THE MADURA COLLEGE

An Autonomous Institution affiliated to Madurai Kamaraj University
Re-accredited (3rd cycle) with 'A' grade by NAAC
Vidya Nagar, T.P.K. Road, Madurai – 625 011

DEPARTMENT OF PHYSICS

Course Outcomes mapped with POs

PROGRAMME : B.Sc. (Physics)

Course Code	Course Title	CLO	Mapping of CO with PO				
			PO1	PO2	PO3	PO4	PO5
20U1TLA1	இக்கால இலக்கியம்	கவிதைகள் வெளிப்படுத்தும் மனித அன்பு, பெண்நிலைகள், மொழியின்சிறப்பு, தொழிலாளர் நிலை போன்றவற்றை அறியச் செய்தல்.	-	1	1	2	2
		கவிதைகளின் கருத்துப் பரிமாற்றம், உயர்மனிதச் செயல்பாடுகளை ஊக்குவித்து நடைமுறையில் பின்பற்றல்.	-	2	2	3	2
		கதையின் உள்ளடக்கம்,வடிவம் -மாந்தர் எண்ணம், உணர்வு, நடத்தை, சமூகப் பண்பாட்டுச் செயல்பாட்டில்- ஈடுபடுதல்.	-	3	1	-	2
		இலக்கிய வரலாற்றை நிரல்படுத்திப் படைப்பாளிகளின் அறிவுத்திறத்தில் ஈடுபடச்செய்தல்.	3	-	1	-	2
		மொழியின் சிறப்புகளைத் தொகுத்தல். படைப்பூக்கத்துடன் பிழை நீக்கித் தனித்துவமாக எழுதத் தூண்டல்.	-	-	3	-	2
20U1HLA1	Hindi 1	Use of singular, plural, numbers	-	1	1	2	2
		Use of sentences and choosing the right answer	-	2	2	3	2
		Able to translate and correct the sentences	-	3	1	-	2
		Able to write answers questions from prose	3	-	1	-	2
		Able to identify directions and seasons	-	-	3	-	2
20U1SLA1	Sanskrit I	Gain basic knowledge about Devanagari Script and understand Male/ Female/ Neuter Gender Words	-	1	1	2	2
		Identify Person/Number/Tense	-	2	2	3	2
		Know to substitute word without affecting Number / Tense/ Grammar and to enhance students attitude towards good behaviour through Subhashitani (Good says)	-	3	1	-	2
		Understand the Sanskrit Literature like Vedas, Vedangas and Epic Literature	3	-	1	-	2
		Translate from Sanskrit to English in Present / Future Tense	-	-	3	-	2

20U1NEN1	**English-I**	Use proper Parts of Speech while framing simple sentences	-	2	3	2	-
		Express practical skills of various types of writing dialogues and comprehend content in English	-	2	3	3	-
		Use proper tense forms in sentences and Classify kinds of sentences; convert from one type to another.	-	2	2	2	-
		Fill different challans , issue cheques, fill railway form in real life contexts and prepare advertisements on their own.	-	2	2	2	-
		Appreciate a literary work for its genre and evaluating ideas. To use language skills necessary for social,academic and professional purposes	-	2	3	3	-
20U1VEN1	**Value Education and Professional Ethics**	Describe the various value system and its familiarity	3	-	2	2	3
		List forty virtues and eighty values	3	-	2	2	3
		Outline the foundations on value oriented moral values	3	-	2	2	3
		Focus on relevance of various religion values and its similarities	2	-	2	2	3
		Build a value system and ethics in Education, Business and Teaching	3	2	2	2	3
20U1MAC1	**Allied Mathematics – I**	Recognize the fundamental relation among roots and coefficients and solve the changed condition and to predict approximate solution for conditions.	3	2	-	-	1
		Utilize the idea of differentiation to find derivatives of inverse trigonometric functions, implicit function and logarithmic functions.	3	2	-	-	1
		Evaluate integrals using integration by parts and apply integration to compute double and triple integrals.	3	2	-	-	1
		Apply vector differentiation to evaluate gradient, divergence and curl of a vector point function and related identities and to evaluate line integrals using vector integration.	3	2	-	-	1
		Compute the Fourier series of functions.	3	2	-	-	1
20U1PMC1	**Properties of Matter and Sound**	Apply the principles of elasticity in construction and allied fields and able to examine the effects in them	3	1	2	-	-
		Apply the principles of fluid dynamics in aerodynamics	3	2	3	1	-
		Infer the importance of surface tension in real life applications	3	2	2	1	-
		Make use of the physics of sound for musical instruments	3	1	1	-	2
		Utilize the physical parameters related to sound in the design and construction of buildings with good acoustic properties	3	2	2	1	-
20U1PMC2	**Mechanics**	Use work energy theorem to physical systems.	3	2	2	3	-
		Apply rigid body dynamics to propeller design and in biological systems.	3	2	2	3	2
		Analyze gravitation and its effects on heavenly bodies based on the laws of Newton and Kepler.	3	1	1	3	-
		Apply principles of conservation of momentum to real life problems involving collision, rocket propulsion, etc	3	3	1	3	2
		Use principles of hydrodynamics to real life situations	3	2	2	3	-

