



Sri Bhagawan Mahaveer Jain First Grade College
Geetha Road, Robertsonpet, KGF

Accredited By NAAC B⁺ Grade

B.Sc. (PMCs)

Program Outcomes (POs)

ProgramOutcome	Description
PO1	Propose novel ideas towards solutions to contemporary problems justifying with relevant facts and data
PO2	Develop scientific outlook and see the relevance of science concepts in all aspects of life
PO3	Identify, formulate and analyze complex Scientific problems using principles of natural and applied sciences.
PO4	Comprehend concepts, frameworks and inventions through various learning methods and effectively communicate them to others orally and in writing.
PO5	Analyze critically the given scientific data ascribe meaning to them and draw objective conclusions.
PO6	Demonstrate empathetic social concern, skills to effectively participate in civic affairs and democratic decision making.
PO7	Imbibe ethical, moral and social values to become cultured and civilized global citizens.
PO8	Apply concepts of sustainable development to make a difference in social and environmental issues.
PO9	Develop multidimensional skills and habits as lifelong learners.



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Program Specific Outcome	Description
PSO1	Ability to explain core theoretical concepts/ their scientific basis and applications relevant to the disciplines of Physics, Mathematics and Computer Science at foundation level
PSO2	Demonstrating qualitative/quantitative reasoning skills and ability to use tools/methods relevant to the disciplines of study
PSO3	Understand the impact of science on society and engage in life-long learning and professional development
PSO4	Demonstrate awareness of national and global trends in the fields covered by the study and assessing their implications



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Course Outcomes

BSC- PMCs

Sem	Subject Code	Subject	Course Outcomes
I	PHYT101	PHYSICS-I	<p>CO1:Understanding of basic facts, principles and physical laws</p> <p>CO2:Analyze applications of vectors and differential equations, concept of laws of conservation and apply them to basic problems.</p> <p>CO3:Exhibit analytical reasoning and logical ability in problem solving related to gravitation, rigid bodies, elasticity and fluid dynamics.</p> <p>CO4:Demonstrate basic experimental skills in rigid bodies, elasticity and fluid dynamics</p>
I	MAT101	MATHEMATICS-I	<p>CO1:Recall basic concepts of Matrices and AG 3D</p> <p>CO2:Explain concepts like Echelon form, normal form, rank, diagonalization of matrices. Interpret geometrical properties of lines and planes</p> <p>CO3:Calculating the rank of a matrix and examine the nature of geometrical properties</p> <p>CO4:Analyze the nature of solution and categorize the the nature of geometry of lines and planes</p> <p>CO5:Evaluation of eigen values and eigen vectors of a matrices. Measure distances between planes and lines</p> <p>CO6:Design the proofs about Cayley Hamilton theorem and related results. Derive various forms of planes and straight lines.</p>
I	CS1T	PROBLEM SOLVING TECHNIQUES USING C	<p>CO1:Analyse the algorithm and illustrate problem using flowchart.</p> <p>CO2: Apply the concepts of an arrays in real time applications.</p> <p>CO3:Use the functions for various problems.</p> <p>CO4:Solve the problems using pointers and structures.</p> <p>CO5: Illustrate the basic file operations.</p>

I	PHY102	PHYSICS LAB-I	<p>CO1: Understand the working principles of instruments used in experiment</p> <p>CO2:Acquire the experimental skills in concepts like elastic constants, oscillations, conservation of energy and rigid bodies</p> <p>CO3:Analyze the results with observations and proper theory</p> <p>CO4:Gain knowledge about application of the experiments</p>
I	CS1P	COMPUTER SCIENCE LAB 1	<p>CO1: Explain the usage of selection statements and iteration statements and write simple programs.</p> <p>CO2:Discuss the usage of data structures like arrays and structures.</p> <p>CO3:Explain the concepts of inline functions, function overloading and default arguments and use them according to the user requirements.</p> <p>CO4:Create solutions to a range of problems using the classes and objects, constructors.</p> <p>CO5:Discuss and demonstrate operator overloading</p> <p>CO6:Achieve code reusability and extensibility by means of Inheritance and Polymorphism.</p>
I	ENGT101	ENGLISH-I	<p>CO1:Demonstrate a coherent and systematic knowledge of the field of English literature showing an understanding of current theoretical and literary developments in relation to the specific field of English studies.</p> <p>CO2 :Demonstrate a set of basic skills in literary communication and explication of literary practices and process with clarity.</p>
I	KANT101	KANNADA-I	<p>CO1:To understand ancient Kannada literature form and principles of life as depicted in it.</p> <p>CO2:Develop creative thinking with the introduction of different literature forms.</p> <p>CO3:Awareness about gender equality and social harmony.</p> <p>CO4:Develop business correspondence skills through letter writing.</p> <p>CO5 :Ability to formulate a value based thought process with inclusive approach.</p>
II	CS2T	DATA STRUCTURES USING C	<p>CO1:Analyze algorithms and algorithm correctness.</p> <p>CO2: Apply the searching and sorting techniques in real time applications.</p> <p>CO3: Explore concepts on stack and queue operation and its implementation.</p> <p>CO4: Adopt the knowledge of linked list on node of array.</p> <p>CO5:Apply the concepts of trees and its applications.</p>

