



# Dr. N.G.P. ARTS AND SCIENCE COLLEGE

(An Autonomous Institution, Affiliated to Bharathiar University, Coimbatore)  
 (Approved by Government of Tamil Nadu & Accredited by NAAC with A++ Grade (3<sup>rd</sup> Cycle - 3.64 CGPA)  
 Dr. N.G.P. – Kalapatti Road, Coimbatore – 641 048, Tamil Nadu, India  
 Web : www.drngpasc.ac.in | Email : info@drngpasc.ac.in | Phone : +91-422-2369100

**BoS****15<sup>th</sup>**

## MINUTES OF THE FIFTEENTH BOARD OF STUDIES MEETING

**Faculty: Basic and Applied Sciences****Board: Physics****The Meeting of Board of Studies (BoS) was held as given below:**

<b>Name of the Body</b>	<b>Board of Studies</b>
<b>Department</b>	<b>Physics</b>
<b>Meeting No.</b>	<b>15</b>
<b>Date and Time</b>	<b>12.06.2023 @ 10.30 a.m.</b>
<b>Venue</b>	<b>Room no. 1513 - B Block</b>
<b>Members Attended</b>	<b>The details are given in the ANNEXURE -I</b>

Item	AGENDA
01	Discussion on UG syllabi for Part- III Core Courses in Third semester for 2022-25 Batch
02	Discussion on syllabus for Part III - Inter Disciplinary Course (IDC) offered by Department of Chemistry in Third semester for 2022-25 Batch
03	Discussion on Part I (Tamil/Hindi/French/Malayalam) offered by Language departments for 2022-25 Batch
04	Discussion on Part II (English) offered by Department of English for 2022-25 Batch
05	<ul style="list-style-type: none"> <li>Discussion on UG syllabi for Part -III Core courses in First Semester for 2023-24 Batch and onwards</li> <li>Discussion on Inter Disciplinary Course (IDC) in First semester offered to Department of Chemistry &amp; Mathematics and offered by Department of Mathematics for 2023-24 Batch and onwards</li> </ul>
06	Discussion on Part I (Tamil/Hindi/French/Malayalam) offered by Language departments for 2023-24 Batch and onwards
07	Discussion on Part II (English) offered by Department of English for 2023-24 Batch and onwards
08	Discussion on Part IV (AECC) Environmental Studies offered by Department of Microbiology for 2023-24 Batch and onwards
09	Discussion on Part V Extension Activity for 2023-24 Batch and onwards
10	Discussion on PG syllabi in Third semester courses for 2022-24 Batch
11	Discussion on PG DSE syllabi in Third semester courses for 2022-24 Batch





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15<sup>th</sup>

12	Discussion on PG core and DSE Syllabi in First semester courses for 2023-24 Batch and onwards
13	Discussion on Practical to be included in the curriculum as per requirement of DBT Star Scheme sponsored instruments.
14	Discussion on Value added Certificate Course
15	Any other matter





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## MINUTES OF THE FIFTEENTH BOARD OF STUDIES MEETING

Faculty: Basic and Applied Sciences

Board: Physics

The Chairman of BoS welcomed all the Panel members for the meeting. The items listed in the agenda were taken for discussion.

The following are the minutes of the meeting:

Item - 01	Discussion on UG syllabi for Part- III Core Courses in Third semester for 2022-25 Batch
Discussion	<p><b>222PY1A3CA: Electricity and Magnetism</b></p> <ul style="list-style-type: none"><li>Prof. Kalaiselvan and Prof. Shanthi suggested to include the following topics, to improve skills in problem solving Unit- I: Method of Images and its application to: Plane Infinite Sheet and Sphere. Unit- V: Maxwell's correction in ampere's law.</li></ul> <p><b>222PY1A3CB: Nuclear Physics (New Course)</b></p> <ul style="list-style-type: none"><li>Prof. Shanthi and Prof. Kalaiselvan suggested to add Reference Books written by Author, R. Murugesan and D.C. Dayal</li></ul> <p><b>222PY1A3CP: Electricity and Magnetism</b></p> <ul style="list-style-type: none"><li>Mr. Maheswaran and Prof. Shanthi suggested to add the following experiments, to understand the calibration and measure emf using basic instruments.<ul style="list-style-type: none"><li>Calibration of low range voltmeter- Ballistic galvanometer.</li><li>Calculate the moment of magnet – Tan A Position.</li><li>Comparison of emf's of two coils using Ballistic Galvanometer.</li></ul></li><li>The following experiments were added under DBT star college scheme.<ul style="list-style-type: none"><li>Determination of wavelength and particle size using LASER source of He-Ne.</li><li>Determine the low range Voltmeter calibration by using potentiometer.</li><li>Determine the Ammeter calibration by using potentiometer.</li><li>Calculate the B and M by magnetic hysteresis loop tracer equipment.</li></ul></li></ul> <p><b>222PY1A3SP: Basic Computer Skills (New Course)</b></p> <ul style="list-style-type: none"><li>Prof. Rajini and Mr. Maheswaran suggested to add practicals in each unit related to theory, to enhance the skills.</li></ul> <p><b>222PY1ASSA: Electrical and Electronic Appliances (New Course)</b></p> <ul style="list-style-type: none"><li>Prof. Shanthi and Mr. Maheswaran for students to be familiarized suggested to add contents related to home appliances.</li></ul>







