



GOVERNMENT POLYTECHNIC KANDHAMAL
LESSON PLAN FOR MATHEMATICS-II
(Course Code-TH3)



SUMMER-2026

DEPARTMENT: Mathematics & Science	SEMESTER: 2nd	NAME OF THE FACULTY TEACHING: Sri Nirakara Bag, Lecturer stage-I, Mathematics
SUBJECT: Mathematics-II (TH3)	TOTAL PERIOD: 60	CREDIT: 4
DURATION OF END SEM EXAM: 3 Hours	PERIOD PER WEEK: 4	IA: 30 MARKS END SEM EXAM: 70 MARKS

Semester From Date: 09-01-2026 to Date: 08-05-2026

LESSON PLAN AND COURSE STRUCTURE

Week	Day	Topic to be covered
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UNIT-I: Determinants and Matrices (12 Periods)

Week 1	Day 1	Introduction to determinants, definition, notation
	Day 2	Determinants of order 2
	Day 3	Determinants of order 3
	Day 4	Properties of determinants

Week 2	Day 5	Expansion of determinants
	Day 6	Consistency of linear equations
	Day 7	Cramer's Rule
	Day 8	Introduction to matrices
Week 3	Day 9	Algebra of matrices
	Day 10	Transpose and types of matrices
	Day 11	Inverse of a matrix
	Day 12	Solving system of equations using matrix inverse
UNIT-II: Integral Calculus (16 Periods)		
Week 4	Day 13	Integration as inverse of differentiation
	Day 14	Standard integrals
	Day 15	Integration by substitution
	Day 16	Problems on substitution
Week 5	Day 17	Integration by parts
	Day 18	Problems on integration by parts
	Day 19	Integration by partial fractions
	Day 20	Problems on partial fractions (linear factors)

Week 6	Day 21	Definite integrals
	Day 22	Properties of definite integrals
	Day 23	Evaluation of $\int \sin^n x \, dx$
	Day 24	Evaluation of $\int \cos^n x \, dx$
Week 7	Day 25	Evaluation of $\int \sin^m x \cos^n x \, dx$
	Day 26	Area bounded by curves and axes
	Day 27	Problems on area
	Day 28	Volume of solids of revolution
UNIT-III: Coordinate Geometry (14 Periods)		
Week 8	Day 29	Straight line – general and standard forms
	Day 30	Intersection of two straight lines
	Day 31	Angle between two straight lines
	Day 32	Parallel and perpendicular lines
Week 9	Day 33	Perpendicular distance formula
	Day 34	Circle – general equation
	Day 35	Equation of circle (centre & radius)
	Day 36	Circle through three points

Week 10	Day 37	Circle with diameter endpoints
	Day 38	Introduction to conics
	Day 39	Parabola – standard equation
	Day 40	Problems on parabola
Week 11	Day 41	Ellipse – standard equation
	Day 42	Hyperbola – standard equation
	UNIT-IV: Vector Algebra (8 Periods)	
	Day 43	Vectors – definition and notation
Week 12	Day 44	Rectangular resolution of vectors
	Day 45	Addition and subtraction of vectors
	Day 46	Scalar product
	Day 47	Vector product
Week 13	Day 48	Applications – work
	Day 49	Applications – moment
	Day 50	Applications – angular velocity
	UNIT-V: Differential Equations (6 Periods)	
	Day 51	Differential equations – basic concepts

Week 14	Day 52	Formation of differential equations
	Day 53	Variable separable method
	Day 54	Problems on variable separable method
	Day 55	First order first degree equations
	Day 56	Practice problems

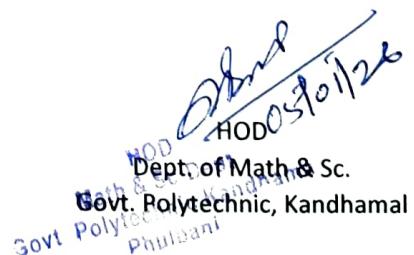
REVISION & ASSESSMENT (4 Periods)

Week 15	Day 57	Revision – Unit I & II
	Day 58	Revision – Unit III
	Day 59	Revision – Unit IV & V
	Day 60	Model Test / Internal Assessment

Recommended Book

1. Mathematics-II by Dr. Garima Singh (Download from <https://ekumbh.aicteindia.org/dbook.php>)
2. B.S. Grewal, Higher Engineering Mathematics, Khanna Publishers, New Delhi, 40th Edition, 2007.
3. G. B. Thomas, R. L. Finney, Calculus and Analytic Geometry, Addison Wesley, 9th Edition, 1995.


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