Murshidabad University

Address: -1, Sahid Surjyasen Road, Gora-Bazar, Berhampore, Murshidabad, West Bengal 742101

Website: murshidabaduniversity.ac.in

No – MU (R)/ 177/2021-2022

Date:13/09/2021

NOTIFICATION

It is notified for information of all concerned that Murshidabad University in its meeting, held on 09/09/2021 approved the ad-hoc syllabus, M.A/M.Sc. course of study in Mathematics under CBCS in the Postgraduate dept. of the University.

The above shall be effective from academic session 2021-2022.

Choice Based Credit System (CBCS)

MURSHIDABAD UNIVERSITY

DEPARTMENT OF MATHEMATICS

POSTGRADUATE PROGRAMME

M. SC. COURSE IN MATHEMATICS

(Four Semesters)

(Courses effective from Academic Year 2021-22)

SYLLABUS OF COURSES TO BE OFFERED

M. Sc. Course in Mathematics
(Choice Based Credit System)
Total Marks : 1000
(Total four semester course carrying 250 marks in each semester)

Outline of the Choice Based Credit Semester System

Transaction Categories: CC: Core Course; **CB**: Choice Based Course; **E**: Elective Course; **PW**: Project Work
Evaluation Categories: SEE: Semester End Examination; **IA**: Internal Assessment

Course/Paper	Topics	Marks		Credit	Hrs/Wk
		SEE	IA		
SEMESTER I					
PG-MATH-CC-101	Algebra-I	40	10	4	4
PG-MATH-CC-102	Complex Analysis	40	10	4	4
PG-MATH-CC-103	Ordinary Differential Equations	40	10	4	4
PG-MATH-CC-104	Topology	40	10	4	4
PG-MATH-CC-105	Advanced Programming in C	40	10	4	6
SEMESTER II					
PG-MATH-CC-201	Algebra-II	40	10	4	4
PG-MATH-CC-202	Classical Mechanics	40	10	4	4
PG-MATH-CC-203	Measure Theory and Integration	40	10	4	4
PG-MATH-CC-204	Operations Research	40	10	4	4
PG-MATH-CC-205	Computer Practical (application of Matlab and typesetting software Latex)	40	10	4	6

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DETAILS OF COURSE:
SEMESTER I
Duration: 6 Months (Including Examinations) Total 20 credits (Marks: 250)

Course/Paper	Topics	Marks		Credit	Hrs/Wk
		SEE	IA		
SEMESTER I					
PG-MATH-CC-101	Algebra-I	40	10	4	4
PG-MATH-CC-102	Complex Analysis	40	10	4	4
PG-MATH-CC-103	Ordinary Differential Equations	40	10	4	4
PG-MATH-CC-104	Topology	40	10	4	4
PG-MATH-CC-105	Advanced Programming in C	40	10	4	6

M. Sc. Course in Mathematics
SEMESTER-I
Course Code: PG-MATH-CC-101
Course title: Algebra-I
Core Course; Credit-4; Full Marks-50
Course wise Class (L+T+P): 3:1:0

Group A (25 Marks)

Basic Algebra: Review of basic concept of Algebra: Permutations, combinations, pigeon-hole principle, inclusion-exclusion principle, derangements. Fundamental theorem of arithmetic, divisibility in Z, congruence's, Chinese Remainder Theorem, Euler's Ø- function, primitive roots.

Group Theory: Review of basic concepts of Group Theory: Groups, subgroups, normal subgroups, quotient groups Lagrange's Theorem.

Cyclic Groups, Permutation Groups and Groups of Symmetry:S_n, A_n D_n, Conjugacy Classes, Index of a Subgroup, Divisible Abelian Groups. Homomorphism of Groups, Normal Subgroups, Quotient Groups, Isomorphism Theorems, Cayley's Theorem. Generalized Cayley's Theorem, Direct Product and Semi-Direct Product of Groups, Fundamental Theorem (Structure Theorem) of Finite Abelian Groups (Statement and its application only), Cauchy's Theorem, Group Action, Sylow Theorems and their applications. Solvable Groups.

