Department of Physics

Board of Studies Meeting

The minutes of the 17th meeting of the Board of Studies held on 05.04.2024 at 10.00 am at the A1 Block – AV Hall.

Members Present:

S.No	Name	Category
1	Dr. V. Gopala Krishnan	Chairman
2	Dr. R. Kalaiselvan Assistant Professor Bharathiyar University, Coimbatore.	VC Nominee
3	Dr. J. Shanthi Professor and Head Avinashilingam Institute for Home Science and Higher Education for Women University, Coimbatore.	Subject Expert
4	Dr. K. S. Rajini Professor Amirta University, Coimbatore.	Subject Expert
5	Mr. G. Maheswaran Chief Executive Officer Silicon Technologies, Coimbatore.	Industrial Expert
6	Ms. A. Suvathini Junior Assistant Commercial Tax Office,Tiruppur.	Meritorious Alumni
7	Dr. N. Kuppusamy	Co-opted Member
8	Dr. A. Hazel Verbina	Co-opted Member
9	Dr. R. Sowrirajan	Co-opted Member
10	Dr. M. Suganthi	Co-opted Member
11	Dr M.R Ananthan	Member
12	Mrs. R.Revathi	Member
13	Dr.R. Karunathan	Member
14	Dr R Dilip	Member

15	Dr S Gunasekaran	Member
16	Dr Martin Sam Ganaraj	Member
17	Ms. S. Punitha	Member
18	Ms Gayathri	Student Representative -UG
19	Mr Gowtham	Student Representative –PG

The HoD and Chairman of the Department of Physics welcomed and introduced all the members and appreciated them for their continuous support and contribution for the development of academic standard and enrichment of the syllabus.

Further Chairman informed the inability of the following member/s to attend the meeting in-person and they attended online.

1. Dr. R. Kalaiselvan – VC Nominee
2. Dr. J. Shanthi Subject Expert

Further Chairman informed the inability of the meritorious alumni to attend the meeting in-person and requested to grant leave of absence.

1. Ms. A. Suvathini

After brief discussion the items of the agenda were taken one by one for discussion and the following resolutions were passed.

Item 17.1: *To review and approve the minutes of the previous meeting held on* ***18.10.2023***

The chairman of the Board presented the minutes of the previous meeting held on **18.10.2023** and requested the members to approve. After brief discussion the following resolution was passed

Resolution:

Resolved to approve the minutes of the previous meeting held on 18.10.2023

Item 17.2: *To consider and approve the Scheme and Syllabi for I semester for the students to be admitted during the academic year 2024-2025.*

The chairman presented the detailed scheme and Regulation for the students admitted from the academic year 2024-2025 onwards and syllabus for the I semester. The members deliberated in detail about the modification required. After discussion it is unanimously decided to adopt the following changes.

Changes Made:

B.Sc. Physics		
Code	**Course**	**Changes and Reason**
24PYU1CA	Properties of Matter and Sound	The following changes have been made as per the suggestion given by Dr. J. Shanthi & Dr.K.S. Rajini Unit II: Title was changed from Surface Tension to **Surface tension and determinatio**n due to an preliminary standard
24PYU1CB	Mechanics	As per subject expert Dr. J. Shanthi & Dr.K.S. Rajini Suggestion, Unit II: Title was revised from Dynamics of Rigid Body to **Rigid Body dynamics and applications** Unit III: Title was revised from Gravitation to **Gravitation and applications.** Textbook Fundamentals of Physics by Halliday D, Resnick and the reference book Mechanics and Mathematical Physics by Murugesan were swapped
M.Sc. Physics		
Code	**Course**	**Changes and Reason**
24PYP1CQ	Core Practical - II: Electronics I	Title of Experiment changed as **Study of Astable Multivibrator using an Op-Amp / IC 555** from Construction of an Astable Multivibrator