20U1PMP1	**Practical - I**	Apply the basic laws of physics to determine the various properties of the given materials.	1	3	-	-	-
		Apply knowledge of physics and mathematics to derive solution for various problems.	1	3	2	-	-
		Use the basic laws to study the elastic properties of solids and thermal properties of liquids and solids.	-	3	1	-	-
		Analyse the property of the material by experimenting in different methods.	1	3	2	-	-
		Understand the application of materials.	-	3	2	-	-
20U2TLA2	**இடைக்கால இலக்கியமும் உரைநடையும்**	சிற்றிலக்கியங்கள் குறித்த அடிப்படைக் கருத்துகளைப் பெறுவர்.	1	-	3	-	2
		பக்தி இலக்கியங்கள் வெளிப்படுத்தும் சமயம் சார்ந்த செய்திகளைப் புரிவர்.	-	-	2	-	3
		சைவ வைணவ சித்தாந்த இறை தத்துவக் கருத்துகளைத் தெரிந்து நடைமுறைப்படுத்திக்கொள்வர்.	1	-	3	1	2
		இலக்கிய வரலாறு தரும் வாழ்வியல் கருத்துகளைப் பொருத்திப் பார்க்கும் திறன் பெறுவர்.	2	1	3	1	3
		மொழியின் நுட்பங்களின் மூலமாக ஆளுமைத் திறனை வளர்த்துக் கொள்வர்.	-	-	3	1	1
20U2HLA2	**Hindi 2**	Write stories and draft letter	1	-	3	-	2
		Use of proverbs and phrases in communication	-	-	2	-	3
		Learning morals from great Indian leaders	1	-	3	1	2
		Writing esssays with creativity	2	1	3	1	3
		Using proverbs in speech and having knowledge of days in Hindi	-	-	3	1	1
20U2SLA2	**Sanskrit II**	Gain basic knowledge about the origin of Sanskrit Kavya Literature	1	-	3	-	2
		Understand Sanskrit Poetic Literature and Style of Writing Poems	-	-	2	-	3
		Compare Poetic Literature with Modern Life and to classify and discuss the importance of early literature	1	-	3	1	2
		Practice creativity and demonstrate different aspects of life as portrayed in Sanskrit Literature	2	1	3	1	3
		Learn Sanskrit Bhakti Literature and Tamil Chemmozhi Literature at basic levels	-	-	3	1	1
20U2NEND2	**English-II**	Use linkers to compose a coherent paragraph and to examine language skills through core subjects	-	2	3	2	-
		Use singular, plural, present and past tenses.'will' and 'going to' to engage in meaningful conversations and writing tasks	-	2	3	3	-
		Classify appropriate pronunciation for "c" as "s","k" and "ch"and classify letters / sound "p, b, th, v, w, tion" appropriately.	-	2	2	2	-
		Demonstrate practical skills of various types of media writing and reports Use appropriate expressions, ask for favor, offer suggestions and engage in meaningful telephonic conversations	-	2	2	2	-