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	<b>222PY1ASSB: Biophysics (New Course)</b> <ul style="list-style-type: none"> <li>Prof. Shanthi and Prof. Kalaiselvan suggested to add titles related to Centrifugation, Optics, Radiation and Osmosis, to understand their biological concepts.</li> </ul>
<b>Resolution</b>	The Board approved the syllabi.
<b>Item - 02</b>	Discussion on syllabus for Part III - Inter Disciplinary Course (IDC) offered by Department of Chemistry in Third semester for 2022-25 Batch
<b>Discussion</b>	<b>222CE1A3IP- Applied Chemistry - I (IDC)</b> The syllabus approved by the Board of Studies in Chemistry was placed for endorsement.
<b>Resolution</b>	The Board unanimously approved the syllabus
<b>Item - 03</b>	Discussion on Part I (Tamil/Hindi/French/Malayalam) offered by Language departments for 2022-25 Batch
<b>Discussion</b>	<b>221TL1A3TA: Part I: Tamil-III (New course)</b> <b>221TL1A3HA: Part I: Hindi-III (New course)</b> <b>221TL1A3FA: Part I: French-III (New course)</b> <b>221TL1A3MA: Part I: Malayalam - III (New course)</b>  The unified syllabi approved by the Board of Studies in Languages were placed for endorsement.
<b>Resolution</b>	The Board unanimously approved the syllabi.
<b>Item-04</b>	Discussion on Part II (English) offered by Department of English for 2022-25 Batch
<b>Discussion</b>	<b>221EL1A3EA: Part II: Professional English III (New Course)</b> Syllabus approved by the Board of Studies in English was placed for endorsement.
<b>Resolution</b>	The Board approved the syllabi.
<b>Item - 05</b>	<ul style="list-style-type: none"> <li>Discussion on UG syllabi for Part -III Core courses in First Semester for 2023-24 Batch and onwards</li> <li>Discussion on Inter Disciplinary Course (IDC) in First semester offered to Department of Chemistry &amp; Mathematics and offered by Department of Mathematics for 2023-24 Batch and onwards</li> </ul>
<b>Discussion</b>	<b>Core Courses:</b> 232PY1A1CA- Properties of Matter and Sound 232PY1A1CB- Mechanics 232PY1A1CP- Properties of Matter and Mechanics <b>IDC:</b> 232PY1A1IP - Allied Physics - I (Department of Chemistry and Mathematics)





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	232MT1A1IP- Fundamentals of Mathematics with MATLAB (Department of Mathematics)
Resolution	The Board unanimously approved the syllabi.
Item-06	Discussion on Part I (Tamil/Hindi/French/Malayalam) offered by Language departments for 2023-24 Batch and onwards
Discussion	231TL1A1TA- Tamil-I 231TL1A1HA- Hindi-I 231TL1A1MA- Malayalam-I 231TL1A1FA- French-I The unified syllabi approved by the Board of Studies in Languages were placed for endorsement.
Resolution	The Board approved the syllabi.
Item - 07	Discussion on Part II (English) offered by Department of English for 2023-24 Batch and onwards
Discussion	231EL1A1EA -English -I The unified syllabi approved by the Board of Studies in Languages were placed for endorsement.
Resolution	The Board unanimously approved the syllabi.
Item - 08	Discussion on Part IV (AECC) Environmental Studies offered by Department of Microbiology for 2023-24 Batch and onwards
Discussion	233MB1A1AA- Environmental studies The unified syllabus approved by the Board of Studies in Microbiology was placed for endorsement
Resolution	The Board unanimously approved the syllabus
Item - 09	Discussion on Part V Extension Activity for 2023-24 Batch and onwards
Discussion	One credit to be awarded for each Extension activity like YRC/NCC/NSS/RRC/Yoga/Sports/Clubs
Resolution	The Board unanimously approved one credit for Extension activity
Item-10	Discussion on PG syllabi in Third semester courses for 2022-24 Batch
Discussion	The board discussed the syllabus of the following courses offered in Third semester. 222PY2A3CA: Quantum Mechanics- II • Prof. Shanthi and Prof. Kalaiselvan suggested to add the topic Asymptotic behavior of partial waves and deleted the contents present in Quantum Mechanics - I







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	<p><b>222PY2A3CB: Electromagnetic Theory</b>  <b>222PY2A3CC: Condensed Matter Physics (New Course)</b>  <b>222PY2A3CD: Microprocessors and Microcontroller</b></p> <ul style="list-style-type: none"> <li>Prof. Shanthi, Mr. Maheswaran and Prof. Rajini suggested to add application-oriented topics related to microcontroller.  <b>Unit-V</b> - Traffic Light Control, Hardware for washing machine control using 8051, Motor control using Relay, DC Motor control using PWM - Stepper motor control.</li> </ul> <p><b>222PY2A3CP: Electronics -III (New Course)</b></p> <ul style="list-style-type: none"> <li>Prof. Shanthi and Prof. Kalaiselvan recommended to add the following experiments to enhance the skills of students               <ul style="list-style-type: none"> <li>- Construct binary ladder weighted resistor using OP-AMP,</li> <li>- Study the Characteristics of Tunnel Diode 1N3716,</li> <li>- Design of Saw tooth wave generators using OPAMP</li> <li>- Construct half-adder and full-adder circuits using NAND gates and study their performance,</li> <li>- Construct voltage regulated power supply using Zener diode,</li> <li>- Study the characteristics of JFET.</li> </ul> </li> </ul>
Resolution	The Board approved the syllabus.
Item-11	Discussion on PG DSE syllabi in Third semester courses for 2022-24 Batch
Discussion	<p><b>222PY2A3DA-Crystal growth and thin film techniques</b></p> <ul style="list-style-type: none"> <li>Prof. Shanthi and Prof. Kalaiselvan recommended to add the following topics present in TANSCHB</li> </ul> <p><b>Unit 1:</b> Crystals, Classes of crystal system, Nucleation Phenomena: Critical Supersaturation, Homogeneous Nucleation, Heterogeneous Nucleation, Nucleation on a Substrate, Nucleation of a Crystalline Material, Equilibrium Shape of Anisotropic Nuclei.</p> <p><b>Unit 2:</b> Solvents and solutions -Two-Dimensional Layer Growth Mechanism.</p> <p><b>222PY2A3DB-Instrumental methods of analysis</b>  <b>222PY2A3DC-Radiological safety aspects</b></p>
Resolution	The Board approved the syllabus.
Item-12	Discussion on PG Core and DSE Syllabi in First semester courses for 2023-24 Batch and onwards
Discussion	<ul style="list-style-type: none"> <li>232PY2A1CA- Mathematical Physics</li> <li>232PY2A1CB- Thermodynamics and Statistical Mechanics</li> <li>232PY2A1CC- Classical Mechanics</li> <li>232PY2A1CD- Electronics</li> </ul>





