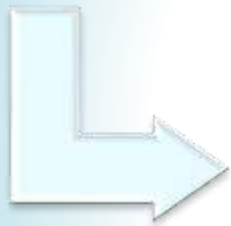**Maratha Vidya Prasarak Samaj's**

Karmaveer Shantarambapu Kondaji Wavare
Arts, Science and Commerce College, CIDCO, Nashik
Uttamnagar, Nashik- 422 008 (Maharashtra)

Internal Quality Assurance Cell

Programme Outcomes (PO's)

Programme Specific Outcomes (PSO's)

Course Outcomes (CO's)

Syllabus: 2013 Pattern

Maratha Vidya Prasarak Samaj's
KARMAVEER SHANTARAMBAPU KONDAJI WAVARE
ARTS, SCIENCE AND COMMERCE COLLEGE,CIDCO
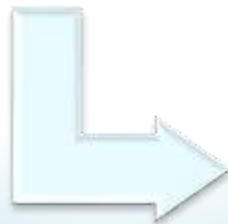**Uttamnagar, Nashik- 422 008 (Maharashtra)**
Affiliated to Savitribai Phule Pune University   Id. No. PU/NS/ASC/047/1993
AISHE C-42086   NAAC Re-accredited 'A' Grade (III Cycle 2017-22, CGPA 3.20)
Best College Award of Savitribai Phule Pune University Pune in 2009-10 and 2021-22

Principal
Prof. (Dr) S. K. Kushare
M.Sc., Ph. D.

Programme Outcome (PO's), Programme Specific Outcome (PSO's), Course Outcome (CO's)
Department: Mathematics
Syllabus: 2013 Pattern

Sr. No.	Name of the Programme	Year of introduction of programme	Duration of introduction of Programme
1	B.Sc	1993	3 Years

Programme Specific Outcome (B.Sc Mathematics)

Sr. No.	Programme Specific Outcome (B.Sc Mathematics)
PSO 1	Explain the core ideas and the techniques of mathematics at the college level.
PSO 2	Recognize the power of abstraction and generalization, and to carry out investigative mathematical work with independent judgment.
PSO 3	Setup mathematical models of real world problems and obtain solutions in structured and analytical approaches with independent judgment.
PSO 4	Carry out objective analysis and prediction of quantitative information with independent judgment.
PSO 5	Communicate effectively about mathematics to both lay and expert audiences utilizing appropriate information and communication technology.
PSO 6	Work independently, and to collaborate effectively in team work and team building.
PSO 7	Conduct self-evaluation, and continuously enrich themselves through lifelong learning.
PSO 8	Communicate to lay audiences and arouse their interest in the beauty and precision of mathematical arguments and science.
PSO 9	Recognize the importance of compliance with the ethics of science and being a responsible citizen towards their community and a sustainable environment.
PSO 10	Cultivate a mathematical attitude and nurture the interests

Course Outcomes B.Sc. Mathematics

Class	Subject code	Title	Cos: After successful completion of this course, student will be able to understand
F. Y. B.Sc.	MT-101	Algebra & Geometry	CO 1: Integers.
			CO 2: Polynomials
			CO 3: Matrices and System of linear equations
			CO 4: Analytical Geometry of two dimensions
			CO 5 : Planes in 3-dimension
			CO 6 : Lines in 3-dimension
			CO 7 : Sphere
			CO 8 : Cones and Cylinders
	MT-102	Calculus and Differential Equations	CO 1: Real numbers
			CO 2: Limit & Continuity
			CO 3: Differentiation
			CO 4: Integration
			CO 5: Differential Equations of first order and first degree
			CO 6: Application of Differential Equations
			CO 7: Methods of finding general solution of Differential Equations of first ord and higher degree
	MT-103	Practical Course	CO 1: On successful completion of the course students are able to understand the theory course problem by using problems
S. Y. B.Sc Sem I	MT-211	Calculus of Several Variables	CO 1: Limit & continuity of several variables.
			CO 2: Partial derivatives & Differentiability
			CO 3: Extreme values
			CO 4: Double & Triple Integral
	MT-212(B)	Laplace Transform and Fourier Series	CO 1: The Laplace Transform
			CO 2: The Inverse Laplace Transform
			CO 3: Applications of Laplace Transform
			CO 4: Fourier Series
	MT-213	Practical Course	CO 1: Applications problems on theory courses will be solved by students
S. Y. B.Sc Sem II.	MT-221	Linear Algebra	CO 1: Vector spaces
			CO 2: Inner Product Spaces
			CO 3: Linear transformations
			CO 4: Linear isomorphism
	MT-222(A)	Multivariable Calculus	CO 1: Vector valued functions
			CO 2: Integrals

