B. Sc., Chemistry/ B. Sc., Physics/ B. Sc., Geography / B. Sc Computer Science/ BCA/ B. COM / BBA/ B.Sc DS/ B.Sc CS with AI

ALLIED COURSES

OFFERED BY

PG & RESEARCH DEPARTMENT OF MATHEMATICS

2024 onwards

Sem	Course Code	Title of the Course	Nature	CP	Ih	EX Hrs	MARKS		MAX
							CIA	ESE	
I	23UMA1A13	NUMERICAL METHODS ***(Employability)***	GEN	4	5	3	20	55	75
I	23UMA1A01	STATISTICS FOR GEOGRAPHY I ***(Employability)***	GEN	5	6	3	25	75	100
I	23UMA1A11	MATHEMATICS FOR MANGEMENT ***(Employability)***	GEN	4	5	3	25	75	100
I	23UMA1A19	APPLIED STATISTICS I	GEN	4	5	3	20	55	75
II	23UMA2A02	STATISTICS FOR GEOGRAPHY II ***(Employability)***	GEN	5	6	3	25	75	100
II	23UMA2A12	OPERATIONS RESEARCH ***(Entrepreneurship)***	GEN	4	5	3	20	55	75
III	24UMA3A03/ 24UMA3A04/ 24UMA3A13/ 24UMA3A14/ 24UMA3A17/ 24UMA3A21	BUSINESS MATHEMATICS ***(Employability)***	GEN	4	5	3	20	55	75
III/I	23UMC3A03/ 24UMA1A23	PROBABILITY AND STATISTICS ***(Employability)***	GEN	4	5	3	20	55	75
I	23UMA1A07 / 23UMA3A07	MATHEMATICS PAPER I ***(Entrepreneurship)***	GEN	5	6	3	25	75	100

23/4/24		23/04/24		
Dr.D.Jayanthi	**Dr.N.Murugesan**	**Dr.C.Janaki**	**Mr.T.Vibu**	**Ms.J.Magdalene**

IV	24UMA4A04 24UMA4A11/ 24UMA4A15/ 24UMA4A16/ 24UMA4A18/ 24UMA4A22	BUSINESS STATISTICS ***(Employability)***	GEN	4	5	3	20	55	75
II	23UMA2A10 /23UMA4A08	MATHEMATICS PAPER II ***(Entrepreneurship)***	GEN	5	6	3	25	75	100
III	24UMA3A20	APPLIED STATISTICS II ***(Employability)***	GEN	4	5	3	20	55	75
II	24UMA2A24	DISCRETE MATHEMATICAL STRUCTURES ***(Employability)***	GEN	4	5	3	20	55	75

Dr.D.Jayanthi Asstistant Professor(SG) Department of Mathematics Avinashilingam Institute For Home Science and Higher.Education for Women, Coimbatore - 43	**Dr.N.Murugesan** Asstistant Professor(SS) Department of Mathematics, Govt.Arts College, Coimbatore - 18	**Dr.C.Janaki** Asstistant .Professor(SS) Department of Mathematics, Govt.Arts College ForWomen, Coimbatore - 18	**Mr.T.Vibu** Mangaing Partner, REL Agencies, Coimbatore	**Ms.J.Magdalene** Project Manager, Robert Bosch, Keeranatham, Saravanampatti, Coimbatore - 35

SEMESTER: I

COURSE CODE: 23UMA1A13

ALLIED – NUMERICAL METHODS

(Employability)

(For B.Sc., Computer Science, B.Sc., Information Technology and BCA candidates admitted from the academic year 2023 onwards.)

COURSE OBJECTIVES:

- To introduce numerical methods for solving algebraic and simultaneous equations.
- To learn the techniques of numerical differentiation, integration
- To enable the students to solve the ordinary differential equations using Numerical Methods.

COURSE OUTCOMES:

At the end of the course the students will be able to:

CO1	Identify the methods to solve the given equations.	**K2**
CO2	Finding the solution for the system of equations by Gaussian Methods	**K3**
CO3	Estimate the Missing values in the given data.	**K3**
CO4	Integrate the given function.	**K3**
CO5	Find solution to the Ordinary Differential Equations	**K3**

SYLLABUS

Credits : 4 **Instructional Hours: 75**

Unit I: Solution of Numerical, Algebraic and transcendental equations (K2) 15 Hours

Introduction to Numerical Analysis: Solution of Numerical Algebraic and Transcendental Equations - Bisection Method- Iteration Method - Regula-Falsi Method - Newton Raphson Method.

Unit II:Solution of Simultaneous Linear Algebraic Equations (K3) 15 Hours

Direct Method- Gauss Elimination Method- Gauss Jordan Method- Iterative Method- Gauss Jacobi and Gauss Seidel Method.

(Self Study- Problems in Gauss Seidel method)

Unit III: Interpolation (K3) 15 Hours

Gregory Newton's Forward and Backward Interpolation Formulae -Lagrange's Interpolation Formula - Inverse Interpolation Formula.

(Self Study- Problems in Gregory Newton's Backward Interpolation Formulae)

Unit IV: Numerical integration (K3) 15 Hours

Trapezoidal Rule-Simpson's Rule - Simpson's one-third Rule.

Unit V :Numerical Solution of Ordinary Differential Equations (K3) 15 Hours

Euler's Method- Modified Euler's Method- Runge-KuttaMethod(Second order and Fourth order) (Problems only)

TEXT BOOK:

Kandasamy P, Thilagavathy K, Gunavathi K, (2016) Numerical Method (3rd Revised Edition) S.Chand& Company Ltd,New Delhi

UNIT I	Chapter 3	Section 3.1 to 3.4
UNIT II	Chapter 4	Section 4.1, 4.2, 4.7, 4.8, 4.9
UNIT III	Chapter 6	Section 6.1, 6.2, 6.3
	Chapter 8	Section 8.7, 8.9
UNIT IV	Chapter 9	Section 9.7, 9.9, 9.13, 9.14
UNIT V	Chapter 11	Section 11.1, 11.9, 11.11, 11.12, 11.13

REFERENCE BOOKS:

1. Venkataraman. M. K.,(1999) Numerical Methods in Science and Engineering, The National Publishing Company, Madras.
2. Sastry S.S,Introduction to Numerical Analysis, Prentice Hall of India Private Limited.
3. SankaraRao K, (2009) Numerical Methods for Scientists and Engineers(3rd Edition) PHI Learning Private Limited.
4. Saxena H.C,(2002) Finite Difference and Numerical Analysis, S.Chand and Company Limited.
5. Curtis F Gerald, (2011) Patrick O. Wheatley,Applied Numerical Analysis, (7th Edition) Pearson Education.

