GAYATRI VIDYA PARISHAD COLLEGE FOR DEGREE AND PG COURSES(A)
DEPARTMENT OF MATHEMATICS
I B.Sc. Honours MAJOR (MATHEMATICS)
W.E.F. AY 2023-24
COURSE STRUCTURE (SEMESTER-I)

Course	Total Marks	Mid. Sem.	Sem. End		Teaching Hours Per Week	Credits
LANGUAGES, MULTI DISCIPLINARY AND SKILL ENHANCEMENT COURSES (COMMON FOR ALL)						
1. First Language: Telugu/ Hindi/ Sanskrit	100	40	60		4	3
2. Second Language: English	100	40	60		4	3
3. Multi Disny-1: Indian History	50	---	50		2	2
4. Skill Enhancement Course -1 Communication Skills	50	--	50		2	2
5. Skill Enhancement Course -2 Analytical Skills	50	-	50		2	2
TOTAL	350	80	270		14	12
PART II - CORE SUBJECTS MAJOR and MINOR						
B.Sc.						
1. MAJOR-1 Course-1 (i) Essentials and Applications of Mathematical, Physical and Chemical Sciences.	100	40 (Mid + Activities) (20+20)	60		3	3
Lab / Practical/ Activities	-	-	-		2	1
2. MAJOR-2 Course-2 (i) Advances in Mathematical, Physical and Chemical Sciences.	100	40 (Mid + Activities) (20+20)	60		3	3
Lab / Practical/ Activities	-	-	-		2	1
TOTAL	200	80	120		10	8
GRAND TOTAL	550	160	390		24	20

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DEPARTMENT OF MATHEMATICS
I B.Sc. Honours MAJOR (MATHEMATICS)
W.E.F. AY 2023-24

COURSE STRUCTURE (SEMESTER-II)

Course	Total Marks	Mid. Sem.	Sem. End	Teaching Hours Per Week	Credits
LANGUAGES, MULTI DISCIPLINARY AND SKILL ENHANCEMENT COURSES (COMMON FOR ALL)					
1. First Language: Telugu/ Hindi/ Sanskrit	100	40	60	4	3
2. Second Language: English	100	40	60	4	3
3. Skill Enhancement Solar Energy	50	--	50	2	2
4. Skill Enhancement Business Writing	50	-	50	2	2
TOTAL	300	80	220	12	10
PART II - CORE SUBJECTS MAJOR and MINOR					
B.Sc.					
5. MAJOR- Course-3 Differential Equations	100	40	60	3	3
Lab / Practical:	50	25	25	2	1
6. MAJOR Course-4 Analytical solid geometry	100	40	60	3	3
Lab/Practical::	50	25	25	2	1
7. MINOR Course-1 Differential Equations	100	40	60	3	3
Lab/Practical::	50	25	25	2	1
TOTAL	450	195	255	15	12
GRAND TOTAL	750	275	475	27	22

GATARI VIDYA PARISHAD COLLEGE FOR DEGREE AND PG COURSES(A)
DEPARTMENT OF MATHEMATICS
BLUE PRINT FOR MAJOR SUBJECTS

SECTION-A **5X2=10**			
I	**UNIT**	**MARKS**	**CO'S**
1	UNIT-1	2	CO-1
2	UNIT-2	2	CO-2
3	UNIT-3	2	CO-3
4	UNIT-4	2	CO-4
5	UNIT-5	2	CO-5
II **SECTION-B** **5X10=50**			
6 A or B	UNIT-1	10	CO-1
7 A or B	UNIT-2	10	CO-2
8 A or B	UNIT-3	10	CO-3
9 A or B	UNIT-4	10	CO-4
10 A or B	UNIT-5	10	CO-5

GAYATRI VIDYA PARISHAD COLLEGE FOR DEGREE AND P.G. COURSES (A)
COURSE STRUCTURE OF B.Sc., ADMITTED BATCH 2023-24, MATHEMATICS for MAJOR

Year	Semester	Course	Title of the Course	No. of Hrs /Week	No. of Credits
I	**II**	3	Differential Equations & Problem Solving Sessions	**3**	**3**
			Differential Equations & Problem Solving Sessions Practical Course	**2**	**1**
		4	Analytical Solid Geometry & Problem Solving Sessions	**3**	**3**
			Analytical Solid Geometry & Problem Solving Sessions Practical Course	**2**	**1**

