

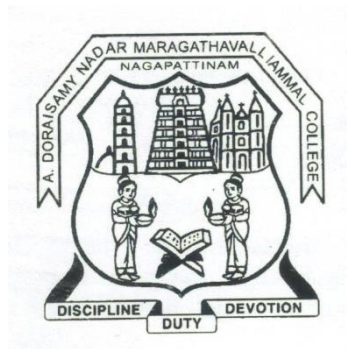
A.D.M. COLLEGE FOR WOMEN

(AUTONOMOUS)

Nationally Accredited with “A” Grade by NAAC - 3rd Cycle
(Affiliated to Bharathidasan University, Thiruchirappalli)
No.1, College Road, Velippalayam,
Nagapattinam – 611 001, Tamil Nadu, India

PG & RESEARCH DEPARTMENT OF MATHEMATICS

(for the candidates admitted from the academic year 2021-2024)



ALLIED MATHEMATICS

SYLLABUS

2021-2024

Allied Mathematics 2021- 2024 Batch

SCHEME OF THE PROGRAMME

S.No	Sem.	Class	Subject code	Title	Inst. Hours	Credit	Exam hours	Marks		Total marks
								CIA	SE	
1	I	I.B.Sc (C.S), I.B.C.A	KUMA1/ MUAP1	Algebra and Calculus	6	3	3	25	75	100
2		I.B.Sc(Chemistry), I.B.Sc(Physics), I.B.Sc(Geology)	MUA1	Algebra, Analytical Geometry (3D) and Trigonometry	4	3	3	25	75	100
3	II	I.B.Sc(Chemistry), I.B.Sc(Physics), I.B.Sc(Geology)	MUA2	Calculus and Fourier Series	6	4	3	25	75	100
4		I.B.Sc (C.S)	MUAP2	Operations Research	4	3	3	25	75	100
5		I.B.C.A, I B.Sc(CS)	KUMA3/ MUAP3	Numerical Methods and Statistics	4	3	3	25	75	100
6		I.B.Sc(Physics), I B.Sc(Geology), I B.Sc(Chemistry)	MUA3	Differential equations and Transforms	4	3	3	25	75	100
7	III	II B.C.A	BKA4	Operations Research	6	3	3	25	75	100

Semester-I AC I	ALGEBRA AND CALCULUS	Course Code: MUAP1/ KUMA1
Instruction Hours: 6	Credits: 3	Exam Hours: 3
Internal Marks -25	External Marks-75	Total Marks: 100

Cognitive Level	K1 -Recalling K2 -Understanding K3 -Applying K4 - Analyzing K5 - Evaluating K6 - Creating	
Course Objectives:	<ul style="list-style-type: none"> To train the students to solve the problems in Theory of equations. To understand the matrices To interpret differentiation and partial differentiation. To learn the basic concepts of integration. To gain the knowledge about second order differential equations. 	
UNIT	CONTENT	HOURS
Unit I	THEORY OF EQUATIONS Relation between roots and coefficients – transformations of equations – diminishing, increasing and multiplying the roots by a constant – forming equations with the given roots – Descartes’ rule of sign (Statement only) simple problems. Chapter 6 : Sec 11,15,17,18,24	18 Hours
Unit II	MATRICES Singular matrices – inverse of a non singular matrix using Adjoint method – rank of a matrix- characteristic equation , Eigen value , Eigen vectors – Cayley Hamilton theorem (proof not needed) simple applications only. Chapter 2 :Sec 7, 8 ,11,12,13,16	18 Hours
Unit III	DIFFERENTIATION Maxima and Minima-concavity ,Convexity- Points of inflexion – Partial Differentiations- Euler’s theorem- Total differential coefficients (proof not needed) simple problems only Chapter 5 : Sec 26, 27 and Chapter 6 :Sec 28.1 - 28.6	18 Hours
Unit IV	INTEGRATION Evaluation of integrals of types $1). \int \frac{px+q}{ax^2+bx+c} dx \quad 2). \int \frac{px+q}{\sqrt{ax^2+bx+c}}$ $3). \int \frac{dx}{a+bsinx}$ $4). \int \frac{dx}{a+bcosx}$ Evaluation using integration by parts- properties of definite integrals – Fourier series in the range $(0, 2\pi)$ – Odd & even functions- Fourier Half range Sine & Cosine series. Chapter 8 :Sec 34.1 - 34.6	18 Hours
Unit V	DIFFERENTIAL EQUATION Variable separable – Linear equation – second order of types $(aD^2+bD+ c)y=F(X)$ where a ,b ,c are constants and F(X) is one of the following types (i) e^{kx} (ii) $\sin(kx)$ or $\cos(kx)$ (iii) X^n , n being an integer (iv) $e^{kx}f(x)$. Chapter 8 :Sec 2.1, 2.4and Chapter 9 :Sec 1	18 Hours