Normal and Subnormal Series, Composition Series, Solvable Groups and Nilpotent Groups, Jordan-Hölder Theorem (Statement and its application only).

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Group B (25 Marks)

Review of Vector Spaces: Vector spaces over a field, subspaces. Sum and direct sum of subspaces. Linear span. Linear dependence and independence. Basis.

Finite dimensional spaces. Existence theorem for bases in the finite dimensional case. Invariance of the number of vectors in a basis, dimension. Existence of complementary subspace of any subspace of a finite dimensional vector space. Dimensions of sums of subspaces. Quotient space and its dimension. Infinite dimensional vector spaces.

Matrices and Linear Transformations: Matrices and linear transformations, change of basis and similarity. Algebra of linear transformations. Change of basis. Isomorphism Theorems. Adjoint of linear transformations. Eigen values and eigenvectors of linear transformations. Determinants. Characteristic and minimal polynomials of linear transformations, Cayley-Hamilton Theorem. Diagonalization of operators. Invariant subspaces. Canonical forms.

References:

1. Roman, S., Fundamentals of Group Theory: An Advanced Approach, Birkhauser, 2012.
2. Malik, D.S., Mordesen, J.M., Sen, M.K., Fundamentals of Abstract Algebra, The McGraw-Hill Companies, Inc, 1997.
3. Rotman, J., The Theory of Groups: An Introduction, Allyn and Bacon, Inc., Boston, 1973.
4. Rotman, J., A First Course in Abstract Algebra, Prentice Hall, 2005.
5. Pinter, Charles. C., A Book of Abstract Algebra, McGraw Hill, 1982.
6. Herstein, I.N., Topics in Abstract Algebra, Wiley Eastern Limited, 1975.
7. Gallian, J., Contemporary Abstract Algebra, Narosa, 2011.
8. Jacobson, N., Basic Algebra, I & II, Hindusthan Publishing Corporation, India.
9. Hungerford, T.W., Algebra, Springer.
10. Artin, M., Algebra, Prentice Hall of India, 2007.
11. Goldhaber, J.K., Ehrlich, G., Algebra, The Macmillan Company, Collier-Macmillan Limited, London.
12. Dummit, D.S., Foote, R.M., Abstract Algebra, Second Edition, John Wiley & Sons, Inc., 1999
13. Artin, M., Algebra, Prentice Hall of India, 2007.
14. Halmos, P.R., Finite Dimensional Vector Spaces, Springer, 2013.
15. Roman, S., Advanced Linear Algebra, Springer, 2007.
16. Curtis, C.W., Linear Algebra: An Introductory Approach, Springer (SIE), 2009.
17. Hoffman, K., Kunze, R., Linear Algebra, Prentice Hall of India, 1978.
18. Dummit, D.S., Foote, R.M., Abstract Algebra, Second Edition, John Wiley & Sons, Inc., 1999.
19. Apostol, T.M., Calculus Vol. I & II, John Wiley and Sons, 2011.

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M. Sc. Course in Mathematics
SEMESTER-I
Course Code: PG-MATH-CC-102
Course title: Complex Analysis
Core Course; Credit-4; Full Marks-50
Course wise Class (L+T+P): 3:1:0

Complex Differentiation: Review of Cauchy-Riemann equations, sufficient conditions for differentiability.

Complex Functions and Conformality: Stereographic projection, Analytic functions, Entire functions, Harmonic functions and Harmonic conjugates, Polynomial functions, Rational functions, Power series, Exponential, Logarithmic, Trigonometric and Hyperbolic functions, Branch of a logarithm, Conformal maps, Mobius Transformations.