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	<ul style="list-style-type: none"> <li>• 232PY2A1CP- Thermodynamics and Optics</li> <li>• 232PY2A1CQ- Electronics -I</li> <li>• 232PY2A1DA- Energy Physics</li> <li>• 232PY2A1DB- Materials Physics and Processing Techniques</li> <li>• 232PY2A1DC- Laser Physics &amp; Non Linear Optics</li> </ul>
<b>Resolution</b>	The Board approved the syllabus.
<b>Item-13</b>	<b>Discussion on Practical to be included in the curriculum as per requirement of DBT Star Scheme sponsored instruments.</b>
<b>Discussion</b>	<p>Practical relevant to the equipment procured under DBT Star Scheme was included in UG: Semester III (R4)</p> <p><b>222PY1A3CP: Electricity and Magnetism</b></p> <ul style="list-style-type: none"> <li>- Determination of wavelength and particle size using LASER source of He-Ne.</li> <li>- Determine the low range Voltmeter calibration by using potentiometer.</li> <li>- Determine the Ammeter calibration by using potentiometer.</li> <li>- Calculate the B and M by magnetic hysteresis loop tracer equipment.</li> </ul>
<b>Resolution</b>	The Board members approved the syllabus
<b>Item-14</b>	<b>Discussion on Value added Certificate Course</b>
<b>Discussion</b>	<ul style="list-style-type: none"> <li>• Smart Phone trouble shooting and PCB designing</li> <li>• Fundamentals of AI and Robotics</li> </ul> <p>The above VACC course to be offered to Physics students were discussed.</p>
<b>Resolution</b>	The Board members accepted the initiatives.
<b>Item-15</b>	<b>Any other matter</b>
<b>Discussion</b>	<ul style="list-style-type: none"> <li>• Discussion on fifth regulation for 2023-24 batch onwards.</li> <li>• The board members discussed the Panel of Examiners</li> </ul>
<b>Resolution</b>	The Board approved the same

The Chairman of Board of Studies (BoS) thanked all the members for their active participation and provided their valuable suggestions.

Date: 15.06.2023

*Ky 15/6/2023*  
 (Dr. K. Girija)

BoS Chairman/HoD  
 Department of Physics  
 Dr. N. G. P. Arts and Science College  
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## Syllabus Revision

**Faculty: Basic and Applied Sciences****Board: Physics****Semester: III****Course Code / Name: 222PY1A3CA / ELECTRICITY AND MAGNETISM**

Unit	Existing	Changes
I	<b>Magnetic Effect of Electric Current:</b> Magnetic field - Magnetic flux - Biot Savart law - Helmholtz tangent galvanometer; construction and theory - Magnetic induction at any point on the axis of a solenoid - Force on a current carrying conductor in a magnetic field - Torque on a current loop in a uniform magnetic field - Moving coil Ballistic galvanometer construction and theory.	Method of Images and its application to: Plane Infinite Sheet and Sphere.
II	<b>Thermoelectricity and Chemical Effect of Electric Current:</b> Seebeck effect - laws of thermo e.m.f - Measurement of thermo e.m.f using potentiometer - Peltier effect S.G. starling method - Thomson effect and coefficient - Thermo electric diagram - Electrical conductivity of an electrolyte - Kohlrausch's bridge method of determining the specific conductivity of an electrolyte - Arrhenius theory of electrolytic dissociation.	
III	<b>Electromagnetic Induction:</b> Faraday's laws of electromagnetic induction - Faraday's laws of electromagnetic induction in vector form - Self-inductance of a long solenoid - Determination of self-inductance (L) by Rayleigh's methods- Mutual induction - Mutual inductance between two co-axial solenoids - Experimental determination of mutual inductance - Ruhmkorff's induction coil.	
IV	<b>Electromagnetic Waves:</b> Alternating current - J operator method - LCR series resonance circuit - Parallel resonant circuit - Comparison between series and parallel resonant circuits - Wattless current - A.C. circuit containing resistance only - Inductance only - capacitance only - Capacitance and Resistance in series - Parallel resonant circuit - A.C. Watt meter.	
V	<b>Maxwell's Equation and Electromagnetic Waves:</b> Basic laws - Maxwell's equations - Displacement current - Poynting vector - Maxwell's equations for electric and magnetic properties - Monochromatic plane waves in vacuum - Energy and momentum of electromagnetic wave- Reflection and Transmission at normal incidence.	Maxwell's correction in ampere's law.

**PERCENTAGE OF SYLLABUS REVISED : 11 %****COURSE FOCUSES ON:**

Skill Development



Entrepreneurial Development



Employability



Innovations



Intellectual Property Rights



Gender Sensitization



Social Awareness/ Environment



Constitutional Rights/ Human Values/ Ethics







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## Syllabus Revision (New Course)

**Faculty: Basic and Applied Sciences****Board: Physics****Semester: III****Course Code / Name: 222PY1A3CB / Nuclear Physics**

Unit	Content
I	<b>Introduction on Nucleus</b> Introduction - Classification of Nuclei - General Properties of Nucleus - Binding Energy- Nuclear Stability- Theory of Nuclear Composition-Liquid Drop Model- Semi-empirical Mass Formula-The shell model- Evidence for Shell Model - Prediction of The Shell Model - Collective Model
II	<b>Detectors of nuclear radiation and particle accelerators</b> Interaction Between Energetic Particles and Matter - Ionization Chamber - Geiger Muller Counter - Wilson Cloud Chamber - Bubble Chamber - Radiation Hazards -Cyclotron - Synchro Cyclotron - Betatron - Magic Numbers.
III	<b>Theory of Radioactivity</b> Natural Radioactivity-Properties of Alpha, Beta, Gamma Rays-Geiger Nuttal Law -Nuclear Isomerism-Soddy Fajan's Displacement Law-Law of Radioactive Disintegration- Half Life -Mean Life -Unit of Radioactivity -Law of Successive Disintegration - Radioactive Dating -The Age of The Earth
IV	<b>Theory of Nuclear Fusion and Fission</b> Nuclear Fusion - Energy Released In Fission - Bohr and Wheelers Theory of Nuclear Fission - Nuclear Chain Reaction - Atom Bomb - Nuclear Reactor - Use of Nuclear Reactor - Nuclear Fusion - Source of Stellar Energy - Thermonuclear Reactions -Hydrogen Bomb.
V	<b>Elementary Particle Physics and Cosmic Rays</b> Classification of Elementary Particles -Fundamental Interactions -Elementary Particles -Quantum Numbers- Conservation Laws And Symmetry -Quark Model- Type of Quarks-Primary Cosmic Rays - Secondary Cosmic Rays -Cosmic Ray Showers-Van Allen Belt-Origin of Cosmic Rays

