Digambarrao Bindu Arts, Commerce & Science College, Bhokar, Dist Nanded

Annual Teaching Plan for __2017-2018__

Department of Mathematics

Workload Distribution

Class	Name of Teachers							
	Dr.S.B.Chavhan		Mr.O.K.Berdewad		Mr.Sainath Landge		Miss.Jyoti Mandalwad	
	Theory	Practical	Theory	Practical	Theory	Practical		Practical
B.Sc. I Sem.-I	Paper-I			Paper-V			Paper-II	
B.Sc. I Sem.-II	Paper- III						Paper-IV	
B.Sc. II Sem.-III	Paper-VI	PAPER-XII	Paper-VII		Paper-VIII			
B.Sc. II Sem.-IV	Paper-IX		Paper-X		Paper-XI			
B.Sc. III Sem.-V	Paper-XIII				Paper-XIV	PAPER-XIX	Paper-XV	
B.Sc. III Sem.-VI	Paper-XVIII(B)				Paper-XVI		P-XVII	

Head
Department of Mathematics
Digambarrao Bindu ACS College,Bhokar
Dist.Nanded.(M.S.)

Principal
Digambarrao Bindu Arts,Com.& Sci.College
Bhokar,Ta.Bhokar Dist.Nanded

DIGAMBARRAO BINDU ARTS & COMMERCE COLLEGE, BHOKAR DIST. NANDED

DEPARTMENT OF MATHEMATICS

Class: B.SC-F.Y

Title of the Paper & No.: Particles

Name of the Teacher: Dr.S.B.Chavhan

ANNUAL TEACHING PLAN 2017-18

Month	Course content	Expected Periods
June	**Revision:**	
July	1) To enter the Matrix A and pick-out following entries from it : $A11$, $A21$, $A22$, $A23$. 2) To find the transpose a matrix.	8
Aug	3) For two matrices A and B, to find $A + B$ & $B + A$ and to verify whether the matrix addition is commutative. 4) For a square matrix A to find $A2$, $A3$, $A4$, $A5$. 7) To verify both left distributive law and right distributive law. 8) To find the determinant of a square matrix.	8
Sept	5) For two matrices A and B. confirmable for multiplication from both sides, to find AB and BA. 6) To verify the associativity of matrix addition.	8
Oct	9) To find the inverse of a square matrix. 10) To find the rank of the matrices.	02
Nov		
Dec	11) To solve the system of linear equations whose matrix equation is $Ax = b$ and check the solution. 12) To find the eigen values of a square matrix. 13) To find the eigen vectors of a square matrix. 14) To find the characteristic polynomial of a square matrix.	8
Jan	15) To find the conjugate a matrix. 16) To plot $f(x) = 10 \sin$ for x between 0 and 20. 17) To plot $r(\theta) = 1 + 2\sin2(2\theta)$ for $0 < \theta < 2\pi$.18) To plot the contours of $z = \cos x \cos y$ ex$y2 / 4$ over the default domains.19) To plot the surface for $z = 2\ 2\ 51$ over the domain $\mid x \mid < 3$ and $\mid y \mid < 3$. 20) To plot multiple graphs $y1 = \sin t$, $y2 = t$, $y3 =13!\ 5!\ \ t\ \ t$ in same figure Window 21) To plot $x = e-t, y = t, 0\ \ t\ \ 2\pi$.	8
Feb	22) To plot $f(t) = t \sin t$, $0\ \ t\ \ 10\pi$. 23) To plot the surface z $= 2\ 2\ xy\ xx\ y$, -3 $\ \ x\ \ 3$, . -3 $\ \ y\ \ 3$ by computing the values of z over 50 x 50 grid on specified domain. 24) To draw a cylinder with base radius $r = 40$ and top radius $r = 60$ 25) To plot the unit sphere.	08
March	Revision	02
April		

Principal

Department of Mathematics

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Annual Teaching plan 2017-18

DIGAMBARRAO BINDU ARTS & COMMERCE COLLEGE, BHOKAR DIST. NANDED
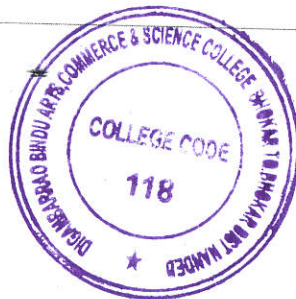
DEPARTMENT OF MATHEMATICS

Class: B.SC-F.Y

Title of the Paper & No.:   Differential Calculus (I) & Integral Calculus(IV)

Name of the Teacher: Dr.S.B.Chavhan

ANNUAL TEACHING PLAN 2017-18

Month	Course content	Expected Periods
June	**Revision:** Relation, Functions, Limit, Continuity, Differentiation,	03
July.	Derivatives of some standard functions, Some rules of Differentiation. **Unit I:** Hyperbolic functions, Higher order derivatives, nth order derivatives, Leibnitz theorem, Equation of tangent and normal, Angle of intersection of two curves, Length of tangent, normal, sub-tangent and subnormal at any point of a curve.	17
Aug	**Unit II:** Rolle's theorem, Lagrange's mean value theorem, Meaning of sign of derivative, Cauchy's mean value theorem, Generalized mean value theorems (Taylor's theorem, Maclaurin's theorem), Expansions of some functions. Indeterminate forms: $0/0$, ∞/∞, $0 \cdot \infty$, $\infty-\infty$, 00, 1∞, $\infty 0$.	20
Sept	**Unit III:** Functions of two variables, Neighborhood of a point (a,b), Limit & Continuity, Partial derivatives, Geometrical Interpretation, Homogeneous functions, Theorems on total differentials,	15
Oct Nov	Equality of $fxy(a,b)$ & $fyx(a,b)$, Equality of fxy & fyx, Taylors theorem for functions of two variables.	05
Dec	**Unit I : Integration, Definition, Standard Forms,** Methods of Integration, Integral of product of two functions, Reduction formulae, Integral of rational fractions, Partial fractions, Non-repeated linear factors, Repeated factors, Integration of Irrational Algebraic fractions, A rational function of a root of a linear expression and x, Integration of $xm(a + bn)p$, Reduction formulae for $\square xm \square a \square bn \square p$	20
Jan	**Unit II :** Integration of Transcendental Functions Integration of $\sin mx$, $\cos nx$, reduction formulae for $\square \sin n\,x\,dx$, reduction formulae for $\sin \cos \square m\,x\,n\,x\,dx$, Integration of $\tan nx$ and $\cot nx$, Integration of $\sec nx$ and $\csc nx$, Integration of $xn \sin mx$ or $xn \cos mx$, Definite Integrals : Definitions, General properties of the definite integrals, The integral as the limit of a sum, Areas 10	20
Feb	**unit III : Areas of Curves :** Areas of curve given by Cartesian equations, Areas of curves given by polar equations. Multiple Integrals : Double integrals, Evaluation of double integrals, Area by double integration, Volume under a surface, Triple integrals, Gamma function, Definition, An important property, Product of	15
March	two single integrals, Value of $\Gamma(1/2)$. Integral of $\sin 2m-1x \cos 2n-1x$, Beta function, Dirichlet's integral	05
April		

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Department of Mathematics

COLLEGE CODE 118

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Department of Mathematics
Annual Teaching plan 2017-18
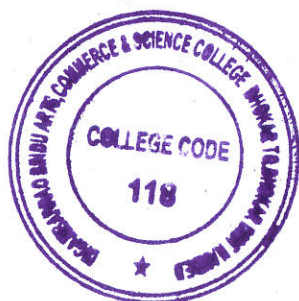Dinbarrao Bindu ACS College,Bhokar
Dist.Nanded.(M.S.)