		Title of Experiment changed as **Study the frequency response of Op-Amp** were modified from Construction of a frequency response of an Op-Amp The above experiments were modified as per suggestion given by Dr. J. Shanthi, Subject Expert
24PYP1DA	Energy Physics	Title of Unit I, Title was changed as **Energy Sources** from Energy Source In Unit IV, the Photo physics topic was removed, and **Photosynthesis** was added. In Unit V, the topic was irrelevant to the content, so the title was modified as **Energy systems, Storage** from Energy systems, Storage and transmission The above modifications were made as per suggestion given by subject expert Dr. J. Shanthi & Dr.K.S. Rajini suggestions.
24PYP1DB	Material Physics and Processing Techniques	The following changes have been made as per the Suggestion given by Dr. R. Kalaiselvan - university nomine and Dr. J. Shanthi- Subject expert. In Unit II, the Processing of Ceramics topic was found irrelevant and it was removed. In Unit IV, the topic Microwave synthesis was removed. The Reference book, Thin Films Phenomena by K.L.Chopra removed and it was replaced as **"Thin Film Fundamentals by A.Goswami"**

New Courses Introduced:

Code	Course	Changes and Reason
-	-	-

Courses Removed

Code	Course	Changes and Reason
-	-	-

After the discussion the following resolution was passed.

Resolution:

Resolved to approve the above modification and adopt the revised syllabus for the students admitted for the academic year 2024-25.

Item 17.3 : *To consider and approve the syllabi for III semester for the students admitted during the academic year 2023-2024.*

The Chairman presented the detailed scheme and regulations for the students admitted from the academic year 2023-2024 onwards and syllabus for the III semester. The members deliberated in detail about the modification required. After discussion it is unanimously decided to adopt the following changes.

Changes Made:

B.Sc. Physics		
Code	**Course**	**Changes and Reason**
222PY1A3CA	Core: Electricity and Magnetism	As per suggestions given by Dr. R. Kalaiselvan - University nomine and Dr. J. Shanthi- Subject expert, The topic Arrhenius Theory of Electrolytic Dissociation in Unit 2 was removed due to the heavy content
222PY1A3CB	Core: Nuclear Physics	The following changes have been made as per the Suggestion given by Dr.K.S. Rajini and Dr. J. Shanthi- Subject expert, The topic – **Magic Numbers** is removed from Unit II and added to the Unit I The Textbook **"Atomic and Nuclear Physics" by Subrahmanyam** swapped with Reference book "**Modern Physics" by Theraja.B.L.**

222PY1A3CP	Core Practical III - Electricity and Magnetism	As per subject expert Dr.K.S. Rajini & Dr. J. Shanthi suggestions, The experiment of study the characteristics of transistor (CE) was removed and replaced by **Determination of thermo-electric power at a certain temperature of a given thermocouple** Incorporated and checked, all the units in the theory subject is covered in the list of experiments
M.Sc. Physics		
Code	**Course**	**Changes and Reason**
232PY2A3CB	Electromagnetic Theory	As per the suggestion given by Dr. J. Shanthi and Dr. R. Kalaiselvan, The syllabus content was compared with CSIR-NET syllabus Unit III: Ohm's Law – Electromotive force was removed and Boundary conditions was added based on PG Standard
232PY2A3CD	Microprocessors and Microcontroller	As per the subject expert Dr. J. Shanthi, Dr. R. Kalaiselvan, and Mr. G. Maheshwaran-Industrial Expert suggestions, The **Unit II and III** was swapped In Unit V, the topics on Relay was removed and the topics of **Display, LED, ADC and DAC** was added The experiments related **µp-8051 and their Interfacing** was added.
232PY2A3CP	Core Practical – Electronics III	As per Dr. J. Shanthi and Mr. G. Maheshwaran-Industrial Expert suggestion, The experiment 'Study the characteristics of JFET 'was modified as **'Construct the Amplifier using JFET'**
222PY2A3DB	Instrumental Methods of Analysis	As per suggestions given by Dr. J. Shanthi - Subject Expert,

		The Reference book: Skoog, West & Holler, Analytical Chemistry-An Introduction was replaced by **P.S.Kalsi**, **Spectroscopy of Organic compounds**

New Courses Introduced:

Code	Course	Changes and Reason
-	-	-

Courses Removed

Code	Course	Changes and Reason
-	-	-

IDC Offered

Code	Course	Department
B.Sc. Physics		
232CE1A3IP	Modern Chemistry	Chemistry I

After discussion the following resolution was passed.