Complex Integration: The complex integral (over piecewise $C1$curves), Cauchy's Theorem and Integral Formula, Power series representation of analytic functions, The difference between Real Analytic functions and C_∞ functions over R. Real Analyticity vs. Complex Analyticity. Morera's Theorem, Goursat's Theorem, Liouville's Theorem, Fundamental Theorem of Algebra, Zeros of analytic functions, Identity Theorem, Weierstrass Convergence Theorem (Statement only), Maximum Modulus Principle and its applications, Schwarz's Lemma, Index of a closed curve, Contour, Index of a contour, Simply connected domains, Cauchy's Theorem for simply connected domains.

Singularities: Definitions and Classification of singularities of complex functions, Isolated singularities, Uniform convergence of sequences and series, Laurent series, Casorati-Weierstrass Theorem (Statement only), Poles, Residues, Residue Theorem and its applications to contour integrals, Applications of Argument Principle, Applications of Rouche's Theorem.

References:
1. Sarason, D., Complex Function Theory, Hindustan Book Agency, Delhi, 1994.
2. Ahlfors, L.V., Complex Analysis, McGraw-Hill, 1979.
3. Rudin, W., Real and Complex Analysis, McGraw- Hill Book Co., 1966.
4. Hille, E., Analytic Function Theory (2 vols.), Gonn & Co., 1959.
5. Gamelin, T.W., Complex Analysis, Springer, 2001.
6. Bak, J., Newman, D.J., Complex Analysis, Springer, 2010.
7. Marsden, J.E., Hoffman, M.J., Basic Complex Analysis, Third Edition, W. H. Freeman and Company, New York, 1999.
8. Ponnusamy, S., Foundations of Complex Analysis, Narosa, 2008.
9. Conway, J.B., Functions of One Complex Variable, Second Edition, Narosa Publishing House, 1973.

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M. Sc. Course in Mathematics
SEMESTER-I
Course Code: PG-MATH-CC-103
Course title: Ordinary Differential Equation
Core Course; Credit-4; Full Marks-50
Course wise Class (L+T+P): 3:1:0

Existence and Uniqueness: First order ODE, Initial value problems, Existence theorem, Uniqueness, basic theorems, Ascoli Arzela theorem, Theorem on convergence of solution of initial value problems, Picard - Lindelof theorem, Peano's existence theorem and corollaries.

System of ODE: Existence and uniqueness of solution of systems, Local existence, Non-local existence, Approximation and uniqueness, Existence and uniqueness for linear systems, linear homogeneous systems, Nonhomogeneous linear systems, Linear system with constant coefficients, linear system with periodic coefficients, Fundamental Matrix.

Higher Order Linear ODE: Higher order linear ODE, fundamental solutions, Wronskian, variation of parameters, Linear differential equations of order n, Linear equations with analytic coefficients.

Boundary Value Problems for Second Order Equations: Ordinary Differential Equations of the Strum Liouville type and their properties, Application to Boundary Value Problems, Eigenvalues and Eigenfunctions, Orthogonality theorem, Expansion theorem. Green's function for Ordinary Differential Equations, Application to Boundary Value Problems

References:

1. Simmons, G.F., Differential Equations, Tata McGraw Hill.
2. Agarwal, R.P., O’ Regan, D., An Introduction to Ordinary Differential Equations, Springer, 2000.
3. Codington, E.A., Levinson, N., Theory of Ordinary Differential Equation, McGraw Hill.
4. Ince, E.L., Ordinary Differential Equation, Dover.
5. Estham, M.S.P., Theory of Ordinary Differential Equations, Van Nostrand Reinhold Compa.Ny, 1970.
6. Piaggio, H.T.H., An Elementary Treatise on Differential Equations and Their Applications, G. BellAnd Sons, Ltd, 1949.
7. Hartman, P., Ordinary Differential Equations, SIAM, 20

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M. Sc. Course in Mathematics
SEMESTER-I
Course Code: PG-MATH-CC-104
Course title: Topology
Core Course; Credit-4; Full Marks-50
Course wise Class (L+T+P): 3:1:0

Topological Spaces and Continuous Functions: Topological spaces, Basis and Subbasis for a topology, Order Topology, Product topology on X × Y, subspace Topology, Interior Points, Limit Points, Derived Set, Boundary of a set, Closed Sets, Closure and Interior of a set, Kuratowski closure operator and the generated topology, Continuous Functions, Open maps, Closed maps and Homeomorphisms, Product Topology, Quotient Topology, Metric Topology, Complete Metric Spaces, Baire-Category Theorem.

