Re-Accredited B++ 2.86 CGPA by NAAC
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વીર નર્મદ દક્ષિણ ગુજરાત યુનિવર્સિટી
યુનિવર્સિટી કેમ્પસ, ઉધના-મગદલ્લા રોડ, સુરત - ૩૯૫ ૦૦૭, ગુજરાત, ભારત.
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સંદર્ભ:યુનિવર્સિટી પરિપત્ર ક્રમાંકઃએસ./પરિપત્ર/૧૬૨૪૨/૨૦૨૩ તા.૨૮/૦૬/૨૦૨૩

–: પરિપત્ર :–

વાણિજય વિદ્યાશાખા હેઠળની સંલગ્ન તમામ કોલેજોના આચાર્યશ્રીઓને જણાવવાનું કે, NEP-2020 અંતર્ગત શૈક્ષણિક વર્ષ ૨૦૨૩–૨૪ થી અમલમાં આવનાર આંકડાશાસ્ત્ર વિષયના F.Y.B.Com. Sem.-1 & 2 ના માઈનર અને મલ્ટિડિસિપ્લિનરીના અભ્યાસક્રમ આંકડાશાસ્ત્ર વિષયની અભ્યાસ સમિતિની તા.૨૧/૦૭/૨૦૨૩ ની સભાનાં ઠરાવ ક્રમાંકઃ ૨ અન્વયે મંજૂર કરી વાણિજય વિદ્યાશાખાને કરેલ ભલામણને વાણિજય વિદ્યાશાખાની મંજૂરીની અપેક્ષાએ વાણિજય વિદ્યાશાખા વતી વાણિજય વિદ્યાશાખાનાં અધરધેન ડીનશ્રીએ મંજૂર કરી એકેડેમિક કાઉન્સિલની તા.૧૭/૮/૨૦૨૩ની સભાનાં ઠરાવ ક્રમાંકઃ ૨૧ થી મંજૂર કરેલ છે. જેનો અમલ કરવા આથી જાણ કરવામાં આવે છે.

એકેડેમિક કાઉન્સિલની તા.૧૭/૦૮/૨૦૨૩ની સભાનાં ઠરાવ ક્રમાંકઃ ૨૧

:: **આથી ઠરાવવામાં આવે છે કે, શૈક્ષણિક વર્ષ ૨૦૨૩–૨૪ થી અમલમાં આવનાર આંકડાશાસ્ત્ર વિષયના F.Y.B.Com. Sem- 1 & 2 ના માઈનર અને મલ્ટિડિસિપ્લિનરીના અભ્યાસક્રમ આંકડાશાસ્ત્ર વિષયની અભ્યાસ સમિતિની તા.૨૧/૦૭/૨૦૨૩ ની સભાનાં ઠરાવ ક્રમાંકઃ૨ અન્વયે મંજૂર કરી વાણિજય વિદ્યાશાખાને કરેલ ભલામણને વાણિજય વિદ્યાશાખાની મંજૂરીની અપેક્ષાએ વાણિજય વિદ્યાશાખાવતી વાણિજય વિદ્યાશાખાનાં અધરધેન ડીનશ્રીએ મંજૂર કરી એકેડેમિક કાઉન્સિલને કરેલ ભલામણ સ્વીકારી મંજૂર કરવામાં આવે છે.**

બિડાણઃ ઉપર મુજબ

ક્રમાંક : એસ./પરિપત્ર/૨૧૫૪૧/૨૦૨૩
તા. ૧૮–૦૮–૨૦૨૩

કુલસચિવ

પ્રતિ,
૧) વાણિજય વિદ્યાશાખા હેઠળની સંલગ્ન તમામ કોલેજોના આચાર્યશ્રીઓ,
..... આપશ્રીની કોલેજના સંબંધિત શિક્ષકોને જાણ કરી અમલ કરવા સારૂ.
૨) અધ્યક્ષશ્રી, વાણિજય વિદ્યાશાખા
૩)પરીક્ષા નિયામકશ્રી, પરીક્ષા વિભાગ, વીર નર્મદ દ. ગુ. યુનિવર્સિટી, સુરત.
.....તરફ જાણ તેમજ અમલ સારૂ.