Text Books:

1. T.K.Manichavasagam Pillay and S.Narayanan , Algebra volume I , S.V. Publication, Revised Edition,1985.
2. T.K. Manichavasagam Pillay and S.Narayanan , Algebra volume II,S.V. Publication, Revised Edition, 1985.
3. S. Narayanan, T. K. Manichavasagam Pillay, Calculus volume I,S. Viswanathan Pvt Ltd, 2003.
4. S. Narayanan, T. K. Manichavasagam Pillay, Calculus volume II,S. Viswanathan Pvt Ltd, 2003.

Reference Books:

- 1.M.L.Kanna algebra, Jai prakashNath& come, 1974.
- 2.Shanti Narayan, Differential & Integral Calculus, 10th Revised Edition, S.Chand& Co. Ltd, 1962.

Web- Resources:

- <http://www.gacariyalur.ac.in/econtent/maths/ug/UG-I-16SACMA1-Allied-Mathematics.pdf>
- https://www.google.com/search?client=firefox-b-d&q=%E2%80%A2+https%3A%2F%2Fwww.sakshieducation.com%2FEngg%2FEnggAcademia%2FCommonSubjects%2FMathMethods-Fourier_Series.pdf++

Course Outcomes:

On completion of the course the learner will be able

CO 1:	to understand theory of equations
CO 2:	to find eigen values and eigen vectors.
CO 3:	to find maxima and minima of a given function.
CO 4:	to evaluate Fourier series
CO 5:	to solve differential equation of second order.

Semester-I AC I	ALGEBRA, ANALYTICAL GEOMETRY OF 3D AND TRIGONOMETRY	Course Code: MUA1
Instruction Hours: 4	Credits: 3	Exam Hours: 3
Internal Marks -25	External Marks-75	Total Marks: 100

Cognitive Level	K1 -Recalling K2 -Understanding K3 -Applying K4 - Analyzing K5 - Evaluating K6 - Creating	
Course Objectives:	<ul style="list-style-type: none"> To gain the knowledge about the summation of series To find inverse of a matrix using Cayley Hamilton theorem. To understand straight line and sphere To know the expansion of $\sin n\theta$, cosine $n\theta$ To acquire the knowledge about hyperbolic and inverse hyperbolic functions. 	
UNIT	CONTENT	HOURS
Unit I	BINOMIAL, EXPONENTIAL AND LOGARITHMIC SERIES. Binomial, Exponential and logarithmic series (formulae only) - Summation and approximation related problems only. Chapter: 3, 4 & 5	12 Hours
Unit II	MATRICES Eigen values and Eigen Vectors - Verifications of Cayley – Hamilton’s Theorem – Simple Problems. Chapter 2: Sec 16.1-16.3	12 Hours
Unit III	THE RIGHT LINE AND THE SPHERE Right line – Coplanar lines – conditions for the coplanarity of lines - Number of arbitrary constants in the equations of the straight line - the shortest distance between the two lines – Spheres – Definitions – the sphere through four given points – Equations of a circle. Chapter 3: Sec 3.1,3.4-3.6, Chapter 6: Sec 6.11-6.13 & 6.4	12 Hours
Unit IV	EXPANSION OF TRIGONOMETRIC FUNCTIONS Expansion of $\sin \theta$, $\cos n\theta$ and $\tan n\theta$, $\sin^n \theta, \cos^n \theta$, $\sin^n \theta \cos^m \theta$ – Simple problems. Chapter 3: Sec 1,2,4,4.1	12 Hours
Unit V	HYPERBOLIC FUNCTIONS Hyperbolic functions – Relations between hyperbolic functions and circular Trigonometry functions–Inverse hyperbolic functions – Simple problems. Chapter 4: Sec 1,2,2.2,2.2&2.3	12 Hours