II	PHYT201	PHYSICS-II	<p>CO1:Equipped with the basic facets of thermodynamics, statistical distribution laws with their applications</p> <p>CO2: Ability to analyze the statistical nature of physical systems from an energy perspective</p> <p>CO3:Understand, identify and differentiate between the concepts of statistics and the statistical distribution laws of particles</p> <p>CO4:Demonstrate laboratory skills pertaining to Thermal Physics</p>
II	MAT201	MATHEMATICS-II	<p>CO1:Students will recall the basic derivatives and integrals of basic functions and fundamental knowledge about the concepts of Numerical methods</p> <p>CO2: Students will interpret the meaning and concepts of Differential calculus, integral calculus and Numerical methods.</p> <p>CO3:Students will learn to solve problems on Differential calculus, integral calculus and Numerical methods.</p> <p>CO4: Understand the concept of various methods of calculus and its calculation</p> <p>CO5:Students will gather knowledge of deriving various formulae of calculus and numerical algorithms</p>
II	ENGT201	ENGLISH-II	<p>CO1:Display knowledge to cultivate a better understanding of values – both literary values that aid us in literary judgment and also values of life at all stages.</p> <p>CO2:Cultivate ability to look at and evaluate literary texts as a field of study and as part of the wider network of local and global culture.</p>
II	KAN201	KANNADA-II	<p>CO1: Students will be able to understand the importance of democracy, elections and responsibility of the younger generation.</p> <p>CO2 Awareness about student life, knowledge acquisition through academics and learning beyond for holistic development.</p> <p>CO3 Analyze and differentiate the cultural beliefs to give up superstitious beliefs.</p> <p>CO4 Evaluate the information based on social concerns and defend the right cause.</p>
II	PHY202	PHYSICS LAB-II	<p>CO1:Understand the working principles of instruments used in experiment</p> <p>CO2:Acquire the experimental skills in concepts like heat, radiation, elasticity</p> <p>CO3:Analyze the results with observations and proper theory</p> <p>CO4:Gain knowledge about application of the experiments</p>

II	CS2P	DATA STRUCTURE LAB	<p>CO1:To implement algorithms for different Data structures efficiently.</p> <p>CO2:Design and implement programs for Stacks, Queues and linked list.</p> <p>CO3:Design and implement programs for a given Search problem (Linear Search and Binary Search)</p> <p>CO4:Create and Implement the programs for Binary search Traversals(Inorder,Preorder and PostOrder traversals)</p> <p>CO5:Design and implement algorithms for Selection Sort, Bubble Sort, Insertion Sort, Quick Sort, and Merge Sort and compare their performance in term of Space and Timecomplexity</p>
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Sem	Subject Code	Subject	Course Outcomes
III	PHY301	PHYSICS-III	<p>CO1:Understanding of various Electrostatics and Magneto statics laws and its applications</p> <p>CO2:Identify,analyze and differentiate electrical networks using various analysis techniques</p> <p>CO3:Understanding of the Maxwell's equations and its applications</p> <p>CO4: Understanding Thermo Electricity, laws and its application</p> <p>CO5: Assessing and interpreting laboratory experiments pertaining to Electricity and Magnetism</p>
III	MAT-III	MATHEMATICS-III	<p>CO1: To enhance the knowledge of order of an element of a group, Subgroup generated by an element of a group, coset decomposition of a group, Cyclic groups, – Lagrange's theorem-</p> <p>CO2: Understand and be able to apply basic definitions and concepts in series and swquence theory</p> <p>CO3: Discuss the behaviour of the geometric series.</p> <p>CO4:Identify and apply the intermediate value theorems and L,Hospital rule</p>
III	CS3T	DATABASE MANAGEMENT SYSTEM	<p>CO1: Describe the fundamental elements of database management systems</p> <p>CO2:Explain the basic concepts of entity-relationship model</p> <p>CO3:Explain the basic concepts of relational data model, and relational algebra</p> <p>CO4:Design tables for a specific database and write SQL queries for data definition/manipulation/ alteration</p> <p>CO5:Recognize and apply functional dependencies to improve database design (Normalization)</p> <p>CO6:Analyze the requirements of transaction processing, concurrency control</p>
III	PHY302P	PHYSICS LAB-III	<p>CO1:Understand the working principles of instruments used in experiment</p> <p>CO2:understanding of the Maxwell's equations and its applications</p> <p>CO3:Acquire the experimental skills in concepts like Thevenin's, theorem, Maximum power transfer theorem, LCR circuits, Ballistic galvanometer, CO4:Analyze the results with observations and proper theory</p> <p>CO5:Gain knowledge about application of the experiments</p>