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

Syllabus Of Statistics For B.COM Sem-I

AS PER NEP- 2020

To be implemented from the academic year 2023-24

Statistics

B.Com

(SEMESTER - I)

Course Code:

Course Title: **Data Collection Methods.**

Course Category: Minor

Credit: 4 Credit

Implementation year: A. Y. 2023-24

Course Objective: The main objective of this course is to acquaint students with different data collection methods and its process in research and project work. Students can be developed their skill about different diagram and Graphs and also will be able to understand the ideology about suitable graphs. The purpose of this course is to give some essence of measures of central tendency and dispersion based on different scale so that they can get some idea about when a particular measure can be used.

Course Outcomes:

CO1	Understand about how to collect Data using different data collection methods.
CO2	Understand the process of data collection and its use in research/project work.
CO3	Understand about how to code and decode the data and how to use it using questionnaire so that they can easily entre the data in to different statistical soft ware's.
CO4	Represent the data using diagrams and graphs to present the data before laymen.
CO5	Develop the skills about different descriptive statistics for different measures of scale which will help them for further research work.

Teaching Methodology: Class work, discussion, self study, seminars/ presentations and assignments.

Evaluation method: 30% Internal Assessment and 70% External Assessment.

Sr.No.	Course Inputs (As per UGC Model Curriculum)	Weightage	Marks

Unit -1	Data collection methods and its process ➢ Meaning of Data collection and its importance in research ➢ Measurement of Scales: Nominal, Ordinal, Interval, Ratio ➢ Primary Data Collection Methods : Surveys or Questionnaire, Observations, Experiments, Interview, Focus Groups, Delphi Technique ➢ Sources of Secondary Data Collection: Financial Reports, Sales Reports, Government Reports, Company Statement, Internet ➢ Process of Data Collection ➢ Preparation of Questionnaire for the Research and Project Work ➢ Practical: Questionnaire Preparation using Practical Research Problem	**30%**	**15**
Unit-2	Data Handling & Its Presentation: ➢ Meaning of coding ➢ Meaning of decoding ➢ Process of Data Coding and its practical ➢ Diagrammatic and Graphical Presentation of Data: • Diagrams: ➢ Meaning of Diagram ➢ Rules for construction of diagram ➢ Types of diagram: Line Diagrams, Bar Diagrams, Stem and Leaf Diagram • Graphs: ✓ Meaning of Graphs ✓ Types of Graphs: Frequency Distribution Graphs, Histogram, Frequency Distribution Curves, Cumulative Frequency Distribution Graphs, Ogive • Difference between Diagram and Graph	**40%**	**20**
Unit-3	Descriptive Statistics for different Measures of Scale: (Scale Based illustrations only) ➢ Concept of Measures of Central Tendency ➢ Descriptive Statistics for Nominal Scale : Mode ➢ Descriptive Statistics for Ordinal Scale: Median, ➢ Quartiles, Deciles, Percentile ➢ Descriptive Statistics for Interval or Ratio Scale: ✓ Measures of Central Tendency: (1) Mean: Arithmetic Mean, Harmonic Mean, Geometric Mean, (2) Quartiles, (3) Deciles, (4) Percentiles ✓ Measures of Dispersion: Variance, Standard Deviation, Coefficient of Variation	**30%**	**15**
	Grand Total	**100%**	**50**

Reference Books:		
1.	Hooda, R.P	Statistics for business and economics; Macmillan. New Delhi.
2.	Dr. S.S. Chaudhary, Dr. Madhu Gupta, Dr. Govind Singhal, Dr. Sanjay Jain	DESCRIPTIVE STATISTICS -Text Book For B.Sc , M.Sc , Ph.D & Other Research Purpose in Statistics
3.	Goon A.M., Gupta M.K. and Dasgupta B. (2000):	Fundamentals of Statistics, Vol. I & II, 8thEdn. The World Press. Kolkata.
4.	Dr. M. H. Lohgaonkar	Descriptive Statistics-I
5.	Gun. A.M.Gupta, M.k. and Dasgupta.B.(2008)	Fundamental of Statistics, Vol. II, 9th Edition World press.
6.	S.P. Gupta, M.P. Gupta	Business Statistics 18th Edition
7.	Hole & Jessen	Basic Statistics for business and economics: John Wiley and Sons. New York
8.	P. Sundara Pandian, S. Muthulakshmi, T. Vijaykumar	Research Methodology & Applications of SPSS in Social Science Research
9	Prof. H.D. Shah	ગાણિતિકઆંકડાશાસ્ત્ર .યુનિવર્સીટી ગ્રંથનિર્માણ બોર્ડ- અમદાવાદ . ગુજરાત
10	ડો.આર.એસ.પટેલ	સંશોધન માટે આંકડાશાસ્ત્રીય પ્રયુક્તિઓ - Jay Publication
11	M.C.Jayswal(1974)	અર્થ વિષયક આંકડાશાસ્ત્ર, યુર્નિવસિટી ગ્રંથ નિર્માણ બોર્ડ – અમદાવાદ, ગુજરાત.
12	Dr. R T Ratani	પ્રયુક્ત આંકડાશાસ્ત્ર, ગુજરાત યુનિવર્સીટી ગ્રંથનિર્માણ બોર્ડ- અમદાવાદ . ગુજરાત