BLENDED LEARNING

UNIT	TOPIC	LINK
IV	Trapezoidal Rule	https://www.youtube.com/watch?v=lP9tAX7a1vs
IV	Simpson's one-third Rule	https://www.youtube.com/watch?v=ivihlQg5AOs
V	Euler's Method	https://www.youtube.com/watch?v=ukNbG7muKho
V	ModifiedEuler's Method-Runge-Kutta Method	https://www.youtube.com/watch?v=2NcQi41VX9g&feature=emb_logo

MAPPING OF CO'S WITH PO's AND PSO's

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	3	3	3	3	3	2	2	3	3	3	1	3	3	1
CO2	3	3	3	3	3	2	2	3	3	3	1	3	3	1
CO3	3	3	3	3	3	2	2	3	3	3	1	3	3	1
CO4	3	3	3	3	3	2	2	3	3	3	1	3	3	1
CO5	3	3	3	3	3	2	2	3	3	3	1	3	3	1

(**Correlation:** 3 – High; 2 – Medium; 1 - Low)

ASSESSMENT TOOLS:

S.No	Assessment methods	Frequency of Assessment
1.	End Semester Examination	Once in a semester
2.	CIA I	Once in a semester
3.	CIA II	Once in a semester
4.	Model Examination	Once in a semester
5.	Assignment (Unit I & II)	Twice in a semester
6.	Seminar (Unit III & IV)	Twice in a semester
7.	Real time problem solving (Unit V)	Once in a semester

Course designed by Dr. G. Sindhu	**Verified by HOD** Dr. K. Julia Rose Mary
Checked by CDC Dr.S.Jaculin Arockia Selvi	**Approved by** Principal

SEMESTER: I
COURSE CODE: 23UMA1A11
ALLIED - MATHEMATICS FOR MANAGEMENT
(*Employability*)

(For BBA)

COURSE OBJECTIVES:

- To discuss the basis of all commercial arithmetic's.
- To study the measure of dispersion .
- To analyze time series and index numbers.

COURSE OUTCOMES :
At the end of the course the students will be able to:

CO 1	Define set and set operations and to describe fundamental ideas about matrices and their operational rules.	**K2**
CO 2	Explain simple interest, compound interest, annuities and sinking funds	**K2**
CO 3	Evaluate arithmetic mean ,median mode and to examine the measure of variation using standard, mean and quartile deviations	**K3**
CO 4	Draw the outline of simple correlation and distinguish between correlation and regression	**K3**
CO 5	Estimate time series ,relate the trend and seasonal variation and to compose index numbers, cost of living indices	**K3**

SYLLABUS

Credits: 4 **Instructional Hours: 75**

Unit I: Sets and Matrices (K2) **15 Hours**

Sets and set operation: Venn diagram – Elements of coordinate system – Matrices – fundamental ideas about matrices and their operational rules – Matrix multiplication – Inversion of square matrices of not more than 3rd order

[Self Study : Sets]

Unit II:Mathematics of Finance (K2) **15 Hours**

Mathematics of finance: Simple Interest and Compound Interest – Annuities – Sinking funds

[Self Study : Simple Interest]

Unit III:Measure of central tendency (K3) 15 Hours

Measure of central tendency: Arithmetic mean – Median – Mode, Geometric and Harmonic mean. Measure of variation: Standard deviation – mean deviation and quartile deviation

Unit IV: Correlation and Regression (K3) 15 Hours

Simple correlation – Scatter diagram – Karl Pearson's coefficient of correlation Rank correlation – Regression lines

Unit V: Analysis of time series (K3) 15 Hours

Analysis of time series: Method of measuring – Trend and seasonal variations – Index number – unweighted indices – consumer's prices and cost of living indices.

TEXT BOOK:

Navnitham.P.A., (2018), Business Mathematics and Statistics, Jai Publishers, Trichy.
Part I- Business Mathematics

Unit I: Chapter 3(Page No: 104-146)

Chapter 4 (Page No: 147-184)

Unit II: Chapter 2 (Page No: 43-75)

Part II- Business Statistics

Unit III: Chapter 7(Page No: 159-395)

Unit IV: Chapter 12 (Page No: 503-539)

Chapter 13 (Page No: 540-578)

Unit V: Chapter 10 (Page No: 444-471)

Chapter 14 (Page No: 579-612)

REFERENCE BOOKS:

1. Sunderesan and Jayaseelan – "An introduction to Business Mathematics and Statistical method", Sultan Chand Co Ltd,New Delhi .
2. Gupta. S. P – "Statistical Methods", Sultan Chand & Sons, 4th edition, 2011.
3. Vittal P.R. – "Business Mathematics and Statistics" ,Margham Publications 6th edition ,2012.

4. Ramakrishna Ghosh, SuranjanSaha – "Business Mathematics and Statistical methods", New Central Book Agency, 13th Revised edition, 2010.

5. SuranjanSaha – "Practical Business Mathematics and Statistics", Tata Mcgraw Hill *Publishing* Co Ltd, New Delhi, 1995.

6. Pillai R.S.N. and Bagavathi – "Statistics theory And practice" S.Chand and Company Limited, New Delhi, 1998.

BLENDED LEARNING

UNIT	TOPIC	LINK
IV	Karl Pearson's coefficient of correlation	https://www.youtube.com/watch?v=_bSnUKEhfBg
IV	Rank correlation	https://www.youtube.com/watch?v=A4u5YWiJuKg&list=UUlDw4ijXzb9YxiU5nWinEfQ&index=562
IV	Regression lines	https://www.youtube.com/watch?v=265JZ9BgKT0
V	Analysis of time series-Method of Least square	https://www.youtube.com/watch?v=FpSTneHuPjM
V	Analysis of time series-Method of moving averages	https://www.youtube.com/watch?v=s07UUDNoxHk

MAPPING OF CO'S WITH PO's AND PSO's

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	3	2	3	2	3	2	2	3	3	3	2	3	3	3
CO2	2	3	3	2	3	2	2	3	3	3	2	3	3	3
CO3	3	3	2	2	3	2	2	3	3	3	2	3	3	3
CO4	3	3	3	2	3	2	2	3	3	3	2	3	3	3
CO5	2	3	3	2	3	2	2	3	3	3	2	3	3	3

(**Correlation:** 3 – High; 2 – Medium; 1 - Low **)**

ASSESSMENT TOOLS:

