श्री Davara University

Established under Chhattisgarh Private Universities (Establishment and Operation) Act, 2005

Shri Davara University, Raipur

Curriculum

Master of Science in Mathematics

Semester-III

(Effective from Session: 2024-25)

Programme Code – FOSMSC2MAT

श्री Davara University
Established under Chhattisgarh Private Universities (Establishment and Operation) Act, 2005

TWO YEAR POSTGRADUATE PROGRAMME
MASTER OF SCIENCE IN MATHEMATICS
COURSE STRUCTURE

Semester-III

S. No.	Course Code	Course Title	Hours / Week			Credits	Maximum Marks			Sem End Exam Duration (Hrs)
			L	T	P		Sem End Exam	Continuous Evaluation	Total	
1	DUMSC301	Integration theory and Functional Analysis-I	4	1	-	5	70	30	100	3
2	DUMSC302	Partial Differential Equations and Mechanics-I	4	1	-	5	70	30	100	3
3	DUMSC303	Cryptography/ Fuzzy Set theory and its applications-I	4	1	-	5	70	30	100	3
4	DUMSC304	Operations Research-I	4	1	-	5	70	30	100	3
5	DUMSC305	Graph Theory-I / Programming in C (with ANSI features theory)-I	4	1	-	5	70	30	100	3
Total			**20**	**5**	**-**	**25**			**500**	**15**

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TWO YEAR POSTGRADUATE PROGRAMME
DEPARTMENT OF MATHEMATICS
COURSE CURRICULUM

Title	**INTEGRATION THEORY AND FUNCTIONAL ANALYSIS-I**				
Code	**DUMSC301**				
Credit	**L**	**T**	**P**	**Total**	
	5	**0**	**0**	**5**	
Prerequisite	**Basic knowledge of spaces.**				
Objective	(i)To acquire a basic body of Mathematical knowledge that will provide the students with a strong foundation for further study and/or for a career in Mathematics or in other technical or scientific fields (ii) To develop fundamental mathematical skill and the ability for independent mathematical learning and reasoning. (iii) To become aware of the applications of mathematics across science and technology, and to learn how to use mathematical ideas and techniques to solve real life problem				
Content	**Integration Theory** **UNIT-I** Signed measure. Hahn decomposition theorem, mutually singular measures. Radon-Nikodym theorem. Labesgue decomposition. Riesz representation theorem. Extension theorem (Caratheodory). **UNIT-2** Lebesgue-Stieltjes integral, product measures, Fubini's theorem. Differentiation and Integration. Decomposition into absolutely continuous and singular parts. **UNIT-3** Baire sets. Baire measure, continuous functions with compact support. Regularity of measures on locally compact spaces. Integration of continuous functions with compact support, Riesz-Markoff theorem. **Functional Analysis** **UNIT-4** Normed linear spaces. Banach spaces and examples. Quotient space of normed linear spaces and its completeness, equivalent norms. Riesz Lemma, basic properties of finite dimensional normed linear **Spaces and compactness**				