Resolution:

Resolved to approve the above modification and adopt the revised syllabus of the III semester for the UG and PG students admitted for the academic year 2023-24.

Item 17.4 : *To consider and approve the syllabi for V Semester for the students admitted during the academic year 2022-2023.*

The Chairman presented the detailed scheme and Regulation for the students admitted from the academic year 2022-2023 onwards and syllabus for the V semester. The members deliberated in detail about the modification required. After discussion it is unanimously decided to adopt the following changes.

Changes Made:

Code	Course	Changes and Reason
222PY1A5CA	Mathematical Physics	As per the subject expert Dr. K.S. Rajini and Dr. J. Shanthi Suggestions, Revised the content of syllabus, and ensured the content in PG syllabus is not similar to UG syllabus
222PY1A5CB	Classical and Statistical Methods	As per Dr. K.S. Rajini suggestions, The title of paper is revised as **Classical and Statistical methods of analysis**
222PY1A5CC	Solid State Physics	As per Dr. R. Kalaiselvan suggestion. Ensured the content of PG syllabus is not similar to UG syllabus

New Courses Introduced:

Code	Course	Changes and Reason
-	GE – Eco Physics	Updated syllabus according to environmental need and recent trends.

Courses Removed

Code	Course	Changes and Reason
Nil		

IDC Offered

Code	Course	Department
Nil		

After discussion the following resolution was passed.

Resolution:

Resolved to approve the above modification and adopt the revised syllabus of the V semester for the UG students admitted for the academic year 2022-23.

Item 17.5 : *To approve the panel of examiners for question paper setting and evaluation of answer scripts for the odd semester of the academic year 2024-2025.*

The Chairman presented the panel of examiners for question paper setting, question paper scrutiny and conduct of practical and theory of examination are submitted to CoE for exam related work.

Resolution:

Resolved to approve the panel of examiners for question paper setting and evaluation of answer scripts for the odd semester of the academic year 2024-2025.

Item 17.6 : *To consider and approve any other item brought forward by the Chairman and the members of the board.*

The chairman presented the Value-added certificate course (VACC) – Basic Electronics and Applications to be offered for Physics students during the odd semester of the academic year 2024-2025.

Resolution:

Resolved to approve the Value-added certificate course (VACC) – Basic Electronics and Applications to be offered for Physics students during the odd semester of the academic year 2024-2025.

Finally, the Chairman thanked all the members for their cooperation and contribution in enriching the syllabus with active participation in the meeting and sought the same spirit in the future also. The meeting was closed with formal vote of thanks proposed by the Dr. V. Gopala Krishnan, Head and Chairman- Physics.

Date: 05.04.2024

(Dr. V. Gopala Krishnan)
BoS Chairman/HoD
Department of Physics
Dr. N. G. P. Arts and Science College
Coimbatore – 641 048

Syllabus Revision

Faculty : Basic and Applied Sciences **Board : Physics**

Semester: I

Course Code / Name: 24PYU1CA: PROPERTIES OF MATTER AND SOUND

Unit	Existing	Changes
I	**Elasticity:** Relation between angle of shear and linear strain - Work done in strain – Relation between the elastic moduli - Bending of beams – Expression for the bending moment - Determination of young's modulus by uniform bending method - Torsion of a body – Expression for torque per unit twist – Torsional oscillations of a body - Rigidity modulus by dynamic torsion method (Torsional pendulum).	**Nil**
II	~~**Surface Tension:**~~ Molecular forces – Explanation of surface tension on kinetic theory – Work done in increasing area of a surface – Pressure difference across a liquid surface - Jaegar's method - Variation of surface tension with temperature - Experimental study of variation of surface tension with temperature.	**Surface tension and determination**
III	**Viscosity:** Poiseuille's formula for the flow of a liquid through capillary tube – Ostwald's viscometer – Stokes method for coefficient of viscosity of a viscous liquid – Friction and lubrication – Modification of Poiseuille's formula for gases - Rankine's method for determination of η of a gas.	Nil
IV	**Oscillation:** Simple harmonic motion - Free vibration of a body - Damped vibration - Force vibrations - Saw tooth wave - Square wave - Composition of two simple harmonic motion in straight line - Lissajous figure - Experimental methods for obtaining Lissajous figure and uses.	Nil
V	**Ultrasonics and Acoustics:** Ultrasonics – Piezoelectric effect – Piezoelectric crystal method – Magnetostriction method – Applications - Acoustics of building – Sabine's Reverberation formula (No derivation) - Factors affecting acoustics of building - Sound distribution in an auditorium - Requisites for good acoustics.	Nil

