DEPARTMENT OF MATHEMATICS

The mathematics department at B.A.M. Khalsa College traces its history back to 1975, when mathematics was introduced as an elective subject in humanity discipline.Since its Inception, the department has made constant efforts to grow along with the Institution in order to cater the need of the dynamically developing world. The subject made a progression by becoming the core subject with the initiation of Basic Sciences in 1998. The department has been constantly upgrading itself, an example of which is the introduction of MSc (Mathematics) in 2016. At present, the competent mentoring team of the department offers both graduate and post graduate courses in mathematics. Besides the rigorous analytical subjects of pure mathematics, a number of laboratory-based practical courses are also incorporated in our post graduate curriculum. We believe in providing abundant opportunities to students which improve their organizational and leadership skills for handling various academic and co-curricular activities.

VISION

To create a benchmark in students centric learning environments and interdisciplinary research opportunities in order to foster a rich heritage of valuable alumni

MISSION

- To popularise the subject, several mathematics fairs, quizzes, fun games and exhibitions are to be featured in our annual academic calendar
- To organize off-campus educational tours and collaborating with Research centres for a first-hand experience in applied mathematics
- The faculty looks forward to achieving excellence by the means of pioneering technologies, Quality literature and state-of-the-art laboratories
- Introducing more statistical and computational programs to balance practical and theoretical aspects of the subject
- We anticipate launching new online courses to expand out of the conventional teaching practice

OBJECTIVES

With the intention to fulfill the vision and mission of the department, we are dedicated to:

- Build and sustain an environment that inculcates appropriate mathematical skills required for solving problems in real life context
- Developing deep understanding of core subjects like pure mathematics, enabling learners to effortlessly apply those apparently complex mathematical techniques
- Provide superlative education facilities to yield the potential of students by imparting optimum knowledge of the subject and encouraging questioning spirit
- Provide proper mentoring and counselling to students regarding higher education opportunities and emerging career prospects
- To bestow opportunities of participating in workshops, conferences and orientations to equip students with interpersonal skills and industry standard hands-on expertise
- To promote and popularise the 'Queen of Sciences' through interdisciplinary programmes and application based curriculum

Programme run by department:

1. B.Sc. Non- Medical (General) (Programme code: BSCM)
2. M.Sc. Mathematics (Programme code: MSCMATH)

B.Sc. Non-Medical (General)

Programme Learning Outcomes of B.Sc. Non-Medical (General)

Graduate Attributes

On successful completion of B.Sc. programme the students will be able to develop following attributes, qualities and skills:

PO 1	**Disciplinary Knowledge**	Capable of demonstrating comprehensive knowledge and understanding of major concepts, theoretical principles and experimental findings in science and its different subfields, and other related fields of study, including broader interdisciplinary subfields.

PO 2	**Communication Skills**	Course of English in B.Sc. enables them to communicate clearly and convincingly about science and technology ideas, practice and future contributions to expert and non-expert audiences through seminars, open discussion, language learning.
PO 3	**Critical Thinking**	Ability to employ critical thinking is enhanced by ● Organizing guest lectures, debates and declamation on hot topics/current subjects. ● Presenting logic and reasoning for all forms of topics. ● Question to be paused through studying different courses domestically and international.
PO 4	**Problem Solving**	The practical and theoretical approaches in basic sciences develop the conceptual, analytical, quantitative and technical skills in the students to solve academic and real life problems.
PO 5	**Sense of Inquiry**	Experiment based curriculum builds the capability for asking relevant/appropriate questions relating to issues and problems in the field of Science and planning, executing and reporting the results of an investigation.
PO 6	**Team player/ worker**	Students of B.Sc. are capable of ● Working effectively in diverse teams in both classroom, laboratory and in industry and field-based situations. ● Performing in groups to meet a shared goal with people whose disciplinary and cultural background differs from their own. ● Organize field trips, field surveys and photo documentation projects. ● Consistently hold science exhibitions, poster contests, short trips to help in shaping personality.
PO 7	**Skilled Project Manager**	Undertaking Assignments and projects of various disciplines of Science make them capable of identifying/mobilizing appropriate resources required for a project, and managing a project through to completion, while observing responsible and ethical scientific conduct; and safety-regulations and practices.
PO 8	**Digitally Literate**	Students of B.Sc. Capable of ● Using computers for computation and appropriate software for analysis of data Employing modern library search tools to locate, retrieve and evaluate subject-related information. ● Various class seminars are arranged for the students to make their ppt. by using e-resources/e-books and different search engines
PO 9	**Ethical Awareness**	Course Framework of B.Sc. make students capable of ● Demonstrating ability to think and analyze rationally with modern and scientific outlook and identify ethical issues

		• Avoiding unethical behavior such as fabrication, falsification or misrepresentation of data or committing plagiarism, and appreciating environmental and sustainability issues.
PO 10	**National and International Perspective**	The Multidisciplinary Program enables students to evaluate the role of science, technology, and engineering in addressing current issues facing local and global communities. For example climate change, health and disease, food security, sustainable energy use etc.
PO 11	**Lifelong Learners**	Make students Capable of self-paced and self-directed learning aimed at personal development and for improving knowledge/skill development and reskilling in all areas of science. It promotes interactions with corporate, NGOs and government as well as other agencies.
PO 12	**Leadership Readiness/ Qualities**	B.Sc. program enhanced the • theoretical and experimental skills necessary to analyze and solve a range of advances problems, providing an excellent foundation for leadership • Through extra and co-curricular activities (NSS, NCC, Youth Festivals). • To interact with different individuals in society and work for welfare of community.
PO 13	**Multicultural Competence**	• In youth fest and heritage festival encouraging performance in various items. • Visual and graphic presentation of Indian culture and ethnicities. • Gurpurab celebrations to showcase rich cultural heritage of Punjab. • Encouraging the embellishment of various cultures of the state through its traditional profile presentation in text, oral and other performance initiatives.
PO 14	**Self -Directing Learning**	Enable them to recognize the need for information, effectively search for, evaluate, manage and apply that information in support of scientific investigation.
PO 15	**Scientific reasoning**	• Introduction of students to labs and lab equipment materials and safe-guard. • Perform experiments and activities in singles and in groups. • Compare and coordinate team spirit in discussant mode.

Program Specific Outcomes (PSOs)

PSO1	Understand the conceptual development of the subject and its application in emerging areas of Physics, Chemistry/C.S./Env. and Mathematics.

PSO2	A non-medical student will demonstrate a scientific knowledge of the core physics principles in Mechanics, Electromagnetism, Modern Physics, and Optics.
PSO3	Students are able to demonstrate basic manipulative skills in algebra, analysis, probability, geometry, trigonometry, and beginning calculus.
PSO4	Students will acquire knowledge of Chemical Thermodynamics, Kinetics, Electrochemistry, Atomic Structure, Organic Chemistry, Spectroscopy and Skill in Industrial Chemistry.
PSO5	Students will determine the appropriate level of technology for use in experimental design and implementation, analysis of experimental data, and numerical and mathematical methods in problem solutions.
PSO6	Students will be able to apply the underlying unifying structures of mathematics (i.e. sets, relations and functions, logical structure) and the relationships among them.
PSO7	A non-medical student can join Indian Air Force, Indian Navy, Indian Civil Services like IAS, IPS, IFS etc.
PSO 8	Students can join as a scientist in research institutes of immense knowledge having a great scope for growth and development.

Course Outcomes (COs) of B.Sc. Non- Medical

Semester	**Course Title**	**College Code**	**Course Outcomes** On completion of the course, students will be able to know the scope and importance of the discipline and its objectives	
Sem. I	**Punjabi Compulsory**	**PBC101**	**CO1**	Give an introductory knowledge of PBI language.
			CO2	Examine the various forms of modern poetry
			CO3	To understand the definition and nature of easy and make students capable of writing easily.
			CO4	To develop the skill of Percy writing.
			CO5	To make student able to understand the grammar and its importance in sentence language.
			CO6	To get practical knowledge of various
Sem. I	**History & Culture of Punjab**	**HCP101**	**CO1**	Develop the knowledge of history of the Punjab region
			CO2	Identify the culture of Punjab region
			CO3	Analyze Harappan Civilization & Life in Vedic Age, Growth of Jainism and Buddhism
			CO4	Develop the knowledge of Society and Culture under Maurayas & Gupta, Cultural Reorientation:

			CO5	Discuss Evolution of Sikhism
			CO6	Develop the knowledge of Changes in Society in 18th century
Sem. I	**Inorganic Chemistry-I**	**CHM101A 1**	**CO1**	Understand the essential facts relating inorganic chemistry concepts.
			CO2	Comprehension of Atomic Structure, Periodic properties of elements.
			CO3	Description of Chemistry of Noble Gases.
			CO4	Knowledge about s-Block Elements.
			CO 5	Explanation of Chemical Bonding (V.B.T, VSEPR, hybridization MOT).
			CO 6	To determine the percentage ionic character from dipole moment and electro negativity difference.
Sem. I	**Organic Chemistry-I**	**CHM101A 2**	**CO1**	Understand the structure and bonding of organic compounds
			CO2	Comprehension of mechanisms of different organic reactions
			CO3	Description of alkanes and cycloalkanes and including their synthesis and chemical reactions
			CO4	Knowledge about optical isomerism in organic compounds.
			CO5	Explanation of geometrical isomerism and
			CO6	Conformational isomerism in organic compounds.
Sem. I	**Physical Chemistry-I**	**CHM10 1A3**	**CO1**	Acquire the knowledge of mathematical concepts and its application in evaluation of analytical data.
			CO2	Explanation of gaseous state and deviation in their behavior from ideal gases behavior
			CO3	Knowledge about Maxwell distribution of molecular velocity, collision number and mean free path.
			CO4	Description of reaction, rate of reaction, kinetics and their mechanism
			CO5	Understand the effect of temperature on rate of reaction , collision theory , catalysis and radioactive decay
			CO6	To understand the Michaelis Menten’s equation for enzyme catalysis and its mechanism.
Sem. I	**Mechanics I (Physics)**	**PHY101A**	**CO1**	Knowledge about spherical and coordinate systems.
			CO2	Understand the concept of center of mass ,angular momentum and various relationships of momentum
			CO3	Knowledge about motion under force obeying inverse square law.
			CO4	Understand the important connections between theory and experiment.
			CO5	Completely understand Newton’s law of motion and conservation principles.
			CO6	Complete knowledge about application of vector theorems

				of mechanics and interpretation of their results.
Sem. I	**Vibration, Waves & EM TheoryI (Physics)**	**PHY101B**	**CO1**	Understand the decay of free vibrations due to damping, types of damping and electromagnetic Damping.
			CO2	To acquire the knowledge of transient and steady state behavior and power supply to an oscillator and its vibration with frequency.
			CO3	Knowledge about simple harmonic motions, Torsional Pendulum, and transverse vibrations.
			CO4	Understand the significance of transverse wave, and wave equation.
			CO5	Understand the concept of simple harmonic vibrations of same frequency and different frequency.
			CO6	Use Lissajous figures to understand simple harmonic vibrations of same frequency and different frequencies.
Sem. I	**Electricity and Magnetism I (Physics)**	**PHY101C**	**CO1**	Know the vocabulary and concepts of physics as it applies to: Principles of Electric Fields, Gauss's Law, Electric
			CO2	Understand the relationship between electrical charge, electrical field, electrical potential
			CO3	Be able to use electromagnetic theory and principles in a wide range of Applications and Learn a variety of advanced mathematical methods and computer technique
			CO4	Learn a variety of advanced mathematical methods and computer techniques.
			CO5	To know what the electric field and electric potential in, and around, a conductor look like.
			CO6	To study the concept of electrical images with the help of Poisson and Laplace equation
Sem. I	**Practical (Physics)**		**CO1**	Expose the students of B.Sc. to the experimental techniques in general Physics, Mechanics, waves and vibration, electricity and magnetism.
			CO2	They can co-relate the theoretical concepts with the experimental ones and develop confidence to handle sophisticated equipment wherever necessary.
			CO3	Solving Problems on Transformation of lines joining origin to the intersection of a line and a curve.
			CO4	Solving Problems on Transformation of axes, Joint equation of pair of straight lines and angle between them, Joint equation of lines joining origin to the intersection of a line and a curve.
			CO5	Learn about General equation of circle, tangents, normals, chord of contact, pole and polar, pair of tangents from a point and length of tangent
			CO6	Knowledge of equation of chord in terms of midpoint,

				radical axis, co-axial family of circles, limiting points.
Sem. I	**Plane Geometry (Mathematics)**	**MAT101A**	**CO1**	Understanding of General equation of a conic, tangents, normals, chord of contact, pole and polar, pair of tangents, diameter, Conjugate diameters of ellipse and hyperbola.
			CO2	Exposure on special properties of parabola, ellipse and hyperbola, conjugate hyperbola, asymptotes of hyperbola, rectangular hyperbola.
			CO3	Understanding the concepts of real numbers, Limits and continuity.
			CO4	Solve Algebraic equations and inequalities involving the square root and Modulus function.
			CO5	Analyze functions and their graphs and learn to produce rigorous proofs of results that arise in the context of calculus, Geometric value theorems.
			CO6	Determine continuity at a point or an interval. and distinguish between the types of discontinuities at a point.
Sem. I	**Calculus I (Mathematics)**	**MAT101B**	**CO1**	Identify and Apply the intermediate value theorem, Mean value theorem and L'Hospital Rule.
			CO2	Knowledge about Hyperbolic functions, their differentiation. learn Successive differentiation and Leibnitz's theorem.
			CO3	Understand De Moivre theorem and apply it to find roots and powers of complex numbers
			CO4	Analyze functions of complex variables and calculate summation of trigonometric series
			CO5	Differentiate Hermitian and Skew Hermitian Matrices and compute rank of matrix.
			CO6	Discuss Linear dependence and linear independence of vectors and solve linear equations using matrices
Sem. I	**Trigonometry & Matrices (Mathematics)**	**MAT101C**	**CO1**	Calculate Eigenvalues of matrix and apply Cayley - Hamilton theorem to find inverse of matrix
			CO2	Define basic computer hardware architecture
			CO3	Discuss software applications
			CO4	Use essential IT support skills including installing, configuring, securing and troubleshooting operating systems and hardware
			CO5	Understand file management
			CO6	Accomplish creating basic documents, presentations with their properties
Sem. I	**Computer Fundamentals (Theory) (Computer**	**CS101A**	**CO1**	Acquire the knowledge of types of software Operating Systems
			CO2	To introduce students with the basic concepts of the operating system, its functions and services.

	Science)		**CO3**	Use essential IT support skills including installing, configuring, securing and troubleshooting operating systems and hardware.
			CO4	Discuss such Microsoft office applications like MS-Word , MS-Excel , MS-PowerPoint etc.
			CO5	Use file management techniques for file and directory/folder organization.
			CO6	Able to aware of RAM, ROM, COST, SIZE, CACHE and virtual memory
Sem. I	**PC Software (Theory) (Computer Science)**	**CS101B**	**CO1**	Accomplish creating basic documents, presentations with their properties
			CO2	Basic Knowledge of input/output devices & various types of memories.
			CO3	Become proficient in using the features of MS Office.
			CO4	Determine what operating system you have, Create files and folders, organize files and folders, delete and restore files and folders using the Recycle Bin.
			CO5	Understand the basic set of commands and editors in the Linux operating system.
			CO6	Each student must be able to configure the basic computer management settings of windows components. Each student must familiar to work with MS-DOS command prompt and basic DOS commands
Sem. I	**Practical (Computer Science)**	**CS101L**	**CO1**	Understand the scope and importance of the environment.
			CO2	To acquire knowledge about the ecosystem and its various components. Introduction to various biogeochemical cycles of the environment
			CO3	Learn about different types of natural resources and their uses to mankind, Various policies of their conservation.
			CO4	Acquire knowledge about various alternative sources of energy like solar energy , wind power , geothermal energy, dung energy and wood energy
			CO5	Detailed understanding of forest types in India and the World. Learn about different forestry systems like farm forestry, community forestry , social forestry and agroforestry systems
			CO6	To know about the various adulterants of food and various tests performed to find out the type of adulteration and understand about various indoor pollutants exist in our workplaces, homes, college, bus stands .
Sem. II	**Punjabi Compulsory**	**PBC201**	**CO1**	To get basic information of Punjabi language
			CO2	Provide knowledge of Punjabi short story and make student familiar with it

			CO3	Also make student able to write any kind of notice
			CO4	To make student to understand the Punjabi idioms its importance and benefits
			CO 5	To provide practical knowledge of Punjabi language and vocabulary
			CO 6	Theoretical and Practical knowledge of linguistics
Sem. II	**History & Culture of Punjab**	**HCP201**	**CO1**	Discuss the history of the Punjab region
			CO2	Discuss the culture of Punjab region
			CO3	Explain the Colonial Rule in Punjab, western education, agrarian development
			CO4	Develop the knowledge of Early socio religious reform, Socio Religious Reform Movements
			CO 5	Discuss Gurudwara Reform Movement, Emergence Of Political Consciousness & struggle for freedom
			CO 6	Discuss the major historical places in Punjab
Sem. II	**Inorganic Chemistry-I**	**CHM201A 1**	**CO1**	Appraisal of p-block elements and chemical bonding.
			CO2	Understanding of close packing in ionic solids and radius ratio rule.
			CO3	Comprehension of lattice energy and Born Haber cycle.
			CO4	Knowledge about polarising power and polarisability using fajan's rule .
			CO5	Descriptions of hydrides ,oxides ,oxyacids of p-block elements.
			CO6	To know about the basic properties of halogens, interhalogens and polyhalides.
Sem. II	**Organic Chemistry-I**	**CHM201A 2**	**CO1**	Comprehension of alkenes and cycloalkanes including their synthesis and chemical reactions
			CO2	Knowledge about dienes and alkynes incorporating their methods of formation, structures and chemical reactions
			CO3	Understanding the arenes and aromaticity in organic compounds
			CO4	Descriptions of mechanisms of aromatic electrophilic substitutions reactions
			CO5	Appraisal of methods of formation and chemical reaction of alkyl halides and aryl halides.
			CO6	To understand the substitution at allylic and vinylic position of alkenes.
Sem. II	**Physical Chemistry-I**	**CHM20 1A3**	**CO1**	Appraisal of thermodynamics, first law of thermodynamics
			CO2	Understanding the expansion of ideal gases under isothermal and adiabatic conditions
			CO3	Descriptions of standard state and enthalpy of formation using hess's law
			CO4	Knowledge of colloidal state, its classifications ,sols