	UNIT-5 Weak convergence and bounded linear transformations, normed linear spaces of bounded linear transformations, dual spaces with examples.
Outcome	On the successful completion of this course student will be able to develop Mathematical Concept of the social and natural problems by logic facts. Integration theory and functional analysis helps to present the problems logically for the logical solution. Students understood the concept of Signed measure, Baire sets. Baire measure, continuous functions with compact support , Normed linear spaces and its applications in real life
Text books	**Text Books :** 1. P.R. Halmos, Measure Theory, Van Nostrand, Princeton, 1950. 2. B.Choudhary and S.Nanda, Functional Analysis with Applications. Wiley Eastern Ltd. 1989. 3. H.L. Royden, Real Analysis, Macmillan Publishing Co. Inc., New York, 4'h Edition, 1993.
Reference Books	**Reference Books:** 1. S.K. Berberian, Measure and integration, Chelsea Publishing Company, New York, 1965. 2. G. de Barra, Measure Theory and Integration, Wiley Eastern Limited, 1981. 3. P.K. Jain and V.P. Gupta, Lebesgue Measure and Integration, New Age International (P) Limited, New Delhi, 2000. 4. Richard L. Wheeden and AntoniZygmund, Measure and Integral : An Introduction to Real Analysis, Marcel ekker Inc. 1977. 5. J.H. Williamson, Lebesgue Integration, Holt Rinehart and Winston, Inc. New York. 1962. 6. T.G. Hawkins, Lebesgue's Theory of Integration: Its Origins and Development, Chelsea, New York, 1979. 7. K.R. Parthasarathy, Introduction to Probability and Measure, Macmillan Company of India Ltd., Delhi, 1977. 8. R.G. Bartle, The Elements of Integration, John Wiley & Sons, Inc. New York, 1966. 9. Serge Lang, Analysis I & II, Addison-Wesley Publishing Company, Inc. 1967. **10.** Inder K. Rana, An Introduction to Measure and Integration, Narosa Publishing House, Delhi, 1997.
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TWO YEAR POSTGRADUATE PROGRAMME
DEPARTMENT OF MATHEMATICS
COURSE CURRICULUM

Title	**PARTIAL DIFFERENTIAL EQUATIONS AND MECHANICS-I**				
Code	**DUMSC302**				
Credit	**L**	**T**	**P**	**Total**	
	5	**0**	**0**	**5**	
Prerequisite	**Basic knowledge of Partial Differential equation.**				
Objective	(i)To acquire a basic body of Mathematical knowledge that will provide the students with a strong foundation for further study and/or for a career in Mathematics or in other technical or scientific fields (ii) To develop fundamental mathematical skill and the ability for independent mathematical learning and reasoning. (iii) To become aware of the applications of mathematics across science and technology, and to learn how to use mathematical ideas and techniques to so hilve real life problem				
Content	**Partial Differential Equations** **UNIT 1** Examples of PDE. Classification. Transport Equation-Initial value Problem. Non-homogeneous Equation. Laplace's Equation-Fundamental Solution, Mean Value Formulas, Properties of Harmonic Functions, Green's Function, Energy Methods. **UNIT 2** Heat Equation-Fundamental Solution, Mean Value Formula, Properties of Solutions, Energy Methods. Wave Equation-Solution by Spherical Means, Non-homogeneous Equations, Energy Methods. **Analytical Dynamics:** **UNIT 3** Generalized coordinates. Holonomic and Non-holonomic systems. Scleronomic and Rheonomicsytems. Generalized potential. Lagrange's equations of first kind. Lagrange's equations of second kind. Uniqueness of solution. Energy equation for conservative fields. Hamilton's variables. Donkin's theorem. Hamilton canonicalequations. Cyclic coordinates. Routh's equations. **UNIT 4** Poisson's Bracket. Poisson's Identity. Jacobi-Poisson Theorem. Motivating problems of calculus of variations, Shortest distance. Minimum surface of revolution. Brachistochrone problem. Isoperimetric problem. Geodesic. Fundamental lemma of calculus of variations. Euler's equation for one dependent function and its generalization to (1) 'n' dependent functions, (ii) higher order derivatives. Conditional extremum under				