PERCENTAGE OF SYLLABUS REVISED : NIL

COURSE FOCUS ON :

☑ Skill Development	☑ Entrepreneurial Development
☑ Employability	☑ Innovations
☑ Intellectual Property Rights	☐ Gender Sensitization
☐ Social Awareness/ Environment	☐ Constitutional Rights/ Human Values/ Ethics

Faculty : Basic and Applied Sciences **Board : Physics**
Semester: I
Course Code / Name: 24PYU1CB: MECHANICS

Unit	Existing	Changes
I	**Collisions :** Collisions - Calculation of final velocities of colliding particle - Elastic collision in two or three dimensions - Collisions - Elastic one-dimensional collision - Impulse of a force - Value of the scattering angle - Impulse and linear momentum – Newton's law of impact - Co-efficient of restitution - Motion of two smooth bodies perpendicular to the line of impact - Definitions for direct and oblique impact	**Nil**
II	~~**Dynamics of Rigid Body**~~: Moment of inertia – Theorems of perpendicular and parallel axes – Calculation of M.I for Rectangular, Cylindrical and Spherical Bodies – Compound pendulum – Theory – Determination of g and k.	**Rigid Body dynamics and applications**
III	~~**Gravitation:**~~ Newton's law of gravitation – G by Boy's method – Acceleration due to gravity - Motion of a planet in an elliptical orbit around the sun - Mass and density of earth - Conservation of angular momentum of a system, a consequence of a rotational invariance of potential energy of the system - Motion of a planet or a satellite in its orbit – Applications: Scattering of a positive particle by a massive nucleus - Effect on linear and angular speeds of a particle on contraction of its orbit - The shape of the galaxy	**Gravitation and applications.**
IV	**Central Force Motion** : Torque and angular acceleration – Acceleration of two objects connected by a cord - Acceleration of two connected objects when friction is present – Automobile Antilock Braking Systems (ABS) - Determination of motion of individual particle – System of variable mass.	Nil
V	**Statics and Hydrodynamics**: Friction - Laws of friction - Experimental method for determining coefficient of friction - Hydrodynamics - Equation of continuity of flow – Bernoulli's theorem and its applications - Venturi meter - Pitot tube	Nil

PERCENTAGE OF SYLLABUS REVISED : NIL

COURSE FOCUS ON :

☑	Skill Development	☑	Entrepreneurial Development
☑	Employability	☑	Innovations
☑	Intellectual Property Rights	☐	Gender Sensitization
☐	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

Faculty : Basic and Applied Sciences **Board : Physics**
Semester: I
Course Code / Name: 24PYP1DA / ENERGY PHYSICS