**PERCENTAGE OF SYLLABUS REVISED : 100 %****COURSE FOCUSES ON:**

Skill Development



Entrepreneurial Development



Employability



Innovations



Intellectual Property Rights



Gender Sensitization



Social Awareness/ Environment



Constitutional Rights/ Human Values/ Ethics





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## Syllabus Revision

**Faculty: Basic and Applied Sciences****Board: Physics****Semester: I****Course Code / Name: 222PY1A3CP/ELECTRICITY AND MAGNETISM**

Sl. No	Existing	Changes
1	Determination of M and H -Deflection Magnetometer.	
2	Find the magnetic field along the axis of a circular coil carrying current.	
3	Find the moment of magnet – Tan C Position.	
4	<del>Comparison of mutual inductance – Ballistic galvanometer.</del>	Calibration of low range voltmeter- Ballistic galvanometer.
5	To determine the angle and refractive index of prism – (i-d)	
6	<del>To characterize the Junction Diode.</del>	Calculate the moment of magnet – Tan A Position.
7	<del>To find the series resonance in series LCR circuit</del>	Determination of wavelength and particle size- LASER source of He-Ne. (under DBT star college scheme)
8	To determine a Low Resistance by Carey Foster's Bridge.	
9	<del>To characterize the transistor (CE).</del>	Determine a low range Voltmeter calibration by using potentiometer. (under DBT star college scheme)
10	<del>To verify the Thevenin and Norton theorems.</del>	Comparison of emf's of two coils using Ballistic Galvanometer.
11	Characteristics of a Zener diode.	Determine of an Ammeter calibration by using potentiometer. (under DBT star college scheme)
12	<del>To study the Characteristics of a Series RC Circuit</del>	Calculate the B and M by magnetic hysteresis loop tracer equipment. (under DBT star college scheme)

End Semester Practical Examination requires completion of 10 experiments out of 12

**PERCENTAGE OF SYLLABUS REVISED**  
**COURSE FOCUS ON:**

**: 48%**

- ☒ Skill Development
- ☒ Employability
- ☐ Intellectual Property Rights
- ☐ Social Awareness/ Environment

- ☒ Entrepreneurial Development
- ☒ Innovations
- ☐ Gender Sensitization
- ☐ Constitutional Rights/ Human Values/ Ethics







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15<sup>th</sup>

## Syllabus Revision

Faculty: Basic and Applied Sciences

Board: Physics

Semester: III

Course Code / Name: 222PY1A3SP / BASIC COMPUTER SKILLS (New Course)

Unit	Contents
I	<b>World wide web:</b> Internet Principles – Basic Web Concepts – Client/Server model – retrieving data from Internet – Internet – Protocols and Applications
II	<b>Introduction to HTML:</b> History of HTML - HTML Generations, Documents - Anchor Tag - Hyper Links - Header Section - Title, Prologue, Links - Colour full webpage - Comment lines Create a web page which displays the wage of style attributes and event function with demo. Create a web page which receives suggestions from customers for a software development and consultancy agency using necessary functions
III	<b>Designing the body section:</b> Heading Printing - Aligning the Headings - Horizontal rule - Paragraph - Tab settings - Images and Pictures - Embedding PNG Format images Create a web page with necessary formats, images and marquees. Create a web page which displays the mouse co-ordinates and image co-ordinates
IV	<b>Ordered, Unordered lists and frames:</b> Lists - Unordered lists - Heading in a list - Ordered Lists - Nested Lists - Frames: Frameset Definition, Frame definition - Nested framesets. Create a web page with lists (Ordered, Unordered and Definition Lists) Using frames, create web page for a travel agency
V	<b>Table Handling:</b> Table Creation – Table creation in HTML – Width of the Table and cells - Cell spanning multiple rows/columns - Colouring cells - Column specification. Create a web page with table content. Create a web page site using links for text and images

PERCENTAGE OF SYLLABUS REVISED :100%  
 COURSE FOCUS ON:

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Skill Development  | <input checked="" type="checkbox"/> Entrepreneurial Development      |
| <input checked="" type="checkbox"/> Employability      | <input checked="" type="checkbox"/> Innovations                      |
| <input type="checkbox"/> Intellectual Property Rights  | <input type="checkbox"/> Gender Sensitization                        |
| <input type="checkbox"/> Social Awareness/ Environment | <input type="checkbox"/> Constitutional Rights/ Human Values/ Ethics |





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15<sup>th</sup>

## Syllabus Revision

Faculty: Basic and Applied Sciences

Board: Physics

Semester: III

Course Code / Name: 222PY1ASSA / SELF STUDY: ELECTRICAL AND ELECTRONIC APPLIANCES (New Course)

Unit	Content
I	Basic Electrical Instruments and Units Galvanometer-Ammeter-Voltmeter- Multimeter- Transformers -Voltage-Current, Resistance-Capacitance-Inductance-Electrical conductors and Insulators.
II	Electrical Safety Measurement Electric shock- First aid for electric shock- Overloading - Earthing and its necessity, Short circuiting - Fuses - MCB -ELCB -Insulation- Inverter-UPS
III	Home Appliances Principles and working; Electric Fan-Electric Iron box -Water heater- Induction heater- Microwave oven- Refrigerator
IV	Household Wirings House hold wiring - Short circuit protection - Current consumption of household appliances - Power distribution - AC load - DC load - Advantages and limitations of DC load
V	Electrical Machines D.C. motor; working, principle, and construction- Single Phase A.C. Motor; working, principle, and construction - Rewinding-Maintenance.