DEPARTMENT OF MATHEMATICS

Class : B.SC-S.Y
Title of the Paper & No.: Real Aalysis-I (VI) and Real Aalysis-II(IX)
Name of the Teacher: Dr.S.B.Chavhan

ANNUAL TEACHING PLAN 2017-18

Month	Course content	Expected Periods
June	**Revision:**	03
July	**Unit–I : Sets and Functions** Sets and Elements; Operations on sets, Functions, real valued functions, Equivalence, Real numbers, Least upper bounds.	20
Aug	**Unit–II : Sequence of Real Numbers.** Definition of sequence and subsequence, Limit of a sequence, Convergent sequences, Divergent sequences, Bounded sequences. Monotone sequences. Cauchy sequences.	15
Sept	**Unit–III : Series of Real Numbers.** Convergence and divergence, Series with non-negative terms, Alternative series, Conditional convergence and absolute convergence,	17
Oct	Tests for absolute convergence.	05
Nov		
Dec	**Unit–I : The Riemann Integral.** Definitions and Existence of the integral, Refinement of partitions; Darboux's theorem, Conditions of integrability, Intergrability of the sum and difference of Integrable functions, The integral as a limit of sums (Riemann Sums).Some Integrable Functions , **:Improper Integrals.** Introduction, Integration of unbounded functions with Finite Limits of Integration, Comparison Test, for Convergence at a of fdx.Absolute Convergence.	20
Jan	**Unit–II** Integration and Differentiations, Fundamental Theorem of Calcul;us , Mean value Theorem.	20
Feb	**Unit III Fourier Series .** Trigonometric Series, Fourier Series , Some Preliminary Theorems, Periodic Function, Some Definitions, Some Theorems The Main	15
March	Theorem ,Fourier Series of Even and Odd Functions , Half Range Series	05
April		

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Bhokar.Ta.Bhokar Dist.Nanded

COLLEGE CODE
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Department of Mathematics
Digambarrao Bindu ACS College,Bhokar
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Department of Mathematics

Annual Teaching plan 2017-18

DIGAMBARRAO BINDU ARTS & COMMERCE COLLEGE, BHOKAR DIST. NANDED

DEPARTMENT OF MATHEMATICS

Class: B.SC-T.Y

Title of the Paper & No.:   Mechanics-I(XIV-B) &   Mechanics-II (XVII -B)

Name of the Teacher: Dr.S.B.Chavhan

ANNUAL TEACHING PLAN 2017-18		
Month	**Course content**	**Expected Periods**
June	**Revision:, Forces Acting on a particle**	05
July	**Unit I: (Forces Acting on a particle)** Definitions, Law of parallelogram of forces, Determination of magnitude and direction, Resultant of forces, Components and resolved parts, The Algebric Sum of the resolved parts of two forces , To find magnitude and direction, Resultant of parallel forces.	16
Aug	**Unit II: (Equilibrium of Forces acting on a particle)** Triangle Law of forces, Converse of triangle law of forces, Polygon of forces Lami's Theorem, Conditions of equilibrium of forces acting on a particle.	15
Sept	**Unit III (Forces acting on a rigid body)** Introduction, Moment of force, The sum of vector moment of a system of forces, The Sum of the vector moments of two like parallel forces acting on a rigid body, Couples, Two couples acting in one plane upon a rigid body, Equivalent couples, The vector of the resultant couple of two couples. A System of forces acting upon a rigid body,	19
Oct	Conditions of equilibrium of forces acting on a rigid body and Cartesian form, Conditions of equilibrium of coplanar forces acting on a rigid body.	05
Nov		
Dec	**Unit I: (Kinematics and Dynamics of a particle in two dimensions)** Introduction, Definitions, Expressions for velocity and acceleration, Components of velocity and acceleration, Tangent and unit vector, Rate of change of a unit vector moving in a plane, Curvature and principal normal, Tangential and normal components of velocity and acceleration, Angular speed and angular velocity, Angular acceleration, The radial and transverses directions, Find the radial and transverse components of velocity and accelerations .	20
Jan	**Unit II: (Kinetics of a Particle)** Introduction, Newton's law of motion, Matter, Linear momentum, Impulsive force and its impulse, Unit of impulse, Conservation of linear momentum, Impact of two bodies, Work, Work done by a force, Unit of work, Power, Energy, Kinetic energy, Potential Energy Kinetic energy of particle of mass m moving with velocity, Definition of scalar and vector point function, Scalar and vector field, Field of force, Conservative field of force , Potential function.	20
Feb	**Unit III : (Motion of a Projectile and motion in resisting medium)** Rectilinear motion, Motion under gravity,	15
March	Projectile, Range on inclined plane projectile to pass through a given point (h, k),	05
April		

Department of Mathematics

Annual Teaching plan 2017-18
Department of Mathematics
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Digambarrao Bindu Arts, Commerce & Science College, Bhokar, Dist Nanded

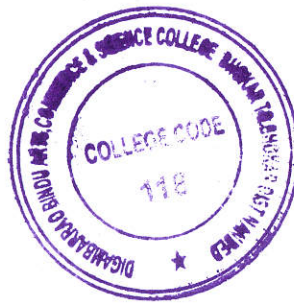## Annual Teaching Plan for <u>2018-2019</u>

Department of Mathematics

Workload Distribution

Class	Dr.S.B.Chavhan		Mr.O.K.Berdewad		Miss.Solanke S.R		Miss.Jyoti Mandalwad	
	Theory	**Practical**	**Theory**	**Practical**	**Theory**	**Practical**		
B.Sc. I Sem.-I	Paper-I			Paper-V			Paper-II	Practical
B.Sc. I Sem.-II	Paper- III						Paper-IV	
B.Sc. II Sem.-III	Paper-VI	PAPER-XII(SEC)	Paper-VII		Paper-VIII			
B.Sc. II Sem.-IV	Paper-IX		Paper-X		Paper-XI			
B.Sc. III Sem.-V	Paper-XIII				Paper-XIV	Paper-XIX	Paper-XV	
B.Sc. III Sem.-VI	Paper-XVIII(B)				Paper-XVI		P-XVII	

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Digambarrao Bindu ACS College,Bhokar
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DIGAMBARRAO BINDU ARTS & COMMERCE COLLEGE, BHOKAR DIST. NANDED

DEPARTMENT OF MATHEMATICS

Class: B.SC-T.Y
Title of the Paper & No.: Metric Space (XII) and Numerical Analysis (XV)
Name of the Teacher: Dr.S.B.Chavhan

Month	Course content	Expected Periods
	ANNUAL TEACHING PLAN 2018-19	
June	**Revision:**	05
July	**Unit I:** Definitions and examples, open and closed sets.	20
Aug	**Unit II**: Convergence and completeness, Continuity and uniform continuity.	15
Sept	**Unit III**: Compactness,	15
Oct	Connectedness.,	05
Nov		
Dec	**Unit I:** (**Differences, Operators, Interpolation with equal intervals**) Introduction, Differences, Theorem, Factorial notation, The operator E, Properties of E and D. , the operators D andÑ, Interpolation, Extrapolation, Interpolation with equal intervals, Newton- Gregory formula for forward and backward interpolation, Equidistant terms with one or more missing terms. Interpolation for unequal intervals of the arguments, Divided differences with unequal intervals, Divided differences, When two or more arguments are same, Properties of divided differences (Theorems 1, 2 only)	20
Jan	**Unit II**: Properties of divided differences(Theorems 3, 4 only), Newton's, Formula for unequal intervals, Lagrange's, Formula for unequal intervals, Central differences ($\tilde{N}$,d ,s ,µ), Interpolation formulae: Gauss, Bessel and Stirling's.	15
Feb	**Unit III:** Numerical differentiation, Introduction, Approximate Expressions for the derivative of a function, Unsymmetrical expressions for third order derivative, Numerical quadrature, Introduction, General quadrature formula, Trapezoidal, Simpson's one-third and three-eight rules. Weddle's rule. Numerical solution of O.D.E.,	20
March	Introduction, equation of first order, Euler"s method, Euler"s modified method, Picard's method, Talyor series method.	05
April		

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Department of Mathematics

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Annual Teaching plan 2018-19
Department of Mathematics
...mbarrao Bindu ACS College, Bhokar
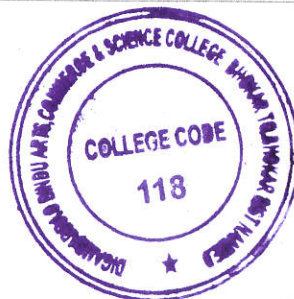Dist.Nanded.(M.S.)

