

CODE	COURSE TITLE
18PHUC301	OPTICS AND SPECTROSCOPY

Category	CIA	ESE	L	T	P	Credit
Core	25	75	41	4	-	4

### Preamble

To integrate the concept of light, geometric and wave optics and their applications in industries and principles Laser and molecular spectroscopy.

### Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1.	Describe the general method for analyzing and predicting the aberrations in lens and to find the velocity of light.	K1
CO2.	Understand the basic concepts of the interference through experiments with visible lights.	K2
CO3.	Interpret various Diffraction techniques to determine the wavelength of light.	K2
CO4.	Infer the basic concept of polarization and their application in the field of Photonics.	K2
CO5.	Apply various aspects of molecular spectroscopy analysis relevant to research and industry.	K3

### Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1.	S	M	S	S	S
CO2.	S	S	S	S	S
CO3.	S	S	M	S	S
CO4.	S	S	S	S	S
CO5.	S	S	S	S	S

S- Strong; M-Medium; L-Low

## Syllabus

### UNIT I

12 Hrs.

#### Geometrical Optics:

**Aberrations:** Spherical Aberration in a Lens – Reducing Spherical Aberration – Coma – Aplanatic Lens – Chromatic Aberration In a Lens – *Achromatism In Prisms – Achromatic Lenses.*

**Velocity Of Light:** Anderson's Method – Houston's Method.

### UNIT II

12 Hrs.

#### Physical Optics:

**Interference:** Fresnel's Biprism – Determination of Wavelength – Air Wedge – *Interferometry – Michelson Interferometer* – Types of Fringes – Visibility of Fringes – Determination of Wavelength of Monochromatic Light – Determination of Difference in Wavelength Between two Neighboring Spectral Lines – Standardization of the Meter – Holography.

### UNIT III

12 Hrs.

**Diffraction:** Rectilinear Propagation of Light – Zone Plate – Fresnel & Fraunhofer Diffraction – Diffraction Pattern Due to a Straight Edge – Plane Diffraction Grating – Theory – Determination of Wavelength – Echelon Grating – Theory – *Resolving Power of a Plane Diffraction Grating.*

### UNIT IV

12 Hrs.

**Polarization:** Double Refraction – Huygens's Explanation of Double Refraction in Uniaxial Crystals – Production and Detection of Plane, Circularly and Elliptically Polarized Light – Optical Activity – Specific Rotation – *Laurent's Half – Shade Polarimeter – Lippich Polarimeter.*

### UNIT V

12Hrs.

**LASER:** Induced Absorption, Spontaneous Emission and Stimulated Emission – Population Inversion – Pumping – Ruby Laser – *Gas Laser: Helium-Neon Laser —CO<sub>2</sub> Laser - Properties of Laser Beam.*

**Molecular Spectroscopy:** Pure Rotational Spectra – Vibrational – Rotational Spectra – Electronic Spectra – Raman Effect – Quantum Theory of Raman Effect – Experimental Study of Raman Effect – Applications.

**Note:** *Italics* denotes Self study Topics

#### Text Books

Sl.No.	Author Name	Title of the Book	Publisher	Year and Edition
1.	Murugesan R	Modern Physics	S.Chand & Company	2005
2.	Subramaniam And Brijlal	Optics	S.Chand & Company	1994, 22 <sup>nd</sup> Edition
3.	Murugesan R and Sivaprasath Kiruthiga	Optics and Spectroscopy	S.Chand & Company	2014, 9 <sup>th</sup> Edition

#### Reference Books

Sl.No.	Author Name	Title of the Book	Publisher	Year and Edition
1.	Ajay Ghatak	Optics	Tata McGraw-Hill Publishing Co. Ltd	1978, 1 <sup>st</sup> Edition
2.	Dutta M K	Atomic and molecular Spectroscopy	IV Y Publishing House	2010, 1 <sup>st</sup> Edition
3.	Vimal Kumar Jain	Introduction to Atomic and Molecular Spectroscopy	Narosha Publishing House	2007, 1 <sup>st</sup> Edition