PERCENTAGE OF SYLLABUS REVISED : 100

COURSE FOCUS ON:

<input checked="" type="checkbox"/> Skill Development	<input checked="" type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input checked="" type="checkbox"/> Innovations
<input type="checkbox"/> Intellectual Property Rights	<input type="checkbox"/> Gender Sensitization
<input type="checkbox"/> Social Awareness/ Environment	<input type="checkbox"/> Constitutional Rights/ Human Values/ Ethics







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BoS

15<sup>th</sup>

## Syllabus Revision

Faculty: Basic and Applied Sciences

Board: Physics

Semester: III

Course Code / Name: 222PY1ASSB / SELF STUDY: BIOPHYSICS (New Course)

Unit	Content
I	<b>Introduction to Biophysics</b> Methods of biophysics-scope of Biophysics- Primary Bonds -Secondary Bonds-Ionic Bonds, Covalent Bonds-Metallic Bonds- Van Der Waals Bonds-Hydrogen Bond.
II	<b>Centrifugation in Biological Studies</b> Introduction -Ordinary Centrifugation-Types of Centrifugation -Differential Centrifugation -Ultracentrifugation-Principle-Application
III	<b>Principle of Optics in Biological Studies</b> Introduction -Optical Microscope-Ultraviolet Microscope- Transmission Electron Microscope-Scanning Electron Microscope.
IV	<b>Radiation Physics in Biology</b> Introduction-Radioactive Isotopes-Radioactivity-Effects of Radiation on Biological System-Beneficial Effects of Radiation-Radiation Dosimetry.
V	<b>Principle of kinetics of molecules</b> Diffusion-Factors Affecting Diffusion -Biological Significance of Diffusion -Osmosis -Osmotic Pressure-Biological Significance of Osmosis.

PERCENTAGE OF SYLLABUS REVISED : 100

COURSE FOCUS ON:

<input checked="" type="checkbox"/> Skill Development	<input type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input checked="" type="checkbox"/> Innovations
<input type="checkbox"/> Intellectual Property Rights	<input type="checkbox"/> Gender Sensitization
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## Syllabus Revision

**Faculty: Basic and Applied Sciences****Board: Physics****Semester: III****Course Code / Name: 222PY2A3CB / QUANTUM MECHANICS – II**

Unit	Existing	Changes
I	Time independent perturbation theory – Non degenerate energy levels – First and Second order – Degenerate energy levels – Variation method: Upper bound on ground state energy – Applications to excited state – Hydrogen Molecule – Exchange interaction – WKB approximation: One dimensional schrodinger equation – Bohr – Sommerfeld – Quantum Condition – Barrier Penetration.	
II	Introduction – Partial wave – Analysis- Asymptotic behavior of partial waves – Scattering amplitude – Total Scattering Cross Section – Effective range theory for s wave – Optical theorem – Transformation from centre of mass to lab frame.	Asymptotic behavior of partial waves
III	Introduction – Transition probabilities – Constant and Harmonic perturbations – Transition probabilities – Fermi's golden rule – Selection rules for dipole radiation – Adiabatic approximation – Sudden approximation – Magnetic resonance – Semi- Classical treatment of an atom with electromagnetic radiation.	
IV	Klein-Gordon equation and its interpretation – Equation of continuity – Dirac equation for a free particle – Dirac matrices – Covariant form of Dirac equation – Probability Density – Plane wave solutions – Interpretation of negative energy states – Antiparticle – Spin of Dirac particle.	
V	Classical fields – Euler Lagrange equations – Hamiltonian formulation – Noether's theorem – Quantization of real and complex scalar fields – creation, destruction and number operators – Fock states – Second Quantization of K.G. field.	

**PERCENTAGE OF SYLLABUS REVISED : 16 %****COURSE FOCUS ON:**

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|--|--|
| <input checked="" type="checkbox"/> Skill Development  | <input checked="" type="checkbox"/> Entrepreneurial Development      |
| <input checked="" type="checkbox"/> Employability      | <input checked="" type="checkbox"/> Innovations                      |
| <input type="checkbox"/> Intellectual Property Rights  | <input type="checkbox"/> Gender Sensitization                        |
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15<sup>th</sup>

## Syllabus Revision

Faculty: Basic and Applied Sciences

Board: Physics

Semester: III

Course Code / Name: 222PY2A3CB / Electromagnetic theory

Unit	Existing	Changes
I	Coulomb's law - The electric field – Line, Flux and Gauss's Law - Divergence of E - Application of Gauss's law – Curl of E - Poisson's equation - Laplace's equation – Work and energy in electrostatics: Energy of a point charge distribution – Energy of continuous charge distribution – Induced charges – Capacitors - Laplace equation in one dimension and two dimensions – Electric Fields in matter: Dielectrics – Induced dipoles – Gauss's Law in the presence of dielectrics.	No changes
II	Lorentz force – Magnetic fields – Magnetic forces – Currents – Biot-Savart Law – Divergence and curl of B – Ampere's Law – Electromagnetic induction -Comparison of magnetostatics and electrostatics – Magnetic vector potential - Effect of magnetic field on atomic orbit – Ampere's Law in magnetized materials – Ferromagnetism.	
III	Ohm's Law – Electromotive force – Motional emf - Faraday's Law – Induced electric field – Inductance – Energy in magnetic field – Maxwell's equation in free space and linear isotropic media – Continuity equation – Poynting theorem.  Waves in one dimension: Wave equation – Sinusoidal waves – Reflection and transmission – Polarization.	
IV	The wave equation for E and B – Monochromatic Plane waves – Energy and momentum in electromagnetic waves – Electromagnetic waves in matters - TE waves in rectangular wave guides – The co-axial transmission line - Scalar and vector potentials – Gauge transformation – Coulomb Gauge and Lorentz Gauge – Lorentz force law in potential form.	
V	Four vectors and Tensors – Transformation equations for charge and current densities - Transformation equations for the Electromagnetic Potentials – The Electromagnetic Field Tensor – Transformation Equations for Electric and Magnetic field Vectors – Covariance of Maxwell Equations in four Vector forms and in four Tensor forms – Covariance and Transformation Law of Lorentz Force.	