		Appreciate a literary work for its genre and evaluating ideas.	-	2	3	3	-
20U2EVS1	**Environmental Science & Gender studies**	Able to list out various ecosystems and their interactions	2	-	-	1	3
		To appreciate the nuances behind food webs and food chains	2	-	2	1	3
		Able to differentiate the importance of Hotspots and mega diversity centres.	2	3	-	1	3
		Able to identify different types of pollutions and provide solutions	2	-	-	3	3
		To analyze and identify the behavioral problems among student community with reference to gender.	2	3	-	3	3
20U4MAC4	**Allied Mathematics – IV**	Use various methods to solve first order & first degree ordinary differential equations.	3	2	-	-	1
		Solve second & higher order differential equations with constant coefficients. Construct the growth & decay model and apply suitable method to solve it.	3	2	-	-	1
		Formulate Partial differential equations, classify them with respect to their order & linearity. Analyze and apply various methods to solve first order partial differential equations.	3	2	-	-	1
		Find Laplace transform and Inverse Laplace transform of simple functions and use Laplace transform to solve ordinary differential equations.	3	2	-	-	1
		Compute limit, continuity & differentiation of functions of complex variables. Determine Analyticity of complex functions, C-R equations and to discuss various regions are transformed by bilinear transformation.	3	2	-	-	1
20U2PMC3	**Heat and Thermodynamics**	Calculate and interpret heat and related properties using typical calorimetry/thermometry data.	3	2	1	-	-
		Apply concepts of blackbody radiation and associated radiation laws to estimate the temperature of stars and other objects where thermometry and calorimetric estimates are not feasible.	3	2	1	-	-
		Apply the principles of kinetic theory of gases to determine the macroscopic variables of real gases (including free electron gases)	3	2	1	-	2
		Analyze real world thermodynamical system and apply the principles of thermodynamics to them and determine whether a process is reversible, irreversible or impossible.	3	2	1	-	2
		Understand entropy as the law of nature & apply the same to thermodynamic systems.	3	2	1	-	1
20U2PMC4	**Optics**	Apply the knowledge of dispersion of lens and prism and to solve real life problems related to the phenomena.	3	2	-	-	-
		Analyze the production of lenses by studying the phenomena of aberrations.	3	2	-	2	1
		Describe the theory and experiment of interference using air wedge, Newtons ring and Michelson interferometer.	3	-	-	-	-
		Illustrate the important and fascinating areas of diffraction to solve the wavelength of spectral lines using plane diffraction grating.	3	2	1	1	2

		Evaluate the principles of wave motion and superposition to explain the polarization.	3	1	1	1	2
20U2PMP2	**Practical - II**	Apply the basic laws of physics to determine the various properties of the given materials.	1	3	-	-	-
		Apply knowledge of physics and mathematics to derive solution for various problems.	1	3	2	-	-
		Use the basic laws to study the elastic properties of solids and thermal properties of liquids and solids.	-	3	1	-	-
		Analyse the property of the material by experimenting in different methods.	1	3	2	-	-
		Understand the application of materials.	-	3	2	-	-
20U2NCC1	**Introduction to NCC**	Understand the structure, organization of NCC and armed forces.	2	1	1	2	2
		Develop leadership qualities and general knowledge from current affairs.	2	1	1	1	2
		Involve in social service activities and act in the emergency situation.	2	1	1	2	1
		Develop qualities like character, comradeship and discipline through regular training and field work.	2	1	1	1	2
		Improve secular outlook, spirit of adventure, ethics and ideals of selfless service.	2	1	1	1	2
20U2NPN	**Introduction to National Service Scheme**	To understand the aims and principles of NSS , the duties and responsibilities of an NSS volunteer to the society.	2	1	2	3	3
		To know the administrative structure of NSS, its plans and its execution.	2	1	2	3	3
		To acquire leadership qualities and democratic attitudes through the participation in various social activities	2	1	2	3	3
		To aid in character building and develop qualities like comradeship and discipline through regular training and field work.	2	1	2	3	3
		To develop the spirit of humanity and ideals of selfless service.	2	1	2	3	3
20U2YRC1	**Introduction to Youth Red Cross**	Equip to conduct social and health awareness programmes.	2	1	1	2	3
		Making awareness regarding red cross service and social activities	2	1	1	2	3
		Encourage and to youth members and other students to contribute in red cross activities.	2	1	1	2	3
		Develop qualities like compassion, kindness and caring sense through regular training and field work.	2	1	1	2	3
		Improve kind heartedness, spirit of humanity and ideals of selfless red cross service	2	1	1	2	3
20U2PED1	**History of Physical education**	Know physical education in national and international level.	2	1	1	2	2
		Understand ancient Olympics, modern Olympics, first aid and yoga	2	1	1	1	2
		Comprehend games rules and ground measurements	2	1	1	2	1
		Develop their physique in good shape through regular work outs and exercises.	2	1	1	1	2
		Realize the need of physical education.	2	1	1	1	2