				,emulsions and gels
			CO5	Comprehension of ideal and non-ideal solutions and their colligative properties.
			CO6	To learn how to determine various colligative properties.
Sem. II	**Mechanics II (Physics)**	**PHY201A**	**CO1**	Understand the terminology used in Classical Mechanics
			CO2	Employ conceptual understanding to make predictions, and then approach the problem mathematically.
			CO3	To study different types of motion, transformations and moments including Euler's equation and elementary gyroscope.
			CO4	To understand the concept of inertial and non-inertial frames, fictitious forces, centrifugal force due to rotation of earth.
			CO5	To get the knowledge of postulates of special theory of relativity, length contraction, time-dilation, twin paradox and relativistic Doppler effect.
			CO6	To get the exposure of variation of mass with velocity in an in-elastic collision and concepts of Minkowski space, 4-vector formulation.
Sem. II	**Vibrations, Waves & EM Theory II (Physics)**	**PHY201B**	**CO1**	Ability to recognize and use mathematical oscillator equation and wave equation
			CO2	Able to solve wave equation and understand significance of transverse waves
			CO3	Understand and be able to calculate the reflection and transmission coefficient of travelling waves
			CO4	To calculate what happen when wave move from one medium to another and explain dispersion and group and phase velocity
			CO5	To gain knowledge of pointing vector and impedance of di-electric to EM waves
			CO6	To understand refraction and be able to derive and apply Snell's law.
Sem. II	**Electricity and Magnetism II (Physics)**	**PHY201C**	**CO1**	Know the Principles of Magnetic Fields, Sources of Magnetic Fields, Faraday's Law, Inductance, Alternating Current Circuits, and Electromagnetic Waves
			CO2	Solve mathematical problems involving magnetic forces, fields, and various electro-magnetic Circuits.
			CO3	Gain confidence in their ability to apply mathematical methods to understand electromagnetic problems to real life situations
			CO4	Ability to use Maxwell's equations in calculations featuring : both free and stationary EM waves.
			CO5	Gain knowledge on electromagnetic induction and its

				applications.
			CO6	To study Faraday's Law of EM induction.
Sem. II	**Practical (Physics)**		**CO1**	Expose the students of B.Sc. to the experimental techniques in general Physics, Mechanics, waves and vibration, electricity and magnetism.
			CO2	They can co-relate the theoretical concepts with the experimental ones and develop confidence to handle sophisticated equipment wherever necessary
Sem. II	**Solid Geometry (Mathematics)**	**MAT201A**	**CO1**	Learn about Section of a sphere and a plane, spheres through a given circle, intersection of a line and a sphere, and a tangent line.
			CO2	Understanding of tangent plane, angle of intersection of two spheres, power of a point w.r.t.sphere, radical axis, co-axial family of spheres.
			CO3	Knowledge of Cylinders as a surface, different kinds of cylinders such as right circular, elliptic, parabolic and hyperbolic cylinders in standard forms.
			CO4	Solving exercises on Cone, cone as a surface, reciprocal cones, right circular and elliptic cones, right circular cone, enveloping cones.
			CO 5	Exposure on Equations of ellipsoid, hyperboloid and paraboloid in standard form. Reduction of second degree equation in three variables in standard form.
Sem. II	**Calculus II (Mathematics)**	**MAT201B**	**CO1**	Acquire knowledge about concavity, convexity and points of inflection, multiple points, asymptote and Tracing of curves (cartesian and parametric coordinates only)
			CO2	Derive Reduction formulae for some complex integrations and hence integrate functions of a much higher degree which are applicable in real life situations.
			CO3	Learn to find curvature, evolute and involute, chord of curvature.
			CO4	Demonstrate understanding of common numerical methods of integration.
			CO 5	Apply Integral calculus to find arc length of a curve, arc length of a parametric curves, area under a curve ,surface area and volume of surface of revolution.
Sem. II	**Theory of Equations (Mathematics)**	**MAT201C**	**CO1**	Describe Euclid’s algorithm and apply synthetic division to find the roots of polynomial
			CO2	State the relation between roots and coefficients
			CO3	Implement transformation of the equations to solve roots
			CO4	Explain and apply using Descartes rule of signs
			CO 5	Solve cubic using Cardon’s method and bi-quadratic using Descartes method & Ferrari’s Method

			CO 6	Apply Newton's method of divisors to solve equations.
Sem. II	**Computer Science-A (Operating System Concepts)**	**CS201A**	**CO1**	Apply the scheduling algorithm for the given problem
			CO2	Demonstrate the fundamental Linux commands and system calls.
			CO3	Apply the process synchronous concept using message queue, shared memory, semaphore and Dekker's algorithm for the given situation.
			CO4	Experiment and algorithm to detect and avoid deadlock.
			CO 5	Demonstrate the various operations of the file system.
			CO 6	Apply the various methods in memory allocation and page replacement algorithms.
Sem. II	**Computer Science-B (C - Programming)**	**CS201B**	**CO1**	To Define the problem.
			CO2	To Extend skill on problem solving by constructing algorithms.
			CO3	To Use the fundamentals of C programming in trivial problem solving
			CO4	To Identify solution to a problem and apply control structures and user defined functions for solving the problem
			CO 5	To Demonstrate the use of Strings and string handling functions, structure, union
			CO 6	Apply skill of identifying appropriate programming constructs for problem solving
Sem. II	**Computer Science Lab**	**CS201L**	**CO1**	To acquire logical thinking
			CO2	To identify the correct and efficient ways of solving problems
			CO3	To define the algorithms and analyze their complexity
			CO4	To write the c-code for a given problem
			CO 5	To implement programs with pointers and arrays, structure and file input output.
Sem. II	**Soil and Water Pollution (Environment Conservation)**	**ENC201**	**CO1**	To acquire knowledge about the physical and chemical properties of soil, meaning of soil profile and its components.
			CO2	Learn about various techniques of testing soil samples, various methods to increase soil fertility and role of soil microorganisms in increasing soil fertility.
			CO3	Learn about various factors causing soil erosion, different types of soil pollutants and various control measures to control pollution.
			CO4	Understand about various chemicals, pesticides, fertilizers and manure acting as soil pollutants.
			CO 5	Learn about global and biological water cycle, overutilization of surface and groundwater.

			CO 6	Learn about various methods to treat wastewater like green method, Root – zone technology etc.
Sem. III	**English Compulsory**	**ENG301**	**CO1**	To write an effective business document (such as notice, memo, advertisement etc.) which enable them to think analytically.
			CO2	To acquire extensive knowledge of English as a language in its various textual forms and to become thoughtful, imaginative and effective communicators in a diverse and changing society.
			CO3	To enhance their writing skill by building strong vocabulary.
			CO4	To empower an average student in such a way that English learning becomes a Pleasurable endeavor.
			CO5	To acquire knowledge about various literary aspects through the text which capacitates them to enrich their literary and cultural values.
			CO6	To critically appreciate literary texts
Sem. III	**Inorganic Chemistry-I**	**CHM301A 1**	**CO1**	Justification regarding bonding, magnetic as well as spectral properties of transition metal complexes.
			CO2	To understand the Chemistry of Coordination Compounds and their geometries.
			CO3	Structures of Coordination compounds containing central metal atom and ligands.
			CO4	Study of transition series(First, second and third transition series)
			CO5	Demonstration regarding lanthanides and actinide contractions.
			CO6	To understand the use of co-ordination compounds.
Sem. III	**Organic Chemistry-I**	**CHM301A 2**	**CO1**	Inculcate the knowledge of alcohols i.e. mono, di, tri hydric alcohols
			CO2	Understand the chemical reactions of vicinal glycols and glycerol
			CO3	Appraisal of phenols and their properties
			CO4	Comprehension of the aldehyde and ketones
			CO5	Discuss the formation of aldehydes and ketones and carboxylic acids.
			CO6	To understand the mechanism of nucleophillic addition to carbonyl compound.
Sem. III	**Physical Chemistry-I**	**CHM30 1A3**	**CO1**	Understand the intermolecular forces in liquids , liquid crystals and their classifications.
			CO2	Discuss the chemical equilibrium , law of mass action and relationship and types of equilibrium constant
			CO3	Comprehension of the second law of thermodynamics,

				carnot cycle and its efficency.
			CO4	Appraisal of entropy change in ideal gases and its mixing.
			CO5	Inculcate the knowledge of third law of thermodynamics; Nernst heat theorem.
			CO6	To understand the classification and structure of liquid crystals.
Sem. III	**Statistical Physics & Thermodynamics I (Physics)**	**PHY301A**	**CO1**	Understand how statistics of the microscopic world can be used to explain the thermal features of the macroscopic world.
			CO2	Be able to use statistical principles in a wide range of applications and learn a variety of mathematical techniques
			CO3	Understand different classical and quantum mechanical distribution functions.
			CO4	Can explain phase transitions and magnetization in magnetic system.
			CO5	Familiarize with procedures for deriving the relation between thermodynamics parameters such as pressure, temperature, entropy and heat capacity from the distribution functions.
			CO6	Learn a variety of mathematical techniques.
Sem. III	**Optics and Laser I (Physics)**	**PHY301B**	**CO1**	Develop an understanding of principles of optics. And able to build connections between mathematical development and conceptual understanding.
			CO2	To build connections between mathematical development and conceptual understanding.
			CO3	Distinguish the methods of polarization by reflection, refraction and scattering.
			CO4	Learn different types of fiber and lasers along with principle, properties of laser beams.
			CO 5	Be able to understand the phenomenon of interference and diffraction.
			CO 6	Apply skill to find the wavelength of spectral lines using plane diffraction grating.
Sem. III	**Quantum Physics I (Physics)**	**PHY301C**	**CO1**	Learn the mathematical tools needed to solve quantum mechanics problems.
			CO2	Complete knowledge about wave-particle duality and uncertainty principle.
			CO3	Fully understand the differences between classical quantum mechanics.
			CO4	Learn how to solve Schrodinger equation for simple potentials.
			CO5	Spot, identify and relate the Eigenvalue problems for energy, momentum and central potentials.

			CO6	Able to solve wave equations, fundamental postulates of quantum physics.
Sem. III	**Practical (Physics)**		**CO1**	Expose the students of B.Sc. to the experimental techniques in general Physics, Mechanics, waves and vibration, electricity and magnetism.
			CO2	They can co-relate the theoretical concepts with the experimental ones and develop confidence to handle sophisticated equipment wherever necessary.
Sem. III	**Advanced Calculus I (Mathematics)**	**MAT301A**	**CO1**	Knowledge about Limit and continuity, Partial differentiation, implicit functions theorem.
			CO2	Understanding the Vector differentiation - gradient, divergence, curl and their applications.
			CO3	Learn Euler's theorem on homogeneous function, Taylor's theorem, Jacobian. Finding maxima, minima and saddle point of a function, Lagrange's multiplier method.
			CO4	To provide the students with the skills of vector calculus operations which are needed for further study in Mathematics.
			CO5	Students will be able to apply the concept of envelope and evolutes on real life applications.
Sem. III	**Differential Equations I (Mathematics)**	**MAT301B**	**CO1**	Verify Exact differential equation, define the geometrical meaning of differential equation
			CO2	Derive Orthogonal Trajectory and envelope of the differential equations
			CO3	Solve Linear differential equation with constant and variable coefficients
			CO4	Learn to find solution of Cauchy’s and Legendre’s equations
			CO5	Use method of variation of parameter and reduction of order to solve differential equations
			CO6	Solve simultaneous Differential equations
Sem. III	**Statics (Mathematics)**	**MAT301C**	**CO1**	Knowledge about Composition and resolution of concurrent forces
			CO2	Learn about parallelogram Law of forces , Equilibrium of three forces acting at a point , triangular Law of Forces Lami’s theorem
			CO3	Acquire knowledge about Moments, couples and Friction
			CO4	Develop equilibrium relationships for non-accelerating two or three dimensional rigid bodies acted on by external forces and moments.
			CO5	Understand and compute equilibrium of three coplanar forces acting on rigid body.
Sem. III	**Computer**	**CS301A**	**CO1**	Describe the fundamental organization and Architecture of

	Organization (Theory) (Computer Science)			computer system
			CO2	Learn about representation of Information through number systems like Binary, Decimal, Hexadecimal, Octal. Conversions.
			CO3	Knowledge about Basic Building Blocks, Microinstructions Microprocessor Assembly Language and System Maintenance.
			CO4	Express their knowledge in various error correction and detection techniques.
			CO5	Understand concepts of register transfer logic and arithmetic operations.
			CO6	Distinguish the organization of various parts of a system memory hierarchy.
Sem. III	**Object Oriented Programing (using C++)(Theory-A) (Computer Science)**	**CS301B**	**CO1**	To Understand how C++ improves C with Object Oriented features.
			CO2	To Understand the difference between the top down and bottom up .
			CO3	To Describe the Object Oriented programming approach in connection with C++.
			CO4	To apply the concept of Object Oriented programming.
			CO5	Explain the difference between the call by Value and call by address.
			CO6	Use different data structures and create /manipulate basic data files and developing applications for real world problems.
Sem. III	**Practical -C (Computer Science)**	**CS301L**	**CO1**	To learn the fundamental programming concepts and methodologies which are essential to building good c/c++ programs.
			CO2	To describe and use software tools in the programming process.
			CO3	To code, document ,test and implement a well-structured , robust computer program using the c/c++ programming language.
			CO4	To write reusable modules (collection of functions)
			CO5	To practice the fundamental programming methodologies in the lab experience.
			CO6	To apply good programming principles to the design and implementation of c/c++ programs.
Sem. III	**Air pollution and Climate change (Environment Conservation)**	**ENC301**	**CO1**	Learn about atmosphere ,its structure and learn about stratospheric ozone
			CO2	Understand about Air pollution, its sources and methods to control air pollution and about the Air (prevention and control of pollution) Act, 1981.

			CO3	In this unit students will learn about greenhouse effect and global warming and its causes and various gases cause greenhouse effect.
			CO4	Understand and learn about stratospheric ozone depletion and Role of paddy burning , livestock and biomass burning in causing greenhouse effect.
			CO5	To acquire knowledge about radioactive pollution and noise pollution, its sources and methods to reduce this pollution, learn about various mineral resources and its mining and environmental effects of mining.
			CO6	Learn about the green building concept, carbon sequestration, CDM(Clean development mechanism).
Sem. IV	**Inorganic Chemistry-I**	**CHM401A 1**	**CO1**	Understand the chemistry of Lanthanides and Actinides elements; their properties and separation.
			CO2	Inculcate the concept of acids and bases.
			CO3	Comprehension of theories to understand the classification of acids-bases.
			CO4	Appraisal of oxidation and reduction. to use redox potential data.
			CO5	Describe non-aqueous solvents; their types and properties; principles involved in the extraction of elements.
			CO6	To understand the physical properties of different solvents.
Sem. IV	**Organic Chemistry-I**	**CHM401A 2**	**CO1**	Acquire the knowledge of carboxylic acids, halo acids, malic acids ,tartaric acid and citric acids.
			CO2	Classification of the Organic Compounds of Nitrogen.
			CO3	Detection of elements and functional groups in simple organic compounds.
			CO4	Understanding of ethers,epoxides, oils & detergents.
			CO5	To compare the preparation of alkyl and aryl amines
			CO6	To understand the cleavage and auto-oxidation of ethers, epoxide.
Sem. IV	**Physical Chemistry-I**	**CHM40 1A3**	**CO1**	Learn the necessary chemical knowledge about electrochemistry.
			CO2	Appraisal of electrical transport of electrolytes, conductance with dilution.
			CO3	Understanding of Nernst distribution law and thermodynamic derivation.
			CO4	Description of type of reversible electrode, E.M.F. of cell and electrochemical series.
			CO5	Describe non-aqueous solvents; their types and properties; principles involved in the extraction of elements.
			CO6	To know about applications of concentration.
Sem. IV	**Statistical**	**PHY401A**	**CO1**	Understand the statistical relation with various terms and

	Physics and Thermodynamics II (Physics)			cycles of thermodynamics.
			CO2	Understand the application of thermodynamics to thermoelectric Effect and various Maxwell's thermodynamic relations and applications.
			CO3	Understand the efficiency of carnot's engine and significance of first law and second law of thermodynamics.
			CO4	Ability to evaluate entropy changes in a wide range of processes and determine the reversibility and irreversibility of a process from such calculations.
			CO5	Understand the interrelationship between thermodynamic functions and ability to use such relationships to solve practical problems.
			CO6	To know the Clay Peron equation and thermo dynamical treatment of Joule-Thomson effect.
Sem. IV	**Optics and lasers-II (Physics)**	**PHY401B**	**CO1**	To know the concept of interaction of light with matter
			CO2	To study the uses of Einstein's coefficients and their relations
			CO3	To discuss the theory of broadening in laser and its types.
			CO4	To learn about the different types of lasers, its principles, properties of laser beam.
			CO5	To get acquainted with applications of lasers in holography and reconstruction of image.
			CO6	To study the concept of fibre optics and its applications.
Sem. IV	**Quantum Physics-II (Physics)**	**PHY401C**	**CO1**	To study the excitation of atoms with radiation by transition probability, spontaneous transition and selection rules.
			CO2	To understand the spectrum of hydrogen atom, Frank-Hertz experiment, line structure and Zeeman effect.
			CO3	To get the knowledge of spin orbit coupling including electron magnetic moment and total angular momentum.
			CO4	To learn about the exchange symmetry of wave functions, shells and subshells in atoms and in atomic spectra.
			CO5	To recognize regularities in atomic spectra, x-ray spectra, absorption spectra and interaction energy.
			CO6	To get the exposure of molecular bonding, symmetric structures, rotational, vibrational and electronic level and spectra of molecules.
Sem. IV	**Practical (Physics)**		**CO1**	Expose the students of B.Sc. to the experimental techniques in general Physics, Statistical Physics and Optics.
			CO2	Able to co-relate the theoretical concepts with the experimental ones and develop confidence to handle sophisticated equipment wherever necessary.
Sem. IV	**Advance Calculus II**	**MAT401A**	**CO1**	Knowledge about Sequence- bound of a sequence, convergent, divergent and oscillatory sequence.

