

Scheme of M.Sc. Mathematics Program under Semester System
Program Code& Name: DPMS03 - M.Sc. (Mathematics)

Session 2024-25

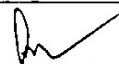
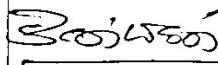

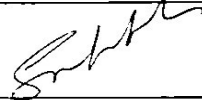

Semester	Course Code	Course Name	Credit			Total Credit	Marks			
			L	T	P		ESE	CIA	Total	
									MAX	MIN
First	MMAT -101	Advanced Abstract Algebra	3	1	-	4	70	30	100	40
	MMAT -102	Mathematical Analysis-I	3	1	-	4	70	30	100	40
	MMAT -103	Topology -I	3	1	-	4	70	30	100	40
	MMAT -104	Complex Analysis -I	3	1	-	4	70	30	100	40
	MMAT -105	Advanced Discrete Mathematics-I	3	1	-	4	70	30	100	40
		Total	20	350	150	500	200			
Second	MMAT -201	Advanced Abstract Algebra -II	3	1	-	4	70	30	100	40
	MMAT -202	Mathematical Analysis -II	3	1	-	4	70	30	100	40
	MMAT -203	Topology -II	3	1	-	4	70	30	100	40
	MMAT -204	Complex Analysis -II	3	1	-	4	70	30	100	40
	MMAT -205	Advanced Discrete Mathematics-II	3	1	-	4	70	30	100	40
		Total	20	350	150	500	200			
Third	MMAT - 301	Integration Theory and Functional Analysis -I	3	1	-	4	70	30	100	40
	MMAT -302	Partial Differential Equations , & Gravitation	3	1	-	4	70	30	100	40
	MMAT - 303	Fuzzy sets and their Application – I	3	1	-	4	70	30	100	40
	MMAT - 304	Operations Research – I	3	1	-	4	70	30	100	40
	MMAE- 305	Fluid Mechanics- I	3	1	-	4	70	30	100	40
	MMAE- 306	Fundamental of computer science	3	1	-	4	70	30	100	40
	MMAE- 307	Numerical Analysis	3	1	-	4	70	30	100	40
		Total	20	350	150	500	200			
Fourth	MMAT - 401	Integration Theory and Functional Analysis -II	3	1	-	4	70	30	100	40
	MMAT - 402	Classical Mechanics & Gravitation	3	1	-	4	70	30	100	40
	MMAT - 403	Fuzzy sets and their Application - II	3	1	-	4	70	30	100	40
	MMAT - 404	Operations Research – II	3	1	-	4	70	30	100	40
	MMAE- 405	Fluid Mechanics- II	3	1	-	4	70	30	100	40
	MMAE- 406	Number Theoryand Cryptography	3	1	-	4	70	30	100	40
	MMAE- 407	Spherical Harmonic	3	1	-	4	70	30	100	40
		Total	20	350	150	500	200			
		Grand Total	80	1400	600	2000	800			

Assessment and Evaluation				
Program Code and Name	DPMS03, M.Sc.(Mathematics))		Semester	III
Exam Code and Name	2033 - M.Sc .MATHEMATICS THIRD SEMESTER		Paper	I
Course Code	MMAT -301		Course Type	T
Course Title	Integration Theory and Functional Analysis -I			
Total Credit	4			
Total Marks	CIA: 30	ESE: 70	Max Marks: 100	Min. Pass. Marks: 40
Prerequisites (if any)				
Course Outcomes	<p>The end of this course, the students will be able to:</p> <ol style="list-style-type: none"> 1. Banach Space Normed and Banach Space Bounded Linear Operators, 2. Measure Spaces, Signed Measure, Absolute Continuity and Singularity of Measures. 3. Gain knowledge to apply Lebesgue Decomposition Theorem and Random Nikodym Theorem. 4. linear Spaces, Inner Product Spaces, Bounded Compact, Self Adjoint Operators, Normal Operators 			