DIGAMBARRAO BINDU ARTS & COMMERCE COLLEGE, BHOKAR DIST. NANDED

DEPARTMENT OF MATHEMATICS

Class: B.SC-F.Y
Title of the Paper & No.: Particles
Name of the Teacher: Dr.S.B.Chavhan

ANNUAL TEACHING PLAN 2018-19		
Month	**Course content**	**Expected Periods**
June	**Revision:**	
July	1) To enter the Matrix A and pick-out following entries from it : $A11$, $A21$, $A22$, $A23$. 2) To find the transpose a matrix.	8
Aug	3) For two matrices A and B, to find $A + B$ & $B + A$ and to verify whether the matrix addition is commutative. 4) For a square matrix A to find $A2$, $A3$, $A4$, $A5$. 7) To verify both left distributive law and right distributive law. 8) To find the determinant of a square matrix.	8
Sept	5) For two matrices A and B, confirmable for multiplication from both sides, to find AB and BA. 6) To verify the associativity of matrix addition.	8
Oct	9) To find the inverse of a square matrix. 10) To find the rank of the matrices.	02
Nov		
Dec	11) To solve the system of linear equations whose matrix equation is $Ax = b$ and check the solution. 12) To find the eigen values of a square matrix. 13) To find the eigen vectors of a square matrix. 14) To find the characteristic polynomial of a square matrix.	8
Jan	15) To find the conjugate a matrix. 16) To plot $f(x) = 10 \sin$ for x between 0 and 20. 17) To plot $r(\theta) = 1 + 2\sin2(2\theta)$ for $0 < \theta < 2\pi$. 18) To plot the contours of $z = \cos x \cos y \, e x y2 / 4$ over the default domains. 19) To plot the surface for $z = 2\,2\,51$ over the domain $|x| < 3$ and $|y| < 3$. 20) To plot multiple graphs $y1 = \sin t$, $y2 = t$, $y3 = 13! 5! \, t \, t$ in same figure Window 21) To plot $x = e\text{-}t$, $y = t$, $0 \, t \, 2\pi$.	8
Feb	22) To plot $f(t) = t \sin t$, $0 \, t \, 10\pi$. 23) To plot the surface z = $2\,2\,xy\,xx\,y$, $\text{-}3 \, x \, 3$, $.\text{-}3 \, y \, 3$ by computing the values of z over 50 x 50 grid on specified domain. 24) To draw a cylinder with base radius $r = 40$ and top radius $r = 60$ 25) To plot the unit sphere.	08
March	Revision	02
April		

Principal

COLLEGE CODE
118

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Head
Department of Mathematics
Digambarrao Bindu ACS College Bhokar
Dist.Nanded.(M.S.)

Department of Mathematics

Annual Teaching plan 2018-19

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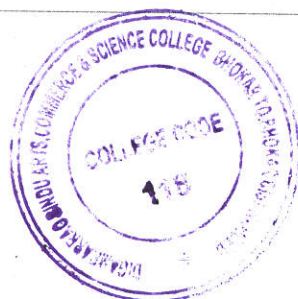
DEPARTMENT OF MATHEMATICS

Class: B.SC-F.Y

Title of the Paper & No.: Differential Calculus (I) & Integral Calculus(IV)

Name of the Teacher: Dr.S.B.Chavhan

ANNUAL TEACHING PLAN 2018-19		
Month	**Course content**	**Expected Periods**
June	**Revision:** Relation, Functions, Limit, Continuity, Differentiation,	03
July	Derivatives of some standard functions, Some rules of Differentiation. **Unit I:** Hyperbolic functions, Higher order derivatives, nth order derivatives, Leibnitz theorem, Equation of tangent and normal, Angle of intersection of two curves, Length of tangent, normal, sub tangent and subnormal at any point of a curve.	15
Aug	**Unit II:** Rolle's theorem, Lagrange's mean value theorem, Meaning of sign of derivative, Cauchy's mean value theorem, Generalized mean value theorems (Taylor's theorem, Maclaurin's theorem), Expansions of some functions. Indeterminate forms: $0/0$, ∞/∞, $0 \cdot \infty$, $\infty-\infty$, 0^0, 1^∞, ∞^0.	20
Sept	**Unit III:** Functions of two variables, Neighborhood of a point (a,b), Limit & Continuity, Partial derivatives, Geometrical Interpretation, Homogeneous functions, Theorems on total differentials,	17
Oct	Equality of fxy(a,b) & fyx(a,b), Equality of fxy & fyx , Taylors theorem for functions of two variables.	05
Nov		
Dec	**Unit I : Integration, Definition, Standard Forms,** Methods of Integration, Integral of product of two functions, Reduction formulae, Integral of rational fractions, Partial fractions, Non-repeated linear factors, Repeated factors, Integration of Irrational Algebraic fractions, A rational function of a root of a linear expression and x, Integration of $xm(a+bn)p$, Reduction formulae for $\int xm \; a \; bn \; p$	20
Jan	**Unit II :** Integration of Transcendental Functions Integration of sinmx, cosnx, reduction formulae for $\int sin n \, x dx$, reductionformulae for sin cos $\int m \, x \, n \, x dx$, Integration of tannx and cotnx, Integration of secnx and cosecnx, Integration of xnsinmx or xncosmx, Definite Integrals : Definitions, General properties of the definite integrals, The integral as the limit of a sum, Areas 10	15
Feb	**unit III : Areas of Curves :** Areas of curve given by Cartesian equations, Areas of curves given by polar equations. Multiple Integrals : Double integrals, Evaluation of double integrals, Area by double integration, Volume under a surface, Triple integrals, Gamma function, Definition, An important property, Product of	20
March	two single integrals, Value of $\Gamma(1/2)$, Integral of sin$2m$-$1x$ cos$2n$-$1x$, Beta function, Dirichlet's integral	05
April		

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Digambarrao Bindu Arts,Com.& Sci.College
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Department of Mathematics

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DIGAMBARRAO BINDU ARTS & COMMERCE COLLEGE, BHOKAR DIST. NANDED

DEPARTMENT OF MATHEMATICS

Class : B.SC-S.Y
Title of the Paper & No.: Real Aalysis-I (VI) and Real Aalysis-II(IX)
Name of the Teacher: Dr.S.B.Chavhan

Month	Course content	Expected Periods
June	**Revision:**	03
July	**Unit–I : Sets and Functions** Sets and Elements; Operations on sets, Functions, real valued functions, Equivalence, Real numbers, Least upper bounds.	18
Aug	**Unit–II : Sequence of Real Numbers.** Definition of sequence and subsequence, Limit of a sequence, Convergent sequences, Divergent sequences, Bounded sequences, Monotone sequences, Cauchy sequences.	15
Sept	**Unit–III : Series of Real Numbers.** Convergence and divergence, Series with non-negative terms, Alternative series, Conditional convergence and absolute convergence,	19
Oct	Tests for absolute convergence.	05
Nov		
Dec	**Unit–I : The Riemann Integral.** Definitions and Existence of the integral, Refinement of partitions; Darboux's theorem, Conditions of integrability, Intergrability of the sum and difference of Integrable functions, The integral as a limit of sums (Riemann Sums).Some Integrable Functions , **:Improper Integrals.** Introduction, Integration of unbounded functions with Finite Limits of Integration, Comparison Test, for Convergence at a of fdx.Absolute Convergence.	20
Jan	**Unit–II** Integration and Differentiations. Fundamental Theorem of Calcul;us , Mean value Theorem.	15
Feb	**Unit III Fourier Series .** Trigonometric Series, Fourier Series , Some Preliminary Theorems, Periodic Function, Some Definitions, Some Theorems The Main	20
March	Theorem ,Fourier Series of Even and Odd Functions , Half Range Series	05
April		

Principal

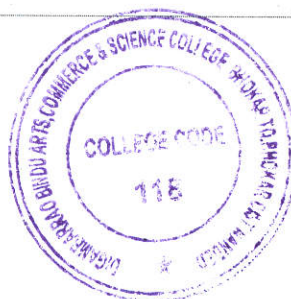HOD

Department of Mathematics

Annual Teaching plan 2018-19

DIGAMBARRAO BINDU ARTS & COMMERCE COLLEGE, BHOKAR DIST. NANDED

DEPARTMENT OF MATHEMATICS

Class: B.SC-T.Y

Title of the Paper & No.: Mechanics-I(XIV-B) & Mechanics-II (XVII -B)