	(Mathematics)		**CO2**	Learn about Series of non negative term- P- test ,comparison test, Cauchy's integral test ,Cauchy's root test, ratio test, Raabe's test, logarithmic test ,Gauss Test. Alternating series
			CO3	Define ,differentiate and integrate functions represented as a power series expansion, including Taylor series and solve related problems.
			CO4	Apply Leibnitz's test, Reimann's rearrangement theorem.
			CO5	Distinguish between concept of sequence and series and determine the limit of sequence and convergence and approximate sum of series.
Sem. IV	**Differential Equations II (Mathematics)**	**MAT401B**	**CO1**	Define Laplace transform, Inverse Laplace transform and apply these to problems.
			CO2	Learn to find Series solution of differential equations power series method
			CO3	Derive the solutions of Bessel equations ,their recurrence relations and orthogonal properties
			CO4	Derive the solutions of Legendre's equations ,their recurrence relations and orthogonal properties
			CO5	Form and solve Partial differential equations
Sem. IV	**Dynamics (Mathematics)**	**MAT401C**	**CO1**	Knowledge about Motion of a particle, Newton's Laws of Motion, motion of a body along the smooth inclined plane.
			CO2	Understanding Simple harmonic motion, elastic string, curvilinear motion of a particle.
			CO3	Learn about Work, power and conservative field. Relative motion, linear momentum, angular momentum, impulsive forces.
			CO4	Determine the dynamic response of the system to applied loadings, using Newton's law.
			CO5	Apply the Principle of Work and Energy and the principle of impulse and momentum to mechanical systems.
Sem. IV	**Database Concepts (Computer science)**	**CS401A**	**CO1**	Learn about the concepts of database system Relational Data Model and Relational Algebra and Calculus
			CO2	Knowledge about Advance concepts- Client-Server Architecture
			CO3	Learn about Hierarchical Data Models
			CO4	Learn about Client-server Architecture.
			CO5	Understand about Normalization and Concurrency Recovery.
			CO6	Understand about storage organization of Relations.
Sem. IV	**Data Structure (Computer science)**	**CS401B**	**CO1**	Understanding data structures and operations performed on them using algorithms.
			CO2	Enable the students to implement these operations using any

				programming language.
			CO3	To understand how to represent linked list in memory.
			CO4	To study the representation of Trees and Graphs.
			CO5	To study the basics of Searching.
			CO6	To understand the basics of Sorting.
Sem. IV	**Practical – C (Computer science)**	**CS401L**	**CO1**	To understand how to implement the program in Data Structure.
			CO2	To study the different concepts like array, linked using programming.
			CO3	To understand the different functions of Queue and stack using different loops of C.
			CO4	To understand the concepts of Algorithm.
			CO5	To implement the programs with help of Trees and Graphs.
			CO6	To implement the programs with help of Sorting and Searching.
Sem. IV	**Solid Waste and Disaster Management (Environment Conservation)**	**ENC401**	**CO1**	Learn about the sources and categories of solid waste , plastic nuisance , incineration and refuse derived fuels and fly ash utilization.
			CO2	Understand about the MSW Handlin rules, 2000; learn about composting and optimum conditions for composting.
			CO3	Understand about Disaster management: Pre- disaster phase, actual disaster phase, and post-disaster phase.
			CO4	To acquire knowledge about management of various natural disasters like floods, earthquakes, tsunami, landslides, drought, and tropical cyclones.
			CO5	Learn about the construction and working of biogas plants, its advantages and disadvantages. To get knowledge about verm- culture and vermicomposting and Waste water treatment.
			CO6	To get knowledge about organic farming, methods, soil management , weed management and control of pests, advantages of organic farming. Learn about different ways of reclamation of waste land.
Sem. V	**Inorganic Chemistry-I**	**CHM501A 1**	**CO1**	Comprehension of crystal field theory and valence bond theory of metal ligand bonding in transition metal complexes.
			CO2	Description of thermodynamic and kinetic aspects of Metal Complexes.
			CO3	Knowledge about synthesis, structure, properties and applications of organometallic compounds of Li,Al,Hg,Sn and Ti.
			CO4	Analysis of metal-ethylenic complexes, homogeneous hydrogenation and mononuclear carbonyls.

			CO5	Explanation of metalloporphyrins, nitrogen fixation and biological role of alkali and alkaline earth metal ions.
			CO6	To appraise the biological importance of alkali and alkaline earth metals.
Sem. V	**Organic Chemistry-I**	**CHM501A2**	**CO1**	Appraisal of the use of spectroscopic techniques to analyze the synthesised organic compounds.
			CO2	Apply the concept of absorption laws to compute molar absorptivity, to differentiate between chromophores and auxochrome.
			CO3	Demonstration of infrared spectroscopy to detect the present functional groups in the given organic compounds.
			CO4	Apply the concept of nuclear magnetic resonance (NMR) spectroscopy to find the structure of the given organic compounds.
			CO5	Count the biological importance of carbohydrates.
			CO6	To interpret the NMR spectrum of simple organic compounds.
Sem. V	**Physical Chemistry-I**	**CHM501A3**	**CO1**	Description of elementary quantum mechanics, black body radiation, Schrodinger wave equation for H-atom.
			CO2	Apply the Schrodinger wave equation to find the wavefunctions of the given system to account for its stability.
			CO3	Demonstrate the use of quantum mechanics to calculate the hybridisation of atomic orbitals.
			CO4	Inculcate the knowledge of photochemical reactions and the laws governing the photochemical reactions.
			CO5	Description of fluorescence, phosphorscence and quantum yield of photochemical reactions.
			CO6	To understand the photochemistry of carbonyl compounds and alkenes.
Sem. V	**Condensed Matter Physics I (Physics)**	**PHY501A**	**CO1**	Understand basic concepts and mathematical methods of solid state physics
			CO2	Explore important connections between theory, experiment, and current applications.
			CO3	Explore important connections between theory, experiment and current applications.
			CO4	Acquire knowledge about various crystal structures
			CO5	Introducing basic concepts via diffraction method, lattice vibrations and free electrons.
			CO6	Understand about various Semiconductors, their band structures and energy-gap.
Sem. V	**Electronics and Solid**	**PHY501B**	**CO1**	Analyze the electric circuit using network theorems
			CO2	Understand about semiconductors and their various devices.

	State Devices I (Physics)		**CO3**	Acquire knowledge about the transistors, amplifiers and their applications.
			CO4	Familiarize with the concept of Biased, Unbiased junction diodes.
			CO5	Understanding about the filters, rectifiers and smooth use of CRO.
			CO6	Reproduce the I-V characteristics of Bipolar Junction Transistors.
Sem. V	**Nuclear & Particle Physics I (Physics)**	**PHY501C**	**CO1**	Acquire knowledge about nuclear and particle physics
			CO2	Develop and communicate analytical skills in subatomic physics and develop familiarity with the vast areas of nuclear and particle physics as well as develop an interest in these subjects
			CO3	Have deep knowledge about nuclear fission and nuclear fusion
			CO4	Fully Understand the concept of alpha, beta gamma radiations and their properties.
			CO5	How to use reactor. And know the concept of neutrons.
			CO6	To get the exposure of conservation laws and kinematics, Q-value equation, Coulomb (Rutherford) scattering cross section and distance of nearest approach.
Sem. V	**Practical (Physics)**		**CO1**	Expose the students to the experimental techniques in general Physics, Electronics and particle physics.
			CO2	Enable to co-relate the theoretical concepts with the experimental ones and develop confidence to handle sophisticated equipment wherever necessary
Sem. V	**Analysis 1 (Mathematics)**	**MAT501A**	**CO1**	Determine Convergence of improper integrals with discontinuities in their domain or infinite limits of integration.
			CO2	Knowledge about Countable and uncountable sets.
			CO3	Solving integral as a function of parameter.
			CO4	Acquire the information about the Beta, Gamma function and evaluate it in various problems.
			CO5	Learn the theory of Riemann integral, mean value theorems and use theory in solving definite integrals arising in different fields of science and engineering.
			CO6	Apply the fundamental theorem of calculus to evaluate definite integrals.
Sem. V	**Modern Algebra (Mathematics)**	**MAT501B**	**CO1**	Understanding of Groups, Subgroups, Lagrange’s Theorem.
			CO2	Learn about Normal subgroups and Quotient Groups, Homomorphism, Isomorphism Theorems.
			CO3	Knowledge of Conjugate elements, Class equation,

				Permutation Groups, Alternating groups and its simplicity.
			CO4	Exposure on Rings, Integral domains, Subrings and Ideals, Quotient Rings, Prime and Maximal Ideals.
			CO5	Brief discussion on Homomorphism, Isomorphism Theorems, Polynomial rings.
Sem. V	**Probability (Mathematics)**	**MAT501C**	**CO1**	Describe the concept Probability, conditional probability, Bayes Theorem
			CO2	Demonstrate the concept of random variables, density function, cumulative distribution function, moments and moment generating function.
			CO3	Develop the knowledge about distributions based on discrete random variables and apply them in real world problems.
			CO4	Develop the knowledge about distributions based on continuous random variables and apply them in real world problems.
			CO5	Explain concepts used in Bivariate Random Variable
Sem. V	**Project Management (Computer Science)**	**CS501A**	**CO1**	Learn about how a project needs to be established, organized, coordinated, controlled and evaluated.
			CO2	Know the fundamentals of report writing
Sem. V	**Relational Database Management System (Computer Science)**	**CS501B**	**CO1**	Define database and its design.
			CO2	Compute DDL, DML and TCL queries.
			CO3	Analyze the different constraints like primary key, foreign key, check, not-null, null and unique key.
			CO4	Create views and manipulate the base table.
			CO5	Implement various queries of sequences.
			CO6	Implement the program through PL/SQL
Sem. V	**Biodiversity and Conservation (Environment Conservation)**	**ENC501**	**CO1**	Understand about the various levels of biodiversity, various threats to biodiversity; learn about various hotspots of biodiversity.
			CO2	Various acts to protect biodiversity Environment protection act 1986, Forest conservation act, 1980, Water prevention and control of pollution act, 1974.
			CO3	Learn about in-situ and ex- situ conservation strategies and various causes of extinction of biodiversity.
			CO4	To acquire knowledge about various acts to conserve biodiversity (Wildlife protection act), 1972, Joint forest management .
			CO5	Learn about the role of religion in environment protection, different possible measures to make localities aware about environmental hazards and its remedies.
			CO6	Learn about the cultivation methods of Aloe vera,

				Calotropis, Acacia nilotica, Mentha ,Ricinus etc.
Sem. VI	**Inorganic Chemistry-I**	**CHM601A 1**	**CO1**	Inculcate the knowledge of Silicones and Phosphazenes.
			CO2	Comprehension of HSAB concept, symbiosis and theoretical basis of hardness and softness.
			CO3	Knowledge about types and selection rules for electronic transitions.
			CO4	Analysis of Orgel- energy level diagram for d1 and d9 states.
			CO5	Description of magnetic properties of transition metal complexes .
			CO6	To understand symbiosis and its theoretical basis.
Sem. VI	**Organic Chemistry-I**	**CHM601A 2**	**CO1**	Familiarized with Amino Acids, Peptides, Proteins and Nucleic Acids.
			CO2	Description of synthetic polymer; their types, synthesis and uses.
			CO3	Inculcate the knowledge of organic synthesis via enolates.
			CO4	Description of organometallic compounds; its types and their synthesis.
			CO5	To understand the doubal helical structure of DNA.
			CO6	To study preparation and reactions of amino acids.
Sem. VI	**Physical Chemistry-I**	**CHM60 1A3**	**CO1**	Understanding of space lattice, unit cell, miller indices.
			CO2	Appraisal of Bragg's equation and X-ray diffraction.
			CO3	Knowledge about electromagnetic radiation and different spectrometers.
			CO4	Description of rigid rotor and non-rigid rotor.
			CO5	Inculcate the concepts vibrational and electronic spectrum.
			CO6	To interpret different types of physical spectra.
Sem. V	**Condensed Matter Physics II (Physics)**	**PHY601A**	**CO1**	Understand the concepts of Lattice dynamics, scattering of photons by phonons and in- depth
			CO2	To study Einstein and Debye theory of Specific heat of solids.
			CO3	Knowledge about magnetic materials, their classifications and dielectric properties of solids.
			CO4	Familiarize with the concept of superconductivity and formation of cooper pairs.
			CO5	Acquire knowledge about electric susceptibility, Clausius Mossotti equation ideas of material and nanoscale.
			CO6	Acquire knowledge about nanoparticles, their structure, fabrication and application of nanotechnology in various fields.
Sem. V	**Electronics and Solid State Devices**	**PHY601B**	**CO1**	Understand about semiconductors and their various devices.
			CO2	Acquire knowledge about the transistors. Amplifiers and their applications.

	II (Physics)		**CO3**	Understand the basis of feedback amplifiers and advantages of negative voltage devices.
			CO4	Acquire knowledge about logic gates and their uses in digital electronics.
			CO5	Classify different types of FETs and demonstrate feedback amplifiers, OP-AMPs and oscillator circuits.
			CO6	To get the exposure of analog and digital communication and develop familiarities with the vast area of electronics in brief account of satellite communication.
Sem. V	**Nuclear & Particle Physics II (Physics)**	**PHY601C**	**CO1**	Acquire knowledge in the content areas of nuclear and particle physics, focusing on concepts that are commonly used in this area.
			CO2	Develop familiarity with the vast areas of nuclear and particle physics as well as develop an interest in these subjects
			CO3	Understand the basic knowledge about standard model of elementary particles and interactions
			CO4	Understand the role of nuclear particle physics in energy production, medicine, astrophysics - for example how to search for dark matter and how to understand the origin of the elements in the universe.
			CO5	Understand basic knowledge of the quark- gluons plasma.
			CO6	A basic understanding of nuclear properties and models that describe the quantum structures, decay and reactions of nuclei.
Sem. V	**Practical (Physics)**		**CO1**	Expose the students to the experimental techniques in general Physics, Electronics and particle physics.
			CO2	They can co-relate the theoretical concepts with the experimental ones and develop confidence to handle sophisticated equipment wherever necessary.
Sem. V	**Analysis II (Mathematics)**	**MAT601A**	**CO1**	Learn to use Double and triple integrals to find area and volume.
			CO2	Change to polar coordinates, change of variable to cylindrical and spherical coordinates.
			CO3	Distinguish between the concepts of sequence and series and determine limits of sequence and convergence and approximate sum of series.
			CO4	Define, differentiate and integrate functions represented as power series expansion and Fourier series expansion including Taylor series and solve related problems.
			CO5	Knowledge about vector integration - line, surface and volume integrals
Sem. V	**Linear**	**MAT601B**	**CO1**	To learn definition and examples of Vector Spaces,

	Algebra (Mathematics)			Subspaces, Algebra of subspaces, Linear span.
			CO2	Knowledge of Linear dependence and independence of vectors, Basis and dimension of a vector space.
			CO3	Understanding of linear transformations, Rank and Nullity of a linear transformation, Vector space of linear transformations.
			CO4	Solving exercises on linear transformations and matrices Change of basis, eigenvalues and eigenvectors.
			CO5	Exposure on Cayley-Hamilton theorem, Diagonalizable operators and matrices. Minimal polynomial of a linear operator.
Sem. V	**Numerical Analysis (Mathematics)**	**MAT601C**	**CO1**	Explain methods to find solutions to linear and nonlinear equations using numerical methods.
			CO2	Knowledge about Interpolation and numerical differentiation.
			CO3	Solving algebraic eigenvalue problems.
			CO4	Able to solve Ordinary differential equations.
			CO5	Develop the knowledge about methods for solving integration of functions.
Sem. V	**E- Commerce (Computer Science)**	**CS601A**	**CO1**	Have knowledge of e commerce, its components, structure of e-banking, rules and regulations on e-commerce.
			CO2	Good knowledge of e-commerce, both technical and business.
			CO3	Understand the principles and practices of e-commerce and its related technologies
			CO4	Discuss the trends in e-Commerce and the use of the Internet
			CO5	Explain the economic consequences of e-Commerce
			CO6	Understand the processes of developing and implementing e-Commerce applications.
Sem. V	**Web Programming (Computer Science)**	**CS601B**	**CO1**	An overview of creating static web pages using HTML.
			CO2	Implement the concepts of built in functions in programming, control structures in programming.
			CO3	Read, write and execute PHP programs.
			CO4	Format and validate web pages.
			CO5	Demonstrate the implementation of PHP into current HTML based websites.
			CO6	Develop PHP programs using databases.
Sem. V	**Public Awareness And Environment**	**ENC601**	**CO1**	To acquire knowledge about current environmental issues like climate change, global warming, population explosion, rain water harvesting and methods to resolve these issues.

	Issues (Environment Conservation)		**CO2**	Green revolution and its impacts on environment with special reference to Punjab, Tehri dam, Narmada project, Bhopal gas tragedy, River cleaning project of Sant B.S. Seechewal.
			CO3	Get knowledge about the role of Non- Governmental organizations in environmental protection.
			CO4	Chipko movement , For a living ganga by WWF, Transformation DTC fleet to CNG driven transport, Earth hour, Green peace, Nitrate pollution in Punjab.
			CO5	Learn about the role of various international and national agencies UNEP, UNDP, WWF, MOEF, CPCB in environment conservation and management. Learn about CITES, UNFCC, Montreal protocol, Kyoto protocol, and Copenhagen summit.
			CO6	Application of RS and GIS in Environment, study about biostatistics: To find mean, mode , median , standard deviation, correlation and regression.

Mapping of Course Outcomes (COs) with Programme Outcomes(POs)

Programme Outcome																
College code	**Course Out-comes**	**PO 1**	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**	**PO 14**	**PO 15**
Semester I																
PBC101	**CO1**	1	2	3	2	1	3	2	x	3	2	1	2	3	2	x
	CO2	2	x	2	1	2	2	1	1	1	1	x	1	1	1	2
	CO3	3	1	X	3	2	2	2	2	x	2	3	x	1	1	3
	CO4	1	1	2	2	x	1	2	3	2	x	1	2	1	1	x
	CO5	3	1	X	3	2	2	2	2	x	2	3	x	1	1	3
	CO6	1	3	1	1	3	x	1	1	2	1	2	1	2	1	2
HCP101	**CO1**	1	2	3	2	1	3	2	x	3	2	1	2	3	2	x
	CO2	2	x	2	1	2	2	1	1	1	1	x	1	1	1	2
	CO3	3	1	X	3	2	2	2	2	x	2	3	x	1	1	3
	CO4	1	1	2	2	x	1	2	3	2	x	1	2	1	1	x

	CO5	3	1	X	3	2	2	2	2	x	2	3	x	1	1	3
	CO6	1	3	1	1	3	x	1	1	2	1	2	1	2	1	2
CHM101 A1	**CO1**	2	2	1	1	1	1	1	1	1	1	1	1	X	1	1
	CO2	2	2	1	1	1	1	1	1	1	1	1	1	X	1	1
	CO3	2	2	1	1	1	1	1	1	1	1	1	1	X	1	1
	CO4	2	2	1	1	1	1	1	1	1	1	1	1	X	1	1
	CO5	2	2	1	1	1	1	1	1	1	1	1	1	x	1	1
	CO6	2	2	1	1	1	1	1	1	1	1	1	1	X	1	1
CHM101 A2	**CO1**	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	CO2	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	CO3	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	CO4	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	CO5	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	CO6	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
CHM1 01A3	**CO1**	2	2	X	2	1	1	2	1	2	1	X	X	X	1	1
	CO2	1	2	X	1	1	1	2	1	1	2	X	X	X	2	1
	CO3	2	2	X	1	1	1	2	1	1	1	X	X	X	1	1
	CO4	1	2	X	1	1	1	2	1	1	1	X	X	X	1	1
	CO5	2	2	X	1	1	1	2	1	1	1	x	x	x	1	1
	CO6	2	2	X	1	1	1	2	1	1	1	X	X	X	1	1
PHY101A	**CO1**	2	X	X	2	1	X	X	X	X	X	X	1	1	1	X
	CO2	3	1	X	3	2	1	1	X	X	X	1	3	X	1	1
	CO3	2	X	X	1	X	X	X	1	1	X	X	2	1	X	X
	CO4	2	X	X	1	2	1	X	X	2	X	X	1	X	1	2
	CO5	3	1	2	1	X	X	X	1	X	2	2	1	1	1	2
	CO6	2	1	2	1	2	X	1	2	3	X	1	2	1	2	1
PHY101B	**CO1**	2	1	3	2	1	1	1	1	1	1	2	3	2	2	X