S.No	**Assessment methods**	**Frequency of Assessment**
1.	End Semester Examination	Once in a semester
2.	CIA I	Once in a semester
3.	CIA II	Once in a semester
4.	Model Examination	Once in a semester
5.	Assignment (Unit I & II)	Twice in a semester
6.	Seminar (Unit III & IV)	Twice in a semester
7.	Solving Real problems (Unit V)	Once in a semester

Course designed by Dr. G. Sindhu	**Verified by HOD** Dr. K. Julia Rose Mary
Checked by CDC Dr.S.Jaculin Arockia Selvi	**Approved by** Principal

SEMESTER I

COURSE CODE: 23UMA1A19

ALLIED – APPLIED STATISTICS I

(*Employability*)

(For B. Sc Data Science)

COURSE OBJECTIVES:

- To learn the measures of Central tendency, Dispersion etc. and to apply them in different fields of study.
- To understand time series and Index numbers.
- To analyze Sampling techniques and use it appropriately

COURSE OUTCOMES:

At the end of the course the students will be able to:

CO1	Understand the meaning, scope of Statistics and its mode of collection and organizing.	**K2**
CO2	Solve problems using the measures of central tendency.	**K2**
CO3	Analyze Skewness, explain correlation and regression and work over it.	**K3**
CO4	Summarize Time Series and compute business forecasting.	**K3**
CO5	Investigate over Index Numbers and Interpolation methods.	**K3**

Syllabus

Credits :4 **Instructional hours:75**

UNIT I Introduction to Statistics(K2) 15 Hours

Meaning and scope of statistics – Sources of data – Collection of data – primary and secondary – Classification and Tabulation – Presentation of data by diagrammatic and Graphic representation.

UNIT II Measures of Central Tendency(K2) 15 Hours

Measures of central tendency – ArithmeticMean, Median,Mode, Geometric and Harmonic mean – Measures of dispersion – range, quartile deviation, standard deviation and co-efficient of variance.

UNIT III Measures of Dispersion(K3) 15 Hours

Skewness: Bowley's and Pearson's co-efficient of skewness – simple Correlation – Scatter diagram – Karl Pearson's coefficient of correlation – Rank correlation - Regression lines into two variables – Uses of regression.

UNIT IV Time Series and Sampling(K3) 15 Hours

Analysis of time series – Meaning – Components – Models – Business forecasting – Methods of measuring trend and Seasonal variations. Methods of sampling – Sampling and non-sampling errors.

UNIT V Index Numbers and Interpolation(K3) 15 Hours

Index number unweighted indices – consumer's prices and cost of living indices. Interpolation – Newton, Lagrange and binomial methods.

TEXT BOOK:

Navnitham P.A., (2016), Business Mathematics and Statistics, Jai Publishers, Trichy.

Unit 1: Chapter 1, Chapter 3, Chapter 5, Chapter 6

Unit 2: Chapter 7, Chapter 8

Unit 3: Chapter 9 (page no: 396 to 416)

Chapter 12, Chapter 13

Unit 4: Chapter 14, Chapter 4

Unit 5: Chapter 10, Chapter 15 (page no: 622 to 643)

REFERENCE BOOKS:

1. Sunderesan&Jayaseelan – "An Introduction to Business Mathematics and statistical methods"
2. Gupta S.P, (2013), Statistical Methods, Sultan Chand & Sons, New Delhi.
3. Vittal P.R. – "Business Mathematics and Statistics"
4. Ramakrishna Gbosh, SuranjanSaha – "Business Mathematics and statistical methods"
5. Saha – "Practical Business Mathematics and Statistics"
6. Pillai R.S.N., Bhagawathi, (1998), Statistics Theory and Practice, S. Chand and Company Limited, New Delhi.

BLENDED LEARNING:

UNIT	TOPIC	LINK
IV	Types of Sampling	https://youtu.be/m6HtYHWScFk
IV	Sampling and Non Sampling errors	https://youtu.be/AJdt2_qxulo
V	Unweighted index numbers problems and Solutions-	https://youtu.be/pQbl4kqn98M

V	Lasperre's , Paasche's& Fisher's index numbers problems-	https://youtu.be/WE6YT6yNsYg
V	Fisher's index numbers with time reversal test and factor reversal test	https://youtu.be/KW4j7bFmkAA

Mapping of CO's with PO's/ PEO's

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
CO1	H	H	H	H	H	H	M	M	H	M	H	M	H	L
CO2	H	H	H	M	H	H	M	M	H	M	H	M	H	L
CO3	H	H	H	M	H	H	M	M	H	H	H	M	H	L
CO4	H	H	H	M	H	H	M	M	H	H	H	M	H	L
CO5	H	H	H	M	H	H	M	M	H	H	H	M	H	L

Correlation: H-High, M-Medium, L-Low

ASSESSMENT TOOLS:

S.No	Assessment methods	Frequency of Assessment
1.	End Semester Examination	Once in a semester
2.	CIA I	Once in a semester
3.	CIA II	Once in a semester
4.	Model Examination	Once in a semester
5.	Assignment (Unit I & II)	Twice in a semester
6.	Seminar (Unit III & IV)	Twice in a semester
7.	Case study (Unit V)	Once in a semester

Course designed by Dr. G. Sindhu	**Verified by HOD** Dr. K. Julia Rose Mary
Checked by CDC Dr.S.Jaculin Arockia Selvi	**Approved by** Principal

SEMESTER: II

COURSE CODE: 23UMA2A12

ALLIED- OPERATIONS RESEARCH

(Entrepreneurship)

(For B.Sc., Computer Science, B.Sc., Information Technology and BCA., BBA, B.Sc. Data Science)

COURSE OBJECTIVES:

- To learn the applications of Operations Research invariably in all fields of Management and Business activities in an organization.
- To enable the students to take optimal managerial decisions pertaining to the optimistic time schedule in a real time problem.
- To evaluate the computational performance of optimization algorithms.

COURSE OUTCOMES:

At the end of the course the students will be able to:

CO 1	Identify the problem environment observation.	**K2**
CO 2	Solve the linear programming problems by using Big-M-method and Two phase method.	**K3**
CO3	Estimate the Optimum transportation schedule keeping in mind cost of transportation to be minimized.	**K3**
CO4	Match the various resources to the various activities on one to one basis.	**K3**
CO5	Find the solution to a project that involves planning, scheduling and controlling a number of interrelated activities with use of limited resources.	**K3**

SYLLABUS

Credits: 4 **Instructional Hours: 75**

UNIT I: Introduction to Operations Research (K2) 15 Hours

Introduction to Operations Research: Linear programming problem-Introduction-General LPP-Basic feasible solution-Optimum basic feasible solution- Alternate basic feasible solution- Degenerate Solution- Unbounded solution-Graphical solution method-Simplex method.