Unit	Existing	Changes
I	**Energy Source** Energy and sustainable development - Scientific principles of renewable energy - Properties of transparent materials - Heat transfer by mass transport - Multimode transfer and circuit analysis - Extraterrestrial solar radiation - Components of radiation - Effect of earth's atmosphere - Measurement of solar radiation.	**Energy Sources** Energy and sustainable development - Scientific principles of renewable energy - Properties of transparent materials - Heat transfer by mass transport - Multimode transfer and circuit analysis - Extraterrestrial solar radiation - Components of radiation - Effect of earth's atmosphere - Measurement of solar radiation.
II	**Hydropower and Wind power** Assessing the resource for small installations - Reaction turbines - Hydroelectric systems - Turbine types and terms - Linear momentum and basic theory - Dynamic matching - Blade element theory- Characteristics of the wind - Power extraction by a turbine - Electricity generation - Mechanical power.	-
III	**Biomass, Biofuels and Geothermal energy** Biofuel classification - Biomass production for energy farming - Direct combustion for heat - Pyrolysis (destructive distillation) - Alcoholic fermentation - Anaerobic digestion for biogas - Wastes and residues - Vegetable oils and biodiesel - Geophysics - Dry rock and hot aquifer analysis - Harnessing Geothermal Resources.	-
IV	**Solar Energy and Photo synthesis** Air heaters - Water desalination - Solar ponds - Solar concentrators - Solar thermal electric power systems - Photon absorption at the junction - Solar radiation absorption - Maximizing cell efficiency -Solar cell construction - Types and adaptations of photovoltaics - Photovoltaic circuit properties - Thermodynamic considerations - ~~Photophysics~~.	**Solar Energy and Photo synthesis** Air heaters - Water desalination - Solar ponds - Solar concentrators - Solar thermal electric power systems - Photon absorption at the junction - Solar radiation absorption - Maximizing cell efficiency -Solar cell construction - Types and adaptations of photovoltaics - Photovoltaic circuit properties - Thermodynamic considerations - **Photosynthesis**.
V	**Energy systems, Storage and Transmission** Biological storage - Chemical storage - Heat storage - Electrical storage: batteries andaccumulators - Fuel cells - Mechanical storage - Distribution of energy - Electricalpower - Socio-political factors - Some policy tools.	-

PERCENTAGE OF SYLLABUS REVISED : 0.997%

COURSE FOCUS ON :

☑	Skill Development	☐	Entrepreneurial Development
☑	Employability	☑	Innovations
☐	Intellectual Property Rights	☐	Gender Sensitization
☐	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

Faculty : Basic and Applied Sciences **Board : Physics**

Semester: I

Course Code / Name: 24PYP1CQ / CORE PRACTICAL-II: ELECTRONICS - I

Ex. No	Existing	Changes
I	Build the Waveform generation by Digital Cathode ray Oscilloscope using OP-AMP.	-
II	Construction of Hartley oscillator using OP-AMP.	-
III	~~Construction of an Astable Multivibrator.~~	Study an Astable Multivibrator using Op-Amp/IC 555.
IV	Construction of Differentiator, Integrator circuit to verify the Output by Cathode ray Oscilloscope using OP-AMP.	-
V	Construction of Adder, Subtraction, Sign Changer circuit using OP-AMP.	-
VI	Determine the shift of output voltage using Clipping and Clamping Circuits.	-
VII	Construct the Modulus counter using IC 7490	-
VIII	Construct the Phase Shift Oscillator.	-
IX	Construction of an active filters using Op-Amp.	-
X	~~Construction of a frequency response of an Op-Amp.~~	Study the frequency response of an Op-Amp.
XI	Assemble the Serial and parallel sequential circuits using Shift Register.	-
XII	Determine the Analog to digital Converter using Op-Amp.	-

PERCENTAGE OF SYLLABUS REVISED : 10%

COURSE FOCUS ON :

☑	Skill Development	☐	Entrepreneurial Development
☑	Employability	☑	Innovations
☐	Intellectual Property Rights	☐	Gender Sensitization
☐	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