Contents of Course		
Unit	Contents	No. of Period
I	Normed linear spaces, Banach Spaces and Examples, Quotient space of normed Linear Space and its Completeness, Equivalent Norms, Riesz lemma, Basic properties of Finite Dimensional Normed linear spaces and compactness..	15
II	Weak Convergence and Bounded linear Transformation , Normed Linear spaces, Bounded linear Transformations, Dual spaces with examples.	15
III	Signed measure, Hahn Decomposition Theorem, Mutually singular measure, Random Nikodym Theorem, Lebesgue Decomposition, Riesz Representation Theorem, Extension Theorem (Caratheodory).	15
IV	Lebesgue-stieltjes, Integral, Product Measure, Fubini's Theorem, Tunnelle's Theorem, Intergral Operator, Inner Measure, Extension by set of measure zero, Caratheodory outer measure, Hanusdorff measure, differentiation and integration Decomposition into absolutely continuous and singular parts.	15
	Total no. of Lectures	60

Text books	1. Integration Theory and Functional Analysis
Reference books	<p>Reference Books:</p> <ul style="list-style-type: none"> ➤ Lebesgue Integration, J. H. Williamson, Holt Rinehart and Wintson, Inc., New York 1962. ➤ Measure Theory. P R. Halmos, Van Nostrand, Princeton, 1950. ➤ Lebesgue Theory of Integration: Its Origin and Development, T. G. Hawkins, Chelsa New York, 1979 ➤ Functional Analysis, B. V. Limye, Wiley Eastern Ltd. 198 1 ➤ Functional Analysis with Applications, A. Siddiqui, Tata McGraw Hill Publishing Company, New Jhelhi. <p>E-Resources:</p> <ul style="list-style-type: none"> ☐ https://onlinecourses.n tel.ac.in ☐ https://epqp.inflibnet.ac.in <p style="text-align: right;">https://swayam.gov.in</p>

Suggested Continuous Evaluation Methods:		
Maximum Marks: 100 Marks	Continuous Internal Assessment (CIA): 30 Marks	End Semester Exam (ESE) : 70 Marks
Continuous Internal Assessment (CIA)	Internal Test/Quiz- (2): 20 & 20 Assignment / Seminar: 10 Total Marks: 30	Better marks out of the two Test / Quiz + obtained marks is Assignment shall be considered against 30 Marks
End Semester Exam (ESE)	Three Section - A, B & C Section A: Q1. Objective- 10 x 1 = 10 Mark; Section B: Long Answer type questions 1 out of 2 from each unit- 4 x 5 = 20 Marks;	
	Section C: Descriptive answer type questions 1 out of 2 from each unit- 4 x 10 = 40 Marks;	


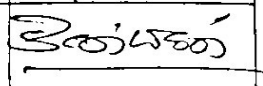
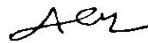
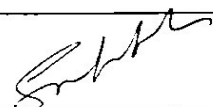
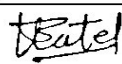
Sr. no	Member Name	Signature
1.	Dr. P. P. Murthy Professor, Guru Ghasidas Vishwavidyalaya Bilaspur	
2.	Dr. S.K.Tiwari Professor Head , Department of Mathematics . Dr. C.V.Raman University Kota Bilaspur	
3.	Dr. Sanjay Kumar Professor G.B.Pant University Uttarkhand	
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Program Code and Name	DPMS03, M.Sc.(Mathematics)			Semester	III
Exam Code and Name	2033 - M.Sc .MATHEMATICS THIRD SEMESTER			Paper	II
Course Code	MMAT -302			Course Type	T
Course Title	Partial Differential Equations , & Gravitation- I				
Total Credit	4				
Total Marks	CIA: 30	ESE: 70	Max Marks: 100	Min. Pass. Marks: 40	
Prerequisites (if any)					
Course Outcomes	<p>The end of this course, the students will be able to:</p> <ol style="list-style-type: none"> 1. Gain Knowledge of kinematics, equation of motion . 2. Motion in two dimension, attraction and potential. 3. Hamiltonian formulation in gravitation. 4. Gain knowledge of understanding dynamics of fluid flows and governing nondimensional parameters. 				