MATHEMATICS for MINOR

Year	Semester	Course	Title of the Course	No. of Hrs /Week	No. of Credits
I	**II**	1	Differential Equations & Problem Solving Sessions	**3**	**3**
			Differential Equations & Problem Solving Sessions Practical Course	**2**	**1**

GAYATRI VIDYA PARISHAD COLLEGE FOR DEGREE AND PG COURSES(A)
DEPARTMENT OF MATHEMATICS
B.Sc., Honours in Mathematics MAJOR(THEORY AND PRACTICAL)
Semester –II, Course 3
Differential Equations (syllabus w. e. f. 2023-24 admitted batch)

SEMESTER	COURSE	TITLE	CREDITS	HOURS	MARKS
II	3	Differential Equations	4	5	100

Course Outcomes:

1. After successful completion of this course, the student will be able to
    1. solve first order first degree linear differential equations.
    2. convert a non-exact homogeneous equation to exact differential equation by using an integrating factor.
    3. know the methods of finding solution of a differential equation of first order but not of first degree.
    4. solve higher-order linear differential equations for both homogeneous and non-homogeneous, with constant coefficients.
    5. understand and apply the appropriate methods for solving higher order differential equations.

CO: 1(UNIT-1) **(No. of hours: 12)**

Differential Equations of first order and first degree:

Linear Differential Equations – Bernoulli's Equations - Exact Differential Equations –Integrating factors - Equations reducible to Exact Equations by Integrating Factors - i) Inspection Method ii) $\frac{1}{Mx+Ny}$+ iii) $\frac{1}{Mx-Ny}$

CO: 2(UNIT-2) **(No. of hours: 12)**

Differential Equations of first order but not of first-degree:

Equations solvable for p, Equations solvable for y, Equations solvable for x – Clairaut's equation - Orthogonal Trajectories: Cartesian and Polar forms.

CO: 3(UNIT-3) **(No. of hours: 12)**

Higher order linear differential equations:

Solutions of homogeneous linear differential equations of order n with constant coefficients - Solutions of non-homogeneous linear differential equations with constant coefficients by means of polynomial operators (i) ax Q(x) e = (ii) $Q(x) = Sin\ ax$ (or) $Cos\ ax$

CO: 4(UNIT-4) **(No. of hours: 12)**

Higher order linear differential equations (continued.):

Solution to a non-homogeneous linear differential equation with constant coefficients P.I. of $f(D)y = Q$ when $Q = bx\ k$ P.I. of $f(D)y = Q$ when $Q = e\ axV$, where V is a function of x P.I. of $f(D)y = Q$ when $Q = xV$, where V is a function of x

CO: 5(UNIT-5) **(No. of hours: 12)**

Higher order linear differential equations with non-constant coefficients:
Linear differential Equations with non-constant coefficients; Cauchy-Euler Equation; Legendre Equation; Method of variation of parameters

Course Outcomes:

1. Those opted this Differential equations can solve different differential equations under one or more conditions.
2. The student can have apply this differential equations in Geometry and Economics, Mechanics etc. They will get knowledge of drawing graphs. Students are capable to calculate intrinsic value of securities.
3. The students have a knowledge to solve the no of problems under various conditions while solving the problems in Engineering and other fields
4. Student acquires knowledge to find Newton's law of cooling and the light of the falling object in the study of engineering physics.
5. Student gets efficiency for finding the proportions of current in the function of current at different times.

Prescribed Text Book: A text book of mathematics for BA/BSc Vol I by N. Krishna Murthy & others, published by S. Chand & Company, New Delhi.

Reference Text Books:

1. Differential Equations and Their Applications by Zafar Ahsan, published by Prentice-Hall of India Pvt. Ltd, New Delhi-Second edition.
2. Ordinary and Partial Differential Equations by Dr. M.D,Raisinghania, published by S.Chand&Company, New Delhi.
3. Differential Equations with applications and programs – S. Balachandra Rao & HRAnuradha-Universities Press.
4. Differential Equations -Srinivas Vangala&Madhu Rajesh, published by Spectrum University Press.