Name of the Teacher: Dr.S.B.Chavhan

Month	ANNUAL TEACHING PLAN 2018-19	
	Course content	Expected Periods
June	**Revision:, Forces Acting on a particle**	06
July	**Unit I: (Forces Acting on a particle)** Definitions, Law of parallelogram of forces, Determination of magnitude and direction, Resultant of forces, Components and resolved parts,The Algebric Sum of the resolved parts of two forces , To find magnitude and direction, Resultant of parallel forces.	14
Aug	**Unit II: (Equilibrium of Forces acting on a particle)** Triangle Law of forces, Converse of triangle law of forces, Polygon of forces Lami's Theorem, Conditions of equilibrium of forces acting on a particle.	16
Sept	**Unit III (Forces acting on a rigid body)** Introduction, Moment of force, The sum of vector moment of a system of forces, The Sum of the vector moments of two like parallel forces acting on a rigid body, Couples, Two couples acting in one plane upon a rigid body, Equivalent couples, The vector of the resultant couple of two couples, A System of forces acting upon a rigid body,	19
Oct	Conditions of equilibrium of forces acting on a rigid body and Cartesian form, Conditions of equilibrium of coplanar forces acting on a rigid body.	05
Nov		
Dec	**Unit I: (Kinematics and Dynamics of a particle in two dimensions)** Introduction, Definitions, Expressions for velocity and acceleration, Components of velocity and acceleration, Tangent and unit vector, Rate of change of a unit vector moving in a plane, Curvature and principal normal, Tangential and normal components of velocity and acceleration, Angular speed and angular velocity, Angular acceleration, The radial and transverses directions, Find the radial and transverse components of velocity and accelerations .	20
Jan	**Unit II: (Kinetics of a Particle)** Introduction, Newton's law of motion, Matter, Linear momentum, Impulsive force and its impulse, Unit of impulse, Conservation of linear momentum, Impact of two bodies, Work, Work done by a force, Unit of work, Power, Energy, Kinetic energy, Potential Energy Kinetic energy of particle of mass m moving with velocity, Definition of scalar and vector point function, Scalar and vector field, Field of force, Conservative field of force , Potential function.	20
Feb	**Unit III : (Motion of a Projectile and motion in resisting medium)** Rectilinear motion, Motion under gravity,	15
March	Projectile, Range on inclined plane projectile to pass through a given point (h, k),	05
April		

Principal

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Department of Mathematics College
Bhokar,Tq.Bhokar Dist.Nanded

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Annual Teaching plan 2018-19

Department of Mathematics
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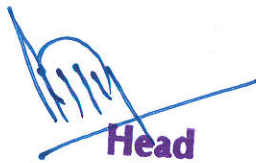# Digambarrao Bindu Arts, Commerce & Science College, Bhokar, Dist Nanded

Annual Teaching Plan for <u>2019-20</u>

Department of Mathematics

Workload Distribution

Class	Name of Teachers							
	Dr.S.B.Chavhan		Miss.S.R.Sollanke		Mr.S.M.Tekale			
	Theory	Practical	Theory	Practical	Theory	Practical		
B.Sc. I Sem.-I	Paper-I	Paper-V	Paper-II					
B.Sc. I Sem.-II	Paper- III		Paper-IV					
B.Sc. II Sem.-III	Paper-VI		Paper-VII		Paper-VIII			
B.Sc. II Sem.-IV	Paper-IX		Paper-X		Paper-XI			
B.Sc. III Sem.-V	Paper-XII&XIV				Paper-XIII			
B.Sc. III Sem.-VI	Paper-XV&XVII				Paper-XVI			

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DEPARTMENT OF MATHEMATICS

Class:	B.SC-T.Y
Title of the Paper & No.:	Metric Space (XII) and Numerical Analysis (XV)
Name of the Teacher:	Dr.S.B.Chavhan

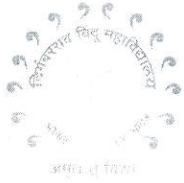| ANNUAL TEACHING PLAN 2019-20		
Month	**Course content**	**Expected Periods**
June	**Revision:**	05
July	**Unit I:** Definitions and examples. open and closed sets.	20
Aug	**Unit II:** Convergence and completeness. Continuity and uniform continuity.	15
Sept	**Unit III:** Compactness,	15
Oct.	Connectedness.,	05
Nov		
Dec	**Unit I: (Differences, Operators, Interpolation with equal intervals)** Introduction, Differences, Theorem, Factorial notation, The operator E, Properties of E and D, , the operators D and Ñ, Interpolation, Extrapolation, Interpolation with equal intervals, Newton- Gregory formula for forward and backward interpolation, Equidistant terms with one or more missing terms. Interpolation for unequal intervals of the arguments, Divided differences with unequal intervals, Divided differences, When two or more arguments are same, Properties of divided differences (Theorems 1, 2 only)	20
Jan	**Unit II:** Properties of divided differences(Theorems 3, 4 only), Newton's, Formula for unequal intervals, Lagrange's, Formula for unequal intervals, Central differences (Ñ,d ,s ,μ), Interpolation formulae: Gauss, Bessel and Stirling's.	15
Feb	**Unit III:** Numerical differentiation, Introduction, Approximate Expressions for the derivative of a function, Unsymmetrical expressions for third order derivative, Numerical quadrature, Introduction, General quadrature formula, Trapezoidal, Simpson's one-third and three-eight rules. Weddle's rule. Numerical solution of O.D.E.,	20
March	Introduction, equation of first order, Euler''s method, Euler''s modified method, Picard's method, Talyor series method.	05
April		

DIGAMBARRAO BINDU ARTS & COMMERCE COLLEGE, BHOKAR DIST. NANDED

DEPARTMENT OF MATHEMATICS

Class: B.SC-F.Y

Title of the Paper & No.: Particles

Name of the Teacher: Dr.S.B.Chavhan

Month	Course content	Expected Periods
	ANNUAL TEACHING PLAN 2019-20	
June	**Revision:**	
July	1) To enter the Matrix A and pick-out following entries from it : $A11$, $A21$, $A22$, $A23$. 2) To find the transpose a matrix.	8
Aug	3) For two matrices A and B, to find $A + B$ & $B + A$ and to verify whether the matrix addition is commutative. 4) For a square matrix A to find $A2$, $A3$, $A4$, $A5$. 7) To verify both left distributive law and right distributive law. 8) To find the determinant of a square matrix.	8
Sept	5) For two matrices A and B, confirmable for multiplication from both sides, to find AB and BA. 6) To verify the associativity of matrix addition.	8
Oct	9) To find the inverse of a square matrix. 10) To find the rank of the matrices.	02
Nov.		
Dec	11) To solve the system of linear equations whose matrix equation is $Ax = b$ and check the solution. 12) To find the eigen values of a square matrix. 13) To find the eigen vectors of a square matrix. 14) To find the characteristic polynomial of a square matrix.	8
Jan	15) To find the conjugate a matrix. 16) To plot $f(x) = 10 \sin$ for x between 0 and 20. 17) To plot $r(\theta) = 1 + 2\sin2(2\theta)$ for $0 < \theta < 2\pi$.18) To plot the contours of $z = \cos x \cos y$ ex$y2 / 4\Box$ over the default domains.19) To plot the surface for $z = 2\ 2\ 51$ over the domain $\|x\| < 3$ and $\|y\| < 3$. 20) To plot multiple graphs $y1 = \sin t$, $y2 = t$, $y3 = 13!\ 5!\ \Box\ t\ \Box\ t$ in same figure Window 21) To plot $x = e\text{-}t$, $y = t$, $0\ \Box\ t\ \Box\ 2\pi$.	8
Feb	22) To plot $f(t) = t\ \sin t$, $0\ \Box\ t\ \Box\ 10\pi$. 23) To plot the surface $z = 2\ 2\ xy\ xx\ y$, $-3\ \Box\ x\ \Box\ 3$, $-3\ \Box\ y\ \Box\ 3$ by computing the values of z over 50 x 50 grid on specified domain. 24) To draw a cylinder with base radius $r = 40$ and top radius $r = 60$ 25) To plot the unit sphere.	08
March	Revision	02
April		

Principal

HOD

Department of Mathematics

Annual Teaching plan 2019-20

DIGAMBARRAO BINDU ARTS & COMMERCE COLLEGE, BHOKAR DIST. NANDED

DEPARTMENT OF MATHEMATICS

Class: B.SC-F.Y
Title of the Paper & No.: Differential Calculus (I) & Geometry (IV)
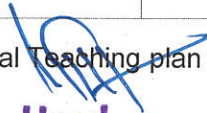Name of the Teacher: Dr.S.B.Chavhan