	CO2	1	1	3	3	2	X	2	X	X	X	2	3	2	3	1
	CO3	2	1	2	3	2	1	1	X	1	X	1	2	2	3	X
	CO4	1	1	2	3	3	X	2	X	1	X	1	3	2	3	2
	CO5	1	1	2	2	2	X	1	1	1	X	2	2	2	3	2
	CO6	3	1	3	2	2	X	1	1	1	X	1	3	2	2	1
PHY101C	**CO1**	2	2	2	2	3	3	2	2	1	X	2	2	2	3	2
	CO2	2	1	3	3	3	3	2	2	1	X	1	3	2	2	1
LAB	**CO1**	3	2	2	3	1	X	2	1	2	1	3	X	2	2	2
	CO2	2	1	3	3	2	2	2	X	1	1	2	X	2	1	2
	CO3	3	X	2	3	1	X	1	1	X	X	3	1	2	1	2
	CO4	3	X	3	2	2	1	2	1	2	3	3	X	2	2	3
	CO5	3	1	2	2	X	1	3	1	2	X	1	1	2	1	1
MAT101 A	**CO1**	3	1	2	3	1	X	1	X	1	X	2	1	2	2	2
	CO2	2	2	2	3	2	2	1	X	1	1	2	2	2	2	2
	CO3	3	3	3	3	2	3	2	2	2	3	3	2	2	3	1
	CO4	3	X	1	3	X	X	1	1	X	2	2	1	X	1	2
	CO5	3	X	2	3	1	1	2	1	1	1	3	1	2	2	3
MAT101B	**CO1**	3	1	2	3	1	X	1	X	1	X	2	1	2	2	2
	CO2	2	2	2	3	2	2	1	X	1	1	2	2	2	2	2
	CO3	3	3	3	3	2	3	2	2	2	3	3	2	2	3	1
	CO4	3	X	1	3	X	X	1	1	X	2	2	1	X	1	2
	CO5	3	X	2	3	1	1	2	1	1	1	3	1	2	2	3
MAT101 C	**CO1**	1	X	2	3	X	X	3	3	X	X	X	X	X	X	X
	CO2	1	X	X	3	X	X	3	3	X	X	3	X	X	X	X
	CO3	1	X	X	3	X	X	3	3	X	X	2	X	X	2	3
	CO4	1	X	X	3	X	X	3	3	X	X	3	X	X	2	3
	CO5	1	X	X	3	X	X	3	3	X	X	3	X	X	2	3

CS101A	**CO1**	1	1	2	2	1	X	2	2	X	1	X	X	X	1	1
	CO2	1	1	2	1	2	1	2	2	X	1	3	X	X	1	1
	CO3	1	X	2	1	1	X	2	2	X	1	2	X	X	2	2
	CO4	1	X	2	2	1	X	2	2	X	X	3	X	X	2	2
	CO5	1	1	2	2	1	1	2	2	X	X	3	X	X	2	2
CS101B	**CO1**	1	1	2	2	1	X	2	2	X	1	X	X	X	1	1
	CO2	1	1	2	1	2	1	2	2	X	1	3	X	X	1	1
	CO3	1	X	2	1	1	X	2	2	X	1	2	X	X	2	2
	CO4	1	X	2	2	1	X	2	2	X	X	3	X	X	2	2
	CO5	1	1	2	2	1	1	2	2	X	X	3	X	X	2	2
CS101L	**CO1**	1	1	2	2	1	X	2	2	X	1	X	X	X	1	1
	CO2	1	1	2	1	2	1	2	2	X	1	3	X	X	1	1
	CO3	1	X	2	1	1	X	2	2	X	1	2	X	X	2	2
	CO4	1	X	2	2	1	X	2	2	X	X	3	X	X	2	2
	CO5	1	1	2	2	1	1	2	2	X	X	3	X	X	2	2
ENC101	**CO1**	3	3	3	3	2	2	1	2	2	2	3	1	1	3	2
	CO2	3	2	3	3	3	2	2	2	2	2	1	2	2	3	2
	CO3	1	3	3	2	2	3	1	2	2	2	1	1	2	2	2
	CO4	2	1	2	2	3	2	3	2	2	1	1	1	1	2	3
	CO5	3	1	3	2	2	2	2	2	2	2	1	2	X	2	3
	CO6	2	1	2	2	3	2	3	2	2	1	1	1	1	2	3
Semester II																
PBC201	**CO1**	1	2	3	2	1	3	2	x	3	2	1	2	3	2	X
	CO2	2	x	2	1	2	2	1	1	1	1	x	1	1	1	2
	CO3	x	2	1	1	1	1	x	2	2	3	2	3	2	3	1
	CO4	3	1	x	3	2	2	2	2	x	2	3	x	1	1	3
	CO5	1	1	2	2	x	1	2	3	2	x	1	2	1	1	X

	CO6	1	3	1	1	3	x	1	1	2	1	2	1	2	1	2
HCP201	**CO1**	1	2	3	2	1	3	2	x	3	2	1	2	3	2	x
	CO2	2	x	2	1	2	2	1	1	1	1	x	1	1	1	2
	CO3	x	2	1	1	1	1	x	2	2	3	2	3	2	3	1
	CO4	3	1	x	3	2	2	2	2	x	2	3	x	1	1	3
	CO5	1	1	2	2	x	1	2	3	2	x	1	2	1	1	x
	CO6	1	3	1	1	3	x	1	1	2	1	2	1	2	1	2
CHM201 A1	**CO1**	3	1	1	2	1	1	2	2	1	1	2	2	X	3	3
	CO2	3	1	1	2	1	1	2	2	1	1	2	2	X	3	3
	CO3	3	1	1	2	1	1	2	2	1	1	2	2	X	3	3
	CO4	3	1	1	2	1	1	2	2	1	1	2	2	X	3	3
	CO5	3	1	1	2	1	1	2	2	1	1	2	2	X	3	3
	CO6	3	1	1	2	1	1	2	2	1	1	2	2	X	3	3
CHM201 A2	**CO1**	3	1	1	1	1	1	2	2	1	1	2	2	x	3	3
	CO2	3	1	1	1	1	1	2	2	1	1	2	2	x	3	3
	CO3	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO4	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO5	3	1	1	1	1	1	2	2	1	1	2	2	x	3	3
	CO6	3	1	1	1	1	1	2	2	1	1	2	2	x	3	3
CHM2 01A3	**CO1**	3	1	1	1	2	1	2	2	1	1	2	2	X	2	3
	CO2	3	1	1	1	2	1	2	2	1	1	2	2	X	2	3
	CO3	3	1	1	1	2	1	2	2	1	1	2	2	X	2	3
	CO4	3	1	1	1	2	1	2	2	1	1	2	2	X	2	3
	CO5	3	1	1	1	2	1	2	2	1	1	2	2	X	2	3
	CO6	3	1	1	1	2	1	2	2	1	1	2	2	X	2	3
PHY201A	**CO1**	3	1	1	3	2	2	2	1	1	1	1	1	X	X	X
	CO2	3	1	X	2	1	2	2	2	2	1	3	X	X	X	1

	CO3	3	2	1	1	1	1	2	1	1	1	1	2	1	1	1
	CO4	3	1	1	1	1	1	1	X	X	1	1	1	X	X	1
	CO5	3	2	2	1	X	1	X	X	1	1	2	1	X	X	1
	CO6	3	2	X	X	X	1	X	X	2	X	1	1	X	X	X
PHY201B	**CO1**	3	1	2	1	2	2	2	1	1	1	1	1	X	X	X
	CO2	3	2	X	2	1	2	2	2	2	1	3	X	X	X	1
	CO3	3	2	1	1	1	1	2	1	1	1	1	2	1	1	X
	CO4	3	1	1	1	X	1	1	X	X	2	1	2	X	X	1
	CO5	3	2	2	1	X	2	X	X	1	1	2	1	3	1	1
	CO6	3	2	X	X	X	1	X	X	2	X	1	1	X	X	X
PHY201C	**CO1**	3	1	1	2	2	1	2	1	1	1	X	1	X	X	1
	CO2	1	1	2	2	1	2	X	X	X	2	1	2	1	1	2
	CO3	1	X	1	1	X	3	X	1	2	1	X	3	X	1	1
	CO4	2	2	2	2	2	1	X	X	1	X	1	1	1	X	1
	CO5	2	2	1	1	1	1	1	1	1	1	1	2	X	1	2
	CO6	3	1	1	2	2	2	X	1	1	1	1	2	1	1	1
LAB	**CO1**	2	2	2	2	3	3	2	2	1	X	2	2	2	3	2
	CO2	2	1	3	3	3	3	2	2	1	X	1	3	2	2	1
MAT201 A	**CO1**	2	1	2	2	2	1	3	X	X	X	2	1	1	2	3
	CO2	3	2	2	2	X	X	1	X	X	X	3	2	1	2	2
	CO3	3	1	2	3	1	X	X	1	X	X	2	X	3	1	2
	CO4	3	X	3	3	2	1	2	3	2	X	2	2	X	1	3
	CO5	3	1	3	3	1	X	2	1	1	1	2	2	3	3	3
MAT201B	**CO1**	3	1	3	3	1	1	1	1	1	1	2	2	1	2	1
	CO2	2	X	2	3	2	1	1	1	2	1	3	2	2	2	3
	CO3	1	X	3	3	1	X	2	X	1	2	2	X	2	2	2
	CO4	3	1	3	3	1	1	1	1	1	1	2	2	1	2	1

	CO5	3	X	2	3	2	X	1	1	X	X	2	1	2	2	2
MAT201C	**CO1**	1	1	2	2	1	X	2	2	X	1	X	X	X	1	1
	CO2	1	1	2	1	2	1	2	2	X	1	3	X	X	1	1
	CO3	1	X	2	1	1	X	2	2	X	1	2	X	X	2	2
	CO4	1	X	2	2	1	X	2	2	X	X	3	X	X	2	2
	CO5	1	1	2	2	1	1	2	2	X	X	3	X	X	2	2
	CO6	1	1	2	1	1	1	2	2	1	1	1	1	1	1	1
CS201A	**CO1**	1	1	2	2	1	X	2	2	X	1	X	X	X	1	1
	CO2	1	1	2	1	2	1	2	2	X	1	3	X	X	1	1
	CO3	1	X	2	1	1	X	2	2	X	1	2	X	X	2	2
	CO4	1	X	2	2	1	X	2	2	X	X	3	X	X	2	2
	CO5	1	1	2	2	1	1	2	2	X	X	3	X	X	2	2
	CO6	1	1	2	1	1	1	2	2	1	1	1	1	1	1	1
CS201B	**CO1**	1	1	2	2	1	X	2	2	X	1	X	X	X	1	1
	CO2	1	1	2	1	2	1	2	2	X	1	3	X	X	1	1
	CO3	1	X	2	1	1	X	2	2	X	1	2	X	X	2	2
	CO4	1	X	2	2	1	X	2	2	X	X	3	X	X	2	2
	CO5	1	1	2	2	1	1	2	2	X	X	3	X	X	2	2
CS201L	**CO1**	1	1	2	2	1	X	2	2	X	1	X	X	X	1	1
	CO2	1	1	2	1	2	1	2	2	X	1	3	X	X	1	1
	CO3	1	X	2	1	1	X	2	2	X	1	2	X	X	2	2
	CO4	1	X	2	2	1	X	2	2	X	X	3	X	X	2	2
	CO5	1	1	2	2	1	1	2	2	X	X	3	X	X	2	2
	CO6	1	1	2	1	1	1	2	2	1	1	1	1	1	1	1
ENC201	**CO1**	2	2	3	3	2	2	2	3	3	2	3	3	1	3	2
	CO2	3	2	2	3	3	2	2	2	2	2	1	2	2	2	1
	CO3	2	3	3	2	2	3	1	2	2	2	1	1	2	2	3

	CO4	2	1	2	1	2	2	3	3	2	1	1	1	1	2	3
	CO5	3	1	3	2	1	2	2	2	2	2	1	2	1	2	3
	CO6	1	2	1	2	1	2	1	3	2	2	1	1	2	3	2
Semester III																
ENG301	**CO1**	3	3	1	1	1	1	2	1	1	2	2	1	3	2	X
	CO2	3	3	1	1	1	1	1	1	1	2	2	1	3	2	X
	CO3	3	3	1	1	1	1	1	1	1	2	2	1	2	2	X
	CO4	3	3	1	1	1	2	1	1	1	2	2	1	2	2	X
	CO5	3	3	1	1	1	1	1	1	1	3	2	1	2	2	X
	CO6	3	3	1	1	3	1	1	1	1	2	2	1	2	2	X
CHM301 A1	**CO1**	2	2	1	1	1	1	1	1	1	1	1	2	X	2	2
	CO2	2	2	1	1	1	1	1	1	1	1	1	2	X	2	2
	CO3	2	2	1	1	1	1	1	1	1	1	1	2	X	2	2
	CO4	2	2	1	1	1	1	1	1	1	1	1	2	X	2	2
	CO5	2	2	1	1	1	1	1	1	1	1	1	2	X	2	2
	CO6	2	2	1	1	1	1	1	1	1	1	1	2	X	2	2
CHM301 A2	**CO1**	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	CO2	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	CO3	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	CO4	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	CO5	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	CO6	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
CHM301A3	**CO1**	2	1	1	1	1	1	1	1	1	1	1	1	X	X	X
	CO2	2	X	1	2	2	1	X	1	1	2	X	X	X	1	1
	CO3	1	1	1	2	2	1	1	1	2	1	X	X	1	1	1
	CO4	1	X	1	1	1	1	1	1	X	X	X	X	1	2	2
	CO5	2	1	1	2	1	1	1	1	1	x	x	x	2	1	1

	CO6	2	1	1	2	1	1	1	1	1	x	x	x	2	1	1
PHY301A	**CO1**	3	1	2	3	3	1	2	X	1	1	X	1	X	X	2
	CO2	3	1	1	1	1	2	3	1	2	1	1	2	1	1	3
	CO3	2	1	1	1	2	2	2	X	1	2	1	2	X	X	3
	CO4	1	1	2	1	1	2	1	X	1	2	1	2	1	1	3
	CO5	2	1	1	2	1	1	2	2	2	2	X	2	X	X	3
	CO6	1	1	2	1	X	1	1	2	1	1	1	2	X	X	3
PHY301B	**CO1**	2	X	X	2	1	X	X	X	X	X	X	1	1	1	1
	CO2	3	1	X	3	2	1	1	1	X	X	1	2	X	2	1
	CO3	2	X	X	2	X	X	X	X	X	X	X	2	2	X	1
	CO4	2	X	1	1	1	1	X	X	X	X	X	2	1	1	2
	CO5	3	1	2	3	X	X	X	1	X	X	2	1	2	1	2
	CO6	2	1	2	2	1	X	1	2	2	2	X	2	1	1	2
PHY301C	**CO1**	3	2	1	2	3	1	1	X	1	1	X	1	1	1	1
	CO2	3	2	2	2	2	1	X	X	1	2	1	2	1	1	1
	CO3	3	2	2	2	1	1	X	1	1	3	1	1	2	1	2
	CO4	3	2	1	1	3	X	X	2	X	1	1	1	2	1	2
	CO5	3	2	1	X	2	X	1	1	X	1	2	2	X	X	X
	CO6	3	2	1	X	1	X	2	X	1	X	2	2	X	X	X
LAB	**CO1**	3	1	2	2	3	2	2	X	1	1	X	1	X	X	2
	CO2	3	1	1	1	1	1	X	1	X	1	1	2	1	1	2
MAT301 A	**CO1**	3	1	2	3	1	X	X	1	X	X	2	X	3	1	2
	CO2	3	X	3	3	2	1	2	3	2	X	2	2	X	1	3
	CO3	2	1	2	2	2	1	3	X	X	X	2	1	1	2	3
	CO4	3	1	3	3	1	X	2	1	1	1	2	2	3	3	3
	CO5	3	2	2	2	X	X	1	X	X	X	3	2	1	2	2
MAT301B	**CO1**	3	1	2	3	1	X	X	1	X	X	2	X	3	1	2

	CO2	3	X	3	3	2	1	2	3	2	X	2	2	X	1	3
	CO3	2	1	2	2	2	1	3	X	X	X	2	1	1	2	3
	CO4	3	1	3	3	1	X	2	1	1	1	2	2	3	3	3
	CO5	3	2	2	2	X	X	1	X	X	X	3	2	1	2	2
	CO6															
MAT301C	**CO1**	3	X	2	3	1	X	1	1	X	X	3	1	2	1	2
	CO2	3	2	2	3	1	X	2	1	2	1	3	X	2	2	2
	CO3	3	X	3	2	2	1	2	1	2	3	3	X	2	2	3
	CO4	2	1	3	3	2	2	2	X	1	1	2	X	2	1	2
	CO5	3	1	2	2	X	1	3	1	2	X	1	1	2	1	1
CS301A	**CO1**	3	X	1	2	X	X	X	3	X	X	X	X	X	X	X
	CO2	X	X	X	X	X	X	X	2	X	X	X	X	X	X	X
	CO3	X	X	X	2	X	X	X	X	X	X	X	X	X	2	2
	CO4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	CO5	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	CO6	1	1	1	1	1	1	X	X	X	X	X	X	X	X	X
CS301B	**CO1**	1	1	2	2	1	X	2	2	X	1	X	X	X	1	1
	CO2	1	1	2	1	2	1	2	2	X	1	3	X	X	1	1
	CO3	1	X	2	1	1	X	2	2	X	1	2	X	X	2	2
	CO4	1	X	2	2	1	X	2	2	X	X	3	X	X	2	2
	CO5	1	1	2	2	1	1	2	2	X	X	3	X	X	2	2
	CO6	1	1	2	1	1	1	2	2	1	1	1	1	1	1	1
ENC301	**CO1**	1	1	2	2	1	X	2	2	X	1	X	X	X	1	1
	CO2	1	1	2	1	2	1	2	2	X	1	3	X	X	1	1
	CO3	1	X	2	1	1	X	2	2	X	1	2	X	X	2	2
	CO4	1	X	2	2	1	X	2	2	X	X	3	X	X	2	2
	CO5	1	1	2	2	1	1	2	2	X	X	3	X	X	2	2

	CO6	1	1	2	1	1	1	2	2	1	1	1	1	1	1	1
Semester IV																
ENG401	**CO1**	3	3	1	1	1	1	2	1	1	2	2	1	3	2	X
	CO2	3	3	1	1	1	1	1	1	1	2	2	1	3	2	X
	CO3	3	3	1	1	1	1	1	1	1	2	2	1	2	2	X
	CO4	3	3	1	1	1	2	1	1	1	2	2	1	2	2	X
	CO5	3	3	1	1	1	1	1	1	1	3	2	1	2	2	X
	CO6	3	3	1	1	3	1	1	1	1	2	2	1	2	2	X
CHM401 A1	**CO1**	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO2	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO3	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO4	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO5	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO6	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
CHM401 A2	**CO1**	2	1	1	1	2	1	1	3	1	1	2	2	X	3	3
	CO2	2	1	1	1	2	1	1	3	1	1	2	2	X	3	3
	CO3	2	1	1	1	2	1	1	3	1	1	2	2	X	3	3
	CO4	2	1	1	1	2	1	1	3	1	1	2	2	X	3	3
	CO5	2	1	1	1	2	1	1	3	1	1	2	2	X	3	3
	CO6	2	1	1	1	2	1	1	3	1	1	2	2	X	3	3
CHM401A3	**CO1**	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO2	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO3	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO4	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO5	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO6	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
PHY401A	**CO1**	3	2	1	2	3	1	1	1	1	1	X	1	2	X	1