UNIT II: Linear programming problem (K3) 15 Hours

Linear programming problem: Artificial variable techniques- Big-M-method-Two phase method.

UNIT III: Transportation Problem (K3) 15 Hours

Transportation Problem: Definition-Formulation and Solution –Initial basic feasible solution- North- West Corner Rule- Matrix minima method-Vogel's approximation Method-Optimum basic feasible solution-MODI's Method.

(Self Study- Problems in Vogel's Approximation Method)

UNIT IV: Assignment Problem (K3) 15 Hours

Assignment Problem: Definition- Formulation and solution of Assignment problems-Hungarian method-Unbalanced Assignment problems.

(Self Study- Problems in Unbalanced Assignment problems.)

UNIT V: Networks (K3) 15 Hours

Networks: Introduction and basic components- Rules of network construction-Time calculations in Networks- Critical Path Method- PERT calculations.

TEXT BOOK:

1.Kanti Swarup,P.K.Gupta and Manmohan, (2008) Operations Research,(14th Edition) Sultan Chand & Sons Educational Publishers, New Delhi.

UNIT I Chapter 3: 3.1 - 3.5
Chapter 4: 4.1, 4.3

UNIT II Chapter 4: 4.4

UNIT III Chapter 10: 10.1, 10.2, 10.5, 10.8-10.10, 10.12, 10.13

UNIT IV Chapter 11: 11.1-11.4

UNIT V Chapter 25: 25.1-25.4, 25.6-25.8

REFERENCE BOOKS:

1. Hamdy.A, Taha (1997), Operations Research, Keerthi Publishing House.

2. Prof.V.Sundaresan, K.S.Ganapathy Subramanian and K.Ganesan, Resource Management Techniques

3.Gupta. P.K, Premkumar and Hira D.S. (2009), Problems in Operations Research (Principles and Solutions), S.Chand Company Private, New Delhi.

4. Sharma.J.K. (1997), Operations Research Theory and Applications, Mc Millan.

5. C.W.Churchman, Introduction to Operations Research.

BLENDED LEARNING:

UNIT	TOPIC	LINK

IV	Assignment Problem	https://www.youtube.com/watch?v=BUGIhEecipE
IV	Unbalanced Assignment problems	https://www.youtube.com/watch?v=aPVtIhnwHPE
V	Critical Path Method	https://www.youtube.com/watch?v=H58TPQNr2kM
V	PERT calculations	https://www.coursera.org/lecture/construction-scheduling/pert-calculations-critical-activities-kogmr

MAPPING OF CO'S WITH PO's AND PSO's

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CO2	3	3	3	2	3	2	2	3	3	3	2	3	3	3
CO3	3	3	3	2	3	2	2	3	3	3	2	3	3	3
CO4	3	3	3	2	3	2	2	3	3	3	2	3	3	3
CO5	3	3	3	2	3	2	2	3	3	3	2	3	3	3

(**Correlation:** 3 – High; 2 – Medium; 1 - Low)

ASSESSMENT TOOLS:

S.No	**Assessment methods**	**Frequency of Assessment**
1.	End Semester Examination	Once in a semester
2.	CIA I	Once in a semester
3.	CIA II	Once in a semester
4.	Model Examination	Once in a semester
5.	Assignment (Unit I & II)	Twice in a semester
6.	Seminar (Unit III & IV)	Twice in a semester
7.	Real life problem solving (Unit V)	Once in a semester

Course designed by Dr. G.Sindhu	**Verified by HOD** Dr. K. Julia Rose Mary
Checked by CDC Dr.S.Jaculin Arockia Selvi	**Approved by** Principal

SEMESTER: III/I

COURSE CODE: 23UMC3A03 /24UMA1A23

ALLIED- PROBABILITY AND STATISTICS

(Employability)

(For B. Sc., Computer Science and B. Sc., Computer Science with Artificial Intelligence)

COURSE OBJECTIVES:

- To apply Mathematical and scientific reasoning to a variety of computational problems.
- To formulate a situation as a probability model and make appropriate conclusions.
- To apply advanced algorithmic and Mathematical concepts to the design and to analyze with the help of software.

COURSE OUTCOMES :

At the end of the course the students will be able to:

CO1	Define and compute the various measures of central Tendency for different types of data	**K2**
CO2	Explain the concept of Dispersion and Compute the different measures of Dispersion	**K2**
CO3	Estimate the relationship between variables by using the concept of Correlation and Regression	**K3**
CO4	Apply the notion of Probability in decision making problems and interpret the expected values of a random variable	**K3**
CO5	Explain the concepts of Probability distribution and derive its characteristics	**K3**

SYLLABUS

Credits : 4 **Instructional Hours: 75**

UNIT I Measures of Central Value (K2) 15 Hours

Introduction-Average definition - Objectives-Requisites of good average-Types of averages-Arithmetic Mean, Median, Mode, Geometric Mean and Harmonic Mean-Relationship among the averages.

(Self Study: Problems in Geometric Mean)

UNIT II Measures of Dispersion (K2) 15 Hours

Introduction-Significance of variation-Properties -Methods of studying variation-Range, Inter Quartile range and Quartile deviation, Mean deviation, standard Deviation and The Lorenz curve-Coefficient of variation- Moments- Skewness - Kurtosis.

(Self Study: Problems in Coefficient of variation)

UNIT III Correlation (K3) 15 Hours Types-Methods-Scatter Diagram - Graphic method-Karl Pearson's co-efficient of correlation- Rank correlation- Concurrent deviation method- Regression Analysis- Uses- Difference between correlation and regression-Regression lines into two variables-Limitations.

UNIT IV Probability and Expected value (K3) 15 Hours

Classical or a priori probability- axiomatic approach to probability-calculation of probability-Theorems of probability- conditional probability- Baye's theorem- Mathematical Expectation- Random variable and probability distribution.

UNIT V Theoretical Distributions (K3) 15 Hours

Binomial, Multinomial, Negative Binomial, Poisson, Hypergeometric and Normal distributions and fitting of distributions (Simple Problems).

TEXT BOOK:

Gupta S.P,(2013) ,Statistical Methods, Sultan Chand & Sons, New Delhi.