Text Books:

1. T.K. Manickavasagam Pillai and S. Narayanan ,Algebra Volume IS.Viswanathan Printers and Publishers Pvt. Ltd., Chennai, 1985.
2. Analytical geometry 3D and Vector Calculus, Arumugam and issac, edition 2017.
3. T.K. Manickavasagam Pillai and S.Narayanan, “Trigonometry” S.Viswanathan Printers and Publishers Pvt. Ltd., Chennai.
4. T.K. Manichavasagam Pillay and S.Narayanan , Algebra volume II, S.V. Publication, Revised Edition, 1985.

Reference Books:

1. M.L. Khanna., Algebra, Edition 4 ,Jai Prakash Nath Publications, 1957.
2. S.Arumugam and ThangaPandiIssac, Trignometry and Fourier series, New gamma Publications, 1999.

Web- Resources:

- <http://www.gacariyalur.ac.in/econtent/maths/ug/UG-I-16SACMA1-Allied-Mathematics.pdf>
- https://www.google.com/search?client=firefox-b-d&q=%E2%80%A2+https%3A%2F%2Fwww.sakshieducation.com%2FEngg%2FEnggAcademia%2FCommonSubjects%2FMathMethods-Fourier_Series.pdf++

Course Outcomes:

On completion of the course the learner will be able

CO 1:	to know the relation between binomial exponential and summation of series.
CO 2:	to analysis and evaluate the eigen values and eigen vectors.
CO 3:	to recognize three dimensional shapes in the world around them
CO 4:	to finding trigonometric functions using definition and identities.
CO 5:	to apply the formulas for derivatives and integrals of the hyperbolic and inverse hyperbolic functions

Semester-II AC II	OPERATIONS RESEARCH	Course Code: MUAP2
Instruction Hours: 4	Credits: 3	Exam Hours: 3
Internal Marks -25	External Marks-75	Total Marks: 100

Cognitive Level	K1 -Recalling K2 -Understanding K3 -Applying K4 - Analyzing K5 - Evaluating K6 - Creating	
Course Objectives:	<ul style="list-style-type: none"> • To find the solution of the LPP using graphical method • To understand different types of LPP • To solve transportation problem using various methods. • To train the students to solve the sequencing problem. • To explore the concepts of Network analysis. 	
UNIT	CONTENT	HOURS
Unit I	LPP-GRAPHICAL SOLUTION METHOD Operations Research : Introduction – Nature and Characteristic features of OR- OR and decision making - Linear programming formulations and graphical solution of two variables- Canonical and Standard forms of LPP . Chapter 1 :Sec 1.1,1.2,1.7 and Chapter 2 :Sec 2.1 - 2.2	12 Hours
Unit II	LPP-SIMPLEX METHOD Simplex method : Simplex method for $<,=,>$ constraints – Charner’s method of penalties – Two phase simplex method . Chapter 3 : Sec 3.1,3.3,3.5	12 Hours
Unit III	TRANSPORTATION PROBLEMS Mathematical formulation of the problem – Degeneracy Transportation problem – Transportation Algorithm – Unbalanced Transportation Problem- Assignment algorithm – Unbalanced Assignment problems. Chapter 6 :Sec 6.1,6.2,6.5,6.7 to 6.9	12 Hours
Unit IV	SEQUENCING PROBLEMS Processing of n jobs through two machines – Processing of n jobs and k machines – Processing of 2 jobs and through m machines. Chapter 10 :Sec 10.1 - 10.5	12 Hours
Unit V	NETWORK SCHEDULING BY PERT/CPM Network – Rules of Network construction – Time calculations in Networks – CPM computation – PERT computation. Chapter 21 :Sec 21.1 - 21.7	12 Hours