	CO2	3	2	X	1	2	2	X	X	X	2	1	2	1	1	1
	CO3	2	3	2	2	1	1	X	1	X	2	1	1	2	X	2
	CO4	2	2	1	1	3	X	X	2	X	1	1	1	2	1	2
	CO5	3	2	1	2	2	X	1	1	X	1	2	1	X	X	X
	CO6	2	2	1	X	1	X	2	X	1	X	2	2	X	1	1
PHY401B	**CO1**	3	2	1	2	3	1	1	X	X	1	X	1	1	1	1
	CO2	3	2	2	2	2	1	X	X	X	2	1	2	1	1	1
	CO3	3	2	2	2	1	1	X	1	X	2	1	1	2	X	2
	CO4	2	2	1	1	3	X	X	2	X	1	1	1	2	X	2
	CO5	3	2	1	2	2	X	1	1	X	1	2	1	X	X	X
	CO6	3	2	1	X	1	X	2	X	1	X	2	2	X	X	X
PHY401C	**CO1**	3	2	1	2	3	1	1	X	X	1	X	1	1	1	1
	CO2	3	2	2	2	2	1	X	X	X	2	1	2	1	1	1
	CO3	3	2	2	2	1	1	X	1	X	2	1	1	2	X	2
	CO4	3	2	1	1	3	X	X	2	X	1	1	1	2	X	2
	CO5	3	2	1	X	2	X	1	1	X	1	2	2	X	X	X
	CO6	3	2	1	X	1	X	2	X	1	X	2	2	X	X	X
LAB	**CO1**	3	1	2	2	3	2	2	X	1	1	X	1	X	X	2
	CO2	3	1	1	1	1	1	X	1	X	1	1	2	1	1	2
MAT401 A	**CO1**	3	X	1	2	1	X	2	X	2	x	3	2	2	1	1
	CO2	3	X	2	3	2	X	2	1	1	X	2	2	1	2	1
	CO3	3	X	1	2	1	X	2	X	2	X	3	2	2	1	1
	CO4	2	X	1	2	1	1	3	X	2	X	2	2	2	X	2
	CO5	3	1	X	3	X	1	2	1	2	X	3	1	2	1	2
	CO6	3	X	1	2	1	X	2	X	2	x	3	2	2	1	1
MAT401B	**CO1**	3	X	1	2	1	X	2	X	2	x	3	2	2	1	1
	CO2	3	X	2	3	2	X	2	1	1	X	2	2	1	2	1

	CO3	3	X	1	2	1	X	2	X	2	X	3	2	2	1	1
	CO4	2	X	1	2	1	1	3	X	2	X	2	2	2	X	2
	CO5	3	1	X	3	X	1	2	1	2	X	3	1	2	1	2
	CO6	3	X	1	2	1	X	2	X	2	x	3	2	2	1	1
MAT401C	**CO1**	3	X	2	3	1	X	1	1	X	X	3	1	2	1	2
	CO2	3	2	2	3	1	X	2	1	2	1	3	X	2	2	2
	CO3	3	X	3	2	2	1	2	1	2	3	3	X	2	2	3
	CO4	2	1	3	3	2	2	2	X	1	1	2	X	2	1	2
	CO5	3	1	2	2	X	1	3	1	2	X	1	1	2	1	1
	CO6	3	X	2	3	1	X	1	1	X	X	3	1	2	1	2
CS401A	**CO1**	1	X	X	X	X	1	X	X	1	1	X	1	1	1	X
	CO2	X	2	1	X	X	X	X	X	1	1	X	X	X	X	X
	CO3	X	1	1	X	X	X	X	X	1	1	X	1	1	1	X
	CO4	X	X	1	1	X	X	1	X	X	1	1	X	X	1	X
	CO5	X	X	X	X	1	1	X	X	1	1	X	X	1	X	X
	CO6	1	X	X	X	X	1	X	X	1	1	X	1	1	1	X
CS401B	**CO1**	1	X	X	X	1	1	X	X	1	1	X	1	1	1	X
	CO2	X	1	1	X	X	X	X	X	1	1	X	X	X	X	X
	CO3	X	1	1	X	X	X	X	X	1	X	X	1	1	1	X
	CO4	X	X	1	1	X	X	1	X	X	1	1	X	X	X	X
	CO5	X	X	X	X	1	1	X	X	1	1	X	X	1	X	X
	CO6	1	X	X	X	1	1	X	X	1	1	X	1	1	1	X
CS401L	**CO1**	1	X	X	X	1	1	X	X	1	1	X	1	1	1	X
	CO2	X	2	1	X	X	X	X	X	1	1	X	X	X	X	X
	CO3	X	1	1	X	X	X	X	X	1	X	X	1	1	1	X
	CO4	X	X	1	1	X	X	1	X	X	1	1	X	X	1	X
	CO5	X	X	X	X	1	1	X	X	1	1	X	X	1	X	X

	CO6	1	X	X	X	1	1	X	X	1	1	X	1	1	1	X
ENC401	**CO1**	1	2	2	2	1	3	1	3	3	3	3	2	2	1	3
	CO2	1	2	2	3	3	2	2	2	2	2	3	2	2	3	1
	CO3	1	2	3	2	2	2	1	1	2	2	1	3	2	3	2
	CO4	3	2	1	2	2	2	3	3	2	2	3	1	1	2	1
	CO5	3	2	3	2	2	3	2	2	2	2	1	2	X	2	3
	CO6	2	1	2	2	1	2	1	3	3	2	1	2	2	3	2
Semester V																
CHM501 A1	**CO1**	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	CO2	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	CO3	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	CO4	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	CO5	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
	CO6	2	2	1	1	1	1	1	1	1	1	1	1	X	2	2
CHM501 A2	**CO1**	3	2	1	1	1	1	2	1	1	1	1	1	X	1	1
	CO2	3	2	1	1	1	1	2	1	1	1	1	1	X	1	1
	CO3	3	2	1	1	1	1	2	1	1	1	1	1	X	1	1
	CO4	3	2	1	1	1	1	2	1	1	1	1	1	X	1	1
	CO5	3	2	1	1	1	1	2	1	1	1	1	1	X	1	1
	CO6	3	2	1	1	1	1	2	1	1	1	1	1	X	1	1
CHM5 01A3	**CO1**	2	1	2	2	2	x	1	1	1	x	1	x	x	2	2
	CO2	1	2	1	2	1	X	1	2	X	X	X	X	X	2	2
	CO3	3	1	1	2	1	1	1	1	X	X	X	X	X	1	1
	CO4	1	1	1	1	1	X	X	X	1	X	X	X	X	2	1
	CO5	2	2	2	2	1	1	1	2	x	1	1	x	x	2	2
	CO6	2	2	2	2	1	1	1	2	x	1	1	x	x	2	2
PHY501A	**CO1**	3	1	1	2	X	X	X	X	1	X	1	1	1	X	1

	CO2	2	1	2	2	X	1	X	X	1	X	X	1	1	1	1
	CO3	3	1	2	1	3	2	2	1	1	2	1	3	2	2	3
	CO4	1	1	X	X	X	1	X	X	X	X	X	1	2	X	1
	CO5	1	1	1	X	1	1	X	X	X	1	X	1	1	1	2
	CO6	2	1	X	1	2	X	1	1	X	1	1	2	1	2	3
PHY501B	**CO1**	3	1	2	3	3	1	1	X	1	1	X	1	X	X	1
	CO2	3	1	1	1	1	2	3	1	2	1	1	2	1	1	2
	CO3	2	1	1	1	2	2	2	1	1	2	1	2	X	X	3
	CO4	1	1	2	1	1	2	1	X	1	2	1	2	1	1	2
	CO5	2	1	1	2	1	1	2	2	2	2	X	2	X	X	3
	CO6	1	1	2	1	X	2	1	2	1	1	1	1	X	X	2
PHY501C	**CO1**	3	X	1	3	2	1	2	1	X	X	3	X	X	X	1
	CO2	2	X	1	3	1	2	1	1	1	X	X	1	X	X	2
	CO3	1	1	X	1	X	X	2	1	2	X	X	X	X	2	2
	CO4	3	2	X	1	X	X	2	X	X	X	3	X	1	X	1
	CO5	X	1	1	3	2	1	X	X	X	1	X	2	X	X	X
	CO6	1	X	2	1	3	1	X	2	X	1	X	2	X	2	4
LAB	**CO1**	3	1	2	2	3	2	2	X	1	1	X	1	X	X	2
	CO2	3	2	1	1	1	1	X	1	X	1	1	2	1	1	2
MAT501 A	**CO1**	3	X	3	3	3	1	1	X	1	3	3	X	3	2	2
	CO2	2	X	2	3	3	1	1	X	1	2	3	X	3	2	2
	CO3	3	1	3	3	2	X	1	1	2	3	2	1	1	2	2
	CO4	3	1	3	3	2	X	1	X	1	1	2	2	2	3	2
	CO5	3	1	2	3	1	1	2	2	1	1	2	3	3	3	3
	CO6	3	X	3	3	3	1	1	X	1	3	3	X	3	2	2
MAT501B	**CO1**	3	1	3	3	2	X	1	X	1	1	2	2	2	3	2
	CO2	3	1	3	3	2	X	1	1	2	3	2	1	1	2	2

	CO3	2	X	2	3	3	1	1	X	1	2	3	X	3	2	2
	CO4	3	X	3	3	3	1	1	X	1	3	3	X	3	2	2
	CO5	3	1	2	3	1	1	2	2	1	1	2	3	3	3	3
	CO6	3	1	3	3	2	X	1	X	1	1	2	2	2	3	2
MAT501C	**CO1**	1	X	X	X	1	1	X	X	1	1	X	1	1	1	X
	CO2	X	2	1	X	X	X	X	X	1	1	X	X	X	X	X
	CO3	X	1	1	X	X	X	X	X	1	X	X	1	1	1	X
	CO4	X	X	1	1	X	X	1	X	X	1	1	X	X	1	X
	CO5	X	X	X	X	1	1	X	X	1	1	X	X	1	X	X
	CO6	1	X	X	X	1	1	X	X	1	1	X	1	1	1	X
CS501A	**CO1**	1	X	X	X	1	1	X	X	1	1	X	1	1	1	X
	CO2	X	2	1	X	X	X	X	X	1	1	X	X	X	X	X
	CO3	X	1	1	X	X	X	X	X	1	X	X	1	1	1	X
	CO4	X	X	1	1	X	X	1	X	X	1	1	X	X	1	X
	CO5	X	X	X	X	1	1	X	X	1	1	X	X	1	X	X
	CO6	1	X	X	X	1	1	X	X	1	1	X	1	1	1	X
CS501B	**CO1**	1	X	X	X	1	1	X	X	1	1	X	1	1	1	X
	CO2	X	2	1	X	X	X	X	X	1	1	X	X	X	X	X
	CO3	X	1	1	X	X	X	X	X	1	X	X	1	1	1	X
	CO4	X	X	1	1	X	X	1	X	X	1	1	X	X	1	X
	CO5	X	X	X	X	1	1	X	X	1	1	X	X	1	X	X
	CO6	1	X	X	X	1	1	X	X	1	1	X	1	1	1	X
ENC501	**CO1**	2	2	1	3	3	3	2	3	1	3	1	2	3	1	2
	CO2	3	2	2	2	1	3	3	2	2	2	2	2	2	3	3
	CO3	2	3	3	2	X	3	1	1	2	2	2	1	2	2	3
	CO4	2	2	1	2	2	2	3	2	2	2	2	1	1	2	2
	CO5	3	3	3	3	2	2	X	2	2	2	3	2	3	2	1

	CO6	3	X	2	2	3	2	2	2	3	3	2	3	1	3	1
Semester VI																
CHM601 A1	**CO1**	3	1	1	1	1	1	2	2	1	1	2	2	x	3	3
	CO2	3	1	1	1	1	1	2	2	1	1	2	2	x	3	3
	CO3	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO4	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO5	3	1	1	1	1	1	2	2	1	1	2	2	x	3	3
	CO6	3	1	1	1	1	1	2	2	1	1	2	2	x	3	3
CHM601 A2	**CO1**	3	1	1	1	1	1	2	2	1	1	2	2	x	3	3
	CO2	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO3	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO4	3	1	1	1	1	1	2	2	1	1	2	2	x	3	3
	CO5	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
	CO6	3	1	1	1	1	1	2	2	1	1	2	2	X	3	3
CHM6 01A3	**CO1**	2	1	1	2	1	1	2	2	1	1	2	2	x	2	3
	CO2	2	1	1	2	1	1	2	2	1	1	2	2	x	2	3
	CO3	2	1	1	2	1	1	2	2	1	1	2	2	X	2	3
	CO4	2	1	1	2	1	1	2	2	1	1	2	2	X	2	3
	CO5	2	1	1	2	1	1	2	2	1	1	2	2	x	2	3
	CO6	2	1	1	2	1	1	2	2	1	1	2	2	x	2	3
PHY601A	**CO1**	3	2	2	1	1	1	X	1	1	1	X	X	X	1	1
	CO2	3	2	2	1	1	1	1	1	2	2	X	X	X	1	X
	CO3	3	2	3	2	1	1	1	1	1	2	X	1	X	2	1
	CO4	3	2	2	1	2	1	X	1	1	1	X	X	X	1	1
	CO5	3	2	2	2	3	2	2	2	2	3	X	1	X	2	3
	CO6	3	2	1	2	1	2	2	2	2	2	1	2	X	2	3
PHY601B	**CO1**	3	2	1	2	2	2	2	1	2	2	X	1	X	2	2

	CO2	3	2	2	3	2	1	2	1	2	2	X	1	X	2	2
	CO3	3	2	1	2	2	1	1	1	1	2	X	1	X	2	2
	CO4	3	2	2	2	2	X	2	2	2	2	X	1	X	2	2
	CO5	3	2	1	2	2	1	2	1	2	2	X	1	X	2	2
	CO6	3	2	1	2	2	X	1	2	2	2	X	1	X	2	2
PHY601C	**CO1**	3	2	1	2	2	2	2	1	2	2	X	1	X	2	2
	CO2	3	2	2	3	2	1	2	1	2	2	X	1	X	2	2
	CO3	3	2	1	2	2	1	1	1	1	2	X	1	X	2	2
	CO4	3	2	2	3	2	X	2	2	2	2	X	1	X	2	2
	CO5	3	2	1	2	2	1	2	1	2	2	X	1	X	2	2
	CO6	3	2	1	2	2	X	1	2	2	2	X	1	X	2	2
LAB	**CO1**	3	1	2	2	3	2	2	X	1	1	X	1	X	X	2
	CO2	3	1	1	1	1	1	X	1	X	1	1	2	1	1	2
MAT601 A	**CO1**	3	1	2	2	3	1	1	2	X	3	2	X	X	3	2
	CO2	3	1	2	3	3	2	2	2	X	3	2	X	X	2	2
	CO3	3	1	2	3	3	1	2	2	X	3	2	X	X	3	2
	CO4	3	1	2	3	3	1	2	2	X	3	2	X	X	3	2
	CO5	3	1	2	3	3	2	2	2	X	3	2	X	X	2	2
	CO6	3	1	2	2	3	1	1	2	X	3	2	X	X	3	2
MAT601B	**CO1**	3	1	2	2	X	1	3	1	2	X	1	1	2	1	1
	CO2	3	X	2	3	1	X	1	1	X	X	3	1	2	1	2
	CO3	3	2	2	3	1	X	2	1	2	1	3	X	2	2	2
	CO4	2	1	3	3	2	2	2	X	1	1	2	X	2	1	2
	CO5	3	X	3	2	2	1	2	1	2	3	3	X	2	2	3
	CO6	3	1	2	2	X	1	3	1	2	X	1	1	2	1	1
MAT601 C	**CO1**	3	1	2	2	X	1	3	1	2	X	1	1	2	1	1
	CO2	3	X	2	3	1	X	1	1	X	X	3	1	2	1	2

	CO3	3	2	2	3	1	X	2	1	2	1	3	X	2	2	2
	CO4	2	1	3	3	2	2	2	X	1	1	2	X	2	1	2
	CO5	3	X	3	2	2	1	2	1	2	3	3	X	2	2	3
	CO6	3	1	2	2	X	1	3	1	2	X	1	1	2	1	1
CS601A	**CO1**	1	X	X	X	1	1	X	X	1	1	X	1	1	1	X
	CO2	X	2	1	X	X	X	X	X	1	1	X	X	X	X	X
	CO3	X	1	1	X	X	X	X	X	1	X	X	1	1	1	X
	CO4	X	X	1	1	X	X	1	X	X	1	1	X	X	1	X
	CO5	X	X	X	X	1	1	X	X	1	1	X	X	1	X	X
	CO6	1	X	X	X	1	1	X	X	1	1	X	1	1	1	X
CS601B	**CO1**	1	X	X	X	1	1	X	X	1	1	X	1	1	1	X
	CO2	X	2	1	X	X	X	X	X	1	1	X	X	X	X	X
	CO3	X	1	1	X	X	X	X	X	1	X	X	1	1	1	X
	CO4	X	X	1	1	X	X	1	X	X	1	1	X	X	1	X
	CO5	X	X	X	X	1	1	X	X	1	1	X	X	1	X	X
	CO6	1	X	X	X	1	1	X	X	1	1	X	1	1	1	X
CS601L	**CO1**	1	X	X	X	1	1	X	X	1	1	X	1	1	1	X
	CO2	X	2	1	X	X	X	X	X	1	1	X	X	X	X	X
	CO3	X	1	1	X	X	X	X	X	1	X	X	1	1	1	X
	CO4	X	X	1	1	X	X	1	X	X	1	1	X	X	1	X
	CO5	X	X	X	X	1	1	X	X	1	1	X	X	1	X	X
	CO6	1	X	X	X	1	1	X	X	1	1	X	1	1	1	X
ENC601	**CO1**	3	2	1	3	2	3	2	1	1	3	1	2	3	1	2
	CO2	1	2	2	2	1	3	3	2	2	2	2	3	2	3	3
	CO3	2	3	3	2	2	3	1	1	2	2	2	1	2	2	3
	CO4	1	2	1	2	2	2	3	3	2	2	2	1	1	2	2
	CO5	3	3	3	3	2	2	3	2	2	2	3	2	3	2	1

	CO6	3	2	2	2	3	2	2	2	3	3	2	3	2	3	2

Mapping of Course Outcomes (COs) with Programme Specific Outcomes(PSOs)