III	MAT-III	MATHS LAB 03	<p>CO1:Solve problem on left and right coset and finding the index of a group.</p> <p>CO2: Understand the programs to find the sum of the series and its radius of convergence</p> <p>CO3: Acquire knowledge of Rolle's theorem and Lagrange's theorem</p> <p>CO4: Evaluate the limits by L'Hospital's rule using Scilab/Maxima</p>
III	CS3P	DBMS LAB	<p>CO1: Explain the data types, operators, and constraints in SQL and the general form of SQL commands</p> <p>CO2:Write SQL queries for data definition/manipulation/alteration</p> <p>CO3:Declare and enforce different constraints on a database</p> <p>CO4:Write SQL queries to get information from two tables using join operations</p> <p>CO5:Write SQL queries to create sub groups of tuples and apply aggregate functions to produce summary reports.</p>
III	ENG301	ENGLISH	<p>CO1:To enhance the understanding of LSRW skills and various approaches to language.</p> <p>CO2:Providing an in-depth academic exposure about various forms of communication to enable students to be better speakers and users of language.</p> <p>CO3:Demonstrate a coherent and systematic knowledge of the field of communication through understanding of current linguistic and literary developments .</p> <p>CO4:Demonstrate a set of basic skills in literary communication and explication of literary practices and process with clarity.</p> <p>CO5:Write analytically in a variety of formats, including essays, speeches, and reflectivewritings.</p>
III	KAN301	KANNADA	<p>CO1:Students will be able to understand the importance of democracy, elections and responsibility of the younger generation.</p> <p>CO2:Awareness about student life, knowledge acquisition through academics and learning beyond for holistic development.</p> <p>CO3:Analyze and differentiate the cultural beliefs to give up superstitious beliefs.</p> <p>CO4:Evaluate the information based on social concerns and defend the right cause.</p>

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IV	PHY401	PHYSICS-IV	<p>CO1: Ability to identify and apply the principles of wave s so as to understand the physics behind various optical phenomenon</p> <p>CO2: Equipped with the knowledge of working with optical instruments like polarimeter, interferometer, and diffraction grating</p> <p>CO3: Understanding of various interference, Diffraction and Polarization and its applications</p> <p>CO5: Demonstrate knowledge and understanding of the Maxwell's equations and its applications</p> <p>CO6: Assessing and interpreting laboratory experiments pertaining to Optics</p>
IV	MAT-IV	MATHEMATICS-IV	<p>CO1: Recognize the mathematical objects called Normal subgroups, Quotient group, Kernel and image of a homomorphism, permutation group, cayley,s theorem.</p> <p>CO2: Understand the concept of Trigonometric Fourier series of functions with period 2π and period $2L$ HalfRange sin and cosine series.</p> <p>CO3: To learn to apply the various numerical techniques Continuity and differentiability , Taylor's Theorem, Maxima and Minima , Method of Lagrange multipliers.</p> <p>CO4: To learn the evaluation of Laplace transform of different types of functions, their derivatives of Laplace transform, , Heaviside function, Inverse Laplace transforms.</p> <p>CO5: To apply method of solving Second and higher order ordinary linear differential equations,</p>
IV	CS5T1	JAVA PROGRAMMING	<p>CO1: Describe the object-oriented Programming principles and explain the concepts of classes, functions, data and objects.</p> <p>CO2: Identify the different types of inheritance and demonstrate code reuse using inheritance</p> <p>CO3: Explain the concepts of packages, interfaces and access specifiers.</p> <p>CO4: Use exceptions, threads in a given program.</p> <p>CO5: Explain the concept of applets, and Input/output streams</p>
IV	CS5P1	JAVA PROGRAMMING LAB	<p>CO1: Explain the usage of selection statements and iteration statements and use the correct programming construct according to the situation in their code.</p> <p>CO2: Identify the different types of inheritance supported in Java and develop complex programs appropriately reusing previously created classes.</p> <p>CO3: Describe and use packages and</p>