	geometric constraints and under integral constraints. **Gravitation** **UNIT 5** Attraction and potential of rod, disc, spherical shells and sphere. Surface integral of normal attraction (application & Gauss' theorem). Laplace and Poisson equations. Work done by self attracting systems. Distributions for a given potential. Equipotential surfaces. Surface and solid harmonics. Surface density in terms of surface harmonics.
Outcome	On the successful completion of this course student will be able to develop Mathematical Concept of the social and natural problems by logic facts. Partial differential equations and Mechanics (I) helps to present the problems logically for the logical solution. Students understood the concept of partial differential equation, Analytical Dynamics , Gravitation and its applications in real life
Recommended Books	**Text Books :** 1. L.C. Evans, Partial Differential Equations, Graduate Studies in Mathematics, Volume 19, AMS, 1998. 2. F. Gantmacher, Lectures in Analytic Mechanics, MIR Publishers, Moscow, 1975. 3. R.C.Mondal, Classical Mechanics, Prentice Hall of India 4. S.L. Loney, An Elementary Treatise on Statics, Kalyani Publishers, New Delhi, 1979.
	References Books: 1. Books on Partial differential equation by 1.N. Sneddon, F. John, P. Prasad and R. Ravindran, Amarnath etc. 2. A.S. Ramsey, Dynamics Part II, The English Language Book Society and Cambridge University Press, 1972. 3. H. Goldstein, Classical Mechanics (2nd edition), Narosa Publishing House, New Delhi. 4. I.M. Gelfand and S.V. Fomin, Calculus of Variations, Prentice Hall. 5. Narayan Chandra Rana&PramodSharad Chandra Joag, Classical Mechanics, Tata McGraw Hill, 1991. 6. Louis N. Hand and Janet D. Finch, Analytical Mechanics, Cambridge University Press, 1998. 7. A.S. Ramsey, Newtonian Gravitation, The English Language Book Society and the Cambridge University Press.

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TWO YEAR POSTGRADUATE PROGRAMME
DEPARTMENT OF MATHEMATICS
COURSE CURRICULUM

Course Title	**Cryptography**				
Course Code	**DUMSC303**				
Course Credits	**L**	**T**	**P**	**TC**	
	5	**1**	**0**	**6**	
Prerequisites	**Discrete math, number theory, algorithms, programming, logic, and proofs.**				
Course objectives	This course helps the students to develop skills and knowledge of standard concepts in cryptography and demonstrates how cryptography plays an important role in the present digital world by knowing encryption and decryption techniques and secure data in transit across data networks.				
Course Contents	**Unit 1: Cryptography and Data Encryption Standard (DES)** Overview of Cryptography, Computer security concepts, Security attacks, Symmetric cipher model, Cryptanalysis and brute-force attack, Substitution techniques, Caesar cipher, Mono alphabetic ciphers, Play fair cipher, Hill cipher, Poly alphabetic ciphers, One-time pad, Transposition techniques, Binary and ASCII, Pseudo-random bit generation, Stream ciphers and Block ciphers, Feistal cipher, Data encryption standard (DES), DES example. **Unit 2: Algorithms and Advanced Encryption Standard (AES)** Review of basic concepts in Number theory and Finite Fields**:** divisibility, polynomial and modular arithmetic, Fermat's and Euler's theorems, Chinese remainder theorem, Discrete logarithm, Finite fields of the form GF(p) and GF($2n$); Advanced encryption standard (AES), AES transformation functions, AES key expansion, AES example. **Unit 3: Public-key Cryptography** Principles of public-key cryptosystems, RSA algorithm and security of RSA, Elliptic curve arithmetic, Elliptic curve cryptography, Cryptographic Hash functions, Secure Hash algorithm. **Unit 4: Digital Signatures** Digital signatures, Elgamal and Schnorr digital signature schemes, Digital signature algorithm. **Unit 5: Network Security** Wireless network and mobile device security, Email architecture, formats, threats and security, Secure/Multipurpose Internet Mail Extension, Pretty Good Privacy.				
Course outcomes	After the course, the student will be able to: i) Understand the fundamentals of cryptography and computer security attacks. ii) Learn about various ciphers and data encryption standard. iii) Review basic concepts of number theory and finite fields. iv) Learn about advanced encryption standard.				