#### Web Resources:

1. [www.khanacademy.org/science/physics/geometric-optics/lenses/v/diopters-aberration-and-t-eve?modal=1](http://www.khanacademy.org/science/physics/geometric-optics/lenses/v/diopters-aberration-and-t-eve?modal=1)
2. [www.youtube.com/watch?v=FNp81kkxj5c](http://www.youtube.com/watch?v=FNp81kkxj5c)
3. [www.youtube.com/watch?v=o303wUzy3Ko](http://www.youtube.com/watch?v=o303wUzy3Ko)

#### Pedagogy

- Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

CODE	COURSE TITLE
18PHUC406	DIGITAL ELECTRONICS

Category	CIA	ESE	L	T	P	Credit
Core	25	75	41	4	-	4

### Preamble

To impart the basic knowledge of digital principles and application of the knowledge to analyze/design the basic logic circuits, combinational and sequential circuits.

### Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO6.	Recognize and converts different types of codes and number systems which are used in computer system and digital communication.	K1
CO7.	Optimize simple logic using K-map and simplify Boolean laws using the basic Boolean property.	K2
CO8.	Relate logical processes and implement logical operation using combinational logic circuits.	K2
CO9.	Analyze and design sequential and counter circuits	K3
CO10.	Classify the different types of magnetic memory and semiconductor memory	K3

### Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO6.	S	S	S	S	S
CO7.	S	S	S	M	S
CO8.	S	S	S	S	S
CO9.	S	S	S	S	S
CO10.	S	S	M	S	S

S- Strong; M-Medium; L-Low

## **Syllabus**

### **UNIT I**

**12 Hrs.**

**Number system and Codes:** Decimal, Binary, Octal, Hexadecimal- Conversion of Number system- Binary Coded Decimal – Alphanumeric Codes - ASCII Code – EBCDIC Code – Error Detecting and Correcting Code: Hamming code – Parity – Even Parity and Odd Parity Method.

### **UNIT II**

**12 Hrs.**

**Logic gates and Boolean Algebra:** Positive and Negative logic – Logic Gates - NAND, NOR, XOR, XNOR – Action and Truth Table – Laws and Rules of Boolean Algebra and simplifications - *De Morgan's Theorem and Proof* – *K-map* – *Pairs, Quads, Octets, Don't care condition. Logic Diagram.*

### **UNIT III**

**12 Hrs.**

**Arithmetic and Logic Circuits:** Half Adder – Full Adder – Half Subtractor – Full Subtractor – Parallel Binary Adder – Parallel Binary Subtractor - Decimal to BCD Encoder – 1- of 16 Decoder, BCD to Decimal Decoder 4 bit D/A Converter – 2 bit simultaneous A/D Converter .

### **UNIT IV**

**12 Hrs.**

**Sequential Circuits:** Introduction – R.S Flip Flop, Clocked Flip Flop, JK Flip Flop, D Flip Flop – *Master Slave JK Flip Flop* – *Construction Circuits* – *Working- Truth tables- timing diagram.*

#### **Counters:**

Synchronous counter: Ring Counter- Asynchronous counter: Ripple Counter, Mod counters: Mod 3, Mod 5, Mod 10-logic diagram with truth tables.

### **UNIT V**

**12 Hrs.**

**Magnetic Memory:** Magnetic Cores – Magnetic Core Logic – Coincident Current Memory – Memory Addressing.

**Semiconductor Memory:** Metal Oxide Semiconductor Memeor (MOS) – Random Access Memory (RAM), Read Only Memory (ROM), PROM, & EPROM- Basics.