Faculty : Basic and Applied Science **Board : Physics Semester: I**

Course Code / Name: 24PYP1DB – Material Physics and Processing Techniques

Unit	Existing	Changes
I	**Crystal Growth and Nucleation** Nucleation phenomena: Critical supersaturation - Homogeneous and heterogeneous nucleation - Nucleation on a substrate - Nucleation of a crystalline material - Surface nucleation - Vapor–Liquid–Solid mechanism of crystal growth - Gibbs's free energy- Chemical potential - Solubility curves - Bridgman–Stockbarger and related techniques - Czochralski and related techniques.	**NIL**
II	**Thermal Plasma Processing** Advantages of plasma processing - Thermal plasmas - Principles of plasma generation - DC plasma torches - AC plasma torches - RF plasma torches - Plasma-particle interaction - Plasma processing systems - Plasma-spraying - Plasma reactors and furnaces - Plasma decomposition - ~~Processing of ceramics~~ - Treatment of hazardous wastes.	Processing of ceramics were removed
III	**Vacuum Techniques** Artificial vacuum - Natural vacuum - Applications of vacuum techniques - Calculation of vacuum systems - Vacuum pumps - Principles of pumping - Parameters and classifications - Mechanical pumps - Vapour pumps - Ion-pumps - Classification and selection of vacuum gauges - Thermal conductivity gauges - Pirani gauge**.**	
IV	**Growth Technique of Thin films and Nanomaterials** Thermal Evaporation: RF heating - Electron bombardment heating - Cathodic sputtering: Glow discharge sputtering - Reactive sputtering - Physical Vapor Deposition - Chemical Vapor Deposition - Sol-Gel Technique - Hydrothermal growth - Combustion synthesis - ~~Microwave synthesis.~~	Microwave synthesis were removed
V	**Characterization Tools** Working principles and instrumentation: X-Ray Diffraction - Raman spectroscopy - UV–vis spectroscopy - Photoluminescence spectroscopy - Fourier transform infrared spectroscopy - Scanning electron microscopy - Transmission electron microscopy - Scanning probe microscopy.	

PERCENTAGE OF SYLLABUS REVISED : 10%

COURSE FOCUS ON :

☑	Skill Development	☐	Entrepreneurial Development
☑	Employability	☐	Innovations
☐	Intellectual Property Rights	☐	Gender Sensitization
☐	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

Faculty : Basic and Applied Sciences **Board : Physics**

Semester: III

Course Code / Name: 222PY1A3CA, Electricity and Magnetism

Unit	Existing	Changes
I	Magnetic Effect of Electric Current Magnetic field - Magnetic flux - Biot Savart law - Helmholtz tangent galvanometer construction and theory - Magnetic induction at any point on the axis of a solenoid -Method of Images and its application to: (1) Plane Infinite Sheet and (2) Sphere - Force on a current carrying conductor in a magnetic field - Moving coil Ballistic galvanometer construction and theory	**Nil**
II	Thermoelectricity and Chemical Effect of Electric Current 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 .~~	Thermoelectricity and Chemical Effect of Electric Current 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
III	Electromagnetic Induction 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.	Nil
IV	Electromagnetic Waves Alternating current - J operator method – LCR series resonance	Nil

	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	Maxwell's Equation & Electromagnetic Waves Basic laws - Maxwell's equations - Maxwell's correction in ampere's law -Displacement current - Poynting vector - Maxwell's equations for electric and magnetic properties - Monochromatic plane waves in vacuum - Energy and momentum of electromagnetic wave	Nil

PERCENTAGE OF SYLLABUS REVISED : Nil

COURSE FOCUS ON :

☑	Skill Development	☐	Entrepreneurial Development
☑	Employability	☑	Innovations
☐	Intellectual Property Rights	☐	Gender Sensitization
☐	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

Faculty : Basic and Applied Sciences **Board : Physics**

Semester: III

Course Code / Name: 222PY1A3CB – Nuclear Physics

Unit	Existing	Changes
I	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	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 - Magic numbers - Prediction of the shell model - Collective model
II	Interaction between energetic particles and matter - Ionization chamber - Geiger Muller counter - Wilson cloud chamber - Bubble chamber - Radiation hazards - Cyclotron - Synchrocyclotron - Betatron - ~~Magic numbers~~	Interaction between energetic particles and matter - Ionization chamber - Geiger Muller counter - Wilson cloud chamber - Bubble chamber - Radiation hazards - Cyclotron - Synchrocyclotron - Betatron
III	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	Nil
IV	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	Nil
V	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	Nil

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

Faculty : Basic and Applied Sciences **Board : Physics**

Semester: III

Course Code / Name: 222PY1A3CP, Electricity and Magnetism lab

Unit	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. Calculate the moment of magnet – Tan C Position 4. Calibration of low range voltmeter- Ballistic galvanometer 5. Study the frequency response and to find resonant frequencies of L-C-R series and parallel circuits. ~~6. To study the characteristics of transistor (CE).~~ 7. Determine the wavelength and particle size - LASER source of He-Ne. (Under DBT Star College Scheme) 8. Calculate the low resistance using Carey Foster's Bridge 9. Determine the low range Voltmeter calibration using potentiometer 10. Compare the emf's of two given cells using potentiometer	Determination of thermo-electric power at a certain temperature of a given thermocouple.
	11. Calibration of ammeter by using potentiometer. 12. Calculate the B and M by magnetic hysteresis loop tracer equipment. (Under DBT Star College Scheme).	