Connectedness and Compactness: Connected and Path Connected Spaces, Connected Sets in R, Components and Path Components, Local Connectedness. Compact Spaces, Compact Sets in R, Compactness in Metric Spaces, Totally Bounded Spaces, Ascoli-Arzelà Theorem, The Lebesgue Number Lemma, Local Compactness.

Countability Axioms, The Separation Axioms, Lindelof spaces, Regular spaces, Normal spaces (definition and examples only).

References:

1. Dugundji, J., Topology, Allyn and Bacon, 1966.
2. Simmons, G.F., Introduction to Topology and Modern Analysis, McGraw-Hill, 1963.
3. Kumaresan, S., Topology of Metric Spaces, Narosa Publishing House, 2010.
4. Kelley, J.L., General Topology, Van Nostrand Reinhold Co., New York, 1995.
5. Young, J.G., Topology, Addison-Wesley Reading, 1961.
6. Willard, S., General Topology, Dover.
7. Engelking, R., General Topology, Polish Scientific Pub.
8. Sierpinski, W., Introduction to General Topology, The University of Toronto Press, Canada.
9. Kuratowski, K., General Topology, Vol. I, Academic Press, New York and London.
10. Munkres, J.R., Topology, A First Course, Prentice Hall of India Pvt. Ltd., New Delhi, 2000

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M. Sc. Course in Mathematics
SEMESTER-I
Course Code: MATH-C-105
Course title: Advanced Programming in C
Core Course; Credit-4; Full Marks-50
Course wise Class (L+T+P): 2:0:2

Structure of C Programs: C's Character Set, The form of a C Program, The layout of C Programs, Preprocessor Directives, Add Comments to a Program.

Data Types, Operators and Expression: Variables name, Data type and size, Constants, Arithmetic Operators, Relational and logical operators, Type conversions, Increment and decrement operator, bitwise operators, Assignment operators and expressions, Conditional expressions, Precedence and order of Evaluation.

Control Flow: Statements and blocks, if-else, switch, for loops, while loops, do-while loops, break and continue, goto and labels.

Functions: Basics of functions, Functions returning, External variables, Scope Rules, Header files, Static variables, Register variables, Global variables, Recursion.

Arrays and Pointers: Arrays, String, Multi-dimensional arrays, Pointer and addresses, Pointers and function arguments, Address arithmetic, Character pointers and functions, Pointer arrays, Pointers to pointers.

Structures: Basics of structures, Structures and functions, Arrays of structures, Pointers to structures, Typedef, Unions.

Input and Output: Standard input and output, Formatted output, Variable length argument list, Formatted input, File access, Open, read, write, close file.

References:

1. Gottfried, B.S., Programming with C, Schaum's Outlines, Second Edition, Tata McGraw-Hill, 2006.
2. Dromey, R.G., How to Solve it by Computer, Pearson Education, Fourth Reprint, 2007.
3. Kernighan, B.W., Ritchie, D.M, The C Programming language, Second Edition, Pearson Education, 2006.