PERCENTAGE OF SYLLABUS REVISED : 0 %

COURSE FOCUS ON:



Skill Development



Entrepreneurial Development



Employability



Innovations



Intellectual Property Rights



Gender Sensitization



Social Awareness/ Environment



Constitutional Rights/ Human Values/ Ethics





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15<sup>th</sup>

## Syllabus Revision

Faculty: Basic and Applied Sciences

Board: Physics

Semester: III

Course Code / 222PY2A3CB Name: / Condensed Matter Physics (New Course)

Unit	Changes
I	<b>Free Electrons theory</b> Electrons Moving In 1D Potential Well-Fermi Dirac Statistics -Electrical Conductivity of Metals - Relaxation Time and Mean Free Path -Electrical Conductivity and Ohms Law- Wiedemann Franz Lorentz Law-Electrical Resistivity of Metals-The Hall Effect
II	<b>Thermal and Optical Properties of Materials</b> The Specific Heat of Solids-Debye Model-Thermal Conductivity of Solids-Thermal Conductivity Due To Electrons- Thermal Conductivity Due To Phonons-Thermal Resistance of Solids-Photoconductivity- Photoelectric And Photovoltaic Effect-Photoluminescence.
III	<b>Semiconducting and Dielectric Properties of Materials.</b> Free Carrier Concentration In Semiconductors- Fermi Level And Carrier Concentration In Semiconductors-Mobility of Charge Carriers- Effect of Temperature on Mobility -Dipole Moment - Local Electric Field at An Atom- Dielectric Constant and Its Measurement-Polarizability-Classical Theory of Electronic Polarizability-Dipolar Polarizability- Piezo-Pyro Ferro Electric Properties of Crystals- Ferroelectricity.
IV	<b>Magnetic Properties of Materials</b> Classification of Magnetic Materials - Atomic Theory of Magnetism – The Quantum Numbers - Origin of Permanent Magnetic Moments - Langevin's Classical Theory of Diamagnetism -Langevin's Classical Theory of Paramagnetism--Ferromagnetism – Weiss Molecular Field - Ferromagnetic Domain - Domain Theory- Antiferromagnetism -Ferrimagnetism And Ferrites.
V	<b>Theory of Superconductors</b> Sources of Superconductivity- Response of Magnetic Field -Meissner Effect- Thermodynamics of Superconducting Transitions -Origin of Energy Gap-Isotope Effect London Equations- London Penetration Depth-Coherence Length-Elements of BCS Theory-Normal Tunneling And DC And AC Josephson Effect-High Temperature Superconductivity.

PERCENTAGE OF SYLLABUS REVISED :100 %

COURSE FOCUS ON:



Skill Development



Entrepreneurial Development



Employability



Innovations



Intellectual Property Rights



Gender Sensitization



Social Awareness/ Environment



Constitutional Rights/ Human Values/ Ethics







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## Syllabus Revision

**Faculty: Basic and Applied Sciences****Board : Physics****Semester: III****Course Code / Name: 222PY2A3CC/ Microprocessors and Microcontroller**

Unit	Existing	Changes
I	Intel 8085 microprocessor: Introduction — Pin configuration — Architecture and its operations — Machine cycles of 8085. Interfacing of memory — Classification — I/O device and execution. Instruction classification: number of bytes, nature of operations — Instruction format.	Intel 8085 microprocessor: Architecture and its operations - 8085 Microprocessor Unit - Data transfer operations - Arithmetic operations - Logical operations - Branching and machine control operations - Addressing modes - Writing assembly language programs: Looping, counting and indexing - Counters and time delays - Stack - Subroutine.
II	Instruction set: Data transfer operations - Arithmetic operations - Logical operations - Branching and machine control operations. Addressing modes. Writing assembly language programs: Looping, counting and indexing. Counters and time delays - Stack - Subroutine	
III	Features of 8086 - Architecture - Pins and signals - Minimum mode and maximum mode signals - External memory addressing - 8 bit data transfer - 16 bit data transfer - Interrupt processing - Response to interrupt - Classification of interrupt - Interrupt priority. Addition, subtraction and multiplication programs.	
IV	General purpose programmable Peripheral device: 8255A Programmable Peripheral Interface (PPI) - Block diagram - Mode 0 - BSR mode - A/D converter - 8257 DMA controller - Interfacing - Programming and Execution - Basic concept in serial I/O - Interfacing requirements - Transmission format - Synchronous vs Asynchronous Transmission.	
V	Introduction- Features of microcontroller and 8051 - Difference between microprocessor and microcontroller - 8051 Architecture - Pins and signals 8051- Memory organization - Special function register (SFR) - 8051 Interrupts - Execution - Sources - Enabling and disability - Priority- Timing level of Interrupts - Data types and directives Instruction set - Addition, subtraction and multiplication programs.	Traffic Light Control - Traffic light control system using 8086 microprocessor - Traffic light control system using 8051 microprocessor - Hardware for washing machine control using 8051 - Motor control using Relay: Electromagnetic relay - Operation - Driving a relay - relay for on and off lamp - Solid state relay - DC Motor control using PWM - Stepper motor control.

**PERCENTAGE OF SYLLABUS REVISED : 22 %****COURSE FOCUS ON:**

<input checked="" type="checkbox"/> Skill Development	<input checked="" type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input checked="" type="checkbox"/> Innovations
<input type="checkbox"/> Intellectual Property Rights	<input type="checkbox"/> Gender Sensitization
<input type="checkbox"/> Social Awareness/ Environment	<input type="checkbox"/> Constitutional Rights/ Human Values/ Ethics





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## Syllabus Revision

**Faculty: Basic and Applied Sciences****Board: Physics****Semester: III****Course Code / Name: 222PY2A3CB / Electronics III (New Course)**

Unit	Existing	Changes
1.	Construct the Wien Bridge Oscillator using OP-AMP and verify the output performance (Sine wave and square wave) by digital cathode ray oscilloscope.	
2.	<del>Logarithmic Amplifier using OP-AMP.</del>	Construct binary ladder weighted resistor using OP-AMP.
3.	<del>Binary added weighted resistor using OP-AMP.</del>	Study the Characteristics of Tunnel Diode 1N3716.
4.	<del>Double slope Voltage to Analog converter using OP-AMP.</del>	Design of Saw tooth wave generators using OPAMP
5.	Construct Binary adder and Subtractor using IC 7483 and IC 7486.	
6.	<del>Study the static and dynamic characteristics of a JFET.</del>	Construct half-adder and full-adder circuits using NAND gates and study their performance.
7.	Verify the Characteristics of Photodiode using digital multimeter.	
8.	<del>Study the characteristics of voltage doubler using multimeter.</del>	
9.	<del>A full binary adder and subtractor using 7483.</del>	Construct voltage regulated power supply using Zener diode.
10.	<del>Construction of monostable multivibrator using Op-AMP/NE 555.</del>	
11.	Study the characteristics of SCR.	
12.	<del>Study the characteristics of BJT.</del>	Study the characteristics of JFET.