PERCENTAGE OF SYLLABUS REVISED : nil

COURSE FOCUSES ON :

☑	Skill Development	☐	Entrepreneurial Development
☑	Employability	☑	Innovations
☐	Intellectual Property Rights	☐	Gender Sensitization
☐	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

Faculty: Basic and Applied Sciences **Board : Physics**

Semester: III

Course Code / Name: 232PY2A3CB / 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 change
II	Lorentz force – Magnetic fields – Magnetic forces – Currents – Biot-Savart Law – Divergence and curl of B – Ampere's Law – Comparison of magnetostatics and electrostatics – Magnetic vector potential - Effect of magnetic field on atomic orbit – Ampere's Law in magnetized materials – Ferromagnetism.	No Change
III	~~Ohm's Law~~ ~~Electromotive force~~ – Motional emf – Electromagnetic induction - Faraday's Law – Induced electric field – Inductance – Energy in magnetic field – Maxwell's equation in free space and linear isotropic media – Boundary conditions - Continuity equation – Poynting theorem. Waves in one dimension: Wave equation – Sinusoidal waves – Reflection and transmission – Polarization.	Boundary conditions
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.	No Change
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.	No Change

PERCENTAGE OF SYLLABUS REVISED : 5 %

COURSE FOCUS ON:

☑	Skill Development	☐	Entrepreneurial Development
☑	Employability	☑	Innovations
☐	Intellectual Property Rights	☐	Gender Sensitization
☐	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

Faculty : Basic and Applied Sciences **Board : Physics**

Semester: III

Course Code / Name: 232PY2A3CD/ Microprocessor And Microcontroller

Unit	Existing	Changes
I	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.	Nil
II	~~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.~~	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.
III	~~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.~~	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	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.	Nil
V	~~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.~~	LCD Interfacing: LCD operation - LCD pin descriptions - LCD Addressing- Keyboard Interfacing - ADC Interfacing: ADC devices - ADC 0804 Chip - Programming ADC 0804 in Assembly - DAC Interfacing: DAC 0808 - Current to voltage in DAC0808 - Sensor Interfacing: Temperature sensor - Signal conditioning and interfacing the LM35 to 8051.

PERCENTAGE OF SYLLABUS REVISED : 20%

COURSE FOCUS ON:

☑	Skill Development	☐	Entrepreneurial Development
☑	Employability	☑	Innovations
☐	Intellectual Property Rights	☐	Gender Sensitization
☐	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

Faculty : Basic and Applied Sciences **Board : Physics**

Semester: III

Course Code / Name: 232PY2A3CP/Lab-Electronics-III

Prg. No	Existing	Changes
1	Construct the Wien Bridge Oscillator using OP-AMP and verify the output performance by digital cathode ray oscilloscope.	Nil
2	Construct Binary added weighted resistor - using OP-AMP.	Nil
3	Construct Binary adder and Subtractor using IC 7483 and IC 7486.	Nil
4	Verify the characteristics of Photodetector using digital multimeter	Nil
5	Study the characteristics of voltage doubler using digital voltmeter	Nil
6	Design of Saw tooth wave generators using OPAMP	Nil
7	Study the characteristics of SCR.	Nil
8	Construct monostable multivibrator using Op-AMP/NE 555.	Nil
9	Characteristics of Tunnel Diode 1N3716.	Nil
10	Construct half-adder and full-adder circuits using NAND gates and study their performance.	Nil
11	Construct voltage regulated power supply using Zener diode.	Nil
12	~~Study the characteristics of JFET.~~	Construct the amplifier using JFET.