Class	Subject code	Title	Cos: After successful completion of this course, student will be able to understand
		II	CO 3: Surface and volume integrals
	MT-223	Practical Course	CO 1: Applications problems on theory courses will be solved by students
T. Y. B.Sc Sem III	MT-331	Metric Space	CO 1: Introduction to metric space
			CO 2: Completeness property
			CO 3: Continuous function
			CO 4: Compactness & connectedness
	MT-332	Real Analysis-1	CO 1: Sets & function
			CO 2: Sequence of real no.
			CO 3 : Series of real no.
	MT-333	Problem Course on MT 331 and MT 332	CO 1: Problems based on Metric Space and Real Analysis-I
	MT-334	Group Theory	CO 1: Groups
			CO 2: Subgroups
			CO 3: Permutations
			CO 4: Homomorphisms and factor groups
	MT-335	Ordinary differential equation	CO 1: Linear differential equations with constant coefficients
			CO 2: Non-Homogeneous Differential Equation
			CO 3: Power Series Solutions
			CO 4: System Of First Order Equations
	MT-336	Problem Course on MT 334 and MT 335	CO 1: Problems based on Group Theoy and Ordinary differential equation.
	MT-337(A)	Operations Research	CO 1: Modeling With Linear Programming
			CO 2: The Simplex Method
			CO 3: Duality
			CO 4: Transportation Model
			CO 5: The Assignment Model
	MT-337(D)	Lattice Theory	CO 1: Ordered Sets
			CO 2: Lattices And Complete Lattices
			CO 3: Modular, Distributive and Boolean Lattices
	MT-338	Practical	CO 1: Practical based on Operations Research & Lattice Theory
T. Y. B.Sc Sem-IV	MT-341	Complex Analysis	CO 1: Complex numbers
			CO 2: Analytic functions
			CO 3: Elementary functions
			CO 4: Integrals
			CO 5: Series

Class	Subject code	Title	Cos: After successful completion of this course, student will be able to understand
			CO 6: Residues and poles
	MT-342	Real Analysis-II	CO 1: Riemann Integral
			CO 2: Improper Integral
			CO 3: Sequences and series of functions
	MT-343	Problem Course on MT 341 and MT 342	CO 1: Problems based on Complex Analysis and Real Analysis-II
	MT-344	Ring Theory	CO 1: Rings & fields
			CO 2: Ideals & factor rings
			CO 3: Factorization
	MT-345	Partial Differential Equation	CO 1: Ordinary differential equations in more than two variables
			CO 2: First order partial differential equations
	MT-346	Problem Course on MT 344 and MT 345	CO 1: Problems based on Ring Theory and Partial Differential Equation
	MT-347(D)	Graph theory	CO 1: An introduction to graphs
			CO 2: Trees & connectivity
			CO 3: Euler Tours & Hamiltonian
			CO 4: Cycles
			CO 5: Directed graphs
	MT 347 F	Computational Geometry	CO 1: Two dimensional Transformations
			CO 2: Three Dimensional Transformations
			CO 3: Plane Curves
			CO 4: Space Curves Beizer curves
	MT-348	**Practical**	CO 1: Practical based on Graph Theory & Computational Geometry

HoD, Mathematics   IQAC Coordinator

Principal
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Internal Quality Assurance Cell

Programme Outcomes (PO's)

Programme Specific Outcomes (PSO's)

Course Outcomes (CO's)