20U3TLA3	**காப்பிய இலக்கியமும் நாவலும்**	மனித அறம், அன்பு, செய்ந்நன்றி போன்றவற்றை அறியச் செய்தல்.	-	1	1	2	2
		அற மனப்பாங்கினை ஊக்குவித்துப் பின்பற்றல்.	-	2	2	3	2
		மனித அறம், பத்தி, உதவி செய்யும் மனப்பான்மை போன்றவற்றில் ஈடுபடுதல்.	-	3	1	-	2
		காவிய ஆசிரியர்களின் படைப்புதிறனை வெளிப்படுத்த வடிவ அமைப்பினை விளக்கி ஈடுபடச் செய்தல்.	3	-	1	-	2
		படைப்பின் பல் வடிவங்களை விளக்கிப் படைப்பாக்கத்தினை வெளிக் கொணரல்.	-	-	3	-	2
20U3HLA3	**Hindi 3**	Identify noun, pronoun and adjective in sentences	-	1	1	2	2
		Examine how a text interacts with a reader in the reading process for meaning and interpretation	-	2	2	3	2
		Classify rhymes, beats, sound pattern in a poem	-	3	1	-	2
		Explain various aspects of storytelling in terms of plot, character and form in One Act play	3	-	1	-	2
		Write simple sentences without committing errors of spelling and grammar	-	-	3	-	2
20U3SLA3	**Sanskrit III**	Gain knowledge of Indian Tradition through the origin of Popular Sanskrit Tales and Fables	-	1	1	2	2
		Achieve Moral Values through Sanskrit Fables – Pancatantra	-	2	2	3	2
		Comprehend Sanskrit Poetic Literature, Style of Writing Poems and Know the deepness of Indian Sanskrit Prose Literature	-	3	1	-	2
		Understand the Sanskrit Prosody through Alankaras	3	-	1	-	2
		Learn Sanskrit Prose Literature and Style of Writing Prose	-	-	3	-	2
20U3NEND3	**English-III**	Discover the deviant use of English both in written and spoken forms	-	2	3	2	-
		Explain the need for reference/study skills Make/take notes systematically in an organized manner	-	2	3	3	-
		Choose language for speaking with confidence in an intelligible and acceptable manner	-	2	2	2	-
		Develop an interest for reading and read independently unfamiliar texts with comprehension	-	2	2	2	-
		Examine and analyze a genre on their own	-	2	3	3	-
20U3PNM1	**Discovering physics**	Understand the basic concepts of physics like Newton's gravitational equation	3	2	-	-	-
		Explain the physics of natural phenomenon such as appearance of colors and rainbow	3	1	-	-	-
		Understand the laws of motion and planetary motion	3	1	-	-	-
		Describe the Expanding Universe and theory of relativity	3	2	-	-	-

		Infer Atom models and uncertainty principle	3	2	-	-	-
20U3PSM1	**Mathematical Methods**	Differentiate numerical errors from inherent errors	2	1	2		1
		Apply Gauss elimination and Gauss-Jordan elimination methods in solving simultaneous linear equations and in finding inverse of a matrix.	2	1	2	-	1
		Calculate the population of a city during a particular period from the table of population given for a number of decades in succession using Newton's interpolation formula and such similar problems.	2	2	2	1	1
		Develop linear, parabolic and exponential empirical equations based on the given table of data having two variables.	2	2	2	1	1
		To solve 1st order differential equations using 2nd order and 4th order Runge-Kutta methods and to compare the results obtained for the given initial condition and step size.	2	2	2	1	1
20U3CAC1	**Allied Chemistry I**	To discuss atomic models, and occupancy of electrons on various quantum levels.	3	2	2	1	1
		To illustrate the overlapping of orbitals and hybridization of simple molecules	3	2	2	-	1
		To find the importance of organic compounds in daily life and to describe the types of organic reactions	3	2	1	1	-
		To inspect the types of adsorption and factors affecting the process	3	2	1	2	1
		To identify the characteristics of catalyst and to explicate the types of catalysis	3	2	1	1	2
20U3CAP1	**Volumetric analysis**	To get domain knowledge in estimation of inorganic compounds	3	2	-	-	-
		To design the basic laboratory techniques of volumetric analysis	3	2	-	-	-
		To develop the skills for doing any titrations and recording data	3	2	-	-	-
		To make scientific claims that is supported by their data and other observations	3	2	-	-	-
		To communicate the finding	3	2	2	2	-
20U3PMC5	**Electricity and Electromagnetism**	Demonstrate the behavior of current carrying conductor placed in a magnetic field	3	2	2	-	
		Interpret thermoelectric effect and apply the principle of electrolysis	3	2	2	1	1
		Apply self-induction and mutual-induction and demonstrate eddy currents	3	1	1	1	1
		Analyze LCR circuits	3	3	3	1	2
		Infer the production of electromagnetic wave and the dielectric nature of materials	3	1	1	-	-
20U3PMP3	**Major Practical - III**	Understand the basic laws of physics that can be used to determine the various physical parameters.	1	3	-	-	-
		Apply knowledge of physics and able to construct the relevant circuits.	1	3	2	-	-
		Complete the experiment and the relevant data can be recorded.		3	1	-	-