Contents of Course		
Unit	Contents	No. of Period
I	Non- Linear first order PDE , complete integrals, envelopes characteristics, Hamilton jacobi equations (Calculus of Variations, Hamilton's ODE) Conservation Laws, representation of Solutions. Separation of variables laplace and fourier transforms and their applications , Legendre Transform.	15
II	Laplace's Equation – fundamental solution , mean value formulae, properties of Harmonic function, green function , energy method	15
III	Heat Equation - Fundamental solution, Mean Value formulae properties of solution , Energy method. Wave Equation - Solutions by spherical means, Homogeneous equations, Energy method.	15
IV	Attraction - Attraction of rod, disc, spherical shell and sphere, spherical shell of finite thickness.	15
	Total no. of Lectures	60

Text books	Partial Differential Equations , & Gravitation
Reference books	<ul style="list-style-type: none"> • D. Raisinghania; Ordinary and partial differential, S. Chand publication, New Delhi • H. Goldstem : Classical Mechanics, Addition Wesley. H. N.sneddon: Partial differential equations. Mc Graw Hill book Co. Ltd. • S.L.Loney : An Elementary treatise on statics, University press. Narayan Chandra Rana & Pramod sharad Chandra Joag: Classical Mechanics. Tata • McGraw- Hill publishing company 1991. E- Resources https://onlinecourses.nptel.ac.in https://epgp.inflibnet.ac.in https://swayam.gov.in

Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks: 100 Marks	Continuous Internal Assessment (CIA): 30 Marks	End Semester Exam (ESE) : 70 Marks
Continuous Internal Assessment (CIA)	Internal Test/Quiz- (2): 20 & 20 Assignment / Seminar: 10 Total Marks: 30	Better marks out of the two Test / Quiz + obtained marks is Assignment shall be considered against 30 Marks
End Semester Exam (ESE)	Three Section - A, B & C Section A: Q1. Objective- 10 x 1 = 10 Mark; Section B: Long Answer type questions 1 out of 2 from each unit- 4 x 5 = 20 Marks; Section C: Descriptive answer type questions 1 out of 2 from each unit- 4 x 10 = 40 Marks;	


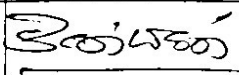

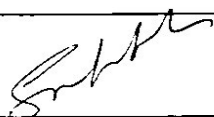

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Program Code and Name	DPMS03, M.Sc.(Mathematics)			Semester	III
Exam Code and Name	2033 - M.Sc .MATHEMATICS THIRD SEMESTER			Paper	III
Course Code	MMAT -303			Course Type	T
Course Title	Fuzzy sets and their Application - I				
Total Credit	4				
Total Marks	CIA: 30	ESE: 70	Max Marks: 100	Min. Pass. Marks: 40	
Prerequisites (if any)					
Course Outcomes	<p>The end of this course, the students will be able to:</p> <ol style="list-style-type: none"> 1. Students gained knowledge of fuzzy sets, 2. Fuzzy numbers, Min- Max composition and its properties, Fuzzy 3. Fuzzy measures, Necessity measure, fuzzy logic, Fuzzy quantifiers, 4. Students gained ability to find fuzzy sets discuss the types of fuzzy sets 				

Contents of Course		
Unit	Contents	No. of Period
I	Fuzzy sets- Basic definitions α - cuts, Convex fuzzy sets, Basic operations on fuzzy sets, Types of fuzzy sets, properties of α cuts, representation of fuzzy sets, First and Second decomposition theorem, Extension Principle for fuzzy sets.	15
II	Fuzzy complements, the two characterization theorems on fuzzy complements, t-norms and t-conorms, Algebraic product and sum, bounded difference and sum, statements of characterization for t-norms and t-conorms, combination of operators,	15
III	Fuzzy Arithmetic- Fuzzy numbers, Arithmetic operations on fuzzy numbers, Lattices of fuzzy numbers, fuzzy equations	15
IV	Fuzzy Relations- Fuzzy relations on fuzzy sets, fuzzy binary relations and fuzzy equivalence relations, Fuzzy morphism, standard composition, sup \circ composition, Inf-wi composition of fuzzy relations.	15
	Total no. of Lectures	60