GAYATRI VIDYA PARISHAD COLLEGE FOR DEGREE AND P.G COURSES (A)
Visakhapatnam
B.Sc. First year Mathematics Major Syllabus
Semester –II, course – 4
ANALYTICAL SOLID GEOMETRY (w. e. f. 2023-24 admitted batch)

SEMESTER	COURSE	TITLE	CREDITS	HOURS	MARKS
II	4	Analytical Solid Geometry	4	5	100

Course Outcomes:

After successful completion of this course, the student will be able to

1. understand planes and system of planes
2. know the detailed idea of lines
3. understand spheres and their properties
4. know system of spheres and coaxial system of spheres
5. understand various types of cones

CO: 1*(UNIT-1) *The Plane **(No. of hours: 12)**

Equation of plane in terms of its intercepts on the axis - Equations of the plane through the given points - Length of the perpendicular from a given point to a given plane - Bisectors of angles between two planes - Combined equation of two planes - Orthogonal projection on a plane.

CO: 2*(UNIT-2) *The Line **(No. of hours: 12)**

Equation of a line - Angle between a line and a plane - The condition that a given line may lie in a given plane - The condition that two given lines are coplanar - Number of arbitrary constants in the equations of straight line - Sets of conditions which determine a line - The shortest distance between two lines - The length and equations of the line of shortest distance between two straight lines - Length of the perpendicular from a given point to a given line.

CO: 3*(UNIT-3) *Sphere **(No. of hours: 12)**

Definition and equation of the sphere - Equation of the sphere through four given points - Plane sections of a sphere - Intersection of two spheres - Equation of a circle - Sphere through a given circle - Intersection of a sphere and a line - Power of a point - Tangent plane - Plane of contact; Polar plane - Pole of a Plane - Conjugate points - Conjugate planes.

***CO:4*(UNIT-4) Spheres (continued)** **(No. of hours: 12)**

Angle of intersection of two spheres - Conditions for two spheres to be orthogonal - Radical plane;

Coaxial system of spheres - Simplified from of the equation of two spheres.

CO:5*(UNIT-5) *Cones **(No. of hours: 12)**

Definitions of a cone – vertex, guiding curve and generators - Equation of the cone with a given vertex and guiding curve - Equations of cones with vertex at origin are homogenous - Condition that the general equation of the second degree should

represent a cone - Enveloping cone of a sphere - Right circular cone - Equation of the right circular cone with a given vertex, axis and semi vertical angle.

Course Outcomes:

1. The outcome of this course solid Geometry is motivated the students to go to the area of research.
2. The student will get full knowledge that how to calculate volume, surface area etc.
3. Student acquire knowledge of mechanism of controlling a robot, and its construction and design of instruments which will be used for music.
4. Students will be able understand pictures animation and computer graphics.

Prescribed Text Book: A text book of Mathematics for BA/B.ScVol 1, by V Krishna Murthy & Others, Published by S. Chand & Company, New Delhi.

Reference Books :

1. Analytical Solid Geometry by Shanti Narayan and P.K. Mittal, published by S. Chand & Company Ltd. 7th Edition.
2. A text Book of Analytical Geometry of Three Dimensions, by P.K. Jain and Khaleel Ahmed, published by Wiley Eastern Ltd., 1999. 3. Co-ordinate Geometry of two and three dimensions by P. Balasubrahmanyam, K.Y. Subrahmanyam, G.R. Venkataraman published by TataMcGraw -Hill Publishers. 4. Solid Geometry by B. Rama Bhupal Reddy, published by Spectrum University Press.

Practical's Solid geometry Problem Solving Sessions

CO:1 **The Plane**

CO:2 **The Line**

CO:3 **Sphere**

CO:4 **Sphere**

CO:5 **Cones**

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DEPARTMENT OF MATHEMATICS

B.Sc., Honours in Mathematics MAJOR COURSE

BLUE PRINT FOR MAJOR SUBJECTS

SECTION-A **5X2=10**			
I	**UNIT**	**MARKS**	**CO'S**
1	UNIT-1	2	CO-1
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3	UNIT-3	2	CO-3
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