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DETAILS OF COURSE:

SEMESTER II

Duration: 6 Months (Including Examinations) Total 20 credits (Marks: 250)

Course/Paper	Topics	Marks		Credit	Hrs/Wk
		SEE	IA		
SEMESTER II					
PG-MATH-CC-201	Algebra-II	40	10	4	4
PG-MATH-CC-202	Classical Mechanics	40	10	4	4
PG-MATH-CC-203	Measure Theory and Integration	40	10	4	4
PG-MATH-CC-204	Operations Research	40	10	4	4
PG-MATH-CC-205	Computer Practical (application of Matlab and typesetting software Latex)	40	10	4	6

M. Sc. Course in Mathematics
SEMESTER-II
Course Code: MATH-C-201
Course title: Algebra-II
Core Course; Credit-4; Full Marks-50
Course wise Class (L+T+P): 3:1:0

Group A (25 Marks)

Rings: Ideals and Homomorphisms, Prime and Maximal Ideals, Quotient Field of an Integral Domain, Polynomial and Power Series Rings. Divisibility Theory: Euclidean Domain, Principal Ideal Domain, Unique Factorization Domain, Gauss' Theorem, Eisenstein's criterion

Field: Fields, finite fields, field extensions.

Group B (25 Marks)

Inner Product Spaces: Inner product spaces. Cauchy-Schwartz inequality. Orthogonal vectors and orthogonal complements. Orthonormal sets and bases. Bessel's inequality. Gram-Schmidt orthogonalization method. Hermitian, Self Adjoint, Unitary, and Orthogonal transformation for complex and real spaces. Bilinear and Quadratic forms, real quadratic forms.

Modules: Modules over commutative rings, examples: vector spaces, commutative rings, Z-modules, F[X]-modules; sub modules. Quotient modules, Homomorphisms, isomorphism theorems.

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References:

1. Roman, S., Fundamentals of Group Theory: An Advanced Approach, Birkhauser, 2012.
2. Malik, D.S., Mordesen, J.M., Sen, M.K., Fundamentals of Abstract Algebra, The McGraw-Hill Companies, Inc, 1997.
3. Rotman, J., The Theory of Groups: An Introduction, Allyn and Bacon, Inc., Boston, 1973.
4. Rotman, J., A First Course in Abstract Algebra, Prentice Hall, 2005.
5. Pinter, Charles. C., A Book of Abstract Algebra, McGraw Hill, 1982.
6. Herstein, I.N., Topics in Abstract Algebra, Wiley Eastern Limited, 1975.
7. Gallian, J., Contemporary Abstract Algebra, Narosa, 2011.
8. Jacobson, N., Basic Algebra, I & II, Hindusthan Publishing Corporation, India.
9. Hungerford, T.W., Algebra, Springer.
10. Artin, M., Algebra, Prentice Hall of India, 2007.
11. Goldhaber, J.K., Ehrlich, G., Algebra, The Macmillan Company, Collier-Macmillan Limited, London.
12. Dummit, D.S., Foote, R.M., Abstract Algebra, Second Edition, John Wiley & Sons, Inc., 1999
13. Artin, M., Algebra, Prentice Hall of India, 2007.
14. Halmos, P.R., Finite Dimensional Vector Spaces, Springer, 2013
15. Roman, S., Advanced Linear Algebra, Springer, 2007.
16. Curtis, C.W., Linear Algebra: An Introductory Approach, Springer (SIE), 2009.
17. Hoffman, K., Kunze, R., Linear Algebra, Prentice Hall of India, 1978.
18. Dummit, D.S., Foote, R.M., Abstract Algebra, Second Edition, John Wiley & Sons, Inc., 1999.
19. Apostol, T.M., Calculus Vol. I & II, John Wiley and Sons, 2011.
20. C. Musili : Rings and Modules

M. Sc. Course in Mathematics
SEMESTER-II
Course Code: PG-MATH-CC-202
Course title: Classic Mechanics
Core Course; Credit-4; Full Marks-50
Course wise Class (L+T+P): 3:1:0

Generalized coordinates. Virtual work. D’Alemberts principle. Unilateral and bilateral constraints. Holonomic and Non-holonomic systems. Scleronomic and Rheonomic systems. Lagrange’s equations of first and second kind. Uniqueness of solution. Energy equation for conservative fields. Euler’s dynamical equations. Rotating coordinate system. Motion related to rotating earth. Faucaull’s pendulum and torque free motion of a rigid body about a fixed point. Motion of a symmetrical top and theory of small vibrations.