PERCENTAGE OF SYLLABUS REVISED : 8 %

COURSE FOCUS ON:

☑	Skill Development	☑	Entrepreneurial Development
☑	Employability	☑	Innovations
☐	Intellectual Property Rights	☐	Gender Sensitization
☑	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

Faculty : Basic and Applied Sciences **Board : Physics Semester: III**

Course Code / Name: 222PY2A3DB / INSTRUMENTAL METHODS OF ANALYSIS

Unit	Existing	Changes
I	**INSTRUMENTAL METHODS AND MEASUREMENTS** 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.	-
II	**THERMAL ANALYSIS** Thermo gravimetric analysis: Instrumentation – Applications – Differential Thermal analysis: Instrumentation – General Principles – Applications – Differential Scanning Calorimetry: Instrumentation – Applications – Microthermal analysis – Dynamic Mechanical Analysis.	-
III	**X-RAY ANALYSIS** 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	**OPTICAL METHODS AND ELECTRON MICROSCOPY** 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	**ELECTRICAL METHODS** 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 :

☑	Skill Development	☑	Entrepreneurial Development
☑	Employability	☑	Innovations
☐	Intellectual Property Rights	☐	Gender Sensitization
☑	Social Awareness/ Environment	☐	Constitutional Rights/ Human Values/ Ethics

ATTENDANCE OF THE SEVENTEENTH BOARD OF STUDIES MEETING

Faculty: Basic and Applied Sciences **Board: Physics**

Venue : AV Hall – A1 Block

Date : 05/04/2024

Time : 10:00 AM

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

S. No.	Name	Designation	Signature
1	**Dr. V. Gopalakrishnan** Professor and Head Department of Physics Dr.N.G.P. ASC	Chairman	
2	**Dr. R. Kalaiselvan** Assistant Professor Department of Physics Bharathiar University Coimbatore-46	VC Nominee	
3	**Dr. J. Shanthi** Professor and Head Department of Physics Avinashilingam Institute of Home Science Coimbatore -43.	Subject Expert	
4	**Dr K S Rajini,** ~~Associate~~ Professor Department of sciences School of Engineering Home Science Coimbatore-43	Subject Expert	5/4/'24
5	**Mr. G. Maheswaran** Chief Executive Officer Silicon Technologies Coimbatore - 14.	Industrial Expert	
6	**Ms. A. Suvathini** Junior Assistant Commercial Tax Office Tiruppur - 02.	Alumni	Absent.
7	**Dr. N. Kuppusamy** Professor and Head Department of Tamil Dr. N.G.P. ASC	Co-opted Member	05/04/24

8	**Dr. A. Hazel Verbina** Professor and Head Department of English Dr. N.G.P. ASC	Co-opted Member	
9	**Dr. R.Sowrirajan** Assistant Professor and Head Department of Mathematics Dr. N.G.P. ASC	Co-opted Member	
10	**Dr M Suganthi** Assistant Professor and Head Department of Chemistry Dr. N.G.P. ASC	Co-opted Member	
11	**Dr M.R Ananthan** Associate Professor Department of Physics Dr. N.G.P. ASC	Member	5/4/24.
12	**Mrs. R.Revathi** Assistant Professor Department of Physics Dr.N.G.P. ASC	Member	5/4/24.
13	**Dr .R. Karunathan** Assistant Professor Department of Physics Dr.N.G.P. ASC	Member	5/4/24
14	**Dr R Dilip** Assistant Professor Department of Physics Dr. N.G.P. ASC	Member	5/4/24
15	**Dr S Gunasekaran** Assistant Professor Department of Physics Dr. N.G.P. ASC	Member	5/4/24
16	**Dr J Martin Sam Gnanaraj** Assistant Professor Department of Physics Dr. N.G.P. ASC	Member	
17	**Ms. S. Punitha** Assistant Professor Department of Physics Dr. N.G.P. ASC	Member	5/4/24

18	**UG:Ms. Gayathri M** III B.Sc. Physics Department of Physics Dr. N.G.P. ASC	Student Representative	
19	**PG: Mr. Gowtham B** II M.Sc. Physics Department of Physics Dr. N.G.P. ASC	Student Representative	

Date: 05/04/2024

(Dr. V. Gopalakrishnan)

Academic Council
CHAIRMAN
Dr.N.G.P. Arts and Science College