Text Book:

1. KantiSwarup , P.K. Gupta and Man Mohan, Operations Research, Sultan Chand and Sons , Educational Publishers , New Delhi, 2002.

Reference Books:

1. V. Sundaresan, K. Ganesan, Resource Management Techniques, A.R. Publications, 2002 .
2. J.K.Sharma, Operations Research Theory and Applications, Macmillan India Ltd, 3rd edition, 2006.

Web- Resources:

- <https://stemez.com/subjects/science/IHOperationsReseach/IHOperationsReseach.php>
- <https://www.acsce.edu.in/15...PDF>
- <https://web.stanford.edu/notesPDF>

Course Outcomes:

On completion of the course the learner will be able

CO 1:	to formulate the given simplified description of a suitable real work problem as a linear programming models in general, standard and canonical forms.
CO 2:	to interpret different types of LPP.
CO 3:	to solve transportation and assignment problems
CO 4:	to understand the sequencing problem
CO 5:	to acquire the knowledge about network analysis.

Semester-II AC II	CALCULUS AND FOURIER SERIES	Course Code: MUA2
Instruction Hours: 6	Credits: 4	Exam Hours: 3
Internal Marks -25	External Marks-75	Total Marks: 100

Cognitive Level	K1 -Recalling K2 -Understanding K3 -Applying K4 - Analyzing K5 - Evaluating K6 - Creating	
Course Objectives:	<ul style="list-style-type: none"> To differentiate the given functions using Leibnitz’s theorem. To introduce the notion of curvature, radius of curvature and Jacobians. To integrate simply by changing the order of the given integration. To acquire the knowledge of solving definite integrals. To gain the knowledge of Fourier series. 	
UNIT	CONTENT	HOURS
Unit I	DIFFERENTIATION Differentiation- The nth derivative of standard functions-Leibnitz’s Theorem for nth derivative of a product of functions (Statement Only) –Simple Problems. Chapter 1 & 2	18Hours
Unit II	CURVES Curvature– Radius of curvature in Cartesian only -Total Differential Coefficients-Jacobians of two and three variables– Simple Problems. Chapter 10 : Sec 2.1 – 2.4, Chapter 8 : Sec 1.3	18Hours
Unit III	INTEGRATION Integration :Double integrals–Surface area –Changing the order of Integration–Triple Integrals. Chapter 5 :Sec 2.1,2,2,4	18Hours
Unit IV	DEFINITE INTEGRALS General properties of definite integrals – Evaluation of definite integrals of types 1). $\int_a^b \frac{dx}{\sqrt{(x-a)(b-x)}}$ 2). $\int_a^b \sqrt{(x-a)(b-x)}dx$ 3). $\int_a^b \sqrt{\frac{x-a}{b-x}}dx$ Reduction formula (where n is a positive integer) for 1). $\int_a^b e^{ax} x^n dx$ 2). $\int_a^b \sin^n x dx$ 3). $\int_a^b \cos^n x dx$ 4). $\int_0^x e^{ax} x^n dx$ 5). $\int_a^{\frac{\pi}{2}} \sin^n x dx$ 6). Without proof $\int_a^{\frac{\pi}{2}} \sin^n x \cos^m x dx$ - and illustrations. Chapter 1 : Sec 11,13	18Hours
Unit V	FOURIER SERIES Definition of Fourier Series – Finding Fourier Coefficients for a given periodic function with 2π and with period $2l$ – Use of Odd and Even functions in evaluating Fourier Coefficients – Half range sine & cosine series Chapter 6 :Sec 1-5.	18Hours

Text Book:

- 1.T.K. Manickavasagam Pillai and S.NarayananCalculusVol -I, S.Viswanathan Printers and Publishers Pvt. Ltd.,Chennai,2011.
2. T.K.Manickavasagam Pillai and S.Narayanan Calculus vol –III, S.Viswanathan Printers and Publishers Pvt.Ltd.,Chennai, 2011.