Note: *Italics* denotes Self study Topics

### Text Books

Sl.No.	Author Name	Title of the Book	Publisher	Year and Edition
1.	Malvino.	Digital Computer Electronics	Tata McGraw Hill, New delhi,	2013, 3 <sup>rd</sup> Edition
2.	Malvino & Leach	Digital principles and applications	Tata McGraw Hill, New Delhi	2006, 6 <sup>th</sup> Edition
3.	Thomas C Bartee	Digital computer fundamentals	Tata McGraw Hill, New Delhi	2001, 6 <sup>th</sup> Edition

### Reference Books

Sl.No.	Author Name	Title of the Book	Publisher	Year and Edition
1.	Jain.R.P	Modern Digital Electronics	Tata McGraw Hill, New Delhi	2006, 3 <sup>rd</sup> Edition
2.	Morris Mano.M	Digital Logic & Computer Design	Prentice Hall India, New Delhi	2000, 1 <sup>st</sup> Edition, Reprint
3.	William H.Gothmann	Digital electronics	Prentice Hall India, New Delhi	2006, 2 <sup>nd</sup> Edition
4.	Anokh Singh, Chhabra A.K	Fundamentals of Digital Electronics and Microprocessors	S.Chand & Company Ltd., New Delhi	2003, 2 <sup>nd</sup> Revised Edition

### Web Resources

1. [www.khanacademy.org/math/algebra-home/alg-intro-to-algebra#algebra-alternate-number-bas](http://www.khanacademy.org/math/algebra-home/alg-intro-to-algebra#algebra-alternate-number-bas)
2. <https://www.youtube.com/watch?v=gjCpKPqJJUU>
3. <https://www.youtube.com/watch?v=dmBc-E3EpgA>

### Pedagogy

- Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar
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<b>CODE</b>	<b>COURSE TITLE</b>
<b>18PHUAP01</b>	<b>CORE PRACTICAL II</b>

<b>Category</b>	<b>CIA</b>	<b>ESE</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
<b>Core</b>	<b>40</b>	<b>60</b>	<b>-</b>	<b>-</b>	<b>90</b>	<b>3</b>

### Course Outcomes

On the successful completion of the course, students will be able to

<b>CO Number</b>	<b>CO Statement</b>	<b>Knowledge Level</b>
<b>CO1.</b>	Apply the knowledge of Physics fundamentals	<b>K4</b>
<b>CO2.</b>	Determine the various properties of materials	<b>K3</b>
<b>CO3.</b>	Find the errors using error correction methods	<b>K3</b>
<b>CO4.</b>	Quantify the measurement of the physical properties of a materials	<b>K4</b>
<b>CO5.</b>	Determine the characteristics of the electronic devices	<b>K5</b>

### Mapping with Programme Outcomes

<b>COs</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>
<b>CO1.</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>
<b>CO2.</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>M</b>	<b>S</b>
<b>CO3.</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>	<b>S</b>
<b>CO4.</b>	<b>S</b>	<b>M</b>	<b>S</b>	<b>S</b>	<b>S</b>
<b>CO5.</b>	<b>S</b>	<b>S</b>	<b>M</b>	<b>S</b>	<b>S</b>

S- Strong; M-Medium; L-Low

## Syllabus

### Any SIXTEEN of the Following:

1. Young's Modulus – Uniform Bending – Koenig's Method.
2. Young's Modulus – Non Uniform Bending – Koenig's Method.
3. Dispersive Power of Grating – Spectrometer.
4. Cauchy's Constants and Dispersive Power of a Prism – Spectrometer.
5. Refractive index of a Prism – Stoke's Formula.
6. Refractive index of a Lens – Newton's Rings.
7. Thickness of Insulation – Air Wedge.
8. Calibration of High Range Voltmeter – Potentiometer.
9. Temperature Coefficient Of Resistance – Carey Foster's Bridge.
10. Kater's Pendulum – Determination of Acceleration due to Gravity 'g'.
11. Spectrometer –  $i - i'$  Curve.
12. Characteristics of Zener Diode.
13. Figure of Merit of B.G.
14. Comparison of Mutual Inductance – B.G.
15. Transistor Characteristics – Common Emitter Configuration.
16. Transistor Characteristics – Common Base Configuration.
17. Verification of Truth Table of Logic Gates – AND, OR, NOT, NAND, NOR and EX-OR
18. Field Along The Axis of The Coil – Vibration of Magnetometer – Determination of Field
19. Melting Point of Wax – Thermistor – Post Office Box
20. Spectrometer- Resolving Power of a Grating
21. Potentiometer – Internal Resistance of a cell
22. BG- Comparison of EMF
23. Verification of Boolean Laws