UNIT I	Volume I	Chapter 7
UNIT II	Volume I	Chapter 8 and 9
UNIT III	Volume I	Chapter 10 and 11
UNIT IV	Volume II	Chapter 1
UNIT V	Volume II	Chapter 2

REFERENCE BOOKS:

1. Gupta S.C., V.K Kapoor., (2006), Fundamentals of Mathematical Statistics ,Sultan Chand Sons. New Delhi.
2. Navnitham P.A., (2016) ,Business Mathematics and Statistics, Jai Publishers, Trichy.
3. Pillai R.S.N., Bhagawathi,(1998) ,Statistics Theory and Practice, S.Chand and Company Limited, New Delhi.
4. Arumugam S., Thangapandi Isaac S,(2016), Statistics, New Gamma Publishing House, Palayamkottai.
5. Vittal P.R, Business Mathematics and Statistics.

BLENDED LEARNING:

UNIT	TOPIC	LINK
IV	Baye's theorem	https://youtu.be/bUI8ovd07uI
IV	Random variable	https://youtu.be/cqK3uRoPtk0
V	Theoretical Distributions	https://youtu.be/QxItahqAJ60

V	*Binomial distribution - finding probability - example*	*https://youtu.be/rYe2B_7oUiA*
V	Normal Distribution	https://youtu.be/NbWrFFCq2Ks
V	Normal Distribution Word Problems	https://youtu.be/vrS1EpH3Yoo

MAPPING OF CO'S WITH PO's AND PSO's

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO1	3	3	2	3	3	3	2	3	3	3	2	3	3	2
CO2	3	3	2	3	3	3	2	3	3	3	2	3	3	2
CO3	3	3	2	3	3	3	2	3	3	3	2	3	3	2
CO4	3	2	2	3	3	2	2	3	3	3	2	3	3	2
CO5	3	3	2	3	3	3	2	3	3	3	2	3	3	2

(**Correlation:** 3 – High; 2 – Medium; 1 - Low)

ASSESSMENT TOOLS:

S.No	Assessment methods	Frequency of Assessment
1.	End Semester Examination	Once in a semester
2.	CIA I	Once in a semester
3.	CIA II	Once in a semester
4.	Model Examination	Once in a semester
5.	Assignment (Unit I & II)	Twice in a semester
6.	Seminar (Unit III & IV)	Twice in a semester
7.	Case study (Unit V)	Once in a semester

Course designed by Dr. G.Sindhu	**Verified by HOD** Dr. K. Julia Rose Mary
Checked by CDC Dr.S.Jaculin Arockia Selvi	**Approved by**

	Principal

SEMESTER I / III

COURSE CODE 23UMA1A07 / 23UMA3A07

ALLIED - MATHEMATICS PAPER I

(For I B.Sc Physics & II B.Sc Chemistry students)

(Entrepreneurship)

COURSE OBJECTIVES:

- To introduce Binomial and Exponential Series and to provide an insight for the expansions of trigonometric functions
- To study the concept of finding the eigen values and eigen vectors
- To provide an overview of curvature and their properties.

COURSE OUTCOMES:

At the end of the course the students will be able to:

CO1	Compare the expansions of binomial series, exponential series and to apply them in appropriate places.	**K2**
CO2	Implement different methods in obtaining roots of any equation and analyze the category of roots.	**K2**
CO3	Implement the matrix method in finding the eigen values and eigen vectors. To predict the inverse of any matrix using Cayley Hamilton Theorem	**K2**
CO4	Apply various expansions of trigonometric functions in obtaining the power series	**K3**
CO5	Define the radius of curvature for different curves and describe the evolutes and involutes of all the curvatures	**K3**

SYLLABUS

Credits: 5 **Instructional Hours: 90**

UNIT I: Algebra (K2) **18 hours**

Binomial Theorem – The greatest coefficient in the expansion of $(1+x)^n$ and Application of Binomial Theorem to Summation of series. Exponential Series, Exponential theorem and Application of Exponential Theorem to Summation of series.-Approximations and limits.

(Self Study: Problems in obtaining higher powers of numbers using Binomial Theorem)

UNIT II: Theory of Equations (K2) **18 hours**

Theory of equations: Roots of an equation-nature of roots-relation between roots and coefficients of an algebraic equation - Transformations of equations – roots with sign changed, roots multiplied by a given number. Increasing and decreasing the roots of an equation – Standard form of reciprocal equation.

UNIT III: Matrices (K2) **18 hours**

Matrices: Eigen values and Eigen vectors – Eigen values for symmetric matrices - Cayley Hamilton theorem (without proof) – verification of Cayley Hamilton theorem for the problems-Finding the inverse of matrix using the application of Cayley Hamilton theorem.

(Self Study: Problems in obtaining higher powers of matrices using Cayley Hamilton Theorem)

UNIT IV: Trigonometry (K3) 18 hours

Trigonometry: Applications of De-Moivre's theorem- $\cos n\theta, \sin\theta, \tan\theta$ Powers of sines and cosines of θ in terms of functions of multiples of θ - expansions of $\cos^n\theta, \sin^n\theta$ in a series of ascending powers of θ - simple limit problems like $\theta \to 0$ and $\theta \to \frac{\pi}{2}$.

UNIT V: Curvature (K3) 18 hours

Curvature – Center, radius and circle of curvature in Cartesian form - Center, radius and circle of curvature in polar form – Finding the co-ordinates of the center of the curvature in Cartesian and polar forms –Evolutes, involutes and envelopes of the curves – Pedal equations for different curves.

TEXT BOOK:

Narayanan, S., Hanumantha Rao, R. and Manickavachagam Pillay, T.K. (2007). Ancillary Mathematics Volume – I. (edition), SV Publications.

REFERENCE BOOKS:

1. Duraipandian,P. and Laxmi Duraipandian. (1984).Trigonometry. (edition), Emerald Publications, Madras.
2. Manickavachagam Pillay,T.K., Natarajan,T. and Ganapathy,K.S. (2004). Algebra Volume I. Vijay Nicole Publications, Chennai.
3. Vittal, P.R. (1988). Trigonometry. Margham Publications, Chennai.
4. Narayanan,S. (1995). Trigonometry. S.ViswanathanPrinters and Publishers.
5. Vittal, P.R. and Malini, V. (2011). Algebra and Trigonometry. (edition),Margham Publication- Chennai.