ANNUAL TEACHING PLAN 2019-20

Month	Course content	Expected Periods
June	**Revision:** Relation, Functions, Limit, Continuity, Differentiation,	03
July	**Unit-I:** Differentiation Derivability and derivative, derived function, derivability implying continuity, geometrical interpretation of a derivative, derivatives of hyperbolic functions, derivatives of inverse hyperbolic functions, Higher order derivatives, calculation of the nth derivative, determination of nth derivative of rational functions, nth derivatives of the products of the powers of sines and cosines, Leibnitz theorem.	12
Aug	**Unit-II:** Expansion of functions, Tangents and Normals Maclaurin's theorem, Taylor's theorem, Equations of the tangent and normal, Angle of intersection of two curves, length of the tangent, normal, sub-tangent, sub-normal, pedal equations.	15
Sept	**Unit-III:** Mean Value Theorems Rolle's Theorem, Lagrange's mean value theorem, Meaning of sign of derivative, Graphs of hyperbolic functions, Cauchy's mean value theorem, Generalized mean value theorems(Taylor's theorem, Maclaurin's theorem). **Unit-IV:** Partial Differentiations Introduction, Functions of two variables, Neighborhood of a point (a,b), Limit and Continuity, Partial derivatives	20
Oct	, Geometrical Interpretation, Homogeneous functions, Euler's Theorem on homogeneous function and corollary, Theorems on total differentials, Equality of fxy(a; b) and fyx(a; b); Equality of fxyandfyx; Taylors theorem for functions of two variables (Only Statement).	10
Nov	**Unit-I:** Co-ordinates and Transformation of Co-ordinates Direction cosines of a line, a useful relation, relation between direction cosines, Projection	07
Dec	on a straight line, projection of a point on a line, projection of a segment on another line, projection of a broken line, projection of the join of two lines. Angle between two lines. Transformation of Co-ordinates: Introduction, change of origin, change of the direction of a axes, relation between direction cosines of three mutual Perpendicular lines. **Unit-II:** The Plane General equation of _rst degree, converse of the preceding theorem, Transformation to the normal form, direction cosines of the normal to a plane, angle between two planes, determination of plane under given conditions, intercept form of the equation of a plane, plane through three points, system of planes, two sides of a plane, length of perpendicular from a point to a plane, bisectors of angle between two planes.	15
Jan	**Unit-III:** Right line Representation of line, equation of line through a given point drawn in a given direction, equation of a line through two points, two forms of the equation of line, Transformation from the unsymmetrical to the symmetrical form, angle between a line and a plane, condition for a line to lie in a plane, coplanar lines, condition for coplanarity of lines, Number of arbitrary constants in the equation of straight line, determination of lines satisfying given conditions, the shortest distance between two lines, length of the perpendicular from a 8	15

Department of Mathematics

Annual Teaching plan 2019-20

	point to a line	
Feb	**Unit-IV**: Sphere, Cones and Cylinders Definition, equation of sphere, General equation of a sphere, The sphere through four given points, sphere, plane section of a sphere, intersection of two spheres, sphere with a given diameter, equation of a circle, Power of a point, equation of a tangent plane, plane of contact,	15
March	the polar plane , pole of plane, some results concerning poles and polars, angle of intersection of two spheres, condition for the orthogonally of two spheres. Cones, cylinders: Definition, equation of a cone with a conic as a guiding curve, The right circular cone, definition, the cylinder, equation of a cylinder, the right circular cylinder, definition	08
April		

Principal   HOD

Annual Teaching plan 2019-20

DEPARTMENT OF MATHEMATICS

Class   : B.SC-S.Y
Title of the Paper & No.:   Real Aalysis-I (VI) and   Real Aalysis-II(IX)
Name of the Teacher: Dr.S.B.Chavhan

ANNUAL TEACHING PLAN 2019-20

Month	Course content	Expected Periods
June	**Revision:**	03
July.	**Unit–I : Sets and Functions** Sets and Elements; Operations on sets, Functions, real valued functions, Equivalence, Real numbers, Least upper bounds.	20
Aug	**Unit–II : Sequence of Real Numbers.** Definition of sequence and subsequence, Limit of a sequence, Convergent sequences, Divergent sequences, Bounded sequences, Monotone sequences, Cauchy sequences.	20
Sept	**Unit–III : Series of Real Numbers.** Convergence and divergence, Series with non-negative terms, Alternative series, Conditional convergence and absolute convergence,	19
Oct	Tests for absolute convergence.	05
Nov		
Dec	**Unit–I : The Riemann Integral.** Definitions and Existence of the integral, Refinement of partitions; Darboux's theorem, Conditions of integrability, Intergrability of the sum and difference of Integrable functions, The integral as a limit of sums (Riemann Sums).Some Integrable Functions , **:Improper Integrals.** Introduction, Integration of unbounded functions with Finite Limits of Integration, Comparison Test, for Convergence at a of fdx.Absolute Convergence.	20
Jan	**Unit–II** Integration and Differentiations, Fundamental Theorem of Calcul;us , Mean value Theorem.	15
Feb	**Unit III Fourier Series .** Trigonometric Series, Fourier Series , Some Preliminary Theorems, Periodic Function, Some Definitions, Some Theorems The Main	20
March	Theorem ,Fourier Series of Even and Odd Functions , Half Range Series	05
April		

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Department of Mathematics   Annual Teaching plan 2019-20

DIGAMBARRAO BINDU ARTS & COMMERCE COLLEGE, BHOKAR DIST. NANDED

DEPARTMENT OF MATHEMATICS

Class: B.SC-T.Y

Title of the Paper & No.: Mechanics-I(XIV-B) & Mechanics-II (XVII -B)

Name of the Teacher: Dr.S.B.Chavhan

ANNUAL TEACHING PLAN 2019-20

Month	Course content	Expected Periods
June	**Revision:. Forces Acting on a particle**	06
July	**Unit I: (Forces Acting on a particle)** Definitions, Law of parallelogram of forces, Determination of magnitude and direction, Resultant of forces, Components and resolved parts,The Algebric Sum of the resolved parts of two forces , To find magnitude and direction, Resultant of parallel forces.	15
Aug	**Unit II: (Equilibrium of Forces acting on a particle)** Triangle Law of forces, Converse of triangle law of forces, Polygon of forces Lami's Theorem. Conditions of equilibrium of forces acting on a particle.	20
Sept	**Unit III (Forces acting on a rigid body)** Introduction, Moment of force, The sum of vector moment of a system of forces, The Sum of the vector moments of two like parallel forces acting on a rigid body, Couples, Two couples acting in one plane upon a rigid body, Equivalent couples, The vector of the resultant couple of two couples, A System of forces acting upon a rigid body,	14
Oct	Conditions of equilibrium of forces acting on a rigid body and Cartesian form, Conditions of equilibrium of coplanar forces acting on a rigid body.	05
Nov		
Dec	**Unit I: (Kinematics and Dynamics of a particle in two dimensions)** Introduction, Definitions, Expressions for velocity and acceleration, Components of velocity and acceleration, Tangent and unit vector, Rate of change of a unit vector moving in a plane, Curvature and principal normal, Tangential and normal components of velocity and acceleration, Angular speed and angular velocity, Angular acceleration. The radial and transverses directions, Find the radial and transverse components of velocity and accelerations .	20
Jan.	**Unit II: (Kinetics of a Particle)** Introduction, Newton's law of motion, Matter, Linear momentum, Impulsive force and its impulse, Unit of impulse, Conservation of linear momentum, Impact of two bodies, Work, Work done by a force, Unit of work, Power, Energy, Kinetic energy, Potential Energy Kinetic energy of particle of mass m moving with velocity, Definition of scalar and vector point function, Scalar and vector field, Field of force, Conservative field of force , Potential function.	15
Feb	**Unit III : (Motion of a Projectile and motion in resisting medium)** Rectilinear motion, Motion under gravity,	20
March	Projectile, Range on inclined plane projectile to pass through a given point (h, k),	05
April		

Principal

HOD

Digambarrao Bindu Arts, Commerce & Science College, Bhokar, Dist Nanded

Annual Teaching Plan for <u>2020-21</u>

Department of Mathematics

Workload Distribution

Class	Name of Teachers							
	Dr.S.B.Chavhan		C.H.B		C.H.B			
	Theory	Practical	Theory	Practical	Theory	Practical		
B.Sc. I Sem.-I	Paper-I	Paper-V	Paper-II					
B.Sc. I Sem.-II	Paper- III		Paper-IV					
B.Sc. II Sem.-III	Paper-VI		Paper-VII		Paper-VIII			
B.Sc. II Sem.-IV	Paper-IX		Paper-X		Paper-XI			
B.Sc. III Sem.-V	Paper-XII&XIV				Paper-XIII			
B.Sc. III Sem.-VI	Paper-XV&XVII				Paper-XVI			

Head
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Dist.Nanded.(M.S.)