## SEMESTER VI

### Part IV: SKILL BASED SUBJECT- IV

#### MEDICAL PHYSICS

**Instructional Hrs : 45**

**Sub. Code: 17PHUS604**

**Max. Marks: CIA-25; ESE-75**

**Credits: 3**

#### **Objective:**

To provide opportunities and necessary skills for the students to take up a career as clinical technician, radiologist etc., in health related industries.

#### **UNIT I**

##### **Human Physiological Systems:**

Introduction – Cells & Their Structures- Nature Of Cancer Cells- Transport Of Ions Through The Cell Membrane – Resting & Action Potentials- Bio Electric Potentials – Different Systems Of Human Body.

#### **UNIT II**

##### **Electrodes And Transducers:**

Types Of Electrodes – Chemical Electrodes - pH Electrodes – PCO<sub>2</sub> Electrodes – PO<sub>2</sub> Electrode. Piezo – Electric Type – Thermo Electric Type – Photo Voltaic Type.

#### **UNIT III**

##### **Radiology :**

Introduction – X – Ray Machine – Imaging Techniques: Ultra Sonograph, MRI (Qualitative Study) Angiography – Effects Of Radiation Exposure – Radiation Protection – Radio Isotopes In Medicine.

#### **UNIT IV**

##### **Bio Potential Recorders:**

Introduction – Basic Ideas Of Electrocardiography (ECG), Echo Cardiography And Electroencephalography (EEG).

#### **UNIT V**

##### **Physiological Assist devices:**

Introduction – Basic Ideas Of Pacemaker, Artificial Heart Valves And Defibrillators – Heart Lung Machine – Kidney Machine – Dialysis – Hemodialysis.

### **TEXT BOOK**

1. **Arumugam M.**, "*Biomedical instrumentation*", Anuradha Agencies, kumakonam., First Edition, 1992.

### **REFERENCE BOOKS**

1. **Khandpur R.S.**, "*Biomedical instrumentation*", Tata McGraw Hill, New Delhi, First Edition, 2004.
2. **Leslie Cromwell**, "*Biomedical Instrumentation & Measurements*", Prentice Hall Of India, New Delhi, 2<sup>nd</sup> Edition, 1996.

## Self Learning Paper II

### HEALTH PHYSICS

Max. Marks: 100

Sub. Code: 19PHUSL01

Credits: 5

#### UNIT I

Human Physiological system: Cell – Cell structure – Nature of Cancer cells – Different systems of Human body: Skeletal system – Circulatory – Respiratory – Digestive – Excretory – Regulatory – Reproductive – Muscular.

#### UNIT II

Body Temperature: Clinical Thermometer - Hypothermia - Stethoscope sounds – Silent ultrasound: Echoes – Ultrasound scanning in medicine

#### UNIT III

A Pain in ear: Loudness – decibel scale – sound level meters – Noise exposure – Hearing problems – hearing test – hearing aids – frequency response

#### UNIT IV

The human eye: Forming an image – focusing the light- control of brightness – persistence of vision- Eye problems: Normal sight – short sight – long sight – power of a lens – lazy eyes – colour blindness - Lenses and fibers

#### UNIT V

Lasers in medicine – Treating eye disorders - X – rays – X-rays in medicine

Electromagnetic spectrum: Ultraviolet and infra red radiation – Cell killing radiation – Detecting radiation- Taking care with radiation - Helping the disabled

#### TEXT BOOK

1. Biomedical Instrumentation Author: Dr.M.Arumugam, Anuradha Publications, Chennai 2<sup>nd</sup> Edition, Reprint 2012.
2. **Jim Jardine.**, “*Physics through Applications*”, Oxford University Press, 1989.