Syllabus: 2019 Pattern

Maratha Vidya Prasarak Samaj's
KARMAVEER SHANTARAMBAPU KONDAJI WAVARE
ARTS, SCIENCE AND COMMERCE COLLEGE,CIDCO
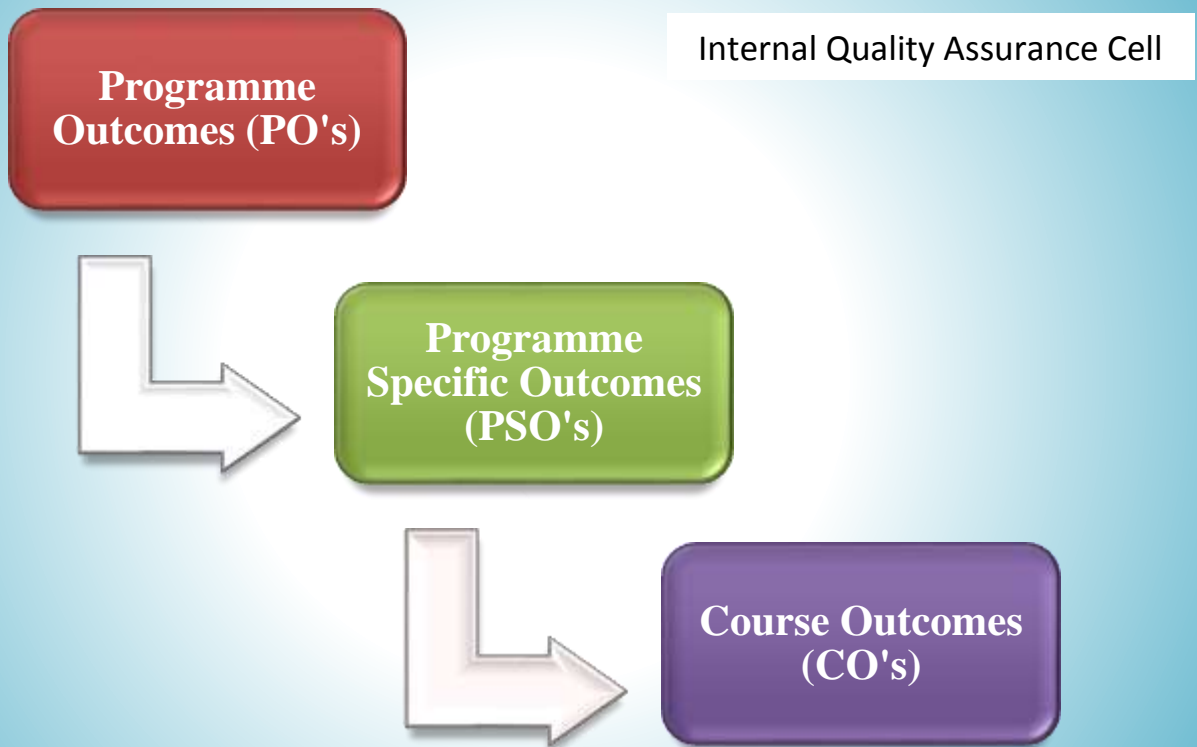**Uttamnagar, Nashik- 422 008 (Maharashtra)**
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Principal
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Programme Outcome (PO's), Programme Specific Outcome (PSO's), Course Outcome (CO's)

Department: Mathematics
Syllabus: 2013 Pattern

Sr. No.	Name of the Programme	Year of introduction of programme	Duration of introduction of Programme
2	B. Sc.	1996	2 Years

Programme Specific Outcome (B.Sc Mathematics)