	v) Understand the fundamentals of RSA and elliptic curve cryptography. vi) Encrypt and decrypt messages using block ciphers, sign and verify messages using well known signature generation and verification algorithms.
Reference Books	1. Stallings, William (2017). Cryptography and Network Security, Principles and Practice (7th ed.). Pearson Education Limited. England. 1. Trappe Wade & Washington, Lawrence C. (2006). Introduction to Cryptography with Coding Theory(2nd ed.). Pearson Education International. **Additional Reading:** Stinson, Douglas R. (2005).Cryptography Theory and Practice (3rd ed.). CRC Press.
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TWO YEAR POSTGRADUATE PROGRAMME
DEPARTMENT OF MATHEMATICS
COURSE CURRICULUM

Course Title	**FUZZY SET THEORY AND ITS APPLICATIONS-I**				
Course Code	**DUMSC303**				
Course Credits	**L**	**T**	**P**	**TC**	
	5	**0**	**0**	**5**	
Prerequisites	**Basic knowledge of fuzzy sets.**				
Course objectives	(i)To acquire a basic body of Mathematical knowledge that will provide the students with a strong foundation for further study and/or for a career in Mathematics or in other technical or scientific fields (ii) To develop fundamental mathematical skill and the ability for independent mathematical learning and reasoning. (iii) To become aware of the applications of mathematics across science and technology, and to learn how to use mathematical ideas and techniques to solve real life problem				
Course Contents	**UNIT-1** Fuzzy sets-Basic definitions, α-level sets. Convex fuzzy sets. Basic operations on fuzzy sets. Types of fuzzy sets. Cartesian products, Algebraic products. Bounded sum and difference, t-norms and t conorms. **UNIT-2** The Extension Principle- The Zadeh's extension principle. Image and inverse image of fuzzy sets. Fuzzy numbers. Elements of fuzzy arithmetic. **UNIT-3** Fuzzy Relations on Fuzzy sets, Composition of Fuzzy relations. Min Max composition and its properties **UNIT-4** Fuzzy equivalence relations. Fuzzy compatibility relations. Fuzzy relation equations. Fuzzy graphs, Similarity relation. **UNIT-5** Possibility Theory-Fuzzy measures. Evidence theory. Necessity measure. Possibility measure. Possibility distribution. Possibility theory and fuzzy sets. Possibility theory versus probability theory.				
Course outcomes	On the successful completion of this course student will be able to develop Mathematical Concept of the social and natural problems by logic facts. Fuzzy set theory and its application helps to present the problems logically for the logical solution. Students understood the concept of Fuzzy set and basic operation on Fuzzy set and its applications in real life				

Text books	**Text Books:** 1. H.J. Zmmemann, Fuzzy set theory and its Applications, Allied Publishers Ltd. New Delhi, 1991.
Reference Books	**Reference Books:** 1. G.J. Klir and B. Yuan- Fuzzy sets and fuzzy logic, Prentice-Hall ol India, New Delhi, 1995.
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TWO YEAR POSTGRADUATE PROGRAMME
DEPARTMENT OF MATHEMATICS
COURSE CURRICULUM

Course Title	**OPERATIONS RESEARCH-I**				
Course Code	**DUMSC304**				
Course Credits	**L**	**T**	**P**	**TC**	
	5	**0**	**0**	5	
Prerequisites	**Basic knowledge of mathematical operations.**				
Course Objectives	(i)To acquire a basic body of Mathematical knowledge that will provide the students with a strong foundation for further study and/or for a career in Mathematics or in other technical or scientific fields (ii) To develop fundamental mathematical skill and the ability for independent mathematical learning and reasoning. (iii) To become aware of the applications of mathematics across science and technology, and to learn how to use mathematical ideas and techniques to solve real life problem				
Course Contents	**UNIT-1** Operations Research and its Scope. Necessity of Operations Research in Industry. Linear Programming-Simplex Method. Theory of the Simplex Method. Duality and Sensitivity Analysis. **UNIT-2** Other Algorithms for Linear Programming-Dual Simplex Method. **UNIT-3** Parametric Linear Programming. Upper Bound Technique. Interior Point Algorithm. Linear Goal Programming **UNIT-4** Transportation and Assignment Problems. **UNIT-5** Network Analysis-Shortest Path Problem. Minimum Spanning Tree Problem. Maximum Flow I Problem. Minimum Cost Flow Problem. Network Simplex Method. Project Planning and Control I with PERT-CPM.				
Course outcomes	On the successful completion of this course student will be able to develop Mathematical Concept of the social and natural problems by logic facts. General and Operation Research helps to present the problems logically for the logical solution. Students understood the concept of linear programming problem, PERT-CPM, Transportation and Assignment problems and its applications in real life				