College code	Course Out-comes	PSO 1	PSO 2	PSO 3	PSO 4	PSO 5	PSO 6	PSO 7	PSO 8
PBC101	**CO1**	1	2	3	2	1	2	1	x
	CO2	2	1	1	2	x	1	2	1
	CO3	x	1	2	3	2	1	1	2
	CO4	1	2	1	3	1	1	2	x
	CO5	2	X	1	2	1	1	3	2
	CO6	1	2	1	3	1	1	2	x
HCP101	**CO1**	1	2	3	2	1	2	1	x
	CO2	2	1	1	2	x	1	2	1
	CO3	x	1	2	3	2	1	1	2
	CO4	1	2	1	3	1	1	2	x
	CO5	2	X	1	2	1	1	3	2
	CO6	1	2	1	3	1	1	2	x
CHM101A1	**CO1**	3	X	X	3	2	X	3	3
	CO2	3	X	X	3	2	X	3	3
	CO3	3	X	X	3	2	X	3	3
	CO4	3	X	X	3	2	X	3	3
	CO5	3	X	X	3	2	X	3	3
	CO6	3	X	X	3	2	X	3	3
CHM101A2	**CO1**	3	X	X	3	2	X	3	3
	CO2	3	X	X	3	2	X	3	3
	CO3	3	X	X	3	2	X	3	3
	CO4	3	X	X	3	2	X	3	3

	CO5	3	X	X	3	2	X	3	3
	CO6	3	X	X	3	2	X	3	3
CHM101A3	**CO1**	3	3	X	X	1	1	X	1
	CO2	3	2	X	X	2	1	X	2
	CO3	3	2	X	X	2	1	X	3
	CO4	3	2	X	X	2	X	X	2
	CO5	3	2	1	X	2	X	X	2
	CO6	3	1	X	X	1	X	X	1
PHY101A	**CO1**	3	3	X	X	1	1	X	1
	CO2	3	2	X	X	2	1	X	2
	CO3	3	2	X	X	2	1	X	3
	CO4	3	2	X	X	2	X	X	2
	CO5	3	2	1	X	2	X	X	2
	CO6	3	1	X	X	1	X	X	1
PHY101B	**CO1**	3	3	X	X	1	1	X	1
	CO2	3	2	X	X	2	1	X	2
	CO3	3	2	X	X	2	1	X	3
	CO4	3	2	X	X	2	X	X	2
	CO5	3	2	1	X	2	X	X	2
	CO6	3	1	X	X	1	X	X	1
PHY101C	**CO1**	3	3	X	X	1	1	X	1
	CO2	3	2	X	X	2	1	X	2
	CO3	3	2	X	X	2	1	X	3
	CO4	3	2	X	X	2	X	X	2
	CO5	3	2	1	X	2	X	X	2
	CO6	3	1	X	X	1	X	X	1
LAB	**CO1**	3	2	1	X	3	X	X	2

	CO2	3	1	X	X	2	X	X	1
MAT101A	**CO1**	3	3	2	3	2	1	2	X
	CO2	3	2	2	2	1	3	X	1
	CO3	3	2	3	1	2	2	2	2
	CO4	2	1	2	1	3	X	2	2
	CO5	1	2	1	X	2	X	2	2
MAT101B	**CO1**	2	1	2	X	2	1	1	2
	CO2	1	2	2	1	2	1	2	1
	CO3	1	2	1	X	2	X	X	1
	CO4	3	3	2	2	2	2	2	2
	CO5	3	2	2	1	1	X	1	1
MAT101C	**CO1**	2	1	2	X	2	1	1	2
	CO2	1	2	2	1	2	1	2	1
	CO3	1	2	1	X	2	X	X	1
	CO4	3	3	2	2	2	2	2	2
	CO5	3	2	2	1	1	X	1	1
CS101A	**CO1**	X	X	X	X	3	X	X	X
	CO2	X	X	X	X	3	X	X	X
	CO3	X	X	X	X	3	X	X	X
	CO4	X	X	X	X	3	X	X	X
	CO5	X	X	X	X	3	X	X	X
CS101B	**CO1**	1	1	X	X	1	X	1	1
	CO2	1	1	X	X	2	1	1	1
	CO3	1	1	X	X	1	1	1	1
	CO4	1	X	X	X	1	1	1	1
	CO5	1	X	X	X	1	X	1	1
CS101L	**CO1**	1	1	X	X	1	X	1	1

	CO2	1	1	X	X	2	1	1	1
	CO3	1	1	X	X	1	1	1	1
	CO4	1	X	X	X	1	1	1	1
	CO5	1	X	X	X	1	X	1	1
ENC101	**CO1**	3	X	1	2	3	X	3	3
	CO2	2	X	2	1	3	X	3	3
	CO3	1	1	2	1	1	X	3	3
	CO4	1	1	3	1	1	X	3	3
	CO5	2	X	2	1	3	X	3	3
	CO6	1	1	2	1	1	X	3	3
PBC201	**CO1**	1	2	3	2	1	2	1	x
	CO2	2	1	1	2	x	1	2	1
	CO3	x	1	2	3	2	1	1	2
	CO4	1	2	1	3	1	1	2	x
	CO5	2	X	1	2	1	1	3	2
	CO6	1	2	1	3	1	1	2	x
HCP201	**CO1**	3	X	1	2	3	X	3	3
	CO2	2	X	2	1	3	X	3	3
	CO3	1	1	2	1	1	X	3	3
	CO4	1	1	3	1	1	X	3	3
	CO5	2	X	2	1	3	X	3	3
	CO6	1	1	2	1	1	X	3	3
CHM201A1	**CO1**	3	X	X	3	2	X	3	3
	CO2	3	X	X	3	2	X	3	3
	CO3	3	X	X	3	2	X	3	3
	CO4	3	X	X	3	2	X	3	3
	CO5	3	X	X	3	2	X	3	3

	CO6	3	X	X	3	2	X	3	3
CHM201A2	**CO1**	3	X	X	3	2	X	3	3
	CO2	3	X	X	3	2	X	3	3
	CO3	3	X	X	3	2	X	3	3
	CO4	3	X	X	3	2	X	3	3
	CO5	3	X	X	3	2	X	3	3
	CO6	3	X	X	3	2	X	3	3
CHM201A3	**CO1**	3	X	X	3	2	x	3	3
	CO2	3	X	X	3	2	X	3	3
	CO3	3	X	X	3	2	X	3	3
	CO4	3	X	X	3	2	X	3	3
	CO5	3	X	X	3	2	X	3	3
	CO6	3	X	X	3	2	X	3	3
PHY201A	**CO1**	3	2	1	2	1	1	2	1
	CO2	3	2	1	2	1	2	1	X
	CO3	3	2	2	2	1	X	1	X
	CO4	3	2	2	2	1	X	1	X
	CO5	3	2	1	2	1	X	1	X
	CO6	3	2	1	2	1	X	X	X
PHY201B	**CO1**	3	2	1	2	1	1	2	1
	CO2	3	2	1	2	1	2	1	X
	CO3	3	2	2	1	1	1	X	1
	CO4	3	2	2	2	1	X	1	X
	CO5	3	2	1	2	1	X	1	X
	CO6	3	2	2	2	1	X	X	X
PHY201C	**CO1**	2	2	1	X	1	X	1	1
	CO2	3	2	1	X	2	X	X	1

	CO3	2	1	X	X	X	X	X	1
	CO4	3	2	1	1	2	X	2	2
	CO5	2	1	2	1	1	X	X	1
	CO6	2	2	1	1	2	X	X	1
LAB	**CO1**	3	2	1	X	3	X	X	2
	CO2	3	1	X	X	2	X	X	1
MAT201A	**CO1**	2	1	2	1	3	X	2	2
	CO2	1	2	1	X	2	X	2	2
	CO3	3	2	3	1	2	2	2	2
	CO4	3	3	2	3	2	1	2	X
	CO5	3	2	2	2	1	3	X	1
MAT201B	**CO1**	2	1	2	X	2	1	1	2
	CO2	1	2	2	1	2	1	2	1
	CO3	1	2	1	X	2	X	X	1
	CO4	3	3	2	2	2	2	2	2
	CO5	3	2	2	1	1	X	1	1
MAT201C	**CO1**	1	1	X	X	1	X	1	1
	CO2	1	1	X	X	2	1	1	1
	CO3	1	1	X	X	1	1	1	1
	CO4	1	X	X	X	1	1	1	1
	CO5	1	X	X	X	1	X	1	1
	CO6	1	1	X	X	1	X	1	1
CS201A	**CO1**	1	1	X	X	1	X	1	1
	CO2	1	1	X	X	2	1	1	1
	CO3	1	1	X	X	1	1	1	1
	CO4	1	X	X	X	1	1	1	1
	CO5	1	X	X	X	1	X	1	1

	CO6	1	1	X	X	1	X	1	1
CS201B	**CO1**	1	1	X	X	1	X	1	1
	CO2	1	1	X	X	2	1	1	1
	CO3	1	1	X	X	1	1	1	1
	CO4	1	X	X	X	1	1	1	1
	CO5	1	X	X	X	1	X	1	1
ENC201	**CO1**	2	2	1	2	3	2	3	3
	CO2	2	2	2	1	3	X	3	1
	CO3	1	1	2	1	1	2	1	3
	CO4	3	1	3	1	1	X	3	3
	CO5	3	1	2	1	1	3	3	1
	CO6	1	1	2	1	2	X	3	3
ENG301	**CO1**	X	X	X	X	X	X	2	X
	CO2	X	X	X	X	X	X	2	X
	CO3	X	X	X	X	X	X	2	1
	CO4	X	X	X	X	X	X	2	1
	CO5	X	X	X	X	X	X	3	1
	CO6	X	X	X	X	X	X	2	1
CHM301A1	**CO1**	3	X	X	3	2	X	3	3
	CO2	3	X	X	3	2	X	3	3
	CO3	3	X	X	3	2	X	3	3
	CO4	3	X	X	3	2	X	3	3
	CO5	3	X	X	3	2	X	3	3
	CO6	3	X	X	3	2	X	3	3
CHM301A2	**CO1**	3	X	X	3	2	X	3	3
	CO2	3	X	X	3	2	X	3	3
	CO3	3	X	X	3	2	X	3	3

	CO4	3	X	X	3	2	X	3	3
	CO5	3	X	X	3	2	X	3	3
	CO6	3	X	X	3	2	X	3	3
CHM301A3	**CO1**	3	X	X	3	2	X	3	3
	CO2	3	X	X	3	2	X	3	3
	CO3	3	X	X	3	2	X	3	3
	CO4	3	X	X	3	2	X	3	3
	CO5	3	x	x	3	2	x	3	3
	CO6	3	x	x	3	2	x	3	3
PHY301A	**CO1**	3	3	X	X	1	1	X	1
	CO2	3	2	X	X	2	X	X	2
	CO3	3	2	X	X	2	X	X	3
	CO4	3	2	X	X	2	X	X	2
	CO5	3	2	1	X	2	X	X	2
	CO6	3	1	X	X	1	X	X	1
PHY301B	**CO1**	3	2	2	X	1	X	2	3
	CO2	2	2	3	1	2	X	X	2
	CO3	3	2	2	X	2	X	2	3
	CO4	2	2	2	1	X	X	X	2
	CO5	3	3	2	X	1	X	1	2
	CO6	2	1	1	2	2	X	X	1
PHY301C	**CO1**	3	2	1	1	1	1	1	1
	CO2	3	2	1	1	1	1	1	1
	CO3	3	2	1	1	1	X	X	1
	CO4	3	2	X	1	2	X	X	X
	CO5	3	2	2	2	2	X	X	X
	CO6	3	2	2	2	1	X	X	X

LAB	**CO1**	3	2	1	X	1	X	X	2
	CO2	2	1	1	X	2	X	X	1
MAT301A	**CO1**	3	2	3	1	2	2	2	2
	CO2	3	3	2	3	2	1	2	X
	CO3	2	1	2	1	3	X	2	2
	CO4	3	2	2	2	1	3	X	1
	CO5	1	2	1	X	2	X	2	2
MAT301B	**CO1**	3	2	3	1	2	2	2	2
	CO2	3	3	2	3	2	1	2	X
	CO3	2	1	2	1	3	X	2	2
	CO4	3	2	2	2	1	3	X	1
	CO5	1	2	1	X	2	X	2	2
MAT301C	**CO1**	3	3	3	1	3	2	1	2
	CO2	3	2	2	1	2	X	2	2
	CO3	3	2	3	2	1	2	3	3
	CO4	2	3	3	3	3	X	3	2
	CO5	2	2	2	3	2	1	1	1
CS301A	**CO1**	X	X	X	X	3	X	X	X
	CO2	X	X	X	X	3	X	X	X
	CO3	X	X	X	X	3	X	X	X
	CO4	X	X	X	X	3	X	X	X
	CO5	X	X	X	X	3	X	X	X
	CO6	X	X	X	X	3	X	X	X
CS301B	**CO1**	1	1	X	X	1	X	1	1
	CO2	1	1	X	X	2	1	1	1
	CO3	1	1	X	X	1	1	1	1
	CO4	1	X	X	X	1	1	1	1

	CO5	1	X	X	X	1	X	1	1
	CO6	1	1	X	X	1	X	1	1
ENC301	**CO1**	1	1	X	X	1	X	1	1
	CO2	1	1	X	X	2	1	1	1
	CO3	1	1	X	X	1	1	1	1
	CO4	1	X	X	X	1	1	1	1
	CO5	1	X	X	X	1	X	1	1
	CO6	1	1	X	X	1	X	1	1
ENG401	**CO1**	X	X	X	X	X	X	2	X
	CO2	X	X	X	X	X	X	2	X
	CO3	X	X	X	X	X	X	2	1
	CO4	X	X	X	X	X	X	2	1
	CO5	X	X	X	X	X	X	3	1
	CO6	X	X	X	X	X	X	2	1
CHM401A1	**CO1**	3	X	X	3	2	X	3	3
	CO2	3	X	X	3	2	X	3	3
	CO3	3	X	X	3	2	X	3	3
	CO4	3	X	X	3	2	X	3	3
	CO5	3	X	X	3	2	X	3	3
	CO6	3	X	X	3	2	X	3	3
CHM1401A2	**CO1**	3	X	X	3	2	X	3	3
	CO2	3	X	X	3	2	X	3	3
	CO3	3	X	X	3	2	X	3	3
	CO4	3	X	X	3	2	X	3	3
	CO5	3	X	X	3	2	X	3	3
	CO6	3	X	X	3	2	X	3	3
CHM401A3	**CO1**	3	X	x	3	2	X	3	3

	CO2	3	X	X	3	2	X	3	3
	CO3	3	X	X	3	2	X	3	3
	CO4	3	X	X	3	2	X	3	3
	CO5	3	X	X	3	2	X	3	3
	CO6	3	X	X	3	2	X	3	3
PHY401A	**CO1**	3	2	1	1	1	1	1	1
	CO2	3	2	2	2	2	1	1	1
	CO3	3	2	1	1	1	X	X	1
	CO4	3	1	X	1	2	1	1	X
	CO5	3	2	2	2	2	X	X	X
	CO6	3	2	2	2	1	X	X	1
PHY401B	**CO1**	3	2	1	1	1	1	1	1
	CO2	3	2	1	1	1	1	2	1
	CO3	3	2	1	1	1	X	X	1
	CO4	3	2	X	1	2	X	X	X
	CO5	3	2	2	2	2	X	X	X
	CO6	3	2	2	2	1	X	X	X
PHY401C	**CO1**	3	2	1	1	1	1	1	1
	CO2	3	2	1	1	1	1	1	1
	CO3	3	2	1	1	1	X	X	1
	CO4	3	2	X	1	2	X	X	X
	CO5	3	2	2	2	2	X	X	X
	CO6	3	2	2	2	1	X	X	X
LAB	**CO1**	3	2	1	X	1	X	X	2
	CO2	2	1	1	X	2	X	X	1
MAT401A	**CO1**	3	2	2	X	2	1	1	3
	CO2	2	2	3	1	2	1	3	2

	CO3	3	2	2	X	2	1	1	3
	CO4	2	2	2	1	3	2	2	2
	CO5	3	3	2	2	1	X	X	2
	CO6	3	2	2	X	2	1	1	3
MAT401B	**CO1**	3	2	2	X	2	1	1	3
	CO2	2	2	3	1	2	1	3	2
	CO3	3	2	2	X	2	1	1	3
	CO4	2	2	2	1	3	2	2	2
	CO5	3	3	2	2	1	X	X	2
	CO6	3	2	2	X	2	1	1	3
MAT401C	**CO1**	3	3	3	1	3	2	1	2
	CO2	3	2	2	1	2	X	2	2
	CO3	3	2	3	2	1	2	3	3
	CO4	2	3	3	3	3	X	3	2
	CO5	2	2	2	3	2	1	1	1
	CO6	3	3	3	1	3	2	1	2
CS401A	**CO1**	X	X	X	X	X	X	X	X
	CO2	X	X	X	X	X	1	X	X
	CO3	X	X	X	X	1	1	X	X
	CO4	X	X	X	X	1	1	X	X
	CO5	X	X	X	X	1	1	X	X
	CO6	X	X	X	X	X	X	X	X
CS401B	**CO1**	X	X	X	X	X	X	X	X
	CO2	X	X	X	X	1	1	X	X
	CO3	X	X	X	X	1	1	X	X
	CO4	X	X	X	X	1	1	X	X
	CO5	X	X	X	X	1	1	X	X

	CO6	X	X	X	X	X	X	X	X
CS401L	**CO1**	X	X	X	X	X	X	X	X
	CO2	X	X	X	X	1	1	X	X
	CO3	X	X	X	X	1	1	X	X
	CO4	X	X	X	X	1	1	X	X
	CO5	X	X	X	X	1	1	X	X
	CO6	X	X	X	X	X	X	X	X
ENC401	**CO1**	2	3	1	2	3	1	3	3
	CO2	2	2	2	1	3	1	3	1
	CO3	3	3	2	2	1	2	3	2
	CO4	2	1	2	1	1	2	3	3
	CO5	3	3	2	3	1	1	3	3
	CO6	3	1	2	1	2	2	3	2
CHM501A1	**CO1**	3	X	X	3	2	2	3	3
	CO2	3	X	X	3	2	2	3	3
	CO3	3	X	X	3	2	2	3	3
	CO4	3	X	X	3	2	2	3	3
	CO5	3	X	X	3	2	2	3	3
	CO6	3	X	X	3	2	2	3	3
CHM501A2	**CO1**	3	X	X	3	2	X	3	3
	CO2	3	X	X	3	2	X	3	3
	CO3	3	X	X	3	2	X	3	3
	CO4	3	X	X	3	2	X	3	3
	CO5	3	X	X	3	2	X	3	3
	CO6	3	X	X	3	2	X	3	3
CHM501A3	**CO1**	3	X	X	3	2	X	X	3
	CO2	3	X	X	3	2	X	3	3