UNIT I	Chapter 1	Section 1.1 to 1.3
UNIT II	Chapter 2	Section 2.1 to 2.4
UNIT III	Chapter 3	Section 3.4, 3.5
UNIT IV	Chapter 4	Section 5.1, 5.2, 5.3
UNIT V	Chapter 6	Section 6.4

BLENDED LEARNING:

UNIT	TOPIC	LINK

III	Introduction to Eigen Values and Eigen Vectors	**https://www.youtube.com/watch?v=G4N8vJpf7hM**
III	Eigen Values and Eigen Vectors	**https://www.youtube.com/watch?v=1wjXVdwzgX8**
IV	De Moivre's theorem	https://youtu.be/b2X7MHK_3ac
IV	Expansion of cosine function	https://www.youtube.com/watch?v=giAjpfwC2LE
IV	Limit problems	https://www.youtube.com/watch?v=fjcjGoSWK-E

MAPPING OF CO'S WITH PO's AND PSO's

	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO 2
CO1	3	3	3	3	2	2	2	2	3	3	3	3	3	1
CO2	3	3	3	3	2	2	2	2	3	3	3	3	3	1
CO3	3	3	3	3	2	2	2	2	3	3	3	3	3	1
CO4	3	3	3	3	2	2	2	2	3	3	3	3	3	1
CO5	3	3	3	3	2	2	2	2	3	3	3	3	3	1

(**Correlation:** 3 – High; 2 – Medium; 1 - Low)

ASSESSMENT TOOLS:

S.No	**Assessment methods**	**Frequency of Assessment**
1.	End Semester Examination	Once in a semester
2.	CIA I	Once in a semester
3.	CIA II	Once in a semester
4.	Model Examination	Once in a semester
5.	Assignment (Unit I & II)	Twice in a semester
6.	Seminar (Unit III & IV)	Twice in a semester
7.	Case study (Unit V)	Once in a semester

Course designed by Dr. A. Stanis Arul Mary	**Verified by HOD** Dr. K. Julia Rose Mary
Checked by CDC Dr.S.Jaculin Arockia Selvi	**Approved by** Principal

SEMESTER: II / IV

ALLIED - MATHEMATICS PAPER II

COURSE CODE: 23UMA2A10/23UMA4A08
(For I B.Sc Physics & II B.Sc Chemistry students)

(Entrepreneurship)

COURSE OBJECTIVES:

- To introduce the concept of Integration and Differential equations and to solve Partial Differential equations.
- To study the method of solving the integration by reduction formulas.
- To provide an exposure on Fourier series.

COURSE OUTCOMES:

At the end of the course the students will be able to:

CO1	Describe the different types of integration and solve them	**K2**
CO2	Integrate different forms of trigonometric functions by reduction formula and integration by parts	**K2**
CO3	Acquire the knowledge of linear differential equations with constant coefficients	**K2**
CO4	Classify different forms of functions and forming the partial differential equations	**K3**
CO5	Investigate the properties of full range and half range fourier series	**K3**

SYLLABUS

Credits : 5 **Instructional Hours: 90**

UNIT I: **Types of Integration (K2)** **18 hours**

Integration - Definite integral-Methods of Integration - Integrals of functions containing linear functions of x- Integrals of the form f(ax+b), $a^2 \pm x^2$, $f(x^n)$, $(f(x))^n$, $F(f(x))$

[Self Study : Basics of Integration]

UNIT II: Reduction Formula (K2) **18 hours**

Integration by parts - Reduction formula for $\int x^n e^{ax} dx$, $\int x^n \cos ax \ dx$, $\int \sin^n x \ dx$, $\int \cos^n x \ dx$,

$\int \sin^m x \cos^n x \ dx$, $\int \tan^n x \ dx$, $\int \cot^n x \ dx$, $\int \sec^n x \ dx$, $\int \operatorname{cosec}^n x \ dx$ *and* $\int x^m (\log x)^n dx$

UNIT III: Linear Differential Equations (K2) 18 hours

Linear Differential equations with constant coefficients of the form $(aD^2 + bD + c)y = e^{ax}\varphi(x)$ where a, b, c are constants, $\varphi(x) = sinmx \ or \ cosmx \ or \ x^m$.

[Self Study : Linear Differential Equations $(aD^2 + bD + c)y = e^{ax}\varphi(x)$ ***with constant coefficients where*** $\varphi(x)$ ***is of the form*** x^m ***]***

UNIT IV: Partial Differential Equations (K3) 18 hours

Formation of Partial Differential equations by eliminating arbitrary constants and arbitrary functions solutions of standard types of first order equations

f(p, q)=0, f(x, p, q)=0, f(y, p, q)=0, f(z, p, q)=0, $f_1(x,p) = f_2(y,q)$.

UNIT V: Fourier Series (K3) 18 hours

Fourier series: Definition – finding Fourier coefficients for given periodic functions with period 2π , odd and even functions- Half range Fourier series

TEXT BOOKS:

1.Narayanan S,. Hanumantha Rao R and Manicavachagom Pillay T.K. (2007), Ancillary Mathematics Volume II by SV Publications, [UNIT I, II, IV, V].

2 Narayanan S and. Pillai. T. K. M , (1996) Differential Equation and its applications, S.Viswanathan Printers and Publishers, .[UNIT-III]

UNIT I	Chapter 1	Section 1.1 to 6.5
UNIT II	Chapter 1	Section 12,13.1-13.10
UNIT III	Chapter 5	Section 1- 4.2
UNIT IV	Chapter 6	Section 01 - 5.3
UNIT V	Chapter 2	Section 1 - 5.2

REFERENCE BOOKS:

1. Bali.N.P, (1987) Differential Equations.,Laxmi Publications, New Delhi,
2. Shanti Narayanan, (1997) Shyam Lal Charitable Trust Differential Calculus –, New Delhi
3. Manickavachagom Pillay.T.K, Natarajan.T and Ganapathy.K.S., (1996) Calculus Volume II, S.Viswanathan Printers and Publishers.
4. Manickavachagom Pillay.T.K, Natarajan.T and Ganapathy.K.S.,(2007) Calculus Volume III, S.ViswanathanPrinters and Publishers.
5. T.Natarajan Engineering Mathematics for Semester IV, (2001) Tata McGraw Hill

Publishing Company Limited , New Delhi,

BLENDED LEARNING:

UNIT	TOPIC	LINK
IV	Formation of Partial Differential equations by eliminating arbitrary constants	https://youtu.be/3c71y8N9qj0
IV	First order partial differential equation	https://youtu.be/JvXd_jw6umw
V	Fourier coefficients for given periodic functions with period 2π	https://youtu.be/MV0iuBtEtQU
V	Half range Fourier series	https://youtu.be/XrWlr9BdzRQ