Text Books	**Text Books :** 1. F.S. Hillier and G.J. Ueberman. Introduction to Operations ResBareft (Sixth Edition), McGraw Hill International Edition, Industrial Engineering Series, 1995. (This book comes with a CD containing tutorial software). 2. G. Hadley, Linear Programming, Narosa Publishing House, 1995. 3. G. Hadly, Nonlinear and Dynamic Programming, Addison-Wesley, Reading Mass. 4. H.A. Taha, Operations Research -An introduction, Macmillan Publishing Co., Inc., New Yark. 5. KantiSwarup, P.K. Gupta and Man Mohan, Operations Research, Sultan Chand & Sons, New Delhi 6. Mokhtar S. Bazaraa, John J. Jarvis and Hanif D. Sherali, Linear Programming and Network flows, John Wiley & Sons, New York, 1990
Reference Books	**Reference Books:** 1. S.S. Rao, Optimization Theory and Applications, Wiley Eastern Ltd., New Delhi. 2. Prem Kumar Gupla and D.S. Hira, Operations Research-An Introduction. S. Cliand& Company Ltd., New Delhi. 3. N.S. Kambo, Mathematical Programming Techniques, Affiliated East-West Press Pvt. Ltd., New Delhi, Madras 4. R.K. Rathy, An Introduction to Fluid Dynamics, Oxford and IBH Publishing Company, New Delhi, 1976. 5. A.D. Young, Boundary Layers, AIAA Education Series, Washington DC, 1989. 6. S.W. Yuan, Foundations of Fluid Mechanics, Prentice Hall of India Private Limited, New Delhi, 1976.
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TWO YEAR POSTGRADUATE PROGRAMME
DEPARTMENT OF MATHEMATICS
COURSE CURRICULUM

Course Title	**Programming in C (with ANSI features) Theory and Practical -I**				
Course Code	**DUMSC305**				
Course Credits	**L**	**T**	**P**	**Total**	
	4	**0**	**0**	**4**	
Prerequisites	**Basic knowledge of computer programming.**				
Course objectives	(i)To acquire a basic body of Mathematical knowledge that will provide the students with a strong foundation for further study and/or for a career in Mathematics or in other technical or scientific fields (ii) To develop fundamental mathematical skill and the ability for independent mathematical learning and reasoning. (iii) To become aware of the applications of mathematics across science and technology, and to learn how to use mathematical ideas and techniques to solve real life problem				
Course Contents	**UNIT-1** An overview of programming. Programming language, Classification. C Essentials-Program Development. Functions. Anatomy of a C Function. Variables and Constants. Expressions. Assignment Statements. Formatting Source Files. Continuation Character. The Preprocessor. **UNIT-2** Scalar Data Types-Declarations, Different Types of Integers. Different kinds of Integer Constants. Floating-Point Types. Initialization. Mixing Types. Explicit Conversions-Casts. Enumeration Types. The Void Data Type. Typedefs. Finding the Address of an object. Pointers **UNIT-3** Control Flow-Conditional Branching. The Switch Statement. Looping. Nested Loops. The break and continue Statements. The go to statement. Infinite Loops. **UNIT-4** Operators and Expressions-Precedence and Associativity. Unary Plus and Minus operators. Binary Arithmetic Operators. Arithmetic Assignment Operators. Increment and Decrement Operators. Comma Operator. Relational Operators. Logical Operators. Bit -Manipulation Operators. Bitwise Assignment Operators. Cast Operator. Size of Operators. Conditional Operator. Memory Operators. **UNIT-5** Arrays -Declaring an Array. Arrays and Memory. Initializing Arrays Encryption and				