End Semester Practical Examination requires completion of 10 experiments out of 12

PERCENTAGE OF SYLLABUS REVISED : 50 %

COURSE FOCUS ON:

- |  |  |
|--|--|
| <input checked="" type="checkbox"/> Skill Development            | <input checked="" type="checkbox"/> Entrepreneurial Development      |
| <input checked="" type="checkbox"/> Employability                | <input checked="" type="checkbox"/> Innovations                      |
| <input checked="" type="checkbox"/> Intellectual Property Rights | <input type="checkbox"/> Gender Sensitization                        |
| <input type="checkbox"/> Social Awareness/ Environment           | <input type="checkbox"/> Constitutional Rights/ Human Values/ Ethics |







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## Syllabus Revision

**Faculty: Basic and Applied Sciences****Board: Physics****Semester: III****Course Code / Name: 222PY2A3DA / CRYSTAL GROWTH AND THIN FILM TECHNIQUES**

Unit	Existing	Changes
I	Ambient-phase-equilibrium—Equilibrium-of-finite-phases—Equation of—Thomson—Gibbs—Types-of-nucleation—Formation-of-critical nucleus—Classical-theory-of-nucleation—Rate-of-nucleation—Growth-from-vapor-phase, solutions-and-melts—Epitaxial-growth—Growth-mechanism-and-classification—Kinetics of-growth-of-epitaxial-films.	Crystals - Classes of crystal system - Crystal symmetry - Single crystal - Growth of crystal -Historical perspective. Nucleation Phenomena: Critical Supersaturation - Homogeneous Nucleation -Heterogeneous Nucleation - Nucleation on a Substrate -Nucleation of a Crystalline Material - Equilibrium Shape of Anisotropic Nuclei.
II	Classes-of-crystal-system—Crystal-symmetry—Solvents-and solutions—Solubility diagram - Metastable zone and induction period - Miers TC diagram - Solution growth - Low and high temperatures solution growth - Slow cooling and solvent evaporation methods.	Solvents and solutions -Two-Dimensional Layer Growth Mechanism.
III	Principle of gel technique - Various types of gel - Structure and importance of gel - Methods of gel growth and advantages - Melt technique - Czochralski growth- Bridgeman method - Horizontal gradient freeze - Hydrothermal growth - Vapor phase growth - Physical vapor deposition - Chemical vapor deposition.	
IV	Vacuum evaporation - Hertz-Knudsen equation - Evaporation from a source and film thickness uniformity - E-beam, pulsed laser and ion beam evaporations - Mechanisms and yield of sputtering processes - DC, magnetically enhanced, reactive sputtering - Spray pyrolysis - Electro deposition - Sol-gel technique.	
V	X-ray diffraction - Powder and single crystal - Fourier transform infrared analysis - Elemental dispersive X-ray analysis - Transmission and scanning electron microscopy - UV-Vis-NIR spectrometer - Vickers micro hardness - Basic principles and operations of AFM and STM - X-ray photoelectron spectroscopy for chemical analysis - Photoluminescence.	

**PERCENTAGE OF SYLLABUS REVISED :23 %****COURSE FOCUS ON:**

Skill Development



Entrepreneurial Development



Employability



Innovations



Intellectual Property Rights



Gender Sensitization

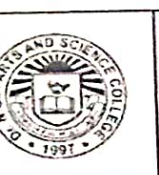


Social Awareness/ Environment



Constitutional Rights/ Human Values/ Ethics



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### Syllabus Revision

Faculty: Basic and Applied Sciences

Board: Physics

Semester: III

Course Code / Name: 222PY2A3DB/ Instrumental Methods of Analysis

Unit	Existing	Changes
I	Classification of Instrumental techniques - Basic functions of Instrumentation - Sensitivity and detection limit - Hardware techniques for signal-to-noise enhancement - Software techniques for signal-to-noise enhancement - Evaluation of results - Accuracy and instrument calibration.	No changes
II	Thermo gravimetric analysis: Instrumentation - Applications - Differential Thermal analysis: Instrumentation - General Principles - Applications - Differential Scanning Calorimetry: Instrumentation - Applications - Microthermal analysis - Dynamic Mechanical Analysis.	
III	Production of X-rays and X-ray spectra - Instrumentation - X-ray Absorption methods - X-ray Fluorescence method - X-ray Diffraction: Reciprocal lattice concept - Diffraction patterns - Automatic Diffractometers - Choice of X-radiation - X-ray powder data file - Quantitative analysis - Structural applications - Crystal topography.	
IV	Ultraviolet-Visible Molecular Absorption spectrometry: Measurement of Transmittance and Absorbance - Beer's law - Instrumentation: Instrument components - Single beam instruments - Double beam instruments - Qualitative applications of U-V Absorption spectroscopy: Solvents - Detection of functional groups Electron spectroscopy: X-ray photoelectron spectroscopy: Principle - Instrumentation - Applications - Scanning Tunneling Microscope: Principle - Instrumentation - Atomic Force microscope: Principle - Instrumentation.	
V	Electrochemical cells - Potentiometry: General principles - Reference electrodes - Ion-selective Field-Effect-Transistors - Molecular selective electrode systems - Instruments for selecting cell potentials - Coulometry: CV relationships during an electrolysis - Coulometric methods of analysis - Voltammetry: Voltametric Instrumentation: Cyclic voltammetry - Applications of voltammetry.	