CODE	COURSE TITLE
<b>18PHUA101/ 18PHUA301</b>	<b>ALLIED PHYSICS PAPER I - MECHANICS, HEAT, SOUND, SOLAR PHYSICS, ELECTRICITY AND MAGNETISM</b>

Category	CIA	ESE	L	T	P	Credit
Allied	20	55	56	4	-	4

### Preamble

To provide the basic knowledge of physical laws and principles to the students of other branches of science.

### Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
<b>CO1.</b>	Understand the basic concepts in mechanics, Solar energy, electricity and magnetism.	K1
<b>CO2.</b>	Investigate the effects of gravity and elasticity	K2
<b>CO3.</b>	Explore the concepts of heat and thermodynamics	K2
<b>CO4.</b>	Provide the opportunity to integrate theory and the application of it in everyday experience	K3
<b>CO5.</b>	Understand the Fundamental properties of electricity and magnetism	K3

### Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
<b>CO1.</b>	S	S	S	S	S
<b>CO2.</b>	S	S	M	M	S
<b>CO3.</b>	S	S	S	M	M
<b>CO4.</b>	S	S	S	S	S
<b>CO5.</b>	S	S	M	M	S

S- Strong; M-Medium; L-Low

## Syllabus

### UNIT I

(9 hrs.)

**Gravitation:** Newton's law of Gravitation – Definition of G – Determination of G by Boy's Method – *Mass and Density of Earth* – Acceleration due to Gravity – Determination of g by Compound Pendulum.

**Elasticity:** Bending of Beams – Bending Moment – Depression of Cantilever – Determination of Y by Uniform and *Non Uniform Bending Method* – Torsion in a wire – Determination of Rigidity Modulus by Torsional Pendulum – I section of Girders

### UNIT II

(9 hrs.)

**Heat and Thermodynamics:** Vander Waal's Equation of State – *Critical Constants of a Gas* – Derivation of Critical Constants in terms of Vander Waals Constant – Joule - Thomson Effect – Theory of J-K Effect – Liquefaction of Hydrogen and Helium – Properties of Liquid - He I and II

**Sound:** Doppler Effect – Derivation and Applications – Frequency of A.C by Sonometer- Ultrasonics – Production, Properties and Applications

### UNIT III

(9 hrs.)

**Solar Physics:** Measurement of Solar Radiations by Pyroheliometer and Pyrometer – Solar Constants – *General Applications of Solar Energy* – Flat Plate Collector – Box Type Cooker Solar Water Heater – Solar Photovoltaic Cells- Applications of Solar Cells

### UNIT IV

(9 hrs.)

**Electricity:** *Conversion of Galvanometer into Ammeter and Voltmeter* – Ballistic Galvanometer: Theory - Charge Sensitiveness - Measurement of Capacitance – Potentiometer – Theory – Measurement of Current, Voltage and Resistance –Electromagnetic Induction: Transformer and its Applications.

**UNIT V****(9 hrs.)**

**Magnetism:** Basic Concepts of Magnetic Materials – *Magnetic Properties of Dia, Para and Ferro Magnetic Materials* – Area of (B-H) Loop – Curie Temperature – Applications of Ferities in Computer Memory

**Note: Italics denote Self Study Topics**

**Text Books**

Sl.No.	Author Name	Title of the Book	Publisher	Year and Edition
1.	Brijlal & Subramaniam	Heat and Thernodynamics	S.Chand and Co	2006
2.	Murugesan R	Properties of Matter	S.Chand and Co	2017, 5 <sup>th</sup> Edition
3.	Murugesan R	Electricity and Magnetism	S.Chand and Co	2016, 9 <sup>th</sup> Edition
4	Subramaniam N & Brijlal	Sound	Vikas Publising House	2015, 2 <sup>nd</sup> Edition
5	Sukhatme S P	Solar Energy Utilization	Tata Mc Graw Hill	1987, 2 <sup>nd</sup> Edition

