transient Analysis: RC Circuit- Charging and discharging with initial charge, RL Circuit with Initial Current, Time Constant, RL and RC Circuits, DC Response of Series RLC Circuits.

Unit – III: AC Circuit Analysis: Sinusoidal Voltage and Current, Definition of Instantaneous, Peak, Peak to Peak, Root Mean Square and Average Values. Power in AC Circuits & Power Factor. Sinusoidal Circuit Analysis for RL, RC and RLC Circuits. Resonance in Series and Parallel RLC Circuits, Frequency Response of Series and Parallel RLC Circuits, Quality (Q) Factor and Bandwidth. Passive Filters: Low Pass, High Pass, Band Pass and Band Stop.

Unit – IV: Network Theorems: Superposition Theorem, Thevenin's Theorem, Norton's Theorem, Reciprocity Theorem, Millman's Theorem, Maximum Power Transfer Theorem.
Two Port Networks: Impedance (Z) Parameters, Admittance (Y) Parameters, Transmission (ABCD) Parameters.

Reference Books:

1. S. A. Nasar, Electric Circuits, Schaum's outline series, Tata McGraw Hill (2004).
2. Electrical Circuits, M. Nahvi and J. Edminister, Schaum's Outline Series, Tata McGraw-Hill.(2005).
3. Robert L. Boylestad, Essentials of Circuit Analysis, Pearson Education (2004)
4. W. H. Hayt, J. E. Kemmerly, S. M. Durbin, Engineering Circuit Analysis, Tata McGraw Hill(2005).
5. Alexander and M. Sadiku, Fundamentals of Electric Circuits, McGraw Hill (2008)
6. Grob's Basic Electronics, 11th ed., Mitchel E. Schultz, McGraw Hill.



Core - 2: Basic Circuit Theory and Network Analysis Lab

Course Code: PLUALT2

Credits = 2 (0+0+2)

Name of Experiments

1. Verification of Kirchoff's Law.
2. Verification of Norton's theorem.
3. Verification of Thevenin's Theorem.
4. Verification of Superposition Theorem.
5. Verification of the Maximum Power Transfer Theorem.
6. Charging and discharging of Capacitor
7. Designing of a Low Pass RC Filter and study of its Frequency Response.
8. Designing of a High Pass RC Filter and study of its Frequency Response.
9. Study of the Frequency Response of a Series LCR Circuit and determination of its (a) Resonant Frequency (b) Impedance at Resonance (c) Quality Factor Q (d) Band Width.

Core 4: Applied Physics Lab

Credit: 2 (0+0+2)

Course Code: PLUBLT2

Name of the Experiments

1. To determine the Modulus of Rigidity of a Wire by Maxwell's needle.
2. To determine the Young's modulus of material of cantilever.
3. To determine the Coefficient of Thermal Conductivity of a bad conductor by Lee and Charlton's disc method.
4. To study the variation of Thermo-Emf of a Thermocouple with Difference of Temperature of its Two Junctions.
5. Determination of Planks constant by Photo electric effect.
6. To determine work function of material of filament of directly heated vacuum diode.
7. To determine the value of e/m by (a) Magnetic focusing or (b) Bar magnet.