		Analyse the collected data from the experiment and relevant graphs can be drawn.	1	3	2	-	-
		Interpret the results and proper views can be expressed.	-	3	2	-	-
20U4TLA4	**பண்டைய இலக்கியமும் நாடகமும்**	பண்டையகால மக்களின் அகம் மற்றும் புறம் சார்ந்த வாழ்வியல் நிலைகளை அறியச்செய்தல்.	-	1	1	2	2
		தனிமனித அறம், பொது அறம் ஆகியவற்றை நீதிநூல்களின் வாயிலாக அறியச்செய்தல்.	-	2	2	3	2
		நாடகம் தொடர்புடைய சிந்தனைகள், உணர்வுகள், உள்ளடக்கம், நடை போன்றவற்றைப் புரியவைத்தல். நாடகம் நடிக்கப் பழக்குதல்.	-	3	1	-	2
		தமிழ் இலக்கிய வரலாற்றையும் பண்பாட்டையும் அறியச்செய்தல்.	3	-	1	-	2
		மொழியின் சிறப்புகளுடன், அகப்பொருள் மற்றும் புறப்பொருள்களின் திணை, துறைகளை அறியச்செய்தல்.	-	-	3	-	2
20U4HLA4	**Hindi 4**	Apply speak, read and write Hindi at the basic level.	-	1	1	2	2
		Identify rhyme, beats, sound pattern in a poem.	-	2	2	3	2
		Analyse novel closely, paying attention to linguistic and stylistic variations.	-	3	1	-	2
		Use language for speaking with confidence in an Acceptable manner	3	-	1	-	2
		Write simple sentences without committing errors of grammar	-	-	3	-	2
20U4SLA4	**Sanskrit IV**	Learn about the Origin of Indian Sanskrit Drama Literature	-	1	1	2	2
		Achieve Moral Values through Indian Sanskrit Drama Literature – Karnabharam	-	2	2	3	2
		Realize Sanskrit drama Literature, method of Writing Dramas and the depth of Indian Sanskrit Drama Literature	-	3	1	-	2
		Understand the importance and role of Sanskrit drama Literature and know great Dramatists	3	-	1	-	2
		Learn Ethical Values of Human Life through Various Authors and their Dramas	-	-	3	-	2
20U4NEN4	**English-IV**	Examine their own ability to improve their own competence in using the language and Show their learnt useful interpersonal soft skills.	-	2	3	2	-
		Re-state a piece of text either orally or in writing with learnt soft skills	-	2	3	3	-
		Apply their useful creative skill in writing like CVs, drafting and reading	-	2	2	2	-
		Investigate the importance of writing in academic life, analyze graphs,charts,grids and other visual supports to understand a text.	-	2	2	2	-
		Apply connecting ideas to continue discussions and apply diagrammatic information – interpretations maps, graphs, pie- charts and note-taking. Communicate with others effectively.	-	2	3	3	-

20U4PNM2	**Discovering physics**	Understand the basic concepts of physics like Newton's gravitational equation	3	2	-	-	-
		Explain the physics of natural phenomenon such as appearance of colors and rainbow	3	1	-	-	-
		Understand the laws of motion and planetary motion	3	1	-	-	-
		Describe the Expanding Universe and theory of relativity	3	2	-	-	-
		Infer Atom models and uncertainty principle	3	2	-	-	-
20U4PSM2	**Basic Instrumentation Skill**	Analyze construction and operational aspects of different measuring instruments along with their application domains.	3	2	2	-	1
		Apply the fundamental measurement method of resistance, capacitance, inductance, etc. by using various a.c bridges and other techniques.	3	2	2	-	1
		Apply the impact of electrical measurement methods and use modern sophisticated instruments/systems for human utilities and industrial application	3	1	1	-	-
		Understand the various devises for recording values	3	2	3	-	-
		Solve problems relating to ranging of level instruments	3	2	1		1
20U4CAC2	**Allied Chemistry II**	To analyse the relative strength acids and bases and buffer action	3	2	1	-	-
		To indicate structure of carbohydrates and figure out the configuration of glucose	3	2	1	-	-
		To classify proteins, vitamins and to explain the sources, functions and deficiency of vitamins A, D, & B, C and illustrate the preparation, properties and uses of glycine	3	2	1	-	-
		To illustrate types of the polymers and to indicate types of the corrosion and its control measures	3	2	1	-	-
		To understand the role of various elements in plant growth and to classify the fertilizers	3	2	1	-	-
20U4CAP2	**Semi-micro qualitative analysis**	To demonstrate the basic laboratory techniques of qualitative analysis.	3	2	-	-	-
		To demonstrate mastery of basic semi-micro qualitative analysis of simple salts containing one anion and one cation.	3	2	-	-	-
		To identify the interfering acid radical, eliminate interfering anion and to perform a systematic analysis	3	2	-	-	-
		To systematically analyse the general group cations.	3	2	-	-	-
		To infer analytical data and make scientific claims that is supported by their results and other observations.	3	2	2	1	1
20U4PMC6	**Classical and Statistical Mechanics**	Comprehend the concepts of conservation of energy and momentum and apply them to basic problems.	3	1	1	-	-
		Develop Lagrangian's equation of motion to real life applications.	3	2	2	-	1