**Reference Books**

Sl.No.	Author Name	Title of the Book	Publisher	Year and Edition
1.	Brijlal & Subramaniam	Properties of Matter	Eurasia Publication House	1989, 5 <sup>th</sup> Edition
2.	JayaPrakash N	Allied Physics I	JP Publications	1993

**Pedagogy**

- Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

CODE	COURSE TITLE
18PHUA202/ 18PHUA402	ALLIED PHYSICS PAPER II –MODERN PHYSICS, ELECTRONICS AND DIGITAL ELECTRONICS

Category	CIA	ESE	L	T	P	Credit
Allied	20	55	56	4	-	4

### Preamble

The paper gives concise ideas about various fields available in Physics and their application in day to day life.

### Course Outcomes

On the successful completion of the course, students will be able to

CO Number	CO Statement	Knowledge Level
CO1.	Understand new types of Lasers for commercial applications	K2
CO2.	Understand the concepts in nuclear and particle Physics	K2
CO3.	Procure knowledge in electronic devices and systems	K2
CO4.	Understand the principles of modern communication systems	K2
CO5.	Analyse and construct various digital circuits.	K3

### Mapping with Programme Outcomes

COs	PO1	PO2	PO3	PO4	PO5
CO1.	S	S	S	S	S
CO2.	S	S	S	M	M
CO3.	S	S	M	S	S
CO4.	S	S	S	S	S
CO5.	S	S	S	S	S

S- Strong; M-Medium; L-Low

## Syllabus

### UNIT I

(9 hrs.)

**Structure of the Atom:** The Vector Atom Model – *Pauli Exclusion Principle* – Coupling Schemes.

**Laser:** Induced Absorption, Spontaneous and Stimulated Emission – Principle of Laser – Population Inversion – Ruby Laser – Helium and Neon Laser – Semiconductor Laser – Properties and Applications.

### UNIT II

(9 hrs.)

**Nuclear Physics:** Characteristics of Nuclear Physics- Model of Nuclear Structure – Liquid Drop Model – Shell Model – Synchrocyclotron – Betatron - Discovery of Artificial Transmutation – Transmutations by Alpha Particles – Transmutation by Protons – *Elementary Particles* – *Leptons* – *Mesons* – *Baryons*.

### UNIT III

(9 hrs.)

**Electronics:** Construction and Characteristics of Zener Diode, Photo Diode, Light Emitting Diode (LED)- Transistor Characteristics (CE) – Qualitative Analysis of a Common Emitter Amplifier – *Phase Reversal of the output Voltage* – *Advantages of Common Emitter Amplification Circuit*.

### UNIT IV

(9 hrs.)

**Operational Amplifier:** Circuit, Symbol, Polarity Conventions and Virtual Ground or Summing Point of an Operational Amplifier- Characteristics of an Ideal Operational Amplifier- Amplifier as an Adder – *Subtractor* – Differentiator and *Integrator*

**Communication Electronics:** Definition of Frequency Modulation – Modulation Index – Block Diagram of a Superheterodyne Receiver – Principle of Picture Transmission and Reception – Block Diagram of a Monochrome TV Receiver - Basic Principle and Applications of Radar.

### UNIT V

(9 hrs.)

**Digital Electronics:** Digital Computer – Organization of Digital Computers – *Number System* – *Binary Octal* – *Hexa Decimal* – ASCII and EBCDIC – Basic Logic Design using Digital Integrated



Circuits, Truth Tables, Boolean Algebra – Simple Arithmetic Circuits – Half Adder – Full Adder- Half Subtractor - Full Subtractor.

NAND and NOR as an Universal Building Block – De Morgan’s Theorems and Proof- Basic Ideas of Memory Elements.

