UNIVERSITY DEPARTMENT OF MATHEMATICS
SIDO KANHU MURMU UNIVERSITY
DUMKA

Syllabus
for

B.A./B.Sc.(Hons.) Mathematics,
B.A. /B.Sc. with Mathematics as a Major/Minor Subject
According to National Education Policy 2020
(With Effect from Academic Session 2022-23)

PROGRAM STRUCTURE

B.A. /B.SC. WITH MATHEMATICS AS A MAJOR/MINOR SUBJECT (FOUR-YEAR UNDER GRADUATE PROGRAM)

SEMESTER-I

PAPER CODE	TITLE OF THE COURSE	CATEGORY OF COURSE	INTERNAL		EXTERNAL		FULL MARKS	CREDIT
			FM	PM	FM	PM		
B.A/B.SC-IRC-1	Introductory Algebra and Trigonometry	Introductory Course	25	10	75	30	100	3
B.A/B.SC-MJ-1	Algebra and Trigonometry	Major	25	10	75	30	100	6
SEMESTER-II								
PAPER CODE	TITLE OF THE COURSE	CATEGORY OF COURSE	INTERNAL		EXTERNAL		FULL MARKS	CREDIT
			FM	PM	FM	PM		
B.A/B.SC-IRC-2	Calculus	Introductory Course/GE-1	25	10	75	30	100	3
B.A/B.SC-MJ-2	Calculus and Geometry	Major	25	10	75	30	100	6

Note:

(i) IRC-Introductory Regular Courses

(ii) MJ - Major Disciplinary/Interdisciplinary Courses

Syllabus for B.A /B.Sc. Mathematics as Major Subject &

B.A /B.Sc. (Honors) Mathematics

SEMESTER – I

MJ-1: Algebra and Trigonometry

Unit-I: Set Theory: Cartesian product of sets, Relation, Kinds of Relation, partition of a set, Relation of congruence modulo n, Partial and total order relation, Fundamental theorem of equivalence relation, Mapping and set mapping. [20 Lectures]

Unit-II: Abstract Algebra: Notionof Group, subgroup,properties of groups, cyclic group,order of an element Definitions and examples of Ring, Field and Integral domain, elementary properties of rings. [18 Lectures]

Unit-III: Trigonometry: Application of De-Moivre's Theorem, Complex Argument, Gregory's Series, Hyperbolic functions and summation of Series. [20 Lectures]

Unit-IV: Linear Algebra: Adjoint and Inverse of a Matrix, orthogonal matrix,Symmetric,Hermitian and Skew-symmetric matrix, Rank of matrix, Solution of Simultaneous linear equation, Characteristic equation, Eigenvaluesand eigenvectors. [22 Lectures]

Books Recommended

Set theory	: -	K. K. Jha
Set theory	: -	A. R. Vasishtha
Abstract Algebra	: -	K. K. Jha
Abstract Algebra	:-	A. R. Vasishtha
Trigonometry	: -	Das and Mukherjee
Trigonometry	: -	Lalji Prasad
Linear Algebra	: -	Seymour Lipschutz,

IRC-1: Introductory Algebra and Trigonometry

Unit- I: Algebra: -Adjoint and Inverse of a matrix, symmetric, skew-symmetric, Hermitian and Orthogonal matrices, Rank of a matrix, Solution of Simultaneous linear equation, Characteristic equations, Eigen values and Eigen vectors of a matrix.[25 Lectures]

Unit- II: Trigonometry: -Application of De-Moivre's Theorem, Gregory's Series, Hyperbolic functions, and inverse hyperbolic functions and summation of Series. [20 Lectures]

Books Recommended

Trigonometry	: -	Das and Mukherjee
Trigonometry	: -	Lalji Prasad
Matrix	: -	A. R. Vasishtha
Matrices	: -	M. D. Raisinghania, H. E. Saxena and H. K. Das

Syllabus for B.A /B.Sc. Mathematics as Major Subject &
B.A /B.Sc. (Honors) Mathematics
SEMESTER – II
MJ-2: Calculus and Geometry

Unit-I: Differential Calculus: Successive differentiation and Leibnitz Theorem, Partial Differentiation and Euler's Theorem on homogeneous functions, Tangents and Normals, pedal equations, Curvature.[20 Lectures]

Unit-II: Two Dimensional Geometry: - System of Circles, Radical axes, coaxial circles, limiting points, Standard equation of Parabola, Hyperbola and Ellipse, Equations of Tangents and Normals, pair of tangents, Polar equation of Conics. [20 Lectures]

Unit-III: Integral Calculus: Indefinite Integral, Definite Integral, Reduction Formula, Area (Both Cartesian and Polar curve). [20 Lectures]

Unit-IV: Three Dimensional Geometry: - Direction Cosine and Direction ratio, Straight line, Plane, Shortcut distance between two skew Straight line and related problem. [25 Lectures]

Books Recommended

Differential Calculus	: -	Prasad and Mishra
Differential Calculus	: -	Lalji Prasad
Integral Calculus	: -	Lalji Prasad
Integral Calculus	: -	Das and Mukherjee
Solid Geometry	: -	Lalji Prasad
Co-ordinate Geometry	: -	M. L. Khanna

IRC-2: Calculus

Unit-I: Differential Calculus: - Successive differentiation and Leibnitz Theorem, Partial Differentiation and Euler's Theorem, Tangents and Normals,Pedal equations, Asymptotes, Curvature, Radius Curvature.[20 Lectures]

Unit-II: Integral Calculus: - Indefinite Integral, Definite Integral, Quadrature and Reduction Formula, Area (Both Cartesian and Polar curve). [20 Lectures]

Books Recommended

Integral Calculus	: -	Lalji Prasad
Integral Calculus	: -	Das and Mukherjee
Differential Calculus	: -	Prasad and Mishra
Differential Calculus	: -	Lalji Prasad

(Dr. S. N.Adhikary)
Head, Univ. Dept. of Maths&
Chairman

(Dr. N. K. Singh)
Member

(Dr. D. N.Garain)
Member

(Dr. Z. Hoque)
Member