Statistics

B.Com

(SEMESTER - I)

Course Code: Statistics

Course Title: **Descriptive Statistics**

Course Category: Multi Disciplinary

Credit: 4 Credit

Implementation year: A. Y. 2023-24

Course Objective: The main objective of this course is to acquaint students with some basic concepts in Statistics. Learner will be introduced to some elementary statistical methods of analysis of data to compute various measures of central tendency and dispersion.

Course Outcomes:

CO1	Students can understand the elementary knowledge and fundamental concept in Statistics.
CO2	Articulate the data and its type and summarize information in the data using different Summary measures.
CO3	Students will be able to differentiate between different types of data.
CO4	Learner will be able to develop to reasoning about statistical tools.
CO5	Compute various measures of Central tendency and Dispersion.

Teaching Methodology: Class work, discussion, self study, seminars/ presentations and assignments.

Evaluation method: 30% Internal Assessment and 70% External Assessment.

Sr.No.	Course Inputs (As per UGC Model Curriculum)	Weightage	Marks
Unit -1	Collection of Data: ➢ Definition and Scope of Statistics ➢ Concepts of Data: Variables and Attributes. ➢ Types of Data: Quantitative and Qualitative data, Discrete and Continuous data Variables, ➢ Different Types of Scales: For Attribute: Nominal, Ordinal For Variables: Interval and Ratio. ➢ Primary data and Secondary data	**10%**	**05**
Unit-2	➢ Tabulation of Data ➢ Frequency distribution: Discrete and Continuous frequency distribution, Cumulative frequency distribution Bivariate frequency distribution: Discrete and Continuous bivariate frequency distribution.	**10%**	**05**
Unit-3	Measures of Central Tendency: ➢ Concept of central tendency ➢ Mean, Median, Mode, Combined Mean, Harmonic mean, Geometric Mean, Weighted Mean :Definition, Merits , Demerits and its uses. Examples and Problems.	**40%**	**20**
Unit-4	Measures of Dispersion: ➢ Range, Quartile Deviation, Mean Deviation ,Standard Deviation, Merits and Demerits, Coefficient of variation and its uses. Examples and Problems.	**40%**	**20**
	Grand Total	**100%**	**50**

ક્રમ નં.	આંતરિક માળખું (યુજીસી મોડેલ અભ્યાસક્રમ મુજબ)	ગુણભાર	ગુણ
એકમ-1.	**માહિતીનું એકત્રીકરણ** ➢ આંકડાશાસ્ત્રની વ્યાખ્યા અને તેનું કાર્યક્ષેત્ર/વિસ્તાર ➢ માહિતીનો ખ્યાલ: ચલ અને ગુણ (ગુણધર્મ) ➢ માહિતીના પ્રકારો: સંખ્યાત્મક માહિતી અને ગુણાત્મક માહિતી, અસતત ચલ અને સતત ચલની માહિતી ➢ માપ પધ્ધતિનાં પ્રકાર: • ગુણ માટેના પ્રકાર: ઓળખ-અંક માપ પધ્ધતિ, ક્રમાંક પધ્ધતિ • ચલ માટેના પ્રકાર; અંતર-અંક માપ પધ્ધતિ, ગુણોતર-અંક માપ પધ્ધતિ ➢ પ્રાથમિક માહિતી અને ગૌણ માહિતી ➢ માહિતીનું કોષ્ટકીકરણ/માહિતીની કોષ્ટક-રચના • આવૃત્તિ વિતરણ: અસતત અને સતત આવૃત્તિ વિતરણ ,સંચયી આવૃત્તિ વિતરણ • દ્વિચલીય આવૃત્તિ વિતરણ: સતત અને અસતત દ્વિચલીય આવૃત્તિ વિતરણ	20%	10
એકમ-2.	**મધ્યવર્તી સ્થિતિનાં માપ** ➢ મધ્યવર્તી સ્થિતિનો ખ્યાલ ➢ મધ્યક, મધ્યસ્થ, બહુલક, મિશ્ર મધ્યક, હરાત્મક/હકારત્મક મધ્યક, ગુણોતર મધ્યક, ભારિત મધ્યક: તેની વ્યાખ્યા, લાભ/ગુણ અને ગેરલાભ/દોષ, તેના ઉપયોગો. ઉદાહરણો અને સમસ્યાઓ.	40%	20
એકમ-3.	**પ્રસારમાન** ➢ વિસ્તાર, ચતુર્થક વિચલન, સરેરાશ વિચલન, પ્રમાણિત વિચલન: તેની વ્યાખ્યા, ગુણ અને દોષ, ચલનાંક અને તેના ઉપયોગો. ઉદાહરણો અને સમસ્યાઓ.	40%	20
	કુલ સરવાળો	100%	50