Text books	1. Fuzzy sets and their Application
Reference books	<p>Reference Books:</p> <ul style="list-style-type: none"> • Dr. A. K. Bhargava: Fuzzy set Theory, Fuzzy Logic and Their Applications, S. Chand Publication, New Delhi • S. K. Pundir and R. Pundir : Fuzzy Sets and Their Applications, Pragati Publication Meerut. <p>E-Resources: https://onlinecourses.nptel.ac.in https://epqp.inflibnet.ac.in https://swayam.gov.in</p>

Assessment and Evaluation		
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Maximum Marks: 100 Marks	Continuous Internal Assessment (CIA): 30 Marks	End Semester Exam (ESE) : 70 Marks
Continuous Internal Assessment (CIA)	Internal Test/Quiz- (2): 20 & 20 Assignment / Seminar: 10 Total Marks: 30	Better marks out of the two Test / Quiz + obtained marks is Assignment shall be considered against 30 Marks
End Semester Exam (ESE)	Three Section - A, B & C Section A: Q1. Objective- 10 x 1 = 10 Mark; Section B: Long Answer type questions 1 out of 2 from each unit- 4 x 5 = 20 Marks; Section C: Descriptive answer type questions 1 out of 2 from each unit- 4 x 10 = 40 Marks;	

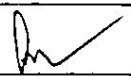
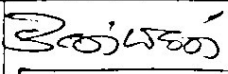
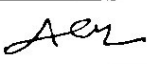
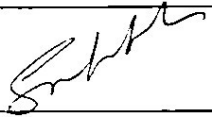

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Program Code and Name	DPMS03, M.Sc.(Mathematics)			Semester	III
Exam Code and Name	2033 - M.Sc .MATHEMATICS THIRD SEMESTER			Paper	IV
Course Code	MMAT -304			Course Type	T
Course Title	Operations Research – I				
Total Credit	4				
Total Marks	CIA: 30	ESE: 70	Max Marks: 100	Min. Pass. Marks: 40	
Prerequisites (if any)					
Course Outcomes	<p>The end of this course, the students will be able to:</p> <ol style="list-style-type: none"> 1. Gain ability to formulate LPP and to obtain the solution of LPP BY Simplex method. 2. Gain knowledge of duality in linear programming Understand concept of goal programming. 3. Gain knowledge of how to find the initial basic feasible solution of a transportation problem and assignment problem. 4. Gain knowledge of network analysis 				

Contents of Course		
Unit	Contents	No. of Period
I	Operations Research and its Scope, Necessity of Operations Research in Industry, Linear Programming-graphical method of solutions, Simplex Method, Theory of the Simplex Method,	15
II	Two phase method, Big M method of solution to LPP. Duality in linear programming, Duality theorems, Dual Simplex method, Other algorithms for Linear Programming- Dual Simplex Method.	15
III	Linear Goal Programming, Parametric Linear Programming, Upper Bound Technique, Interior Point Algorithm,	15
IV	Assignment Problems, Its mathematical formulation, Solution of assignment problems, Optimality test. Transportation Problems, Formulation of Transportation problems, Solutions of Transportation problems, North-West corner method, least cost method, Vogel's approximation method, Test for optimality U-V method. Network Analysis. Shortest Path Problem, minimum spanning tree Problem, Project Planning and Control with PERT and CPM method	15
	Total no. of Lectures	60

Operations	Research
	<p>Reference Books:</p> <ul style="list-style-type: none"> • R. Gupta D. S. Hira.: Operations Research ,S Chand & Co. Ltd., New Delhi. • H.A. Taha, Operations Research an Introduction, Macmillan publishing INC., NewYork. • F. S. Hillier& G.J. Lieberman, Introduction to Operations Research, (sixth- edition). • McGraw Hill International Edition. <p>E - Resources: https://onlincourses.nptel.ac.in/noc20cs82/preview https://swayam.gov.in/ https://www.coursera.org/</p>

Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks: 100 Marks	Continuous Internal Assessment (CIA): 30 Marks	End Semester Exam (ESE) : 70 Marks
Continuous Internal Assessment (CIA)	Internal Test/Quiz- (2): 20 & 20 Assignment / Seminar: 10 Total Marks: 30	Better marks out of the two Test / Quiz + obtained marks is Assignment shall be considered against 30 Marks
End Semester Exam (ESE)	Three Section - A, B & C Section A: Q1. Objective- 10 x 1 = 10 Mark; Section B: Long Answer type questions 1 out of 2 from each unit- 4 x 5 = 20 Marks; Section C: Descriptive answer type questions 1 out of 2 from each unit- 4 x 10 = 40 Marks;	


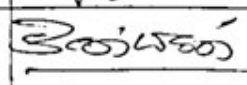
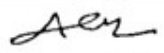
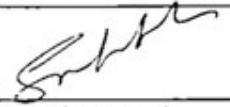

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Program Code and Name	DPMS03, M.Sc.(Mathematics))			Semester	III
Exam Code and Name	2033 - M.Sc .MATHEMATICS THIRD SEMESTER			Paper	V
Course Code	MMAE -305			Course Type	T
Course Title	Fluid Mechanics- I (Optional)				
Total Credit	4				
Total Marks	CIA: 30	ESE: 70	Max Marks: 100	Min. Pass. Marks: 0 4	
Prerequisites (if any)					
Course Outcomes	The end of this course, the students will be able to: <ol style="list-style-type: none"> 1. Gain the knowledge of kinematics, Equation of Motion 2. Motion in two Dimensions ,Motion of cylinders 3. motion in three Dimension Vortex Motion 4. Stress strain and the Navier-stokes equation, 				

Contents of Course		
Unit	Contents	No. of Period
I	Kinematics- Lagrangian and Eulerian methods, Equation of continuity, Streak lines, velocity potential, Irrotational and rotational motion, Boundary surfaces, tex lines.	15
II	Equation of motion- Euler dynamical equations, Bernoulli's equation of motion by flux method, Equation of motion under impulsive forces. Principle of energy for incompressible fluids, Lagrange's equation of motion.	15
III	Motion in two dimension- Lagrange's stream function, Irrotational motion in two dimension, complex potential, sources, sinks. and their images, Use of conformal transformation. The Milne-'Thomson Circle theorem of Blasius..	15
IV	Motion or Cylinders- of a circular and coaxial cylinders, Circulation about a moving cylinder, Streaming and circulation about a fixed circular cylinder,	15
	Total no. of Lectures	60

Text books	1. Fluid Mechanics- I (Optional)
	<p>Reference Books:</p> <ul style="list-style-type: none"> • An introduction to Fluid Dynamics, R. K. Rathy, Oxford and IBH Company, New Delhi, 1976 • An Introduction to Fluid Mechnics, G. K. Batchelor, Foundation Books New Delhi. • Boundary Layers, A.D. Young, AIAA Education Series,Washington DC, 1989. <p>Resource :</p> <p>https://onlinecourses.nptel.ac.in https://epqp.inflibnet.ac.in https://swayam.gov.in</p>

Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks: 100 Marks	Continuous Internal Assessment (CIA): 30 Marks	End Semester Exam (ESE) : 70 Marks
Continuous Internal Assessment (CIA)	Internal Test/Quiz- (2): 20 & 20 Assignment / Seminar: 10 Total Marks: 30	Better marks out of the two Test / Quiz + obtained marks in Assignment shall be considered against 30 Marks
End Semester Exam (ESE)	Three Section - A, B & C Section A: Q1. Objective- 10 x 1 = 10 Mark; Section B: Long Answer type questions 1 out of 2 from each unit- 4 x 5 = 20 Marks; Section C: Descriptive answer type questions 1 out of 2 from each unit- 4 x 10 = 40 Marks;	