MAPPING OF CO'S WITH PO's AND PSO's

	PO 1	PO 2	PO 3	PO 4	PO 5	PO 6	PO 7	PO 8	PO 9	PO 10	PO11	PO12	PSO 1	PSO 2
CO1	2	3	3	3	3	3	2	3	3	2	3	3	3	1
CO2	2	3	3	3	3	3	2	3	3	2	3	3	3	1
CO3	2	3	3	3	3	3	2	3	3	2	3	3	3	1
CO4	2	3	3	3	3	3	2	3	3	2	3	3	3	1
CO5	2	3	3	3	3	3	2	3	3	2	3	3	3	1

(**Correlation:** 3 – High; 2 – Medium; 1 - Low)

ASSESSMENT TOOLS:

S.No	Assessment methods	Frequency of Assessment
1.	End Semester Examination	Once in a semester

2.	CIA I	Once in a semester
3.	CIA II	Once in a semester
4.	Model Examination	Once in a semester
5.	Assignment (Unit I & II)	Twice in a semester
6.	Seminar (Unit III & IV)	Twice in a semester
7.	Case study (Unit V)	Once in a semester

Course designed by Dr. A. Stanis Arul Mary	**Verified by HOD** Dr. K. Julia Rose Mary
Checked by CDC Dr.S.Jaculin Arockia Selvi	**Approved by** Principal

SEMESTER: III

COURSE CODE: 24UMA3A20

TITLE OF THE COURSE: ALLIED: APPLIED STATISTICS II

(*Employability*)

(For B. Sc Data Science)

COURSE OBJECTIVES:

- To know the random variables and their different distributions.
- To estimate the population parameters using sample statistics.
- To test the hypothesis in order to extend the sample inference to the Population

COURSE OUTCOMES:

At the end of the course the students will be able to:

CO1	Understand the concept of Random Variable and its Distributions with its Characteristics.	**K2**
CO2	Understand the concept of Theoretical Distributions and its Characteristics	**K2**
CO3	Apply the sampling methods and its type for Large Sample Test.	**K3**
CO4	Apply Normal, t, F, Chi-Square Tests based on Small Sample Test.	**K3**
CO5	Apply analysis of variance, analysis of CR, RD and Latin square design for the practical problems	**K3**

SYLLABUS

Total Credits: 4 **Instructional Hours:75**

Unit I: RANDOM VARIABLES (K2) **15 Hours**

Random Variable – Distribution Function - Discrete and Continuous Random Variable – Continuous Distribution Function - Mathematical Expectation – Expected Value of Function of a Random Variable- Properties of Expectation and Variance- Covariance. **(Problems Only)**

(Self Study: Properties of Expectation)

Unit II : THEORETICAL DISTRIBUTIONS (K2) **15 Hours**

Theoretical Distributions – Binomial, Poisson and Normal - Moments, Mean, Standard Deviation,

MGF and Fitting of Distribution. **(Problems Only)**

Unit III : SAMPLING METHODS (K3) **15 Hours**

Types of Sampling- Parameter and Statistic- Tests of Significant- Procedure for testing of Hypothesis -Tests of Significant for Large Samples- Sampling of Attributes- Sampling of Variables.

(Self study: Sampling methods)

Unit IV : TESTING THE HYPOTHESIS (K3) **15 Hours**

Tests of Significance of Small Sample Tests based on Normal t, F and Chi-square tests, Goodness of Fit. **(Problems only)**

Unit V : ANALYSIS OF VARIANCE (K3) **15 Hours**

Analysis of Variance – One way and Two way classifications – Experimental Designs –Randomized Block Designs- Latin Squares.

TEXT BOOKS:

1.Gupta S.C, Kapoor V.K, (2002), Fundamentals of Mathematical Statistics (11TH Edition), Sultan Chand Sons, New Delhi. (Unit I, II, III , IV).

Unit I: Chapter 5 : Sec 5.1 to 5.4 (till page no 5.15), 5.4.3

Chapter 6 : Sec 6.1 to 6.6 (till page no.6.14)

Unit II: Chapter 8 : Sec 8.4 (from page. no 8.4 to 8.16, 8.19 to 8.21),

Sec 8.5 (from page. no 8.28 to 8.40, 8.45 to 8.47)

Chapter 9: Sec 9.2 (from page no. 9.3 to 9.26)

UNIT III : Chapter 14 : Sec 14.1 to 14.8 (till page no 14.35)(Problems only)

UNIT IV: Chapter 15 : Sec15.6 (from page. no 15.24 to 15.37)

Chapter 16 : Sec 16.3 (from page. no 16.12 to 16.25)

Sec 16.6 (from page. no 16.36 to 16.39)

2. Gupta S. P,(2002), Statistical Methods, (15TH Edition), Sultan Chand & Sons, New Delhi. (Unit V)

UNIT V : Volume II : Chapter 5 : Page No : 1009 – 1038

Chapter 6 : Page No: 1040-1050

REFERENCE BOOKS:

1. Gupta S.C, Kapoor V.K, (2004), Elements of Mathematical Statistics, (3rd Edition), Sultan Chand Sons. New Delhi.
2. Pillai RSN, Bagavathi, (1993), Statistics Theory and Practice, (3rd Edition), Sultan Chand Sons, New Delhi.
3. Edwards A L, (1960), Statistical analysis, Holt Rinehard & Winston.
4. Singaravelu A and Vijayalakshmi, (2000), Probability and Statistics, (2nd –Edition), Meenakshi Agency.
5. Grewal PS, (1990), Methods of Statistical Analysis, (2nd Edition), Sterling

BLENDED LEARNING:

UNIT	TOPIC	LINK
IV	F test	**https://www.youtube.com/watch?v=orGhAoQvSOM**
IV	chi-square test	**https://www.youtube.com/watch?v=WXPBoFDqNVk**
V	Analysis of variance	**https://youtu.be/ITf4vHhyGpc**
V	Latin square designs	**https://youtu.be/rcoeuYH-fd0**

MAPPING OF CO'S WITH PO's AND PSO's

	PO 1	**PO 2**	**PO 3**	**PO 4**	**PO 5**	**PO 6**	**PO 7**	**PO 8**	**PO 9**	**PO 10**	**PO 11**	**PO 12**	**PSO 1**	**PSO 2**
CO1	3	3	3	2	3	2	2	3	3	3	2	3	3	3
CO2	3	3	3	2	3	2	2	3	3	3	2	3	3	3
CO3	3	3	3	2	3	2	2	3	3	3	2	3	3	3
CO4	3	3	3	2	3	2	2	3	3	3	2	3	3	3