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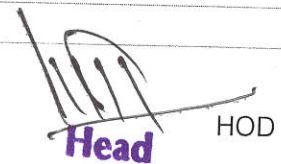Digambarrao Bindu Arts, Com.& Sci.College
Bhokar, Tq.Bhokar Dist.Nanded

Class: B.SC-T.Y

Title of the Paper & No.:   Metric Space (XII) and Numerical Analysis (XV)

Name of the Teacher: Dr.S.B.Chavhan

ANNUAL TEACHING PLAN 2020-21

Month	Course content	Expected Periods
Dec	**Revision:** **Unit I:** Definitions and examples, open and closed sets.	05
		20
Jan	**Unit II:** Convergence and completeness, Continuity and uniform continuity.	15
Feb	**Unit III:** Compactness.	15
March	Connectedness.,	05
April	**Unit I: (Differences, Operators, Interpolation with equal intervals)** Introduction, Differences, Theorem, Factorial notation, The operator E, Properties of E and D, , the operators D andÑ, Interpolation, Extrapolation, Interpolation with equal intervals. Newton- Gregory formula for forward and backward interpolation, Equidistant terms with one or more missing terms. Interpolation for unequal intervals of the arguments, Divided differences with unequal intervals, Divided differences, When two or more arguments are same, Properties of divided differences (Theorems 1, 2 only)	20
May	**Unit II:** Properties of divided differences(Theorems 3, 4 only), Newton's, Formula for unequal intervals, Lagrange's, Formula for unequal intervals, Central differences (Ñ,d ,s ,µ), Interpolation formulae: Gauss, Bessel and Stirling's.	15
Jun	**Unit III:** Numerical differentiation, Introduction, Approximate Expressions for the derivative of a function, Unsymmetrical expressions for third order derivative, Numerical quadrature, Introduction, General quadrature formula, Trapezoidal, Simpson's one-third and three-eight rules. Weddle's rule. Numerical solution of O.D.E.,	20
July	Introduction, equation of first order, Euler"s method, Euler"s modified method, Picard's method, Talyor series method.	05

Principal

Department of Mathematics

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'epartment of Mathematics
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Dist.Nanded (M.S.)
Annual Teaching plan 2020-21

DIGAMBARRAO BINDU ARTS & COMMERCE COLLEGE, BHOKAR DIST. NANDED

DEPARTMENT OF MATHEMATICS

Class: B.SC-F.Y

Title of the Paper & No.: Particles

Name of the Teacher: Dr.S.B.Chavhan

ANNUAL TEACHING PLAN 2020-21

Month	Course content	Expected Periods
	Revision:	
Dec	1) To enter the Matrix A and pick-out following entries from it : $A11$, $A21$, $A22$, $A23$. 2) To find the transpose a matrix.	8
Jan	3) For two matrices A and B, to find $A + B$ & $B + A$ and to verify whether the matrix addition is commutative. 4) For a square matrix A to find $A2$, $A3$, $A4$, $A5$. 7) To verify both left distributive law and right distributive law. 8) To find the determinant of a square matrix.	8
Feb	5) For two matrices A and B, confirmable for multiplication from both sides, to find AB and BA. 6) To verify the associativity of matrix addition.	8
March	9) To find the inverse of a square matrix. 10) To find the rank of the matrices.	02
April	11) To solve the system of linear equations whose matrix equation is $Ax = b$ and check the solution. 12) To find the eigen values of a square matrix. 13) To find the eigen vectors of a square matrix. 14) To find the characteristic polynomial of a square matrix.	8
May	15) To find the conjugate a matrix. 16) To plot $f(x) = 10 \sin$ for x between 0 and 20. 17) To plot $r(\theta) = 1 + 2\sin2(2\theta)$ for $0 < \theta < 2\pi$. 18) To plot the contours of $z = \cos x \cos y \, exy2 / 4$ over the default domains. 19) To plot the surface for $z = 2\,2\,51$ over the domain $\lvert x \rvert < 3$ and $\lvert y \rvert < 3$. 20) To plot multiple graphs $y1 = \sin t$, $y2 = t$, $y3 =13!\,5!\, t \, t$ in same figure Window 21) To plot $x = e-t$, $y = t$, $0 \, t \, 2\pi$.	8
Jun	22) To plot $f(t) = t \sin t$, $0 \, t \, 10\pi$. 23) To plot the surface $z = 2\,2\,xy\,xx\,y$, $-3 \, x \, 3$, $. -3 \, y \, 3$ by computing the values of z over 50 x 50 grid on specified domain. 24) To draw a cylinder with base radius $r = 40$ and top radius $r = 60$ 25) To plot the unit sphere.	08
July	Revision	
April		02

Principal

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Digambarrao Bindu Arts,Com.& Sci.College
Bhokar,To.Bhokar Dist.Nanded

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Department of Mathematics
Digambarrao Bindu ACS College,Bhokar
Dist.Nanded.(M.S.)

Department of Mathematics

Annual Teaching plan 2020-21

DIGAMBARRAO BINDU ARTS & COMMERCE COLLEGE, BHOKAR DIST. NANDED

DEPARTMENT OF MATHEMATICS

Class: B.SC-F.Y

Title of the Paper & No.: Differential Calculus (I) & Geometry (IV)

Name of the Teacher: Dr.S.B.Chavhan

ANNUAL TEACHING PLAN 2020-21

Month	Course content	Expected Periods
Dec	**Revision:** Relation, Functions, Limit, Continuity, Differentiation,	03
Jan	**Unit-I:** Differentiation Derivability and derivative, derived function, derivability implying continuity, geometrical interpretation of a derivative, derivatives of hyperbolic functions, derivatives of inverse hyperbolic functions, Higher order derivatives, calculation of the nth derivative, determination of nth derivative of rational functions, nth derivatives of the products of the powers of sines and cosines, Leibnitz theorem.	12
FEB	**Unit-II:** Expansion of functions, Tangents and Normals Maclaurin's theorem, Taylor's theorem, Equations of the tangent and normal, Angle of intersection of two curves, length of the tangent, normal, sub-tangent, sub-normal, pedal equations.	15
Mar	**Unit-III:** Mean Value Theorems Rolle's Theorem, Lagrange's mean value theorem, Meaning of sign of derivative, Graphs of hyperbolic functions, Cauchy's mean value theorem, Generalized mean value theorems(Taylor's theorem, Maclaurin's theorem). **Unit-IV:** Partial Differentiations Introduction, Functions of two variables, Neighborhood of a point (a,b), Limit and Continuity, Partial derivatives	20
	, Geometrical Interpretation, Homogeneous functions, Euler's Theorem on homogeneous function and corollary, Theorems on total differentials, Equality of fxy(a; b) and fyx(a; b); Equality of fxyandfyx; Taylors theorem for functions of two variables (Only Statement).	10
		07
April	**Unit-I:** Co-ordinates and Transformation of Co-ordinates Direction cosines of a line, a useful relation, relation between direction cosines, Projection on a straight line, projection of a point on a line, projection of a segment on another line, projection of a broken line, projection of the join of two lines. Angle between two lines. Transformation of Co-ordinates: Introduction, change of origin, change of the direction of a axes, relation between direction cosines of three mutual Perpendicular lines. **Unit-II:** The Plane General equation of _rst degree, converse of the preceding theorem, Transformation to the normal form, direction cosines of the normal to a plane, angle between two planes, determination of plane under given conditions, intercept form of the equation of a plane, plane through three points, system of planes, two sides of a plane, length of perpendicular from a point to a plane, bisectors of angle between two planes.	15
may	**Unit-III:** Right line Representation of line, equation of line through a given point drawn in a given direction, equation of a line through two points, two forms of the equation of line, Transformation from the unsymmetrical to the symmetrical form, angle between a line and a plane, condition for a line to lie in a plane, coplanar lines, condition for coplanarity of lines, Number of arbitrary constants in the equation of straight line, determination of lines satisfying given conditions, the shortest distance between two lines, length of the perpendicular from a	15

	8 point to a line	
Jun	**Unit-IV**: Sphere, Cones and Cylinders Definition, equation of sphere, General equation of a sphere, The sphere through four given points, sphere, plane section of a sphere, intersection of two spheres, sphere with a given diameter, equation of a circle, Power of a point, equation of a tangent plane, plane of contact.	15
July	the polar plane , pole of plane, some results concerning poles and polars, angle of intersection of two spheres, condition for the orthogonally of two spheres. Cones, cylinders: Definition, equation of a cone with a conic as a guiding curve, The right circular cone, definition, the cylinder, equation of a cylinder, the right circular cylinder, definition	08

Principal

HOD

DIGAMBARRAO BINDU ARTS & COMMERCE COLLEGE, BHOKAR DIST. NANDED

DEPARTMENT OF MATHEMATICS

Class : B.SC-S.Y
Title of the Paper & No.: Real Aalysis-I (VI) and Real Aalysis-II(IX)
Name of the Teacher: Dr.S.B.Chavhan