		Formulate Hamilton's equation of motion in different coordinate systems and for orbital trajectories near the surface of the earth.	3	2	3	-	1
		Infer the basic concepts of statistical mechanics and apply them to derive the distribution law of molecules.	3	1	1	-	-
		Apply statistical energy distribution laws to analyse various properties of molecules and their applications in different fields.	3	2	2	-	2
20U4PMP4	**Major Practical - IV**	Understand the basic laws of physics that can be used to determine the various physical parameters.	1	3	-	-	-
		Apply knowledge of physics and able to construct the relevant circuits.	1	3	2	-	-
		Complete the experiment and the relevant data can be recorded.	-	3	1	-	-
		Analyse the collected data from the experiment and relevant graphs can be drawn.	1	3	2	-	-
		Interpret the results and proper views can be expressed.	-	3	2	-	-
20U4NCC2	**Field Training In Ncc**	Understand the geography, important world organizations and will do various drills with & without arms.	2	2	1	2	2
		Read maps and related sign systems.	2	1	1	2	1
		Comprehend the types of weapons, field crafts and battle crafts.	2	1	1	2	2
		Develop qualities like character, comradeship and discipline through regular training and field work.	2	1	1	1	2
		Improve secular outlook, spirit of adventure, ethics and ideals of selfless service.	2	1	1	1	2
20U4NPN	**Community Services**	To provide an opportunity to become responsible members of the society by taking part in community service.	2	2	1	3	2
		To enable students acquire life skills and knowledge, through the involvement in environmental awareness activities	2	2	1	3	2
		To understand gender difference and learn to give equal respect to members of the opposite gender, develop service spirit and participate collectively in community programmes.	2	2	1	3	2
		To develop qualities like compassion, kindness and caring sense through regular training and field work in health awareness programmes.	2	2	1	3	2
		To become responsible citizens with a sound knowledge of the Indian Constitution and Fundamental Rights and be prepared for selfless service to the community.	2	2	1	3	2
20U4YRC4	**Introduction To Youth Red Cross**	Equip to conduct social and health awareness programmes.	2	1	1	2	3
		Making awareness regarding red cross service and social activities	2	1	1	2	3
		Encourage and to youth members and other students to contribute in red cross activities.	2	1	1	2	3
		Develop qualities like compassion, kindness and caring sense through regular training and field work.	2	1	1	2	3

		Improve kind heartedness, spirit of humanity and ideals of selfless red cross service	2	1	1	2	3
20U4PED2	**Physical Education And Games**	Understand the meaning, benefits and essentials of yoga and meditation.	2	1	1	2	2
		Maintain good physical and mental health by doing exercises, yoga and by taking nutritive foods.	2	1	1	1	2
		Know the rules and regulations of games like boxing, fencing, judo, basketball, cricket, hockey.	2	1	1	2	1
		Develop their physique in good shape through regular work outs and exercises.	2	1	1	1	2
		Realize the need of physical education.	2	1	1	1	2
20U5PSM3	**Programming with C++**	Acquire the basic concepts of C ++ language and Applying various Data types, Operators, Conversions in program design.	3	1	2	-	2
		Develop programs using the basic elements like control statements Apply control structures, branching, Conditional and looping statements	3	2	2	1	2
		Apply the effective usage of functions and write simple programs to implement its concepts.	3	2	2	1	3
		Develop Simple programs using the concept of arrays and pointers techniques.	3	2	2	1	3
		Illustrate the procedural and object oriented paradigm with concepts of Classes and Creating simple programs in C++.	3	2	2	1	3
20U5PMC7	**Analog Electronics**	Analyze the Circuits using circuit analysis theorems and design different types of rectifier circuits.	3	1	2	-	-
		Experiment the performance characteristics of transistors amplifiers along with frequency Response.	3	1	2	1	-
		Construct simple circuits and mini projects using oscillators and multivibrator using transistor	3	2	2	1	-
		Organize the construction, operation and characteristics of JFET and MOSFET, which can be used in the design of amplifiers.	3	1	1	-	2
		Contrast the properties of materials and the Application of semiconductor electronics	3	3	2	1	-
20U5PMC8	**Quantum Mechanics & Spectroscopy**	Illustrate the wave nature of particles through interference experiment and realize the concept of wave velocity, group velocity and debroglie matter waves	3	1	2	-	-
		Derive Schrodinger wave equation and use definition of commutator to find the commutation relation between the operators	3	1	2	-	-
		Construct Schrodinger wave equation to one dimensional problems and solve as well as analyze the results	3	1	2	-	-
		Use the spectroscopic knowledge to determine the molecular functions	3	2	1	-	1