Sr. No.	Programme Specific Outcome (B.Sc Mathematics)
PSO 1	Explain the core ideas and the techniques of mathematics at the college level.
PSO 2	Recognize the power of abstraction and generalization, and to carry out investigative mathematical work with independent judgment.
PSO 3	Setup mathematical models of real world problems and obtain solutions in structured and analytical approaches with independent judgment.
PSO 4	Carry out objective analysis and prediction of quantitative information with independent judgment.
PSO 5	Communicate effectively about mathematics to both lay and expert audiences utilizing appropriate information and communication technology.
PSO 6	Work independently, and to collaborate effectively in team work and team building.
PSO 7	Conduct self-evaluation, and continuously enrich themselves through lifelong learning.
PSO 8	Communicate to lay audiences and arouse their interest in the beauty and precision of mathematical arguments and science.
PSO 9	Recognize the importance of compliance with the ethics of science and being a responsible citizen towards their community and a sustainable environment
PSO 10	Cultivate a mathematical attitude and nurture the interests

Course Outcome (B.Sc Mathematics)

Class	Subject code	Title	Cos: After successful completion of this course, student will be able to
F.Y. B.Sc. Sem-I	MT-111	Algebra	CO 1: Sets, relation and function.
			CO 2: Division & Euclidean Algorithm
			CO 3: Fermat's Theorem
			CO 4: Complex numbers
	MT-112	Calculus-I	CO 1: Real numbers
			CO 2: Sequences
			CO 3: Series
			CO 4: Limit & Continuity
	MT-113	Practical Course	CO 1: The theory course problem using maxima software
F.Y. B.Sc. Sem-II	MT-121	Analytical Geometry	CO 1: Analytical geometry of two & three dimensions
			CO2: Lines in three dimensions
			CO3: Sphere
	MT-122	Calculus-II	CO 1: Differentiation
			CO 2 : Ordinary differential equation
			CO 3: Exact differential equation
	MT-123	Practical Course	CO1: On successful completion of the course students are able to understand the theory course problem using maxima software
S.Y. B.Sc Sem-III	MT-231	Calculus of several Variables	CO 1: Limit & continuity of several Variables.
			CO 2: Partial derivatives & differentiability
			CO 3: Extreme values
			CO 4: Double & Triple Integral
	MT-232(B)	(B) Graph Theory	CO 1: Graph
			CO 2: Path & circuit
			CO 3: Trees & fundamental circuit
			CO 4: Cut sets & cut vertices Connectivity & Seperability
	MT-233	Practical Course	CO 1: On maxima software problems on theory courses will be solved by students.
S.Y. B.Sc Sem -IV	MT-241	Linear Algebra	CO 1: Matrices and system of linear equations
			CO 2: Vector spaces
			CO 3: Linear transformations Linear isomorphism
	MT-242(A)	Vector calculus	CO 1: Vector valued functions
			CO 2: Integrals

Class	Subject code	Title	Cos: After successful completion of this course, student will be able to
			CO 3: Surface integrals
			CO 4: Applications of integrals
	MT-243	Practical Course	CO 1: On maxima software problems on theory courses will be solved by students
T.Y. B.Sc Sem V	MT-351	Metric Space	CO 1: Introduction to Metric space
			CO 2: Completeness property
			CO 3: Continuous function
			CO 4: Compactness & connectedness
	MT-352	Real Analysis-1	CO 1: Sets & function
			CO 2: Sequence of real no. & series of real no.
	MT-353	Group Theory	CO 1: Groups
			CO 2: Subgroups
			CO 3: Permutations
			CO 4: Homeomorphisms and factor groups
	MT-354	Ordinary Differential Equation	CO 1: Linear differential equations with constant coefficients
			CO 2: Non-homogeneous differential equation
			CO 3: Power series solutions
			CO 4: System of first order equations
	MT-355(A)	Operations Research	CO 1: Modeling with linear programming
			CO 2: The Simplex method
			CO 3: Duality
			CO 4: Transportation
			CO 5: The assignment model
	MT-356(c)	Laplace Transform and Fourier Series	CO 1 : The Laplace Transform
			CO 2 : The Inverse Laplace Transform
			CO 3 : Beta function, Evaluation of Integration
			CO 4 : Applications to Differential Equations
			CO 5 : Fourier series
	MT 357	Practical Course Lab-1 (On Metric Space and Real Analysis-I)	CO 1 : Problem solving skills of students are enhanced.
			CO 2 : Theoretical concepts are strengthened by solving maximum no. of problems
			CO 3 : Due to one to one interaction with the teacher doubts of the students get cleared if any
			CO 1 : Problem solving skills of students are enhanced.
			CO 2 : Theoretical concepts are

Class	Subject code	Title	Cos: After successful completion of this course, student will be able to
			strengthened by solving maximum no. of problems
			CO 3 : Due to one to one interaction with the teacher doubts of the students get cleared if any
	MT 359	Practical Course Lab-III (On DSE-3A and DSE-3B)	CO 1 : Problem solving skills of students are enhanced.
			CO 2 : Theoretical concepts are strengthened by solving maximum no. of problems
			CO 3 : Due to one to one interaction with the teacher doubts of the students get cleared if any
	MT - 3510	Programming in Python -I	CO 1 : Implement object oriented concepts
			CO 2 : Installation of Python
			CO 3 : Boolean operator
			CO 4 : String, list, tuple
			CO 5 : Iterations and Conditional statements
			CO 6 : Numerical methods in Python
			CO 7 : 2D and 3D Graphs
	MT-3511	LaTeX for Scientific Writing	CO 1 : Write a simple LaTeX input document based on the article class.
			CO 2 : Turn the input document into pdf with the pdflatex program.
			CO 3 : Format Words, Lines, and Paragraphs.
			CO 4 : Understand how to present data using tables.
T.Y. B.Sc Sem VI	MT-361	Complex Analysis	CO1: Complex numbers
			CO2: Analytic functions
			CO3: Elementary functions
			CO4: Integrals
			CO5: Series
			CO6 : Residues and poles
	MT-362	Real Analysis-II	CO1: Riemann Integral
			CO2: Improper Integral
			CO3: Sequences and series of functions
	MT-363	Ring Theory	CO 1: Rings & fields
			CO 2: Ideals & factor rings
			CO 3: Factorization
	MT-364	Partial differential equation	CO 1: Ordinary differential equations in more than two variables
			CO 2: First order partial differential equations
	MT-	Calculus of	CO 1: An introduction to graphs

Class	Subject code	Title	Cos: After successful completion of this course, student will be able to
	365(B)	Variation and Classical Mechanic	CO 2: Trees & connectivity
			CO 3: Euler Tours & Hamiltonian Cycles
			CO 4: Directed graphs
	MT-366(B)	Computational geometry	CO 1: Two dimensional transformations
			CO 2: Three dimensional transformations
			CO 3: Plane curves
			CO 4: Space curves Beizer curves
	MT 367	Practical Course Lab-1 (on Complex Analysis and Real Analysis-II)	CO 1 : Problem solving skills of students are enhanced.
			CO 2 : Theoretical concepts are strengthened by solving maximum no. of problems
			CO 3 : Due to one to one interaction with the teacher doubts of the students get cleared if any
	MT 368	Practical Course Lab-II (on Ring Theory and Partial Differential Equations)	CO 1 : Problem solving skills of students are enhanced.
			CO 2 : Theoretical concepts are strengthened by solving maximum no. of problems
			CO 3 : Due to one to one interaction with the teacher doubts of the students get cleared if any
	MT 369	Practical Course Lab-III (on DSE-6A and DSE-6B)	CO 1 : Problem solving skills of students are enhanced.
			CO 2 : Theoretical concepts are strengthened by solving maximum no. of problems
			CO 3 : Due to one to one interaction with the teacher doubts of the students get cleared if any
	MT 3610	Programming in Python-II	CO 1 : Demonstrate the use of Python in Mathematics such as operations research and Computational Geometry etc.
			CO 2 : Study graphics and design and implement a program to solve a real world problem.
			CO 3 : The students will implement the concepts of data with python and database connectivity.
	MT 3611	Mathematics into LaTeX	CO 1 : typeset mathematical formulas, use nested list, tabular and array environments.

Class	Subject code	Title	Cos: After successful completion of this course, student will be able to
			CO2 : import figures and pictures that are stored in external files
			CO 3 : User-Defined Macros

HoD, Mathematics   IQAC Coordinator

IQAC

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