ANNUAL TEACHING PLAN 2020-21

Month	Course content	Expected Periods
Dec	**Revision:**	03
	Unit–I : Sets and Functions Sets and Elements; Operations on sets, Functions, real valued functions, Equivalence, Real numbers, Least upper bounds.	20
Jan	**Unit–II : Sequence of Real Numbers.** Definition of sequence and subsequence, Limit of a sequence, Convergent sequences, Divergent sequences, Bounded sequences, Monotone sequences, Cauchy sequences.	20
Feb	**Unit–III : Series of Real Numbers.** Convergence and divergence, Series with non-negative terms, Alternative series, Conditional convergence and absolute convergence.	19
March	Tests for absolute convergence.	05
Nov		
April	**Unit–I : The Riemann Integral.** Definitions and Existence of the integral, Refinement of partitions; Darboux's theorem, Conditions of integrability, Intergrability of the sum and difference of Integrable functions, The integral as a limit of sums (Riemann Sums).Some Integrable Functions , **:Improper Integrals.** Introduction, Integration of unbounded functions with Finite Limits of Integration, Comparison Test, for Convergence at a of $f dx$.Absolute Convergence.	20
May	**Unit–II** Integration and Differentiations, Fundamental Theorem of Calcul;us , Mean value Theorem.	15
Jun	**Unit III Fourier Series .** Trigonometric Series, Fourier Series , Some Preliminary Theorems, Periodic Function, Some Definitions, Some Theorems The Main	20
July	Theorem ,Fourier Series of Even and Odd Functions , Half Range Series	05

Principal

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Bhokar,Tq.Bhokar Dist.Nanded

HOD
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epartment of Mathematics
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Dist.Nanded.(M.S.)

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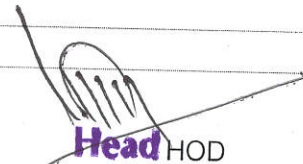
DEPARTMENT OF MATHEMATICS

Class: B.SC-T.Y

Title of the Paper & No.:   Mechanics-I(XIV-B) & Mechanics-II (XVII -B)

Name of the Teacher: Dr.S.B.Chavhan

Month	Course content	Expected Periods
	ANNUAL TEACHING PLAN 2020-21	
	Revision:, Forces Acting on a particle	06
Dec	**Unit I: (Forces Acting on a particle)** Definitions, Law of parallelogram of forces, Determination of magnitude and direction, Resultant of forces, Components and resolved parts, The Algebric Sum of the resolved parts of two forces , To find magnitude and direction, Resultant of parallel forces.	15
Jan	**Unit II: (Equilibrium of Forces acting on a particle)** Triangle Law of forces, Converse of triangle law of forces, Polygon of forces Lami's Theorem, Conditions of equilibrium of forces acting on a particle.	20
Feb	**Unit III (Forces acting on a rigid body)** Introduction, Moment of force, The sum of vector moment of a system of forces, The Sum of the vector moments of two like parallel forces acting on a rigid body, Couples, Two couples acting in one plane upon a rigid body, Equivalent couples, The vector of the resultant couple of two couples, A System of forces acting upon a rigid body,	14
March	Conditions of equilibrium of forces acting on a rigid body and Cartesian form, Conditions of equilibrium of coplanar forces acting on a rigid body.	05
April	**Unit I: (Kinematics and Dynamics of a particle in two dimensions)** Introduction, Definitions, Expressions for velocity and acceleration, Components of velocity and acceleration, Tangent and unit vector, Rate of change of a unit vector moving in a plane, Curvature and principal normal, Tangential and normal components of velocity and acceleration, Angular speed and angular velocity, Angular acceleration, The radial and transverses directions, Find the radial and transverse components of velocity and accelerations .	20
May	**Unit II: (Kinetics of a Particle)** Introduction, Newton's law of motion, Matter, Linear momentum, Impulsive force and its impulse, Unit of impulse, Conservation of linear momentum, Impact of two bodies, Work, Work done by a force, Unit of work, Power, Energy, Kinetic energy, Potential Energy Kinetic energy of particle of mass m moving with velocity, Definition of scalar and vector point function, Scalar and vector field, Field of force, Conservative field of force , Potential function.	15
Jun	**Unit III : (Motion of a Projectile and motion in resisting medium)** Rectilinear motion, Motion under gravity,	20
July	Projectile, Range on inclined plane projectile to pass through a given point (h, k),	05
April		

Principal

Department of Mathematics

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Annual Teaching plan 2020-21

Digambarrao Bindu Arts, Commerce & Science College, Bhokar, Dist Nanded

Annual Teaching Plan for <u>2021-22</u>

Department of Mathematics

Workload Distribution

Class	Name of Teachers							
	Dr.S.B.Chavhan		Dr.S..S.Hambarde		C.H.B			
	Theory	Practical	Theory	Practical	Theory	Practical		
B.Sc. I Sem.-I	Paper-I	Paper-V	Paper-II					
B.Sc. I Sem.-II	Paper- III		Paper-IV					
B.Sc. II Sem.-III	Paper-VI		Paper-VII		Paper-VIII			
B.Sc. II Sem.-IV	Paper-IX		Paper-X		Paper-XI			
B.Sc. III Sem.-V	Paper-XII&XIV				Paper-XIII			
B.Sc. III Sem.-VI	Paper-XV&XVII				Paper-XVI			

Head
Head
Department of Mathematics
Digambarrao Bindu ACS College,Bhokar
Dist.Nanded.(M.S.)

Principal
Digambarrao Bindu Arts,Com.& Sci.College
Bhokar,Ta.Bhokar Dist.Nanded

DIGAMBARRAO BINDU ARTS & COMMERCE COLLEGE, BHOKAR DIST. NANDED

DEPARTMENT OF MATHEMATICS

Class: B.SC-F.Y
Title of the Paper & No.: Differential Calculus (I) & Geometry (IV)
Name of the Teacher: Dr.S.B.Chavhan

ANNUAL TEACHING PLAN 2021-22

Month	Course content	Expected Periods
Nov	**Revision:** Relation, Functions, Limit, Continuity, Differentiation,	03
Nov	**Unit-I:** Differentiation Derivability and derivative, derived function, derivability implying continuity, geometrical interpretation of a derivative, derivatives of hyperbolic functions, derivatives of inverse hyperbolic functions, Higher order derivatives, calculation of the nth derivative, determination of nth derivative of rational functions, nth derivatives of the products of the powers of sines and cosines, Leibnitz theorem.	12
Dec	**Unit-II:** Expansion of functions, Tangents and Normals Maclaurin's theorem, Taylor's theorem, Equations of the tangent and normal, Angle of intersection of two curves, length of the tangent, normal, sub-tangent, sub-normal, pedal equations.	15
Jan	**Unit-III:** Mean Value Theorems Rolle's Theorem, Lagrange's mean value theorem, Meaning of sign of derivative, Graphs of hyperbolic functions, Cauchy's mean value theorem, Generalized mean value theorems(Taylor's theorem, Maclaurin's theorem). **Unit-IV:** Partial Differentiations Introduction, Functions of two variables, Neighborhood of a point (a,b), Limit and Continuity, Partial derivatives	20
Feb.	, Geometrical Interpretation, Homogeneous functions, Euler's Theorem on homogeneous function and corollary, Theorems on total differentials, Equality of fxy(a; b) and fyx(a; b); Equality of fxyandfyx; Taylors theorem for functions of two variables (Only Statement).	10
March	**Unit-I:** Co-ordinates and Transformation of Co-ordinates Direction cosines of a line, a useful relation, relation between direction cosines, Projection	07
March	on a straight line, projection of a point on a line, projection of a segment on another line, projection of a broken line, projection of the join of two lines. Angle between two lines. Transformation of Co-ordinates: Introduction, change of origin, change of the direction of a axes, relation between direction cosines of three mutual Perpendicular lines. **Unit-II:** The Plane General equation of _rst degree, converse of the preceding theorem, Transformation to the normal form, direction cosines of the normal to a plane, angle between two planes, determination of plane under given conditions, intercept form of the equation of a plane, plane through three points, system of planes, two sides of a plane, length of perpendicular from a point to a plane, bisectors of angle between two planes.	15
April	**Unit-III:** Right line Representation of line, equation of line through a given point drawn in a given direction, equation of a line through two points, two forms of the equation of line, Transformation from the unsymmetrical to the symmetrical form, angle between a line and a plane, condition for a line to lie in a plane, coplanar lines, condition for coplanarity of lines, Number of arbitrary constants in the equation of straight line, determination of lines satisfying given conditions, the shortest distance between two lines, length of the perpendicular from a	15