**Note: Italics denote Self Study Topics**

### Text Books

Sl.No.	Author Name	Title of the Book	Publisher	Year and Edition
1.	Albert P.Malvino & Ronald P. Leach	Digital Principles and Applications	Tata McGraw Hills	2006, 6 <sup>th</sup> Edition
2.	Murugaeshan R	Modern Physics	S.Chand & Co	2016, 18 <sup>th</sup> edition
3.	Thereja B.L	Basic Electronics- Solid State	S.Chand & Co	2015, 1 <sup>st</sup> Edition
4	Mehta V.K	Principles of Electronics	S.Chand & Co	2008, 11 <sup>th</sup> Edition

### Reference Books

Sl.No.	Author Name	Title of the Book	Publisher	Year and Edition
1.	Jayaprakash N	Allied Physics- II	J.P.Publications	1993
2.	William H.Gothmann	Digital Electronics	Prentice- Hall of India	2006, 2 <sup>nd</sup> Edition

### Pedagogy

- Lecture, PPT, Quiz, Assignment, Group Discussion, Seminar

<b>CODE</b>	<b>COURSE TITLE</b>
<b>18PHUAP01</b>	<b>ALLIED PHYSICS PRACTICALS</b>

<b>Category</b>	<b>CIA</b>	<b>ESE</b>	<b>L</b>	<b>T</b>	<b>P</b>	<b>Credit</b>
<b>Allied</b>	<b>20</b>	<b>30</b>	<b>-</b>	<b>-</b>	<b>90</b>	<b>2</b>

### Course Outcomes

On the successful completion of the course, students will be able to

<b>CO Number</b>	<b>CO Statement</b>	<b>Knowledge Level</b>
<b>CO1.</b>	Apply the knowledge of Physics fundamentals	K4
<b>CO2.</b>	Determine the various properties of materials	K3
<b>CO3.</b>	Find the errors using error correction methods	K3
<b>CO4.</b>	Quantify the measurement of the physical properties of a materials	K4
<b>CO5.</b>	Determine the characteristics of the electronic devices	K5

### Mapping with Programme Outcomes

<b>COs</b>	<b>PO1</b>	<b>PO2</b>	<b>PO3</b>	<b>PO4</b>	<b>PO5</b>
<b>CO1.</b>	S	S	S	S	S
<b>CO2.</b>	S	S	S	M	S
<b>CO3.</b>	S	S	S	S	S
<b>CO4.</b>	S	M	S	S	S
<b>CO5.</b>	S	S	M	S	S

S- Strong; M-Medium; L-Low

## Syllabus

### Any SIXTEEN of the Following:

1. Young's Modulus – Non Uniform Bending – Pin and Microscope.
2. Young's Modulus – Uniform Bending – Optic Lever.
3. Rigidity Modulus – Static Torsion.
4. Acceleration Due to Gravity – Compound Pendulum
5. Moment of Inertia – Torsional Pendulum
6. Surface Tension by Capillary Rise Method
7. A.C Frequency - Sonometer
8. Refractive Index of a Liquid – Hollow Prism – Spectrometer.
9. Refractive Index of a Solid Prism - Spectrometer.
10. Refractive Index of the Material of a Solid Prism (i-d )– Curve - Spectrometer.
11. Wavelength of Spectral Lines – Grating – Minimum Deviation – Spectrometer.
12. Radius of the Curvature – Newton's Experiment
13. Calibration of Voltmeter – Low Range – Potentiometer.
14. Calibration of Ammeter – Low Range – Potentiometer.
15. Specific Resistance – Potentiometer.
16. Moment of a Magnet – Tan C position.
17. Characteristics of Junction Diode.
18. Characteristics of Zener Diode.
19. Verification of Truth Tables of the gates OR,AND, NOT, NOR, NAND and EX-OR
20. Verification of De Morgan's Theorem
21. Verification of Boolean algebra.