Reference Books:		
1.	Goon A.M., Gupta M.K. and Dasgupta B. (2000):	Fundamentals of Statistics, Vol. I & II, 8th Edn. The World Press, Kolkata.
2.	Miller , Irwin and Miller, Marylees (2006):	John E. Freund's Mathematical Statistics With Applications, (7th Edn.), Pearson education. Asia.
3.	Mood, A.M. Graybill, F.A. And Boes , D.C. (2007):	Introduction to the theory of Statistics, 3rd Edn.,(Reprint), Tata McGraw –Hill Pub. Co. Ltd.
4.	Pavate D.C. Bhagwat	The Element Calculus : Popular Prakashan, Bombay
5.	Gupta S.P	Statistical Method : S. Chand & Co., New Delhi
6.	Rohtgi V.K.	An Introduction to probability theory and mathematical statistics : Wiley EstemLtd.
7.	S.C. Gupta & V.K. Kapoor	Fundamentals of Mathematical Statistics : S. Chand & Co., New Delhi
8.	Prof. H.D. Shah	ગાણિતિકઆંકડાશાસ્ત્ર .યુનિવર્સીટી ગ્રંથનિર્માણ બોર્ડ-અમદાવાદ . ગુજરાત
9	ડો.આર.એસ.પટેલ	સંશોધન માટે આંકડાશાસ્ત્રીય પ્રયુક્તિઓ - Jay Publication
10	Dr. R T Ratani	પ્રયુક્ત આંકડાશાસ્ત્ર, ગુજરાત યુનિવર્સીટી ગ્રંથનિર્માણ બોર્ડ-અમદાવાદ . ગુજરાત
11	M.C.Jayswal(1974)	અર્થ વિષયક આંકડાશાસ્ત્ર, યુર્નિવસિટી ગ્રંથ નિર્માણ બોર્ડ – અમદાવાદ, ગુજરાત.

Statistics

B.Com

(SEMESTER - I)

Course Code:

Course Title: **Business Mathematics and statistics -I**

Course Category: Multi Disciplinary

Credit: 4 Credit

Implementation year: A. Y. 2023-24

Course Objective: The main objective of this course is to acquaint students with some basic concepts of Mathematics so they can understand application of statistics and Computer.

Course Outcomes:

CO1	They will be able to find linear relation between independent and dependent variables. Using linear function deciding whether the function is decreasing or increasing. Finding slope and intercept of a linear function. Finding population change from a linear function.
CO2	Using linear function deciding whether the function is decreasing or increasing. Finding slope and intercept of a linear function. Finding population change from a linear function.
CO3	Set theory widely used in Statistics, Physics, Number Theory, Group theory, Probability, Engineering, Biology and Chemistry.
CO4	A permutation is used for the list of data (where the order of the data matters)
CO5	The combination is used for a group of data (where the order of data doesn't matter)

Teaching Methodology: Class work, discussion, self study, seminars/ presentations and assignments.

Evaluation method: 30% Internal Assessment and 70% External Assessment.

UNIT-1	**Equations**
	• Definition.
	• Linear equation.
	• Uses of linear equation in economics.
	➢ Types of equations
	  • Simultaneous Equations.
	  • Quadratic equation.
	➢ Methods of solution of linear equation of two variables.
	    • Substitution method.
	    • Cross multiplication method.
	    • