VAGDEVI DEGREE COLLEGE
(Affiliated to Acharya Nagarjuna University)
(College Code : 116)
Ravipadu Road, Narasaraopet, Palnadu Dt, A.P., Ph : 9247025166

TEACHING PLAN

Name of the Course with code : MATHEMATICAL SPECIAL FUNCTIONS

Class & Semester / Academic Year : BSC & SEM V /2023-24

Name of the faculty Member : B.V.KRISHNA MOHAN

S.NO	TOPIC	NO OF PERIODS REQUIRED	BOOKS FOLLOWED
UNIT-1 BETA AND GAMMA FUNCTIONS,CHEBYSHEV POLYNOMIALS			
1	EULER'S INTEGRALS	1	T1
2	BETA AND GAMMA FUNCTIONS	2	T1
3	ELEMENTARY PROPERTIES OF GAMMA FUNCTIONS	2	T1
4	TRANSFORMATION OF GAMMA FUNCTIONS	2	T1
5	ANOTHER FORM OF BETA FUNCTION	1	T1
6	RELATION BETWEEN BETA AND GAMMA FUNCTIONS	1	T1
7	CHEBYSHEV POLYNOMIALS	1	T1
8	ORTHOGONAL PROPERTIES OF CHEBYSHEV POLYNOMIALS	1	T1
9	RECURRENCE RELATIONS	2	T1
10	GENERATING FUNCTIONS FOR CHEBYSHEV POLYNOMIALS	2	T1
	TOTAL NO OF PERIODS	15	
UNI0T0-2 POWER SERIES AND POWER SERIES SOLUTIONS OF ORDINARY D0. 0IFERENTLAL EQUATIONS			
1	INTRODUCTION	1	T1
2	SUMMARY OF USEFUL RESULTS,POWER SERIES,	2	T1
3	POWER SERIES	1	T1
4	RADIUS OF CONVERGENCE	2	T1
5	THEREMS ON POWER SERIES	1	T1
6	INTRODUCTION OF ,POWER SERIES, SOLUTIONS OF ORDINARY DIFERENTLAL EQUATIONS	3	R1
7	ORDINARY AND SINGULAR POINTS	2	T1,R1
8	REGULAR AND IRREGULAR SINGULAR POINTS,	2	T1
9	POWER SERIES SOLUTIONS.	1	T1
	TOTAL NO OF PERIODS	15	T1
UNIT-3 HERMITE POLYNOMIALS			
1	HERIMITE DIFFERENTIAL EQUATIONS	1	T1
2	SOLUTION OF HERMITEEQUATION	1	T1
3	HERMITEPOLYNOMIALS	2	T1

4	GENERATING FUNCITION FOR HERMITE POLYNOMIALS	2	T1
6	OTHER FORMS FOR HERMITEPOLYNOMIALS	1	T1
7	RODRIGUES FORMULA FOR HERMITEPOLYNOMIALS	2	T1,R2
8	TO FIND FIRST FEW HERMITEPOLYNOMIALS.	2	T1,R21
9	ORTHOGONAL PROPERTIES OF HERMITEPOLYNOMIALS,	2	T1
10	RECURRENCE FORMULAE FOR HERMITEPOLYNOMIALS	2	T1
	TOTAL NO OF PERIODS	15	
	UNIT-4 LEGENDRE POLYNOMIALS		
1	DEFINITION,SOLUTION OF LEGENDRE'S EQUATION	1	T1
2	LEGENDRE POLYNOMIAL OF DEGREEN	2	T1
3	GENERATING FUNCTION OF LEGENDRE POLYNOMIAL	2	T1
4	DEFINITION OF $P_n(X)$ AND $Q_n(X)$	2	T1
5	GENERAL SOLUTIONS OF LEGENDRE'S EQUATION (derivations not required)	2	T1
6	TO SHOW THAT $P_n(X)$ IS THE COEFFICIENT OF H^n, IN THE EXPANSION OF $(1-2xh+h^2)^{-1/2}$	2	T1
7	ORTHOGONAL PROPETTIES OF LEGENDRE'S POLYNOMIALS	2	T1
8	RECURRENCE FORMULAS FOR LEGENDRE'S POLYNOMIALS	2	T1
	TOTAL NO OF PERIODS	15	
	UNIT -5 BESSEL'S EQUATION		
1	DEFINITION, SOLUTION OF BESSEL,S EQUATION	2	T1
2	BESSEL'S FUNCTION OF THE FIRST KIND OF ORDER N	2	T1
3	BESSEL'S FUNCTION OF THE SECOND KIND OF ORDER N.	2	T1
4	INTEGRATION OF BESSEL'S EQUATION IN SERIES FROM,	2	T1
5	DEFINITION OF $J_n(X)$, RECURRENCE FORMULAE FOR $J_n(X)$.	3	T1
6	GENERATING FUNCTION FOR $J_n(X)$	2	T1
7	ORTHOGONALITY OF BESSEL FUNCTIONS.	2	T1
	TOTAL NO OF PERIODS	15	
	GRAND TOTAL OF PERIODS	60	

Text Book :

T1 A Text book of mathematacs for B.sc by M V S S N PRASAD and R BHARGAVI SHARMA Published by S. CHAND &Company

Reference Book :

R1 J. N. Sharma and Dr. R.K. Gupta, Differential equations with special functions, Krishna prakashan Mandir

R2: Shepley LROSS, Differential equations, second , Edition John Willy & sons Newyork 1974

FACULTY SIGNATURE : **HEAD OF THE DEPARTMENT**