	CO3	3	X	X	3	2	X	3	3
	CO4	3	X	X	3	2	X	X	3
	CO5	3	X	X	3	2	X	3	3
	CO6	3	X	X	3	2	X	3	3
PHY501A	**CO1**	3	2	1	X	1	X	X	2
	CO2	2	1	1	X	2	X	X	1
	CO3	3	2	X	X	3	X	X	3
	CO4	3	1	1	1	X	X	X	1
	CO5	3	2	X	X	1	X	X	1
	CO6	3	1	X	X	2	X	X	2
PHY501B	**CO1**	3	3	X	X	1	1	X	1
	CO2	3	2	X	X	2	X	X	2
	CO3	3	2	X	X	2	X	X	3
	CO4	3	2	X	X	2	X	X	2
	CO5	3	2	1	X	2	X	X	2
	CO6	3	1	X	X	1	X	X	1
PHY501C	**CO1**	2	1	2	X	2	1	1	2
	CO2	1	2	2	1	2	1	2	1
	CO3	1	2	1	X	2	X	X	1
	CO4	3	3	2	2	2	2	2	2
	CO5	3	2	2	1	1	X	1	1
	CO6	3	2	X	1	1	X	1	1
LAB	**CO1**	3	2	1	X	1	X	X	2
	CO2	2	1	1	X	2	X	X	1
MAT501A	**CO1**	3	X	3	3	3	1	1	X
	CO2	2	X	2	3	3	1	1	X
	CO3	3	1	3	3	2	X	1	1

	CO4	3	1	3	3	2	X	1	X
	CO5	3	1	2	3	1	1	2	2
	CO6	3	X	3	3	3	1	1	X
MAT501B	**CO1**	2	3	2	2	2	2	2	2
	CO2	2	2	3	1	2	2	2	2
	CO3	3	2	3	2	3	1	3	2
	CO4	3	3	3	2	3	1	3	3
	CO5	2	2	2	2	2	2	2	2
	CO6	2	3	2	2	2	2	2	2
MAT501C	**CO1**	X	X	X	X	X	X	X	X
	CO2	X	X	X	X	1	1	X	X
	CO3	X	X	X	X	1	1	X	X
	CO4	X	X	X	X	1	1	X	X
	CO5	X	X	X	X	1	1	X	X
	CO6	X	X	X	X	X	X	X	X
CS501A	**CO1**	X	X	X	X	X	X	X	X
	CO2	X	X	X	X	1	1	X	X
	CO3	X	X	X	X	1	1	X	X
	CO4	X	X	X	X	1	1	X	X
	CO5	X	X	X	X	1	1	X	X
	CO6	X	X	X	X	X	X	X	X
CS501B	**CO1**	X	X	X	X	X	X	X	X
	CO2	X	X	X	X	1	1	X	X
	CO3	X	X	X	X	1	1	X	X
	CO4	X	X	X	X	1	1	X	X
	CO5	X	X	X	X	1	1	X	X
	CO6	X	X	X	X	X	X	X	X

ENC501	**CO1**	1	2	3	2	3	1	3	2
	CO2	2	2	2	1	3	1	3	2
	CO3	3	2	3	2	2	3	3	2
	CO4	2	2	2	2	1	3	3	2
	CO5	2	2	2	3	2	1	3	2
	CO6	1	1	2	1	2	2	3	2
CHM601A1	**CO1**	3	X	X	3	2	X	3	3
	CO2	3	X	X	3	2	x	3	3
	CO3	3	X	X	3	2	X	3	3
	CO4	3	X	X	3	2	X	3	3
	CO5	3	X	X	3	2	X	3	3
	CO6	3	X	X	3	2	X	3	3
CHM601A2	**CO1**	3	X	x	3	2	X	3	3
	CO2	3	X	X	3	2	X	3	3
	CO3	3	X	X	3	2	X	3	3
	CO4	3	X	X	3	2	X	3	3
	CO5	3	X	X	3	2	X	3	3
	CO6	3	X	X	3	2	X	3	3
CHM601A3	**CO1**	3	X	X	3	2	X	3	3
	CO2	3	X	X	3	2	X	3	3
	CO3	3	X	X	3	2	X	3	3
	CO4	3	X	X	3	2	X	3	3
	CO5	3	X	X	3	2	X	3	3
	CO6	3	X	X	3	2	X	3	3
PHY601A	**CO1**	3	2	X	1	X	1	X	2
	CO2	3	2	X	X	1	X	X	2
	CO3	3	2	1	X	1	1	X	2

	CO4	3	2	X	X	X	X	X	2
	CO5	3	2	X	1	2	X	X	3
	CO6	3	2	X	1	2	X	X	3
PHY601B	**CO1**	3	2	X	X	3	X	X	3
	CO2	3	2	X	X	3	X	X	3
	CO3	3	2	X	X	3	X	X	2
	CO4	3	2	X	X	3	2	X	2
	CO5	3	2	X	X	3	X	X	3
	CO6	2	2	X	X	3	X	X	2
PHY601C	**CO1**	3	2	X	X	3	X	X	3
	CO2	3	2	X	X	3	X	X	3
	CO3	3	2	X	X	3	X	X	2
	CO4	3	2	X	X	3	2	X	2
	CO5	3	2	X	X	3	X	X	3
	CO6	2	2	X	X	3	X	X	2
LAB	**CO1**	3	2	1	X	1	X	X	2
	CO2	2	1	1	X	2	X	X	1
MAT601A	**CO1**	3	X	3	X	2	3	2	3
	CO2	3	X	3	X	2	2	3	3
	CO3	3	X	3	X	2	3	2	3
	CO4	3	X	3	X	2	3	2	3
	CO5	3	X	3	X	2	2	3	3
	CO6	3	X	3	X	2	3	2	3
MAT601B	**CO1**	2	2	2	3	2	1	1	1
	CO2	3	3	3	1	3	2	1	2
	CO3	3	2	2	1	2	X	2	2
	CO4	2	3	3	3	3	X	3	2

	CO5	3	2	3	2	1	2	3	3
	CO6	2	2	2	3	2	1	1	1
MAT601C	**CO1**	2	2	2	3	2	1	1	1
	CO2	3	3	3	1	3	2	1	2
	CO3	3	2	2	1	2	X	2	2
	CO4	2	3	3	3	3	X	3	2
	CO5	3	2	3	2	1	2	3	3
	CO6	2	2	2	3	2	1	1	1
CS601A	**CO1**	X	X	X	X	X	X	X	X
	CO2	X	X	X	X	1	1	X	X
	CO3	X	X	X	X	1	1	X	X
	CO4	X	X	X	X	1	1	X	X
	CO5	X	X	X	X	1	1	X	X
	CO6	X	X	X	X	X	X	X	X
CS601B	**CO1**	X	X	X	X	X	X	X	X
	CO2	X	X	X	X	1	1	X	X
	CO3	X	X	X	X	1	1	X	X
	CO4	X	X	X	X	1	1	X	X
	CO5	X	X	X	X	1	1	X	X
	CO6	X	X	X	X	X	X	X	X
CS601L	**CO1**	X	X	X	X	X	X	X	X
	CO2	X	X	X	X	1	1	X	X
	CO3	X	X	X	X	1	1	X	X
	CO4	X	X	X	X	1	1	X	X
	CO5	X	X	X	X	1	1	X	X
	CO6	X	X	X	X	X	X	X	X
ENC601	**CO1**	2	2	3	2	3	1	2	2

	CO2	2	2	3	3	3	1	3	3
	CO3	2	2	3	2	2	3	3	2
	CO4	2	2	1	2	2	2	3	2
	CO5	2	2	2	3	2	2	3	3
	CO6	1	1	2	1	2	2	3	2

M.Sc. Mathematics

Programme Outcomes

PO 1	**Disciplinary Knowledge**	Various branches of Mathematics are selected and designed for M.Sc. Mathematics courses aiming at mathematical reasoning, sophistication in things and acquaintance with subjects including application.
PO 2	**Communication skills**	Assimilate effective scientific and technical communication in both oral and writing about Mathematics and allied fields.
PO 3	**Critical thinking**	Theoretical approaches enhance ability to employ critical thinking in understanding the concepts in the every area of mathematics
PO 4	**Problem solving**	M.Sc. programme also offers training in problem solving skills .
PO 5	**Analytical Reasoning**	The student will be able to develop logical reasoning techniques and ability to analyze the results and apply them in various problems appearing in different branches of mathematics
PO 6	**Leadership Readiness/Qualities**	Strategic & Critical Thinking enhanced by the Master programme help them to become strong leaders in the chosen field.
PO 7	**Collaboration/Cooperation/Teamwork**	The students shall be capable of learning autonomously and producing outstanding results by collaborating with others who have a similar mindset but different skills or experience.
PO 8	**Scientific Reasoning**	The students will be able to learn the formulation of problems, on the analytical and numerical techniques for a solution and the computation of useful results.

PO 9	**Ethical awareness/reasoning**	●To acquire relevant knowledge and skills appropriate to professional activities and demonstrate highest standards of ethical issues in mathematical sciences. ● Avoiding unethical behaviour such as fabrication, falsification or misrepresentation of data or committing plagiarism, and appreciate environmental and sustainability issues.
PO 10	**Reflective Thinking**	Programme enables the students sensitive to real experiences with respect to self, society and nation
PO 11	**Lifelong learners**	Capable of self-paced and self-directed learning aimed at personal development and for improving knowledge/skill development and reskilling in areas mathematics.
PO 12	**Information/Digital Literacy**	Capability to use appropriate software to solve system of equations and differential equations. Capability to understand and apply the programming concepts of C to mathematical investigations and problem solving
PO 13	**Self-Directed Learning**	Ability to work independently and do in-depth study of various notions of Mathematics. The student shall acquire capability to evaluate hypothesis, methods and evidence within their proper contexts in any situation.
PO 14	**Multicultural Competence**	The student shall be able to apply the knowledge acquired in Mathematics in Science, technology as well as research and its extensions.
PO 15	**Research-related Skills**	Capability for inquiring about appropriate questions relating to the concepts in various fields of Mathematics. To know about the advances in various branches of mathematics.

Program Specific Outcomes (PSOs)

PSO1	Nurture problem solving skills, thinking, creativity through assignments, project work and learn to apply them independently to problems in pure and applied mathematics.
PSO2	A research oriented learning that develops analytical and integrative problem solving approaches. Create, select and apply appropriate techniques, resources and modern technology in a multi-disciplinary environment.
PSO3	Knowledge and capability in formulating and analysis of mathematical models of real life applications.

PSO4	Advanced mathematical and computational skills that prepare them to pursue higher studies and conduct research in advanced areas of analysis, linear algebra and statistics.
PSO5	Assimilate complex mathematical ideas and arguments and build a strong foundation on algebra, complex analysis, topology and number theory.
PSO6	Appreciate the necessity of various Algebraic structures with binary operations such as Group, Ring, Non-commutative ring that lead to new ideas in algebra for their future research in advanced topics of algebra.

Course Outcomes of M.Sc. (Mathematics)

Sem.	Course title	College Code	Course outcomes On completion of the course students will be able to	
Sem.-1	**Real Analysis I**	**MSMA TH101**	**CO 1**	Know about Countable and Uncountable sets.
			CO 2	Classify and explain open and closed sets , limit point , isolated points, boundary points, subspace ,product metric spaces and apply them to study the nature of the sets.
			CO 3	Learn the theorems on completeness, compactness ,connectedness and use them to solve the problems .Identify the continuity of a function which is defined on metric space ,at a given point and identify the set of points on which a function is continuous by using different theorems.
			CO 4	Distinguish between the concept of sequence and series and determine limits of sequence .
			CO 5	Use theory of Riemann-stieltjes integral in solving definite integrals arising in different fields of science and engineering.
			CO 6	Convergence and approximate sum of series.
	Algebra I	**MSMA TH102**	**CO 1**	Review groups and learn Permutation groups, Even and odd permutations, Conjugacy classes of permutations
			CO 2	Knowledge of Cayley's Theorem, Direct products, Fundamental Theorem for finite abelian groups, Sylow theorems and their applications, Finite Simple group.
			CO 3	Understanding of Groups of order p2, pq (p and q primes). Solvable groups, Normal and subnormal series, composition series
			CO 4	Review basic concepts of rings with emphasis on exercises.
			CO 5	Learn about Polynomial rings, formal power series rings, matrix rings.

			CO 6	The ring of Gaussian Integers
	Differential Equations	**MSMA TH103**	**CO 1**	Discuss existence and uniqueness of solution of first order differential equations
			CO 2	Knowledge of boundary value problems and Sturm - Liouville theory
			CO 3	Solve ordinary differential equations in more than two variables
			CO 4	Compute solution of linear and non-linear partial differential equations of first order
			CO 5	Study partial differential equations of second and higher order
			CO 6	Identify the surface
	Complex Analysis I	**MSMA TH104**	**CO 1**	Express Algebraic and Geometric properties of Complex Numbers.
			CO 2	Define the topological and analytic preliminaries in the complex plane
			CO 3	Develop the knowledge about Analytic Functions, Harmonic functions, Cauchy- Riemann Equations
			CO 4	Define elementary functions like exponential, trigonometric, logarithmic etc. and power series
			CO 5	Learning about zeros, singularities. Cauchy's theorem
			CO 6	Cauchy's integral formula
	Number Theory I	**MSMA TH105**	**CO 1**	Understanding definitions of divisibility and related algorithms, Basic congruence results
			CO 2	Knowledge about Quadratic reciprocity
			CO 3	Understand Fermat’s Theorem and Wilson’s Theorem
			CO 4	Apply the concept of primitive roots and indices.
			CO 5	Applies the greatest common divisor of two integers using Euclid’s Algorithm.
			CO 6	Solving Diophantine equations
Sem.-2	**Real Analysis II**	**MSMA TH201**	**CO 1**	Knowledge about differentiation of vector valued functions
			CO 2	Learn about Lebesgue measure, Lebesgue integral
			CO 3	Understand the relation between differentiation and lebesgue integration.
			CO 4	Know the basic convergence theorems for the lebesgue integral
			CO 5	Understanding of absolute continuity
			CO 6	Conceptual understanding of convex functions
	Algebra II	**MSMA TH 202**	**CO 1**	Understanding of Factorization Theory in Integral Domains, Divisibility, UFD, PID, ED and their relationships.
			CO 2	Knowledge of Noetherian and Artinian Rings, Hilbert Basis Theorem.
			CO 3	Learn about Modules, Difference between Modules and Vector Spaces.
			CO 4	Understanding of Module Homomorphisms, Quotient Module, Semi-simple Modules, Free Modules.

			CO 5	Able to solve exercises on Smith normal Form, Finitely generated modules
			CO 6	Rational Canonical Form
	Mechanics	**MSMA TH203**	**CO 1**	Understand concept of vector differentitaion and integration
			CO 2	State and prove Green’s,Gauss's and Stoke’s theorems
			CO 3	Compute Gradient, Divergence and curl of vectors
			CO 4	Discuss Variational principles, Langrange's equations and Hamilton's equations of motion
			CO 5	Study motion under a central force
			CO 6	Understanding rigid body equations of motion
	Complex Analysis II	**MSMA TH204**	**CO 1**	Find Taylor Series and Laurent Series of functions.
			CO 2	Knowledge about maximum modulus principle, singularities, Calculus of residues.
			CO3	Classify Singularities of Complex Functions and understand calculus of residue.
			CO 4	Understanding Bilinear transformations and Conformal mapping .
			CO 5	Define Gamma Function
			CO 6	Reimann Zeta functions.
	Number Theory II	**MSMA TH205**	**CO 1**	Understanding Farey sequence, continued fractions .
			CO 2	Apply the concept of Geometry of number and applications .
			CO 3	Students will be a able to apply Partitions, arithmetic functions Euler summation formula
			CO 4	Students will be able to solve the questions by using Euler Summation formula.
			CO 5	Knowledge about approximations of real by Rationals.
			CO 6	Using continued fractions for solving problems
Sem.-3	**Field Theory (Compulsory)**	**MSMA TH301**	**CO 1**	Discuss fields , field extension, prime fields, splitting fields, primitive elements
			CO 2	Differentiate separable extension and normal extension.
			CO 3	State and prove fundamental theorem of galois theory, fundamental theorem of algebra and related results
			CO 4	Understand cyclotomic polynomials, cyclic extension, radical field extension
			CO 5	Apply the concept of field extension to mathematical problems
			CO 6	Apply Geometric constructions of perfect division of a circle into n parts
	Topology (Compulsory)	**MSMA TH302**	**CO 1**	Learning of Topological Spaces, the order topology, the product topology on X × Y , the subspace topology, Bases for a topology.
			CO 2	Understanding of continuous functions on topological spaces, the

				product topology, the metric topology, the quotient topology.
			CO 3	Knowledge of Connected spaces, connected subspaces of the real line, components and local connectedness.
			CO 4	Understanding of Compact spaces, compact space of the real line, local compactness, nets.
			CO 5	Learn about separation axioms, Urysohn Lemma, Tietze Extension Theorem, Tychonoff Theorem.
			CO 6	Understanding Tychon off Theorem.
	Probability and Mathematical statistics I (Elective)	**MSMA TH303**	**CO 1**	Calculate and interpret the correlation between two variables. Calculate the simple linear regression equation for a set of data.
			CO 2	Analyze statistical data using measures of central tendency,dispersion and location.Analyze statistical data graphically using frequency distributions and cumulative distribution.
			CO 3	Describe the concept of probability, conditional probability and Bayes theorem.
			CO 4	Demonstrate the concept of Random variables ,density function and cumulative distribution function,moments and moment generating function.
			CO 5	Use discrete and continuous probability distributions including requirements,mean and variance and making decisions.
			CO 6	Knowledge about the association between the attributes.
	Computational Techniques I (Elective)	**MSMA TH304**	**CO 1**	General awareness of Computer hardware, software and MS WORD.
			CO 2	Solve linear and nonlinear equations by using numerical methods.
			CO3	Understand the concept of interpolation and methods used.
			CO4	Develop the knowledge about the concepts used in FORTRAN 77.
			CO 5	Construct programs in FORTRAN for the problems based on the methods studied in theory paper and to run the program on PC.
			CO 6	Apply the concept of Differentiation and methods used.
	Special Functions (Elective)	**MSMA TH307**	**CO 1**	Define and derive Hypergeometric functions, its Recurrence relations, orthogonality property, ,generating formulas and applications
			CO 2	Define and derive Legendre functions, its Recurrence relations, orthogonality property, ,generating formulas and applications
			CO 3	Define and derive Bessel functions, its Recurrence relations, orthogonality property, ,generating formulas and applications

			CO 4	Define and derive Hermite functions, its Recurrence relations, orthogonality property, ,generating formulas and applications
			CO 5	Define and derive Laguerre Functions, its Recurrence relations, orthogonality property, ,generating formulas and applications
			CO 6	Series solutions of the second order differential Equations
Sem.-4	**Linear Algebra (Compulsory)**	**MAMA TH401**	**CO 1**	Understand the concepts of Linear Independence , basis, Dual space
			CO 2	Discuss Algebra of Linear Transformation and Characteristics roots
			CO 3	Compute Eigen vectors and Eigen values of a matrix
			CO 4	Analyse rational canonical form , Jordan canonical form, diagonalization triangularization of a matrix
			CO 5	Understand and derive Bilinear Form
			CO 6	Learn about Quadratic and Hermitian form
	Functional Analysis (Compulsory)	**MSMA TH401**	**CO 1**	Learn about Banach Spaces with examples, Hahn Banach theorem,
			CO 2	Solving problems on Boundedness and continuity of linear transformation, Dual Spaces.
			CO 3	Understand the fundamentals like open mapping theorem, closed graph theorem, Baire Category theorem, Uniform Boundedness Principle.
			CO 4	Learn about Hilbert space, orthonormal basis, Parseval's identity
			CO 5	Knowledge of projections, adjoint operators, self adjoint , normal, unitary and isometric operators.
			CO 6	Understand bounded Linear functional
	Probability and Mathematical Statistics II (Elective)	**MSMA TH403**	**CO 1**	Understand the details of important sampling distributions, namely chi-square, Student-t
			CO 2	Calculate and interpret confidence intervals for estimating a population mean and a population proportion.
			CO 3	Differentiate between Type I and Type II Errors.
			CO 4	Conduct and interpret hypothesis tests for two population means, population standard deviations known.
			CO 5	Knowledge about One way and two way analysis of variance(ANOVA) Non-parametric tests
			CO 6	Understanding Snedecor's F-distributions and use them to make conclusion about problems that arise in applied statistics.
	Computational Techniques II (Elective)	**MSMA TH404**	**CO 1**	Knowledge about MS EXCEL.
			CO 2	Develop the understanding of Concept used in C Programming.
			CO 3	Understand the methods used in numerical differentiation and integration.