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Hamilton's variables. Hamilton canonical equation. Homogeneity of space and time conservation principles, Noethers theorem.Cyclic coordinates. Routh's equations. Hamilton's principle. Principle of least action. Poisson's Bracket. Poisson's identity. Jacobi-Poisson Theorem.

Time dependent Hamilton-Jacobi equation and Jacobi's Theorem. Lagrange Brackets. Condition of canonical character of transformation in terms of Lagrange brackets and Poisson brackets. Invariance of Lagrange brackets and Poisson brackets under canonical transformations.

References:

1. H. Goldstein : Classical Mechanics.
2. N.C. Rana and P.S. Jog : Classical Mechanics.
3. Louis N. Hand and Janet D. Finch : Analytical Mechanics.
4. A.S. Ramsay : Dynamics Part – II.
5. S.L. Loney : Rigid Dynamics.

M. Sc. Course in Mathematics
SEMESTER-II
Course Code: MATH-CC-203
Course title: Measure Theory and Integration
Core Course; Credit-4; Full Marks-50
Course wise Class (L+T+P): 3:1:0

Bounded Variation: Functions of Bounded Variation and their properties, Riemann Stieltjes integrals and its properties, Absolutely Continuous Functions.

The Lebesgue Measure: Lebesgue Measure: (Lebesgue) Outer measure and measure on R, Measurable sets form an σ-algebra, Borel sets, Borel σ-algebra, open sets, closed sets are measurable, Existence of a non-measurable set, Measure space, Measurable Function and its properties, Borel measurable functions, Concept of Almost Everywhere (a.e.), sets of measure zero, Steinhaus Theorem (Statement only), Sequence of measurable functions, Egorov's Theorem, Applications of Lusin Theorem.

The Lebesgue Integral: Simple and Step Functions, Lebesgue integral of simple and step functions, Lebesgue integral of a bounded function over a set of finite measure, Bounded Convergence Theorem, Lebesgue integral of non-negative function, Fatou's Lemma, Monotone Convergence Theorem. The General Lebesgue integral: Lebesgue Integral of an arbitrary Measurable Function, Lebesgue Integrable functions. Dominated Convergence Theorem. L^p-Spaces.

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Riemann Integral as Lebesgue Integral. Product measure spaces, Fubini's Theorem (applications only)

Reference:

1. Halmos, P.R., Measure Theory, Springer, 2007.
2. Rudin, W., Principles of Mathematical Analysis, Tata McGraw Hill, 2001.
3. Rudin, W., Real and Complex Analysis, McGraw-Hill Book Co., 1966.
4. Tao, T., An Introduction to Measure Theory, American Mathematical Society, 2011.
5. Kolmogorov, A.N., Fomin, S.V., Measures, Lebesgue Integrals, and Hilbert Space, Academic Press, New York & London, 1961.
6. Apostol, T.M., Mathematical Analysis, Narosa Publishing House, 2002
7. Barra, G.D., Measure Theory and Integration, Woodhead Pub, 1981.
8. Kingman, J.F.C., Taylor, S.J., Introduction to Measure and Probability, Cambridge University Press, 1966.
9. Cohn, D.L., Measure Theory, Birkhauser, 2013.
10. Wheeden, R.L., Zygmund, A., Measure and Integral, Monographs and Textbooks in Pure and Applied Mathematics, 1977.
11. Royden, H.L., Real Analysis, 3rd Edition, Macmillan, New York & London, 1988

M. Sc. Course in Mathematics
SEMESTER-II
Course Code: PG-MATH-CC-204
Course title: Operations Research
Core Course; Credit-4; Full Marks-50
Course wise Class (L+T+P): 3:1:0

Queuing Theory: Basic Structures of queuing models, Measuring system performance, Monrovian property of exponential distribution, Stochastic process and Markov Chain, Steady state Birth Death Process, Little's Law (Statement and its applications only), Steady state solution for the M/M/1 model, Method for solving steady-state difference equation, Queues with parallel channels (M/M/C) , Queues with parallel channels and Truncation (M/M/c/K), Erlang's Formula (M/M/c/c), Queues with unlimited service, Non-Poisson queue -M/G/1.