Reference Books:

1. S.Arumugam, Calculus, New Gamma Publishing House, Palayamkottai, 2001.
2. An Introduction to Laplace Transforms and Fourier Series ,April 2014 by Phil Dyke

Web- Resources:

- <http://www.gacariyalur.ac.in/econtent/maths/ug/UG-I-Allied-Maths-Calculus.pdf>
- https://www.sakshieducation.com/Engg/EnggAcademia/CommonSubjects/MathMethods-Fourier_Series.pdf

Course Outcomes:

On completion of the course the learner will be able

CO 1:	to calculate the n th derivatives of the function
CO 2:	to sketch curves in Cartesian coordinate systems.
CO 3:	to apply the reduction formulae for finding integration.
CO 4:	to find the area by changing the given order of integration.
CO 5:	to calculate the Fourier coefficients

Semester-II AC III	DIFFERENTIAL EQUATIONS AND TRANSFORMS	Course Code: MUA3
Instruction Hours: 4	Credits: 3	Exam Hours: 3
Internal Marks -25	External Marks-75	Total Marks: 100

Cognitive Level	K1 -Recalling K2 -Understanding K3 -Applying K4 - Analyzing K5 - Evaluating K6 - Creating	
Course Objectives:	<ul style="list-style-type: none"> To study the concepts of linear equations. To study the basic concepts of partial differential equations. To understand the concepts of Laplace Transform. To find the inverse Laplace transform of the given functions. To gain the knowledge of vectors 	
UNIT	CONTENT	HOURS
Unit I	LINEAR EQUATIONS WITH CONSTANT COEFFICIENTS Linear equations with constant coefficients –Evaluation of particular integral of x^k where k is a positive integer and $e^{ax}f(x)$, where f(x) is any function of x–second order linear equations with variable coefficients –Simple Problems. Chapter V : Sec 1-5	12Hours
Unit II	PARTIAL DIFFERENTIAL EQUATIONS Partial differential Equations –Formation of equations by elimination of constants and arbitrary functions- Definition of General, Particular, Complete and singular integral (Geometrical meaning not expected) – Lagrange’s method of solving the linear equations (Pp+Qq=R) –Simple Problems - Solutions of first order equations of the standard forms $F(p,q)=0$, $F(x,p,q)=0$, $F(y,p,q)=0$, $F(z,p,q)=0$, $F(x,p)=F(y,q)$ -Clairaut’s form –Simple Problems. Chapter XII : Sec1-5	12Hours
Unit III	LAPLACE TRANSFORM Definition – Laplace transform of functions e^{at} , $\cos at$, $\sin at$, t^n where n is a positive integer –Shifting theorems –Laplace transform of $e^{-at}f(t)$ –Laplace transform of $e^{-at} \cos bt$, $e^{-at} \sin bt$ and $e^{-at}f(t)$ – Laplace transform of $f'(t)$ and $f''(t)$ –Simple Problems.	12Hours

	Chapter IX :Sec 1 -5	
Unit IV	INVERSE LAPLACE TRANSFORM Inverse transform of standard forms –Application to the solution of ordinary differential equations with constant coefficient involving the above transformations –Simple Problems. Chapter IX: Sec 6-11	12Hours
Unit V	GRADIENT AND CURL OF A VECTOR Gradient of a vector – Directional derivative – Unit normal vector – tangent plane – Divergence – Curl – solenoid & irrotational vectors- Double Operators – Properties connecting grad., div., and curl of a vector. Chapter 4: Sec 4 – 12	12Hours