			<p>appropriately use access specifiers, exception handling keywords, exception handling classes, and handle exceptions in programs.</p> <p>CO4: Describe the purpose of multithreading and write programs using threads to improve performance of code.</p> <p>CO5: Explain the methods defined in Applet class and the life cycle of applet, and write programs to perform input/output operations on file</p> <p>CO6: Understand loops to do repetition.</p>
IV	PHY402	PHYSICS LAB-IV	<p>CO1: Understand the working principles Of instruments used in experiment</p> <p>CO2: Acquire the experimental skills in concepts like Spectrometer, Polarimeter, and Laser</p> <p>CO3: Analyze the results with observations and proper theory</p> <p>CO4: Gain knowledge about application of the experiments</p>
IV	MAT-IV	MATHS LAB-IV	<p>CO1: Acquire the program skills for periodic functions with period 2π and $2L$.</p> <p>CO2: To gain the knowledge of the Laplace transforms of some standard functions</p> <p>CO3: Implementing Laplace transform method of solving ordinary linear differential equations of first and second order with constant coefficient.</p> <p>CO4: Apply problem solving skills complementary function and particular integral of constant coefficient second and higher order ordinary differential equations</p>

Sem	Subject Code	Subject	Course Outcomes
V	PHY501T	PHYSICS-V	<p>CO1: Interpretation of the inadequacies of classical mechanics and understanding of the historical development of quantum mechanics and ability to discuss and interpret experiments that reveal the dual nature of matter</p> <p>CO2: Understanding of synthesis techniques, properties and applications of Nano and smart materials</p> <p>CO3: Apply problem solving skills to de Broglie wave theory, Heisenberg's uncertainty principle</p> <p>CO4: Understanding of basics of atmosphere And atmospheric dynamics</p> <p>CO5: Ability to analyze the statistical nature of physical systems from an energy perspective</p>
V	PHY503T	PHYSICS-VI	<p>CO1: Understanding of the different stages of evolution of stars and basic properties of stars.</p> <p>CO2: learning in solarAstrophysics.</p> <p>CO3: Demonstrate good foundations in band theory of solids and free electron theory of metals.</p> <p>CO4: Understanding the basics ofCrystallography</p> <p>CO5: Ascertain the quantitative foundations of Semiconductor Physics and Superconductivity</p> <p>CO6: Equipped with experimental foundations in astrophysics, and X-ray</p>
V	MAT-V T	MATHEMATICS-V	<p>CO1: Students can learn Rings, Subrings, Ideals ,Principal, Prime and Maximal ideals,</p> <p>CO2: Understanding the concept of Scalar field ,Maximum directional derivative, solenoidal and irrotational fields, Laplacian of a scalar field,</p> <p>CO3: To gain knowledge of the concept Finite differences, Newton –Gregory forward and backward interpolation formulae, Numerical Integration:</p>
V	MAT-VI T	MATHEMATICS-VI	<p>CO1:To gain the knowledge of Evaluate double and triple integrals to apply change variable method to find the value of double and triple integral</p> <p>CO2: Student will learn Euler's equation, isoperimetric, Hanging cable chain solution</p> <p>CO3: Understand the concept of Stokes' theorem to compute line integrals along the boundary of a boundary surface</p>
V	CS5T2	VISUAL PROGRAMMING	<p>CO1: Understand an overview of computers and computer programming.</p> <p>CO2: Understand Visual Basic applications.</p> <p>CO3: Understand how to perform operations and store results</p>