Reliability: Concept, Reliability Definition, Mean Time to Failure, Hazard Rate Function, Conditional Reliability, System Reliability, Constant Failure Rate Models, Time dependent failure models, System Failure rate, Reliability of the Systems connected in Series or / and parallel, Combined Series Parallel System, Reliability of k-out of 'm' System.

Inventory Control: Inventory control -Deterministic including price breaks and Multi-item with constraints, Probabilistic (with and without lead time): News Vendor Model, Continuous review inventory model.

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References:
1. Ronald, V. Hartley, Operations Research, A Managerial Emphasis Goodyear Publishing Company Inc., 1976.
2. Beveridge and Scheehter, Optimization Theory and Practice, McGraw Hill Kogakusha, Tokyo, 1970.
3. Gross and Harris, Queueing Theory, John Wiley
4. Johnson L.A., Montgomery, Operations Research in Production Planning, Scheduling & Inventory Control, John Wiley, 1974.

M. Sc. Course in Mathematics
SEMESTER-II
Course Code: PG-MATH-CC-205
Course title: Computer Practical (application of Matlab and typesetting software Latex)
Core Course; Credit-4; Full Marks-50
Course wise Class (L+T+P): 2:0:2

MATLAB: Group A (25 Marks)

Working with matrix: Generating matrix, Concatenation, Deleting rows and columns. Symmetric matrix, matrix multiplication, Test the matrix for singularity, magic matrix. Matrix analysis using function: norm, normest, rank, det, trace, null, orth ,rref, subspace, inv, expm, logm, sqrtm, funm.

Array: Addition, Subtraction, Element-by-element multiplication, Element-byelement division, Element by-element left division, Element-by-element power. Multidimensional Arrays.

Graph Plotting: Plotting Process, Creating a Graph, Graph Components, Figure Tools, Arranging Graphs Within a Figure, Choosing a Type of Graph to Plot, Editing Plots, Plotting Two Variables with Plotting Tools

LATEX: Group B (25 Marks)

Getting Started: Introduction, Installation of the software LaTeX, Installing Extra Packages, Basics, Understanding Latex compilation.

Common Elements: Basic Syntax, Fonts, color, Special Characters, Writing equations, Matrix, Tables.

Page Layout: Titles, Abstract, Chapters, Sections, Nomenclature, Customizing Page Headers and Footers, References, Equation references, citation. List making environments, Table of contents, generating new commands, Figure handling numbering, List of figures, List of tables, generating index, Importing Graphics, Floats, Figures and Captions, Footnotes and Margin Notes.

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Packages: Geometry, Hyperref, amsmath, amssymb, algorithms, algorithmic graphic, color, tilez listing, etc.

Classes: Article, book, thesis, report, beamer, slides. IEEtran.

Applications: Writing Resume, Writing question paper, Writing articles/ research papers, Presentation using beamer.

Theory, Practical and exercises based on the above concepts.

References:

1. Kottwitz, S., LaTeX Beginner's Guide, Packt Publishing, 2011.
2. Kopka, H., Daly, P.W., Guide to LaTeX, Addison-Wesley Professional; 4th edition, 2003.
3. Grätzer, G., More Math Into LaTeX, Springer, Revised 5th edition, 2016.
4. Pratap, Rudra etting Started with MATLAB 5-A Quick Introduction for Scientists and Engineers, 1998

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