Text Books:

1. T.K.Manickavachagam Pillai and S.Narayanan, Differential Equations, S.Viswanathan Printers and Publishers Pvt.Ltd., Chennai,1996.
2. T.K.Manickavachagam Pillai and S.Narayanan, Vector Algebra and Analysis,S.Viswanathan Printers and Publishers Pvt.Ltd., Chennai

Reference Books:

1. M.L.Khanna, Differential equations, Jai Prakash Nath& Co,Meerut, 14thEdition.
2. M.K.Venkatraman, Engineering Mathematics (Volume II),National Publication & Co 1983.

Web-Resources:

- <https://www.math.ust.hk/~machas/differential-equations.pdf>
- <https://web.stanford.edu/~boyd/ee102/laplace.pdf>

Course Outcomes:

On completion of the course the learner will be able

CO 1:	to solve the linear differential equations
CO 2:	to find the complete solution of partial differential equations.
CO 3:	to find the Laplace transform of the given functions
CO 4:	to solve the ordinary differential equations using inverse Laplace transform.
CO 5:	to make the students gain wide knowledge in vectors

Semester-II AC III	Numerical Methods and Statistics	Course Code: MUAP3/ KUMA3
Instruction Hours: 4	Credits: 3	Exam Hours: 3
Internal Marks -25	External Marks-75	Total Marks: 100

Cognitive Level	K1 -Recalling K2 -Understanding K3 -Applying K4 - Analyzing K5 - Evaluating K6 - Creating	
Course Objectives:	<ul style="list-style-type: none"> To study the numerical methods for solving the algebraic and transcendental equations To learn about numerical differentiation and integration. To find the solutions of ordinary differential equations. To gain the knowledge about the mean and variance. To understand the correlations and regression. 	
UNIT	CONTENT	HOURS
Unit I	SOLUTION OF ALGEBRAIC AND TRANSCENDENTAL EQUATIONS Bisection method, Iteration method, Newton-Raphson method - Finite differences - Forward, backward differences- Newton's Forward, Backward Interpolation formula .Lagrange's interpolation Polynomial . Chapter 2: Sections 2.1-2.5, Chapter 3: 3.1,3.2,3.6,3.9.1	12 Hours
Unit II	NUMERICAL DIFFERENTIATION AND INTEGRATION Trapezoidal rule- Simpson's 1/3 and 3/8 rule.(proof not needed)-Solution of linear system –Direct method- Gauss Elimination method- Solution of linear system-Iterative methods-Gauss Jacobi's and Gauss Seidal methods of iteration. Chapter-5:Sections 5.1,5.2,5.4,5.4.1,5.4.2,5.4.3,Chapter 6: Sec-6.3.2,6.4	12 Hours
Unit III	NUMERICAL SOLUTION OF ORDINARY DIFFERENTIAL EQUATIONS Solution by Taylor's series- Euler's Method- Modified Euler's method- RungeKutta Second and Fourth order methods. Chapter 7: Sections 7.1,7.2,7.4,7.4.2,7.5	12 Hours
Unit IV	MEASURES OF CENTRAL TENDENCY AND DISPERSION Arithmetic Mean – Geometric mean – Harmonic mean – Median, Mode, Standard Deviation – Quartile Deviation – Percentiles – Expectation – Variance and covariance Chapter2:Sections2.5,2.6,2.6.1,2.7,2.7.1,2.8,2.9,2.13,2.13.1,2.13.2,2.13.4,2.14.1	12 Hours
Unit V	CORRELATION Correlations - Karl Pearson's coefficient of correlations - Spearman's rank correlations-Linear regression - Regression coefficients - Simple problems. Chapter 10: Sections 10.4,10.7,10.7.1 – 10.7.3 Chapter 11: Sections	12 Hours

	11.2,11.2.1	
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Text Books:

1. S.S.Sastry, Introductory Methods of Numerical Analysis, 3rd Edition Prentice Hall of India, New Delhi, 1998 .
2. S.C. Gupta and V.K. Kapoor, Fundamentals of Mathematical Statistics, 11th Edition Sulthan Chand & Sons, New Delhi, 2002.