			CO 4	Solve ordinary differential equations.
			CO 5	Writing programs in C for the problems based on the methods studied in theory paper and to run the program of PC.
			CO 6	To Find Eigenvalues using numerical methods
	Integral Transforms and Their Applications (Elective)	**MSMA TH407**	**CO 1**	Describe Laplace transform and inverse Laplace transform
			CO 2	Apply Laplace transform to solve ordinary and partial differential equations, integral equations, Initial and boundary value problems
			CO 3	Knowledge about Finite Laplace transform and Hankel transform
			CO 4	Understand Fourier transforms and inverse Fourier transform
			CO 5	Apply Fourier transforms to solve ordinary and partial differential equations, integral equations, Initial and boundary value problems
			CO 6	Define Finite Fourier transforms and Mellin Transform

Mapping of Course Outcomes (COs) with Programme Outcomes (POs)

College Code/ Course Outcomes		Programme Outcomes														
		PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PO 13**	**PO 14**	**PO 15**
MSMATH101	**CO 1**	3	X	3	3	3	1	X	1	X	2	2	X	1	2	2
	CO 2	3	X	3	3	2	X	1	2	X	2	3	1	2	2	3
	CO 3	3	1	3	3	2	1	1	3	1	2	2	2	2	2	3
	CO 4	3	1	3	3	3	X	X	2	2	2	3	1	2	3	3
	CO 5	3	1	3	3	3	X	X	2	2	2	3	1	2	3	3
	CO 6	3	X	3	3	3	1	X	1	X	2	2	X	1	2	2
MSMATH102	**CO 1**	3	2	3	2	2	X	X	2	2	1	2	1	2	2	3
	CO 2	3	1	2	3	3	1	1	1	1	2	3	1	X	2	3

	CO 3	3	2	3	2	2	X	X	2	2	1	2	1	2	2	3
	CO 4	3	2	3	2	2	X	X	2	2	1	2	1	2	2	3
	CO 5	3	1	2	3	3	1	1	2	1	2	3	1	X	2	3
	CO 6	3	2	3	2	2	X	X	2	2	1	2	1	2	2	3
MSMATH103	**CO 1**	3	X	3	3	3	1	X	1	X	2	2	X	1	2	2
	CO 2	3	X	3	3	2	X	1	2	X	2	3	1	2	2	3
	CO 3	3	1	3	3	2	1	1	3	1	2	2	2	2	2	3
	CO 4	3	1	3	3	3	X	X	2	2	2	3	1	2	3	3
	CO 5	3	1	3	3	3	X	X	2	2	2	3	1	2	3	3
	CO 6	3	X	3	3	3	1	X	1	X	2	2	X	1	2	2
	CO 1	3	X	1	2	2	X	X	2	X	1	2	X	2	1	2
MSMATH104	**CO 2**	3	1	2	2	2	X	1	2	X	1	3	X	2	2	3
	CO 3	3	2	2	3	3	1	1	3	X	1	3	X	3	3	3
	CO 4	3	2	1	3	3	X	X	3	X	1	3	X	3	3	2
	CO 5	3	2	2	3	3	1	1	3	X	1	3	X	3	2	3
	CO 6	3	X	1	2	2	X	X	2	X	1	2	X	2	1	2
MSMATH105	**CO 1**	1	X	3	2	2	X	X	3	X	X	2	3	X	X	X
	CO 2	3	2	2	3	2	X	1	3	2	X	X	1	2	3	1
	CO 3	1	X	2	1	2	1	X	2	1	X	1	3	1	2	2
	CO 4	2	X	3	2	3	1	X	2	1	2	2	X	2	3	2
	CO 5	2	X	2	2	3	X	X	2	X	2	2	X	2	2	1
	CO 6	1	X	3	2	2	X	X	3	X	X	2	3	X	X	X
MSMATH201	**CO 1**	3	X	3	3	1	X	X	1	X	2	2	X	2	1	2
	CO 2	3	1	3	3	1	X	X	2	X	2	2	X	2	1	3

	CO 3	2	1	3	3	X	1	X	2	X	2	2	X	1	1	2
	CO 4	2	1	3	3	1	x	X	2	X	2	2	X	2	1	2
	CO 5	2	X	X	2	2	1	X	1	X	1	2	X	2	1	2
	CO 6	3	X	3	3	1	x	X	1	X	2	2	X	2	1	2
MSMATH 202	**CO 1**	3	1	2	3	3	1	1	1	1	2	3	1	X	2	3
	CO 2	3	2	3	2	2	X	X	2	2	1	2	1	2	2	3
	CO 3	3	2	3	2	2	X	X	2	2	1	2	1	2	2	3
	CO 4	3	2	3	2	2	X	X	2	2	1	2	1	2	2	3
	CO 5	3	1	2	3	3	1	1	2	1	2	3	1	X	2	3
	CO 6	3	1	2	3	3	1	1	1	1	2	3	1	X	2	3
MSMATH203	**CO 1**	3	1	2	3	3	1	1	1	1	2	3	1	X	2	3
	CO 2	3	2	3	2	2	X	X	2	2	1	2	1	2	2	3
	CO 3	3	2	3	2	2	X	X	2	2	1	2	1	2	2	3
	CO 4	3	2	3	2	2	X	X	2	2	1	2	1	2	2	3
	CO 5	3	1	2	3	3	1	1	2	1	2	3	1	X	2	3
	CO 6	3	1	2	3	3	1	1	1	1	2	3	1	X	2	3
MSMATH204	**CO 1**	3	1	3	3	3	X	X	2	X	1	2	X	3	2	2
	CO 2	3	1	3	3	2	1	1	2	X	1	3	X	3	2	2
	CO 3	3	1	3	3	3	1	1	3	X	1	3	X	3	3	3
	CO 4	3	1	3	3	3	1	1	3	X	1	3	X	3	3	3
	CO 5	3	1	3	3	2	X	1	2	X	1	3	X	3	3	3
	CO 6	3	1	3	3	3	X	X	2	X	1	2	X	3	2	2
MSMATH205	**CO 1**	2	X	2	3	1	x	X	1	1	2	2	x	2	3	2
	CO 2	3	1	2	3	3	x	1	2	2	1	3	1	2	3	3

	CO 3	2	2	3	3	2	1	2	3	1	2	3	2	2	3	2
	CO 4	1	1	1	2	1	X	1	1	X	1	1	X	1	1	X
	CO 5	2	1	2	3	2	1	2	3	1	2	3	3	2	1	2
	CO 6	2	X	2	3	1	X	X	1	1	2	2	X	2	3	2
MSMATH301	**CO 1**	1	X	1	1	2	X	X	1	X	1	1	X	1	2	2
	CO 2	1	X	1	3	2	X	X	1	X	1	1	X	1	2	2
	CO 3	1	X	1	3	2	X	X	1	X	1	1	X	1	2	2
	CO 4	1	X	1	3	2	X	X	1	X	1	1	X	1	2	2
	CO 5	2	X	2	1	2	X	X	1	X	1	1	X	1	1	1
	CO 6	1	X	1	1	2	X	X	1	X	1	1	X	1	2	2
MSMATH302	**CO 1**	3	2	3	2	2	X	X	2	2	1	2	1	2	2	3
	CO 2	3	1	2	3	3	1	1	1	1	2	3	1	X	2	3
	CO 3	3	1	2	3	3	1	1	2	1	2	3	1	X	2	3
	CO 4	3	1	2	3	3	1	1	2	1	2	3	1	X	2	3
	CO 5	3	2	3	2	2	X	X	2	2	1	2	1	2	2	3
	CO 6	3	2	3	2	2	X	X	2	2	1	2	1	2	2	3
MSMATH303	**CO 1**	3	1	3	3	2	1	1	1	1	2	2	2	2	2	2
	CO 2	3	X	2	3	2	1	X	1	X	3	3	1	2	1	2
	CO 3	3	X	2	3	2	1	X	1	X	3	3	1	2	1	2
	CO 4	3	1	3	3	2	X	X	2	X	1	2	2	1	3	3
	CO 5	3	1	2	3	3	1	1	1	2	1	2	2	1	3	3
	CO 6	2	X	2	2	1	X	X	X	X	2	X	1	1	1	1
MSMATH304	**CO 1**	3	2	1	1	1	2	2	1	2	1	2	3	1	2	1
	CO 2	3	1	3	3	2	1	1	3	X	1	3	3	2	2	2

	CO 3	3	2	3	3	2	1	1	3	X	1	3	3	3	2	2
	CO 4	3	2	2	2	2	2	2	3	X	1	3	3	2	2	2
	CO 5	3	2	3	3	3	3	3	3	1	2	3	3	3	3	3
	CO 6	3	2	1	1	1	2	2	1	2	1	2	3	1	2	1
MSMATH307	**CO 1**	3	2	3	2	2	X	X	2	2	1	2	1	2	2	3
	CO 2	3	1	2	3	3	1	1	1	1	2	3	1	X	2	3
	CO 3	3	1	2	3	3	1	1	2	1	2	3	1	X	2	3
	CO 4	3	1	2	3	3	1	1	2	1	2	3	1	X	2	3
	CO 5	3	2	3	2	2	X	X	2	2	1	2	1	2	2	3
	CO 6	3	2	3	2	2	X	X	2	2	1	2	1	2	2	3
MAMATH401	**CO 1**	1	X	2	1	X	X	1	2	1	1	2	1	1	2	2
	CO 2	1	X	1	X	2	X	1	2	1	1	2	1	1	2	2
	CO 3	1	X	2	2	X	X	1	X	1	1	2	1	1	2	2
	CO 4	1	X	2	1	2	X	1	X	1	1	2	1	1	2	2
	CO 5	1	X	2	X	X	X	1	X	1	1	2	1	1	2	2
	CO 6	1	X	2	1	X	X	1	2	1	1	2	1	1	2	2
MSMATH401	**CO 1**	1	X	2	1	X	X	1	2	1	1	2	1	1	2	2
	CO 2	1	X	1	X	2	X	1	2	1	1	2	1	1	2	2
	CO 3	1	X	2	2	X	X	1	x	1	1	2	1	1	2	2
	CO 4	1	X	2	1	2	X	1	x	1	1	2	1	1	2	2
	CO 5	1	X	2	X	X	X	1	x	1	1	2	1	1	2	2
	CO 6	1	X	2	1	X	X	1	2	1	1	2	1	1	2	2
MSMATH403	**CO 1**	3	1	3	3	2	1	1	2	X	1	2	1	1	2	3
	CO 2	3	X	2	2	1	X	X	1	X	2	2	2	1	3	3

	CO 3	2	X	2	2	X	X	X	1	X	2	2	2	1	1	1
	CO 4	3	1	3	3	1	X	1	2	1	3	3	3	2	3	3
	CO 5	2	1	2	2	X	1	X	2	1	2	2	2	2	2	2
	CO 6	3	1	3	3	2	1	1	2	X	1	2	1	1	2	3
MSMATH404	**CO 1**	3	1	1	1	1	2	2	1	1	1	2	3	1	2	1
	CO 2	3	1	3	3	2	2	2	3	X	1	3	3	2	2	2
	CO 3	3	1	3	3	2	1	1	3	X	1	3	3	3	2	2
	CO 4	3	2	3	3	2	1	1	3	X	1	3	3	3	2	2
	CO 5	3	2	3	3	3	3	3	3	1	2	3	3	3	2	2
	CO 6	3	1	1	1	1	2	2	1	1	1	2	3	1	2	1
MSMATH407	**CO 1**	3	1	1	1	1	2	2	1	1	1	2	3	1	2	3
	CO 2	3	1	3	3	2	2	2	3	X	1	3	3	2	2	3
	CO 3	3	1	3	3	2	1	1	3	X	1	3	3	3	2	3
	CO 4	3	2	3	3	2	1	1	3	X	1	3	3	3	2	3
	CO 5	3	2	3	3	3	3	3	3	1	2	3	3	3	2	3
	CO 6	3	1	1	1	1	2	2	1	1	1	2	3	1	2	3

Mapping of Course Outcomes (COs) with Programme Specific Outcomes (PSOs)

COLLEGE CODE/ COURSE OUTCOMES		**SEMESTER 1**					
		PSO1	**PSO2**	**PSO3**	**PSO4**	**PSO5**	**PSO6**
MSMATH101	**CO 1**	3	2	3	2	2	2
	CO 2	2	2	3	2	2	1
	CO 3	2	2	3	3	3	1
	CO 4	2	2	2	1	1	1
	CO 5	2	2	2	2	2	2

	CO 6	3	2	3	2	2	2
MSMATH102	**CO 1**	3	2	X	X	3	2
	CO 2	3	3	1	X	2	3
	CO 3	3	3	1	X	2	3
	CO 4	3	2	X	X	3	2
	CO 5	3	3	1	X	2	3
	CO 6	3	2	X	X	3	2
MSMATH103	**CO 1**	3	2	3	2	2	2
	CO 2	2	2	3	2	2	1
	CO 3	2	2	3	3	3	1
	CO 4	2	2	2	1	1	1
	CO 5	2	2	2	2	2	2
	CO 6	3	2	3	2	2	2
MSMATH104	**CO 1**	1	1	1	X	3	X
	CO 2	1	2	1	X	3	X
	CO 3	3	2	1	X	3	X
	CO 4	2	2	1	X	3	X
	CO 5	3	2	1	X	3	X
	CO 6	1	1	1	X	3	X
MSMATH105	**CO 1**	3	2	3	3	2	1
	CO 2	2	2	3	3	3	X
	CO 3	1	2	2	X	x	1
	CO 4	3	3	3	2	1	2
	CO 5	2	1	2	3	1	X
	CO 6	3	2	3	3	2	1
SEMESTER 2							

MSMATH201	**CO 1**	2	2	3	2	1	1
	CO 2	2	2	2	2	x	x
	CO 3	2	2	2	2	1	2
	CO 4	2	2	2	2	1	2
	CO 5	3	2	2	1	2	1
	CO 6	2	2	3	2	1	1
MSMATH202	**CO 1**	3	3	1	X	2	3
	CO 2	3	2	X	X	3	2
	CO 3	3	3	1	X	2	3
	CO 4	3	2	X	X	3	2
	CO 5	3	3	1	X	2	3
	CO 6	3	3	1	X	2	3
MSMATH203	**CO 1**	3	3	1	X	2	3
	CO 2	3	2	X	X	3	2
	CO 3	3	3	1	X	2	3
	CO 4	3	2	X	X	3	2
	CO 5	3	3	1	X	2	3
	CO 6	3	3	1	X	2	3
MSMATH204	**CO 1**	2	2	1	X	3	X
	CO 2	2	3	1	X	3	X
	CO 3	3	3	1	X	3	X
	CO 4	3	3	2	X	3	X
	CO 5	2	3	3	X	3	X
	CO 6	2	2	1	X	3	X
MSMATH205	**CO 1**	3	x	3	2	1	X
	CO 2	3	3	3	3	2	1

	CO 3	3	3	3	3	2	2
	CO 4	2	2	1	1	1	X
	CO 5	2	1	1	x	x	1
	CO 6	3	x	3	2	1	X
SEMESTER 3							
MSMATH301	**CO 1**	2	1	1	X	2	2
	CO 2	1	1	1	X	2	1
	CO 3	1	1	2	X	2	2
	CO 4	1	1	1	X	1	1
	CO 5	1	1	1	X	1	1
	CO 6	2	1	1	X	2	2
MSMATH302	**CO 1**	3	2	X	X	3	2
	CO 2	3	3	1	X	2	3
	CO 3	3	3	1	X	2	3
	CO 4	3	2	X	X	3	2
	CO 5	3	3	1	X	2	3
	CO 6	3	2	X	X	3	2
MSMATH303	**CO 1**	3	2	3	2	X	1
	CO 2	3	2	3	3	X	X
	CO 3	3	2	1	3	2	1
	CO 4	3	2	3	3	X	X
	CO 5	3	2	2	2	1	1
	CO 6	3	3	2	2	X	X
MSMATH304	**CO 1**	1	2	1	1	X	X
	CO 2	3	3	3	3	X	X

	CO 3	3	3	3	3	X	X
	CO 4	2	2	2	3	X	X
	CO 5	2	2	2	3	X	X
	CO 6	1	2	1	1	X	X
MSMATH307	**CO 1**	3	2	X	X	3	X
	CO 2	3	3	1	X	2	1
	CO 3	3	2	X	X	3	X
	CO 4	3	2	X	X	3	1
	CO 5	3	3	1	X	2	X
	CO 6	3	2	X	X	3	X
SEMESTER 4							
MSMATH401	**CO 1**	1	2	X	1	1	2
	CO 2	1	1	X	1	1	2
	CO 3	1	2	X	1	1	2
	CO 4	1	1	X	1	1	2
	CO 5	Q	1	X	1	1	2
	CO 6	1	2	X	1	1	2
MSMATH402	**CO 1**	3	2	X	X	3	2
	CO 2	3	3	1	X	2	3
	CO 3	3	3	1	X	2	3
	CO 4	3	2	X	X	3	2
	CO 5	3	3	1	X	2	3
	CO 6	3	2	X	X	3	2
MSMATH403	**CO 1**	1	2	X	1	1	2
	CO 2	1	1	X	1	1	2
	CO 3	1	2	X	1	1	2

	CO 4	1	1	X	1	1	2
	CO 5	X	1	X	1	1	2
	CO 6	1	2	X	1	1	2
MSMATH404	**CO 1**	1	2	1	1	X	X
	CO 2	2	2	2	3	X	X
	CO 3	3	3	3	3	X	X
	CO 4	3	3	3	3	X	X
	CO 5	2	2	2	3	X	X
	CO 6	1	2	1	1	X	X
MSMATH407	**CO 1**	3	2	X	X	3	2
	CO 2	3	3	1	X	2	3
	CO 3	3	3	1	X	2	3
	CO 4	3	2	X	X	3	2
	CO 5	3	3	1	X	2	3
	CO 6	3	2	X	X	3	2