		Apply the various instrumentation knowledge to identify the different types of molecules	3	3	1	-	1
20U5PMC9	**Relativity & Atomic Physics**	Differentiate special theory of relativity from general theory of relativity	2	2	2	1	1
		Build quantum theory of light based on photo electric effect	2	2	2	1	1
		Apply Bohr's theory to explain the atomic structure	2	2	2	1	1
		Make use of quantum theory to explain anomalous Zeeman effect	2	2	2	1	1
		Explain the cascade theory of comic ray showers	2	2	2	1	1
20U5PMP5	**Major Practical – V**	Apply the various procedures and techniques for the experiments.	1	3	-	-	-
		Construct and measure the physical parameters using different electrical bridge circuits and electrical devices like the ballistic galvanometer.	1	3	2	-	-
		Complete the experiment and relevant data can be recorded	-	3	1	-	-
		Analyze the data which are collected from the concern experiment and relevant graph can be drawn.	1	3	2	-	-
		Linearization of data and the use of slope and intercept to determine unknown quantities.	-	3	2	-	-
20U5PMP6	**Major Practical – VI**	Apply the various procedures and techniques for the experiments.	1	3	-	-	-
		Construct and measure the physical parameters using different electrical bridge circuits and electrical devices like the ballistic galvanometer.	1	3	2	-	-
		Complete the experiment and relevant data can be recorded	-	3	1	-	-
		Analyze the data which are collected from the concern experiment and relevant graph can be drawn.	1	3	2	-	-
		Linearization of data and the use of slope and intercept to determine unknown quantities.	-	3	2	-	-
20U5PIDC	**Interdisciplinary Course – Nano science and Nanotechnology**	Understand the basics of Nanotechnology	3	1	2	-	-
		Infers the various types of growth techniques of Nano materials	3	1	2	1	
		Comprehend the various characterization techniques for analyzing nanomaterials.	3	2	2	1	-
		Comprehends the, properties and of nanomaterials.	3	1	1	-	2
		Appreciates the synthesis, properties and applications of Carbon Nanomaterials	3	3	2	1	-
20U5PME1(A)	**Energy Physics**	Analyse the available energy resources in the world	3	2	2	3	-
		Find applications of the solar energy radiation and its thermal storage collection	3	2	2	3	2
		Apply the theory of thermal energy devices in real life application and analyze its characteristics	3	1	1	3	-
		Identify the various sustainable biomass energy for bio application	3	3	1	3	2
		Understand the basic concepts of wind ,wave and ocean energies	3	2	2	3	-
20U5PME1(B)	**Optoelectronics**	Apply the basic ideas of light source to discuss the various optical materials	2	2	2	1	1
		Compare the physical structure of solid state laser with gas laser.	2	2	2	1	1

		Construct the various detectors using basic ideas	2	2	2	1	1
		Outline the basic principles of fibre optics	2	2	2	1	1
		Develop the knowledge in different modes of optical fibres.	2	2	2	1	1
20U6PSM4	**Astronomy and Astrophysics**	Appreciate the work done by early astronomers in understanding our position in this universe	3	1	1	1	-
		Use relevant coordinate systems to astronomical objects and express physical quantities relative to known values.	3	1	1	2	-
		Apply principles of astrophysics to estimate the physical properties of stars.	3	3	2	2	-
		Analyze measurements, spectroscopic or otherwise, and estimate properties of the universe and other exotic matter / radiation based on principles of physics	3	3	2	2	-
		Analyze the terms of the Drake's equation and its physical significance with relevance to our recent understanding of exoplanets and in view of cosmological considerations.	3	3	1	2	-
20U6PMC10	**Nuclear Physics**	Infer the basic properties of nuclei and nuclear models.	3	2	2	-	-
		Apply the concepts of radioactivity to comprehend its applications like radio carbon dating.	3	2	2	1	-
		Solve nuclear reaction equations to understand the working of nuclear reactors.	3	2	2	-	-
		Compare the different particle accelerators and analyze their applications.	3	2	2	1	-
		Analyze the fundamental interactions in the nucleus and its correlation with nuclear energy.	3	2	2	-	-
20U6PMC11	**Solid State Physics**	Focus the covalent crystals, metals and elastic constants and Perform calculations of Madelung constant in ionic crystals.	3	3	1	1	-
		Illustrate the fundamentals of crystal physics, seven crystal systems and acquire the knowledge of principles of crystal diffraction methods.	3	3	1	2	-
		Identify the various types and properties of magnetic phenomenon to develop the basic concepts of ferromagnetism and its applications	3	2	2	2	-
		Generalize the properties of semiconductors and interpret the dielectric materials in different types of electric polarization.	3	2	2	1	-
		Explain the principle of superconductivity and its applications in modern world.	3	3	2	2	-
20U6PMC12	**Digital & Communication Electronics**	Construct the combinational and sequential logic circuits by using various building blocks	3	1	2	-	-
		Classify various types of Flip flops	3	2	3	1	-
		Compare the concept of ADC,DAC blocks	3	2	2	1	-
		Identify the different types of analog communication system and different modulation techniques used.	3	1	1	-	-
		Develop Knowledge on Fibre Optic Communication & its Applications	3	2	2	1	-