CO5	3	3	3	2	3	2	2	3	3	3	2	3	3	3

(**Correlation:** 3 – High; 2 – Medium; 1 - Low)

ASSESSMENT TOOLS:

S. No	**Assessment methods**	**Frequency of Assessment**
1.	End Semester Examination	Once in a semester
2.	CIA I	Once in a semester
3.	CIA II	Once in a semester
4.	Model Examination	Once in a semester
5.	Assignment (Unit I & II)	Twice in a semester
6.	Seminar (Unit III & IV)	Twice in a semester
7.	Quiz (Unit V)	Once in a semester

Course designed by	**Verified by HOD** Dr. K .Julia Rose Mary
Checked by CDC	**Approved by** Principal

SEMESTER II

COURSE CODE: 24UMA2A24

TITLE OF THE COURSE: ALLIED - DISCRETE MATHEMATICAL STRUCTURES

[Employability]

(For B. Sc., Computer Science with Artificial Intelligence)

COURSE OBJECTIVES

- To understand the concepts of Set Theory.
- To understand the Mathematical Logics and Theory of Inference.
- To recall Relations and Functions
- To inculcate the knowledge to design the Finite State Automata
- To extend the idea of Graphs and Trees.

COURSE OUTCOMES:

- **At the end of the course the students will be able to**

CO 1	Understand the Theory of Inference for the Statement Calculus and Predicate Calculus	**K2**
CO 2	Understand the concepts of Relations and Functions in Computer Science	**K2**
CO 3	Understand the different types of Grammars in Deterministic and Non-Deterministic Finite State Automata.	**K2**
CO 4	Apply Boolean Algebra and simplify Boolean Expressions using Karnaugh Maps	**K3**
CO 5	Demonstrate structural designs using various patterns of Graphs and applying algorithms to understand the concepts of Trees in real life.	**K3**

SYLLABUS

Credits: 4 **Instructional Hours: 75**

Unit I: Mathematical Logic (K2) **15 Hours**

Mathematical Logic - Introduction-Prepositional Calculus - Basic Logic Operations – Tautologies -Contradiction – Argument - Methods of Proof - Predicate Calculus.

Unit II: Relations and Functions (K2) **15 Hours**

Relations - Binary Relations - Set Operation in Relations - Types of Relations-Partial Order Relations - Equivalence Relation - Composition of Relations - Functions - Types of Functions - Invertible Functions - Composition of Functions.

(Self Study: Composition of Functions)

Unit III: Languages, Grammar and Automata (K2) 15 Hours

Languages - Operation on Languages - Regular Expressions and Regular Languages - Grammar and Types of Grammars - Finite State Machine - Finite State Automata.

Unit IV: Boolean Algebra (K3) 15 Hours

Boolean Algebra- Basic theorems in Boolean Algebra-Boolean Functions-Logic Gates and Circuits-Boolean Expression- Minterm and Maxterm- Karnaugh map.

Unit V: Graph Theory and Trees (K3) 15 Hours

Graph theory - Basic Terminology – Paths - Cycle & Connectivity – Subgraphs - Types of Graphs - Representation of Graphs in Computer Memory – Trees - Properties of Trees - Binary Trees - Traversing Binary Trees - Computer Representation of General Trees.

(Self Study: Subgraphs , Properties of Trees)

Text Book:

1. Discrete Mathematics- J.K. Sharma Second Edition -2005, Macmillan India Ltd.
   (Unit I to Unit V)
   Unit I : Chapter 12: Section: 12.1-12.3, 12.8-12.9, 12. 11-12.12, 12.14
   Unit II: Chapter 3: 3.3- 3.7, 3.11
   Chapter 4: 4.3-4.5
   Unit III : Chapter 15: 15.3-15.7
   Unit IV : Chapter 13: 13.1-13.3, 13.5, 13.7, 13.9-13.11
   Unit V : Chapter 9: 9.1-9.5, 9.8
   Chapter 10: 10.1-10.3, 10.6, 10.8

Reference Books:

1. Discrete Mathematics Structures with Application to Computer Science-J. P.Tremblay R Manhar-Mc Graw Hill International Edition.
2. Discrete Mathematics- Dr M.K. Venketramen, Dr. N. Srudharan, N. Chandrasekaran-The National Publishing Company, Chennai.
3. Yadav S.K, (2016), Discrete Mathematics with Graph theory, Ane Books Pvt Ltd, New Delhi.
4. Sundaresan V, Ganapathy Subramanian K.S and Ganesan K, Discrete Mathematics, A.R. Publications, Tamil Nadu.
5. Nar Singh Deo, (1979), Graph Theory for Computer Science & Engineers, PHI, India.
6. Richard Johnsonbaugh, (1997), Discrete Mathematics (4^{th} edition), Prentice Hall, New York.

BLENDED LEARNING

UNIT	TOPICS	LINKS
I	Mathematical Logic	https://www.youtube.com/watch?v=8octtUkdv4Y&list=PLBlnK6fEyqRhqJPDXcvYlLfXPh37L89g3&index=11
V	Introduction to Graph theory	http:// www.youtube.com/watch?v=LFKZLXVO-Dg

MAPPING OF CO'S WITH PO's AND PSO's

	PO 1	PO 2	PO 3	PO 4	PO 5	PO	PO 7	PO 8	PO 9	PO 10	PO 11	PO 12	PSO 1	PSO 2
CO 1	2	3	2	3	2	3	2	3	3	2	2	3	3	2
CO 2	2	3	3	3	2	3	2	3	3	2	2	2	2	2
CO 3	3	3	2	3	3	3	2	2	2	3	2	3	3	2
CO 4	3	3	3	3	3	3	3	3	3	3	3	3	3	2
CO 5	3	3	3	3	3	3	3	3	3	3	3	3	3	2

(Correlation: 3-High ; 2-Medium ;1-Low**)**

ASSESSMENT TOOLS:

S.No	Assessment methods	Frequency of Assessment
1.	End Semester Examination	Once in a semester
2.	CIA I	Once in a semester
3.	CIA II	Once in a semester
4.	Model Examination	Once in a semester
5.	Assignment (Unit I & II)	Twice in a semester
6.	Seminar (Unit III & IV)	Twice in a semester
7.	Quiz (Unit V)	Once in a semester

Course designed by Dr R Joice Nirmala	**Verified by HOD:**

Checked by CDC:	**Approved by:**