			<p>CO4:Understand the concept of data-driven program execution flow control in Visual Basic programming..</p> <p>CO5:Understand additional Visual Basic controls.</p>
V	CS5P2	VISUAL PROGRAMMING LAB	<p>CO1:Students list the visual programming concepts.</p> <p>CO2:Explain basic concepts and definitions.</p> <p>CO3:Express constants and arithmetic operations.</p> <p>CO4:Distinguish variable and data types.</p> <p>CO5:Students code visual programs by using Visual Basic work environment..</p>
V	PHY502P	PHYSICS LAB-V	<p>CO1:Understand the working principles of instruments used in experiment</p> <p>CO2:Acquire the experimental skills in concepts like Energy band gap of materials,Permeability of materials, Fermi energy of materials and Dielectric constant of materials.</p> <p>CO3:Analyze the results with observations and proper theory</p> <p>CO4:Gain knowledge about application of the experiments</p>
V	PHY504P	PHYSICS LAB-VI	<p>CO1:Understand the working principles of instruments used in experiment</p> <p>CO2:Acquire the experimental skills in concepts like Photo cells, transistors ,cro, Zener diode</p> <p>CO3:Analyze the results with observations and proper theory</p> <p>CO4:Gain knowledge about application of the experiments</p>
V	MATHS-V P	MATHS LAB-V	<p>CO1: Understand the program to interpretation of gradient, divergence</p> <p>CO2: Express cyclic notations to derive different vector identities</p> <p>CO3: Gain knowledge about application Interpolations with unequal intervals, to evaluate integrals using simpson's $\frac{1}{3}$ rd rule</p>
V	MATHS-VI P	MATHS LAB-VI	<p>CO1: To gain knowledge of program code of particular forms of Euler's equation, minimum surface of revolution and Brachistochrone problem</p> <p>CO2: Evaluation of the double integral with constant limits, triple integrals.</p> <p>CO3: To analyse Green's theorem. guass-divergence and stoke's theorem</p>

Sem	Subject Code	Subject	Course Outcomes
VI	PHY601T	PHYSICS-VII	<p>CO1:Ascertain the quantitative foundations of Atomic and Nuclear Physics</p> <p>CO2: Equipped with experimental foundations in Atomic physics and Nuclear physics</p> <p>CO3:Apply problem solving skills to Atomic physics and Nuclear physics</p>
VI	PHY602P	PHYSICS LAB-VII	<p>CO1:Understand the working principles of instruments used in experiment</p> <p>CO2: Acquire the experimental skills in concepts like GM counter, Molecular spectroscopy, basic gates and Atomic Physics</p> <p>CO3:Analyze the results with observations and proper theory</p> <p>CO4:Gain knowledge about application of the experiments</p>
VI	PHY603T	PHYSICS-VIII	<p>CO1: understanding of the historical development of quantum mechanics and ability to discuss and interpret experiments that reveal the dual nature of matter.</p> <p>CO2: Comprehending the central concepts of quantum mechanics and ability to identify and differentiate between wave functions, momentum and energy operator and the time dependent and independent Schrodinger equations.</p> <p>CO3:Apply problem solving skills to one dimensional rigid box, harmonic oscillator</p> <p>CO4:Inspect the basic concepts of the digital electronics ,logic gates and OPAMP and their applications</p>
VI	PHY604P	PHYSICS LAB-VIII	<p>CO1:Basic knowledge and understanding About Op-amp and their applications in electronic systems.</p> <p>CO2:Knowledge on designing circuits with Op-amp and their application</p> <p>CO3:Understanding the principle and working of various electronic circuits like filters , amplifiers</p> <p>CO4:Gain knowledge about application of the experiments</p>
VI	MAT-VIIT	MATHEMATICS-VII	<p>CO1:Introduction to vector space and subspace.</p> <p>CO2:Solve problem on Linear equations, matrix algebra, vector spaces, Eigen values and eigenvectors, Orthogonality and Diagonalization through scilab programs</p> <p>CO3: Understand the facts about the cardinality of a set, Understand several standard concepts of metric spaces and their properties like openness,</p>

			closedness, completeness, Bolzano-Weierstrass property, compactness, and connectedness
VI	MAT-VIIIT	MATHEMATICS-VIII	<p>CO1: Understand the significance of differentiability and analyticity of complex functions leading to the Cauchy Riemann equations. Apply Liouville's theorem in fundamental theorem of algebra.</p> <p>CO2: To gain the knowledge of numerical solutions of algebraic and transcendental equations.</p> <p>CO3: Apply various numerical methods in real life problems.</p>
VI	MAT-VIIP	MATHEMATICS LAB-VII	<p>CO1: Students code scilab program the concepts of linear dependence and independence of vectors</p> <p>CO2: To gain knowledge to get solutions to the problems on total and through scilab program simultaneous differential equations</p> <p>CO3: Acquire knowledge of the concept of dimensional through FOSS .</p>
VI	MAT-VIIIP	MATHEMATICS LAB-VIII	<p>CO1: Basic Knowledge of coding of real and imaginary parts of an analytic function being harmonic (in polar coordinates).</p> <p>CO2: To learn that the circles are transformed to circles by a bilinear transformation</p> <p>CO3: Acquire knowledge of solving algebraic equation Bisection method Regula-Falsi and Newton-Raphson methods Solving system of equations (Jacobi and Gauss-Seidel methods). Eigen value by Power method. Through FOSS</p>