	Decryption.
Course outcomes	On the successful completion of this course student will be able to develop Mathematical Concept of the social and natural problems by logic facts. C-language helps to present the problems logically for the logical solution. Students understood the concept of programming in C and its applications in real life
Text books	**Text Books :** 1. Peter A. Darnell and Philip E. Margolis, C: A Software Engineering Approach, Narosa Publishing House (Springer International Student Edition) 1993.
Reference Books	**References Books** 1. Samuel P. Harkison and Gly L. Steele Jr., C : A Reference Manual, 2nd Edition, Prentice Hall, 1984. 2. Brian W. Kernighan & Dennis M. Ritchie, The C Programmer Language, 2nd Edition (ANSI Features), Prentice Hall 1989.
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Shri Davara University, Raipur

Curriculum

Master of Science in Mathematics

Semester-IV

(Effective from Session: 2024-25)

Programme Code – FOSMSC2MAT

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TWO YEAR POSTGRADUATE PROGRAMME
MASTER OF SCIENCE IN MATHEMATICS
COURSE STRUCTURE

Semester-IV

S.No.	Course Code	Course Title	Hours / Week			Credits	Maximum Marks			Sem End Exam Duration (Hrs)
			L	T	P		Sem End Exam	Continuous Evaluation	Total	
1	DUMSC401	Fuzzy Set Theory and Its Applications	4	-	-	4	70	30	100	3
2	DUMSC402	Integration Theory and Functional Analysis II	4	-	-	4	70	30	100	3
3	DUMSC403	Dissertation		-	12	12	200	50	250	16
Total			**8**	**0**	**12**	20			**450**	22 Hrs

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TWO YEAR POSTGRADUATE PROGRAMME
DEPARTMENT OF MATHEMATICS
COURSE CURRICULUM

Title	**FUZZY SET THEORY AND ITS APPLICATIONS**				
Code	DUMSC401				
Credit	**L**	**T**	**P**	**Total**	
	4	**0**	**0**	**4**	
Prerequisite	**NIL**				
Objective	(i)To acquire a basic body of Mathematical knowledge that will provide the students with a strong foundation for further study and/or for a career in Mathematics or in other technical or scientific fields (ii) To develop fundamental mathematical skill and the ability for independent mathematical learning and reasoning. (iii) To become aware of the applications of mathematics across science and technology, and to learn how to use mathematical ideas and techniques to solve real life problem				
Content	**UNIT-1** Fuzzy sets-Basic definitions, α-level sets. Convex fuzzy sets. Basic operations on fuzzy sets. Types of fuzzy sets. Cartesian products, Algebraic products. Bounded sum and difference, t-norms and t conorms. **UNIT-2** The Extension Principle- The Zadeh's extension principle. Image and inverse image of fuzzy sets. Fuzzy numbers. Elements of fuzzy arithmetic. **UNIT-3** Fuzzy Relations on Fuzzy sets, Composition of Fuzzy relations. Min Max composition and its properties **UNIT-4** Fuzzy equivalence relations. Fuzzy compatibility relations. Fuzzy relation equations. Fuzzy graphs, Similarity relation. **UNIT-5** Possibility Theory-Fuzzy measures. Evidence theory. Necessity measure. Possibility measure. Possibility distribution. Possibility theory and fuzzy sets. Possibility theory versus probability theory.				