8

		point to a line	
May	·	**Unit-IV**: Sphere, Cones and Cylinders Definition, equation of sphere, General equation of a sphere, The sphere through four given points, sphere, plane section of a sphere, intersection of two spheres, sphere with a given diameter, equation of a circle, Power of a point, equation of a tangent plane, plane of contact,	15
		the polar plane , pole of plane, some results concerning poles and polars, angle of intersection of two spheres, condition for the orthogonally of two spheres. Cones, cylinders: Definition, equation of a cone with a conic as a guiding curve, The right circular cone, definition, the cylinder, equation of a cylinder, the right circular cylinder, definition	08

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Department of Mathematics

Annual Teaching plan 2021-22

Class : B.SC.S.Y

Title of the Paper & No.: Real Aalysis-I (VI) and Real Aalysis-II(IX)

Name of the Teacher: Dr.S.B.Chavhan

ANNUAL TEACHING PLAN 2021-22

Month	Course content	Expected Periods
Sep	**Revision:**	03
	Unit–I : Sets and Functions Sets and Elements: Operations on sets, Functions, real valued functions, Equivalence, Real numbers, Least upper bounds.	20
Oct	**Unit–II : Sequence of Real Numbers.** Definition of sequence and subsequence, Limit of a sequence, Convergent sequences, Divergent sequences, Bounded sequences, Monotone sequences, Cauchy sequences.	20
Nov	**Unit–III : Series of Real Numbers.** Convergence and divergence, Series with non-negative terms, Alternative series, Conditional convergence and absolute convergence.	19
Dec /Jan	Tests for absolute convergence.	05
Feb	**Unit–I : The Riemann Integral.** Definitions and Existence of the integral, Refinement of partitions; Darboux's theorem, Conditions of integrability, Intergrability of the sum and difference of Integrable functions, The integral as a limit of sums (Riemann Sums).Some Integrable Functions , **:Improper Integrals.** Introduction, Integration of unbounded functions with Finite Limits of Integration, Comparison Test, for Convergence at a of fdx.Absolute Convergence.	20
MARCH	**Unit–II** Integration and Differentiations, Fundamental Theorem of Calcul;us , Mean value Theorem.	15
APRIL	**Unit III Fourier Series .** Trigonometric Series, Fourier Series , Some Preliminary Theorems, Periodic Function, Some Definitions, Some Theorems The Main	20
MAY	Theorem ,Fourier Series of Even and Odd Functions , Half Range Series	05

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Annual Teaching plan 2021-22

DEPARTMENT OF MATHEMATICS

Class: B.SC-T.Y
Title of the Paper & No.: Metric Space (XII) and Numerical Analysis (XV)
Name of the Teacher: Dr.S.B.Chavhan

ANNUAL TEACHING PLAN 2021-22

Month	Course content	Expected Periods
SEPT	Revision:	05
OCT	: Definitions and examples, open and closed sets.	20
NOV	Convergence and completeness, Continuity and uniform continuity.	15
DEC	Compactness, Connectedness	15
JAN	I. Complex Numbers and Analytic functions:	05
FEB	II: Elementary functions:	20
MARCH	III: Integrals:	15
APRIL	IV: Integrals and Series:	20
MAY	revision	05

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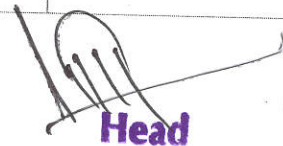Dist.Nanded.(M.S.)

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Annual Teaching plan 2021-22

DIGAMBARRAO BINDU ARTS & COMMERCE COLLEGE, BHOKAR
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DEPARTMENT OF MATHEMATICS

Class: B.SC-T.Y

Title of the Paper & No.:   Mechanics-I(XIV-B) & Mechanics-II (XVII-B)

Name of the Teacher: Dr.S.B.Chavhan

Month	Course content	Expected Periods
	Revision:, Forces Acting on a particle	06
SEPT	**Unit I: (Forces Acting on a particle)** Definitions, Law of parallelogram of forces, Determination of magnitude and direction, Resultant of forces, Components and resolved parts, The Algebric Sum of the resolved parts of two forces , To find magnitude and direction, Resultant of parallel forces.	15
OCT	**Unit II: (Equilibrium of Forces acting on a particle)** Triangle Law of forces, Converse of triangle law of forces, Polygon of forces Lami's Theorem, Conditions of equilibrium of forces acting on a particle.	20
NOV/DEC	**Unit III (Forces acting on a rigid body)** Introduction, Moment of force, The sum of vector moment of a system of forces, The Sum of the vector moments of two like parallel forces acting on a rigid body, Couples, Two couples acting in one plane upon a rigid body, Equivalent couples, The vector of the resultant couple of two couples, A System of forces acting upon a rigid body,	14
JAN	Conditions of equilibrium of forces acting on a rigid body and Cartesian form, Conditions of equilibrium of coplanar forces acting on a rigid body.	05
FEB	**Unit I: (Kinematics and Dynamics of a particle in two dimensions)** Introduction, Definitions, Expressions for velocity and acceleration, Components of velocity and acceleration, Tangent and unit vector, Rate of change of a unit vector moving in a plane, Curvature and principal normal, Tangential and normal components of velocity and acceleration, Angular speed and angular velocity, Angular acceleration, The radial and transverses directions, Find the radial and transverse components of velocity and accelerations .	20
MARCH	**Unit II: (Kinetics of a Particle)** Introduction, Newton's law of motion, Matter, Linear momentum, Impulsive force and its impulse, Unit of impulse, Conservation of linear momentum, Impact of two bodies, Work, Work done by a force, Unit of work, Power, Energy, Kinetic energy, Potential Energy Kinetic energy of particle of mass m moving with velocity, Definition of scalar and vector point function, Scalar and vector field, Field of force, Conservative field of force , Potential function.	15
APRIL	**Unit III : (Motion of a Projectile and motion in resisting medium)** Rectilinear motion, Motion under gravity,	20
MAY	Projectile, Range on inclined plane projectile to pass through a given point (h, k),	05

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DIGAMBARRAO BINDU ARTS & COMMERCE COLLEGE, BHOKAR DIST. NANDED

DEPARTMENT OF MATHEMATICS

Class: B.SC-F.Y
Title of the Paper & No.: Particles
Name of the Teacher: Dr.S.B.Chavhan

Month	Course content	ANNUAL TEACHING PLAN 2021-22 Expected Periods
	Revision:	
OCT	1) To enter the Matrix A and pick-out following entries from it : $A11$, $A21$, $A22$, $A23$. 2) To find the transpose a matrix.	8
NOV	3) For two matrices A and B, to find $A + B$ & $B + A$ and to verify whether the matrix addition is commutative. 4) For a square matrix A to find $A2$, $A3$, $A4$, $A5$. 7) To verify both left distributive law and right distributive law. 8) To find the determinant of a square matrix.	8
DEC	5) For two matrices A and B, confirmable for multiplication from both sides, to find AB and BA. 6) To verify the associativity of matrix addition.	8
JAN	9) To find the inverse of a square matrix. 10) To find the rank of the matrices.	02
FEB	11) To solve the system of linear equations whose matrix equation is $Ax = b$ and check the solution. 12) To find the eigen values of a square matrix. 13) To find the eigen vectors of a square matrix. 14) To find the characteristic polynomial of a square matrix.	8
MARCH	15) To find the conjugate a matrix. 16) To plot $f(x) = 10 \sin$ for x between 0 and 20. 17) To plot $r(\theta) = 1 + 2\sin2(2\theta)$ for $0 < \theta < 2\pi$. 18) To plot the contours of $z = \cos x \cos y$ $exy2 / 4\square$ over the default domains. 19) To plot the surface for $z = 2\ 2\ 51$ over the domain $\mid x \mid < 3$ and $\mid y \mid < 3$. 20) To plot multiple graphs $y1 = \sin t$, $y2 = t$, $y3 = 13! 5! \square\ t\ \square\ t$ in same figure Window 21) To plot $x = e\text{-}t$, $y = t$, $0\ \square\ t\ \square\ 2\pi$.	8
APRIL	22) To plot $f(t) = t \sin t$, $0\ \square\ t\ \square\ 10\pi$. 23) To plot the surface z = $2\ 2\ xy\ xx\ y$, $-3\ \square\ x\ \square\ 3$, $.-3\ \square\ y\ \square\ 3$ by computing the values of z over 50 x 50 grid on specified domain. 24) To draw a cylinder with base radius $r = 40$ and top radius $r = 60$ 25) To plot the unit sphere.	08
MaY	Revision	02

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