**PERCENTAGE OF SYLLABUS REVISED : Nil**  
**COURSE FOCUS ON:**

<input checked="" type="checkbox"/> Skill Development	<input checked="" type="checkbox"/> Entrepreneurial Development
<input checked="" type="checkbox"/> Employability	<input checked="" type="checkbox"/> Innovations
<input type="checkbox"/> Intellectual Property Rights	<input type="checkbox"/> Gender Sensitization
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## Syllabus Revision

Faculty : Basic and Applied Sciences

Board : Physics

Semester: III

Course Code / Name: 222PY2A3DC / Radiological Safety Aspects

Unit	Existing	Changes
I	<b>General Properties of Atomic Nucleus:</b> Scattering of Alpha-particles - Nuclear size and Determination : Nuclear Force Methods, Electromagnetic Methods - Mass spectroscopy - Basic Components of Mass Spectrometers - Double Focussing Mass spectrograph - Double Focussing Mass spectrometer - Doublet Method of mass spectroscopy - Mass Synchrometer - Theories of Nuclear Compositions	No Changes
II	<b>Radioactivity and Isotopes:</b> Law of radioactive Disintegration - Displacement laws of Soddy Russell and Fajans - Law of successive Transformation - Radioactive Equilibrium - Radioactive Branching - Dosimetry - Induced Radioactivity by Nuclear Bombardment - Mixture of Activities - Radio-isotope Therapy - Measurements of Decay Constants - Isotopes (Separation and Uses).	
III	<b>Interactions Nuclear Radiations with Matter:</b> Interaction of Charged Particles with Matter - Stopping Power of Heavy Charged Particles - Range and Straggling - Stopping Power and Range of Electrons - Cerenkov Radiation - Synchrotron Radiation - Absorption of Gamma Rays (Thomson, Rayleigh and Delbruck Scattering) - Photoelectric effect - Compton effect - Pair Production	
IV	<b>Detection and Measurement of Nuclear Radiations:</b> Ionization chamber - Semiconductor Detectors - Diffused Junction detector - Surface Barrier detector - Lithium drifted Junction detector - Regions of multiplicative operation - Proportional Counter - Geiger Muller Counter (Quenching of Discharge) - Scintillation Counters (Photomultiplier tube, Scintillators, Pulse Formation, Resolving Power)	
V	<b>Safety Concepts:</b> Radiation units- Equivalent dose - Effective dose-Committed dose- Collective dose - Genetically significant dose - Detriment - Annual limit on intake- ALARA - Sources of Radiation - Interaction of radiation with tissue - Radiation risk - Sources of exposure - Leakage limits - Personnel monitoring - Film badge Thermoluminescent dosimeter- Pocket dosimeter.	

PERCENTAGE OF SYLLABUS REVISED : Nil

COURSE FOCUS ON:

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| <input checked="" type="checkbox"/> Skill Development  | <input checked="" type="checkbox"/> Entrepreneurial Development      |
| <input checked="" type="checkbox"/> Employability      | <input checked="" type="checkbox"/> Innovations                      |
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BoS

15<sup>th</sup>

## ATTENDANCE OF THE FIFTEENTH BOARD OF STUDIES MEETING

Board: Physics

Faculty: Basic and Applied Sciences

Venue : B Block Room no.1513

Date : 12/06/2023


Time : 10:30 AM


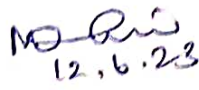
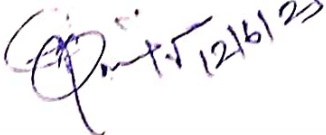




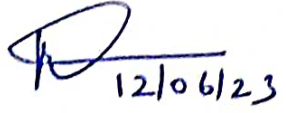
The following members were present for the board of studies meeting.

S. No.	Name	Designation	Signature
1	<b>Dr. K. Grijja</b> Assistant Professor & Head i/c Department of Physics	Chairman	<i>[Signature]</i> 12/6/2023
2	<b>Dr. R. Kalaiselvan</b> Assistant Professor Department of Physics, Bharathiar University, Coimbatore-46	VC Nominee	<i>[Signature]</i> 12/6/23
3	<b>Dr. J. Shanthi</b> Professor and Head Department of Physics Avinashilingam Institute of Home Science, Coimbatore -43.	Subject Expert	<i>[Signature]</i> 12/6/23
4	<b>Dr. K. S. Rajini</b> Associate Professor Department of Sciences, Amrita Vishwa Vidyapeetham, Coimbatore-43	Subject Expert	<i>[Signature]</i> 12/6/23
5	<b>Mr. G. Maheswaran</b> Chief Executive Officer, Silicon Technologies, Coimbatore - 14.	Industrial Expert	<i>[Signature]</i> 12/6/23
6	<b>Ms. A. Suvathini</b> Junior Assistant Commercial Tax Office Tiruppur - 02.	Alumni	<i>[Signature]</i> 12/6/23
7	<b>Dr. N. Kuppusamy</b> Professor and Head Department of Tamil Dr. N.G.P. ASC	Co-opted Member	<i>[Signature]</i> 12/6/23
8	<b>Dr. R. Vidya Prabha</b> Professor and Head Department of English Dr. N.G.P. ASC	Co-opted Member	<i>[Signature]</i> 12/6/23





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9.	Dr.R.Sowrirajan Professor&Head Department of Mathematics Dr.N.G.P ASC	Co-opted Member	
10.	Dr.M.Suganthi Professor&Head Department of Chemistry Dr.N.G.P ASC	Co-opted Member	 12.6.23
11.	Dr.V.Gopalakrishnan Professor Department of Physics Dr.N.G.P ASC	Member	 12/6/23
12.	Dr.M.R.Anandhan Associate Professor Department of Physics Dr.N.G.P ASC	Member	 12/6/23
13.	Mrs.R.Revathi Assistant professor Department of Physics Dr.N.G.P ASC	Member	 12/6/23
14.	Dr.R.Karunathan Assistant Professor Department of Physics Dr.N.G.P ASC	Member	 12/6/23
15.	Dr.R.Dilip Assistant Professor Department of Physics Dr.N.G.P ASC	Member	 12/6/23
16.	Dr.M.R.Venkatraman Assistant Professor Department of Physics Dr.N.G.P ASC	Member	 12/06/23



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17.	Dr.S.Gunasekaran Assistant Professor Department of Physics Dr.N.G.P ASC	Member	
18.	Dr.J Martin Sam Gnanaraj Assistant Professor Department of Physics Dr.N.G.P ASC	Member	
19.	Mr.S.Dinesh II M.Sc Physics	Student Representative	— AB —
20.	Ms.G.Sharmila III B.Sc Physics	Student Representative	

Date: 12/06/2023

(Dr.K.Girija)

BoS Chairman/HoD  
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