Reference Books:

1. M.K.Jain, S.R.K. Iyengar and R.K. Jain, Numerical Methods for Scientific and Engineering Computation, New Age International Private Limited, 2001.
2. M.K.Venkatraman, Numerical methods in Science and Engineering, National Publisher Company, Fifth Edition, 2001.

Web- Resources:

- https://en.wikipedia.org/wiki/Runge%E2%80%93Kutta_methods
- <https://www.bmj.com/about-bmj/resources-readers/publications/statistics-square-one/11-correlation-and-regression>

Course Outcomes:

On completion of the course the learner will be able

CO 1:	to gain the knowledge about numerical methods.
CO 2:	to find the solutions of linear system.
CO 3:	to apply numerical methods to obtain approximate solutions to mathematical problems.
CO 4:	to understand mean and variance
CO 5:	to interpret correlation and regression.

Semester-III AC III	OPERATIONS RESEARCH	Course Code: KUMA4
Instruction Hours: 6	Credits: 3	Exam Hours: 3
Internal Marks -25	External Marks-75	Total Marks: 100

Course Objectives:

- To find the solution of the LPP using graphical method
- To understand different types of LPP
- To solve transportation problem using various methods.
- To train the students to solve the sequencing problem.
- To explore the concepts of Network analysis.

Unit I	<p>LPP-GRAPHICAL SOLUTION METHOD Operations Research : Introduction – Nature and Characteristic features of OR- OR and decision making - Linear programming formulations and graphical solution of two variables- Canonical and Standard forms of LPP . Chapter 1 :Sec 1.1,1.2,1.7 and Chapter 2 :Sec 2.1 - 2.6</p>	18 Hours
Unit II	<p>LPP-SIMPLEX METHOD Simplex method : Simplex method for $<,=,>$ constraints – Charner’s method of penalties – Two phase simplex method . Chapter 3 : Sec 3.1,3.3,3.5</p>	18 Hours
Unit III	<p>TRANSPORTATION PROBLEMS Mathematical formulation of the problem – Degeneracy Transportation problem – Transportation Algorithm – Unbalanced Transportation Problem- Assignment algorithm – Unbalanced Assignment problems. Chapter 6 :Sec 6.1,6.2,6.5,6.7 to 6.9</p>	18 Hours
Unit IV	<p>SEQUENCING PROBLEMS Processing of n jobs through two machines – Processing of n jobs and k machines – Processing of 2 jobs and through m machines. Chapter 10 :Sec 10.1 - 10.5</p>	18 Hours
Unit V	<p>NETWORK SCHEDULING BY PERT/CPM Network – Rules of Network construction – Time calculations in Networks – CPM computation – PERT computation. Chapter 21 :Sec 21.1 - 21.7</p>	18 Hours

Text Book:

1. KantiSwarup , P.K. Gupta and Man Mohan, Operations Research, Sultan Chand and Sons , Educational Publishers , New Delhi, 2002.

Reference Books:

1. V. Sundaresan, K. Ganesan, Resource Managemant Techniques, A.R. Publications, 2002.
2. J.K.Sharma, Operations Research Theory and Applications, Macmillan India Ltd, 3rdedition, 2006

Web- Resources:

- <https://stemez.com/subjects/science/1HOperationsReseach/1HOperationsReseach.php>
- <https://www.acsce.edu.in> › 15...PDF
- <https://web.stanford.edu> › notesPDF

Course Outcomes:

On completion of the course the learner will be able

CO 1:	toformulate the given simplified description of asuitable real work problem as a linear programming models in general, standard and canonical forms.
CO 2:	tointerpret different types of LPP.
CO 3:	to solve transportation and assignment problems
CO 4:	to understand the sequencing problem
CO 5:	toacquire the knowledge about network analysis.