Deptt. of Maths
Cross –cutting issues
B.Sc. Semester System (NEP)

Semester	Paper/ Course Code	Relevant Issues				Description
		Gender	Environment & Sustainability	Human Values	Professional Ethics	
Semester-I	Calculus DSCMAT-01		✓		✓	Concept of line integral helps to calculate the work done by force on a moving object in a vector field
Semester-II	Algebra DSCMAT-02		✓		✓	Hyperbolic functions are used to describe the path of a spacecraft performing a gravitational slingshot maneuver
Semester-III	Calculus & Algebra DSCMAT-03		✓		✓	Trigonometric functions are used to describe the path of a particle
Semester-IV	Real Analysis DSCMAT-04		✓		✓	Cauchy sequences taught in the course are used in fields like satellite design , manufacturing ,construction and treatment plants.
Semester-VI	Metric Space DSCMAT-06		✓		✓	Metric space methods have been employed for decades in various applications for example in internet search engines ,image classification or protein classification.

Deptt. of Maths
Cross –cutting issues
B.Sc. Semester System (Old)

Semester	Paper/ Course Code	Gender	Environ & Sustain.	Human Values	Professional Ethics	Description
Semester-I	Calculus & Algebra I UD5-001		✓		✓	Calculus is used in scientific fields like space exploration,telecommunications systems, computer science,engineering, medicine,pharmacology,business,meteorology and music
Semester-II	Calculus & Algebra II UD5-002		✓		✓	Differential equations are used to calculate the movement or flow of electricity,motion of an object to & fro like a pendulum, to explain thermodynamic s concepts.
Semester-III	Ad.Calculus &Diff. Eq^n-I UD5-201		✓		✓	In medical field , Differential equations are used to check the growth of diseases in graphical representation.
Semester-IV	Ad.Calculus & Diff. Eq^n-II UD5-202		✓		✓	Calculus is used in scientific fields like space exploration,telecommunications systems, computer science,engineering, medicine,pharmacology,business,meteorology and music
Semester-V	Analysis And Abstract Algebra-I UD5-301		✓		✓	Complex numbers play a role in signal processing applications like Fourier analysis. It is used in areas such as telecommunications,audio processing and image processing.
Semester-VI	Analysis And Abstract Algebra-II UD5-302		✓		✓	Group theory has applications in Physics, Chemistry, & Computer Science and puzzles like Rubik's Cube can be represented using group theory.

Deptt. of Maths
Cross –cutting issues
M.Sc. Semester System

Semester	Paper/ Course code	Gender	Environ & Sustain.	Human Values	Professional Ethics	Description
M.Sc.I Sem.	Advanced Abstract Algebra –I MSM101		✔		✔	It helps analyze large and complex data sets, uncovering patterns and connections crucial for artificial intelligence and machine learning applications.
M.Sc.I Sem.	Real Analysis I MSM102		✔		✔	Power series is used in spectrum analysis. in radio,audio & light applications, Power series is useful to be able to receive a wide range of frequencies
M.Sc.I Sem.	Topology–I MSM103		✔		✔	Topology has application ns in various fields such as network design, data analysis, robotics, material science, biology and physics.
M.Sc.I Sem.	Complex Analysis-I MSM A-05		✔		✔	Complex numbers are used in in the analysis & processing of signal s such as in telecommunication, audio processing and image processing
M.Sc.II Sem.	Advanced Abstract Algebra –II MSM201		✔		✔	It is used in computer science for secure communication, in physics to understand symmetices and conservation laws and in engineering to design error correcting codes
M.Sc.IISem.	Real Analysis II MSM202		✔		✔	Measure theory is used to define and analyzer the properties of signals, systems and transform.

Semester	Course					Description
M.Sc.II Sem.	Topology–II MSM203		✓		✓	Many portion of topology helps to understand shapes ,connectivity and spatial relationships in complex systems.
M.Sc.III Sem.	Operation Research I MSM303		✓		✓	The course focuses on providing key strategic tools to policy makers that can be extensively used in decision making for promoting sustainability
M.Sc. III Sem.	Numerical Analysis –I MSM C-05		✓		✓	Some numerical method play a vital role in solving issues pertaining to environmental protection and safety engineering analysis
M.Sc. IV Sem.	Integration Theory and Functional Analysis II MSM401		✓		✓	Inner product space measure and monitor the earth's size & shape, geodynamic phenomena(tides and polar motion)and gravity field to determine the exact coordinates of any point on earth and how that point will move over time
M.Sc. IV Sem.	Operation Research II MSM403		✓		✓	CPM is commonly used with all forms of projects including construction, aerospace and defence ,software development ,research projects, products development, engineering and plant maintenance
M.Sc. IV Sem.	Numerical Analysis –II MSM D-05		✓		✓	Difference equations are used in high speed digital computing machinary area, neutron diffusion and transport ,radiation flow ,thermo-nuclear reactions.