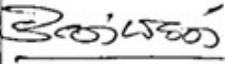
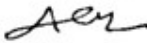

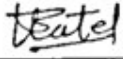
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Program Code and Name	DPMS03, M.Sc.(Mathematics)			Semester	III
Exam Code and Name	2033 - M.Sc .MATHEMATICS THIRD SEMESTER			Paper	V
Course Code	MMAE -306			Course Type	T
Course Title	Fundamental of computer science-I (optional)				
Total Credit	4				
Total Marks	CIA: 30	ESE: 70	Max Marks: 100	Min. Pass. Marks: 40	
Prerequisites (if any)					
Course Outcomes	<p>The end of this course, the students will be able to:</p> <ol style="list-style-type: none"> 1. Learn the basics of how computer originated and its internal compents. 2. Understand design principles of software and its types. 3. Understand the needs of security in computer system and how firewall works 4. 4Study latest trends in IT field 				

Contents of Course		
Unit	Contents	No. of Period
I	Introduction: Components of Computer system, History of computer, Generation and classification of computers, Input-Output device, Storage device: Primary memory and its types (RAM- SRAM and DRAM, ROM-PROM, EPROM, EEPROM, Cache Memory), Secondary memory (Magnetic-Floppy,• Disk, Magnetic Tape, optical CD, VCD5 CD-R, CD-RW).	15
II	Introduction and Evolution of Programming language: Machine, Assembly and High Level languages; Language Processor: Assembler, Interpreter, Compiler, Linker, Loader and Their Types; Types of programming language, Characteristics of good programming language Programming paradigms: procedural oriented and object oriented programming; Number System: Decimal, Binary, Octal? and Hexadecimal Representations and Their Conversions.	15
III	MS-Word including Microsoft equations, MS-Excel and MS-PowerPoint, Introduction to Latex software.	15
IV	Internet; Definition, history of internet, basic services of internet, use QC internet, internet search engine, internet security: Firewall, encryption/decryption methods, Application of IT: IT in business, Industry, home, education, entertainment, science, engineering, e- commerce, m-commerce; Latest IT trends: Artificial 12 Intelligence (AI), Data Mining, Cloud computing, Big data.	15
Total no. of Lectures		60

Text books	1. Text Books, Reference Books, E-Resources
	<p>Reference Books: Fundamental of computer science-I (optional)</p> <ul style="list-style-type: none"> • Computer Fundamentals, P.R. Sinha, BPB Publication, Sixth Edition. • Fundamentals of Computers, V. Rajaraman, PHI Sixth Edition. • Fundamentals of Inf01mation Technology, Chetan Shrivastava, Kalyan Publishers. • Computers Today, Suresh K. Basandra , Galgotia Publications. • Fundamentals of Information Technology, Alexis Leon and Mathews Leon, Vikash Publication. • Computer Fundamentals Architecture and Organization, B, Ram, New Age International' Publishers, Fifth Edition. <p>E-RESOURCES:</p> <ul style="list-style-type: none"> • https://www.w3schools.blog/computer-fundamentals-tutorial • https://www.tutorialspoint.com/computer-fundamentals/index.htm • https://onlinecourses.swayam2.ac.in/cec20/cs05/preview • https://www.tutorialspandit.com/ • https://www.tutorialspoint.com/internet-technologies/internet_overview.htm • https://www.javatpoint.com/internet • http://wuw.ace-edu.in/wp-content/uploads/2018/06/CN-Lab-Manual.pdf

Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
Maximum Marks: 100 Marks	Continuous Internal Assessment (CIA): 30 Marks	End Semester Exam (ESE) : 70 Marks
Continuous Assessment (CIA)	Internal Test/Quiz- (2): 20 & 20 Assignment / Seminar: 10 Total Marks: 30	Better marks out of the two Test / Quiz + obtained marks is Assignment shall be considered against 30 Marks
End Semester Exam (ESE)	Three Section - A, B & C Section A: Q1. Objective- 10 x 1 = 10 Mark; Section B: Long Answer type questions 1 out of 2 from each unit- 4 x 5 = 20 Marks; Section C: Descriptive answer type questions 1 out of 2 from each unit- 4 x 10 = 40 Marks;	