Outcome	On the successful completion of this course student will be able to develop Mathematical Concept of the social and natural problems by logic facts. Fuzzy set theory and its application helps to present the problems logically for the logical solution. Students understood the concept of Fuzzy set and basic operation on Fuzzy set and its applications in real life
Recommended Books	**Text Books:** 1. H.J. Zmmemann, Fuzzy set theory and its Applications, Allied Publishers Ltd. New Delhi, 1991.
	Reference Books: 1. G.J. Klir and B. Yuan- Fuzzy sets and fuzzy logic, Prentice-Hall ol India, New Delhi, 1995.
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TWO YEAR POSTGRADUATE PROGRAMME
DEPARTMENT OF MATHEMATICS
COURSE CURRICULUM

Title	**Integration Theory and Functional Analysis II**				
Code	**DUMSC402**				
Credit	**L**	**T**	**P**	**Total**	
	4	**0**	**0**	**4**	
Prerequisite	**Basic knowledge of spaces.**				
Objective	(i)To acquire a basic body of Mathematical knowledge that will provide the students with a strong foundation for further study and/or for a career in Mathematics or in other technical or scientific fields (ii) To develop fundamental mathematical skill and the ability for independent mathematical learning and reasoning. (iii) To become aware of the applications of mathematics across science and technology, and to learn how to use mathematical ideas and techniques to solve real life problem				
Content	**UNIT-1** Uniform boundedness theorem and some of its consequences. Open mapping and closed graph theorems. **UNIT-II** Hahn-Banach theorem for real linear spaces, complex linear spaces and normed linear spaces. Reflexive spaces. Weak Sequential Compactness. Compact Operators. Solvability of linear equations in Banach spaces. The closed Range theorem. **UNIT-III** Inner product spaces. Hilbert spaces. Orthonormal Sets. Bessel's inequality. Complete orthonormal sets and Parseval's identity. **UNIT-IV** Structure of Hilbert spaces. Projection theorem. Riesz representation theorem. Adjoint of an operator on a Hilbert space. Reflexivity of Hilbert spaces. **UNIT-V** Self-adjoint operators, Positive, projection, normal and unitary operators. Abstract variational boundary-value problem. The generalized Lax-Milgram theorem.				

Outcome	On the successful completion of this course student will be able to develop Mathematical Concept of the social and natural problems by logic facts. Functional Analysis helps to present the problems logically for the logical solution. Students understood the concept of boundedness theorem, Hahn-Banach theorem , Inner product space, Self adjoint operator and its applications in real life
Text Books	**Text Books :** 1. B.Choudhary and S.Nanda, Functional Analysis with Applications. Wiley Eastern Ltd. 1989. 2. H.L. Royden, Real Analysis, Macmillan Publishing Co. Inc., New York, 4'h Edition, 1993.
References Books:	References Books: 1. Serge Lang, Analysis I & II, Addison-Wesley Publishing Company, Inc. 1967. 2. Walter Rudin, Real & Complex Analysis, Tata McGraw-Hill Publishing. 3. Edwin Hewitt and Korl Stromberg, Real and Abstract Analysis, Springer-Verlag, New York. 4. Edwin Hewitt and Kenneth A. Ross, Abstract Harmonic Analysis, Vol. 1, Springer-Verlag, 1993. 5. G. Bachman and L. Narici, Functional Analysis, Academic Press, 1966. 6. N. Dunford and J.T. Schwartz, Linear Operators, Part I, Interscience, New York, 1958. 7. R.E. Edwards, Functional Analysis, Holt Rinehart and Winston, New York, 1965. 8. C. Goffman and G. Pedrick, First Course in Functional Analysis, Prentice Hall of India, New Delhi, 1987. 9. P.K. Jain, O.P. Ahuja and Khalil Ahmad, Functional Analysis, New Age International (P) Ltd. & Wiley Eastern Ltd., New Delhi, 1997. 10. R.B. Holmes, Geometric Functional Analysis and its Applications, Springer-Verlag, 1975.
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