20U6PMP7	**Major Practical – VII**	Apply the various procedures and techniques for the experiments.	1	3	-	-	-
		Construct and measure the physical parameters using different electrical bridge circuits and electrical devices like the ballistic galvanometer.	1	3	2	-	-
		Complete the experiment and relevant data can be recorded	-	3	1	-	-
		Analyze the data which are collected from the concern experiment and relevant graph can be drawn.	1	3	2	-	-
		Linearization of data and the use of slope and intercept to determine unknown quantities.	-	3	2	-	-
20U6PMP8	**Major Practical – VIII**	Apply the various procedures and techniques for the experiments.	1	3	-	-	-
		Construct and measure the physical parameters using different electrical bridge circuits and electrical devices like the ballistic galvanometer.	1	3	2	-	-
		Complete the experiment and relevant data can be recorded		3	1	-	-
		Analyze the data which are collected from the concern experiment and relevant graph can be drawn.	1	3	2	-	-
		Linearization of data and the use of slope and intercept to determine unknown quantities.	-	3	2	-	-
20U6PME2(A)	**Microprocessor Fundamentals**	Explain the pins and signals of 8085 microprocessors	1	-	2	2	-
		Develop assembly language programs to perform addition, subtraction operations and to arrange numbers in ascending order	1	-	2	2	-
		Build circuits for interfacing memory chips with 8085 microprocessor	1	-	2	2	-
		Construct circuit for interfacing input/output ports with 8085 microprocessor	1	-	2	2	-
		Differentiate RIM instructions from SIM instructions	1	-	2	2	-
20U6PME2(B)	**Mathematical Physics**	Collect the different knowledge in various differential polynomials.	-	-	2	2	-
		Examine the real-life problems using the basic idea of differential equations	-	-	2	2	-
		Develop the physical equations using curl and divergence idea of vectors	-	-	2	2	-
		Explain the primary ideas of partial differential equations in physics	-	-	2	2	-
		Apply the real ideas of integrals in various coordinates systems.	-	-	2	2	-
20U6PME3(A)	**Biomedical instrumentation**	Understand the physiology of biomedical system	3	-	1	-	-
		Measure and analyze biomedical and physiological information and illustrate different electrode placement for various physiological recordings	3	-	1	-	-
		Use appropriate techniques for non-electrical physiological measurements	3	2	1	-	-
		Analyze how ionizing radiation interacts with the human body and quantify it and its levels seen in the environment and healthcare settings	3	2	1	-	-
		Apply modern imaging techniques to healthcare settings.	3	2	1	-	-
20U6PME3(B)	**Geophysics and Geomagnetism**	Acquire the basic knowledge of dynamical behavior of earth and modern plate tectonic	3	1	2	1	-
		Apply the gravity anomalies to acquire the basic knowledge of Topography and density in homogeneity in the Earth	3	1	2	1	-

		Analyze the seismic waves generated by an earthquake or man-made source and seismic disturbance through the Earth is governed by periodic elastic displacements.	3	2	2	1	-
		Examine the geomagnetic field at any point on the Earth's surface many of the basic concepts governing the Universe.	3	1	2	1	-
		Surveys the basic concepts of Geo potential Field anomaly studies and also provides a comprehensive understanding of Magnetic.	3	2	2	1	-
20U6PME3(C)	**Solar cell Applications**	Acquire the basic knowledge of characteristics behavior of solar cell	3	1	2	1	-
		Apply the essential function of solar cell in generation of photocurrent and recombination.	3	1	2	1	-
		Analyze the photovoltaic energy conversions from charge generation, charge separation and charge transport.	3	2	2	1	-
		Analyze theeffect of increasing photon flux density within the solar cell.	3	1	2	1	-
		Apply the fundamental ideas of solar cell principles to fabricate the solar cell.	3	2	2	1	-

Chairman/BoS

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