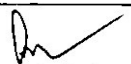
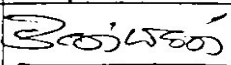
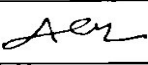
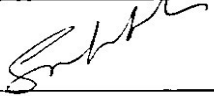

Sr. no	Member Name	Signature
1.	Dr. P. P. Murthy Professor, Guru Ghasidas Vishwavidyalaya Bilaspur	
2.	Dr. S.K.Tiwari Professor Head , Department of Mathematics . Dr. C.V.Raman University Kota Bilaspur	
3.	Dr. Sanjay Kumar Professor G.B.Pant University Uttarkhand	
4	Dr. Ashutosh Pandey Asst.Prof. D.P.Vipra P.G.College Bilaspur	
5.	Dr.smt. Snehalata Mishra Asst. Prof. Head , Department of Mathematics, D.P.Vipra P.G.College Bilaspur	
6.	Bhupesh Patel. Ex-Student. D.P.Vipra P.G.College Bilaspur	

Program Code and Name	DPMS03, M.Sc.(Mathematics))			Semester	III
Exam Code and Name	2033 - M.Sc .MATHEMATICS THIRD SEMESTER			Paper	I
Course Code	MMAE -307			Course Type	T
Course Title	Numerical Analysis				
Total Credit	4				
Total Marks	CIA: 30	ESE: 70	Max Marks: 100	Min. Pass. Marks: 40	
Prerequisites (if any)					
Course Outcomes	<p>The end of this course, the students will be able to:</p> <ol style="list-style-type: none"> To provide the numerical methods of solving the non- linear equations, interpolation, differentiation and intergration To improve the students skills numerical methods by using the numerical analysis software and computer facilities. 				

Contents of Course		
Unit	Contents	No. of Period
I	Operators- finite differences, average, differential etc. their inter- relations , difference of polynomials, Difference equation. Interpolation , Lagrange's methods error terms, Uniqueness of interpolating polynomial, Newton's fundamental interpolation, forward ,backward and central difference interpolation , interpolation by iteration.	15
II	Approximation of function , Least square method, use of orthogonal , polynomials, Approximation by Chebyshev polynomials, Max-min principle , Economization of power series.	15
III	Solution of non-linear equation containing one variable, Newton's methods, Modified Newton- Raphson method,	15
IV	Differentiation, Lagrange's method.	15
	Total no. of Lectures	60

Text books	1. Numerical Analysis
Reference books	<p>Reference Books:</p> <ul style="list-style-type: none"> Numerical Analysis by Richard L.Burden and J. Douglas Faires An Introduction to Numerical Analysis by Endre Suli and David F. Mayers. Applied Numerical Analysis by Curtis. D. Gerald and Patrick O. Wheatley. <p>E-RESOURCES:</p> <p>https://onlinecourses.nptel.ac.in</p> <p>https://epqp.inflibnet.ac.in</p> <p>https://swayam.gov.in</p>

Assessment and Evaluation		
Suggested Continuous Evaluation Methods:		
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End Semester Exam (ESE)	<p>Three Section - A, B & C</p> <p>Section A: Q1. Objective- 10 x 1 = 10 Mark;</p> <p>Section B: Long Answer type questions 1 out of 2 from each unit- 4 x 5 = 20 Marks;</p> <p>Section C: Descriptive answer type questions 1 out of 2 from each unit- 4 x 10 = 40 Marks;</p>	

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5.	Dr.smt. Snehalata Mishra Asst. Prof. Head , Department of Mathematics, D.P.Vipra P.G.College Bilaspur	
6.	Bhupesh Patel. Ex-Student. D.P.Vipra P.G.College Bilaspur	
7		
8.		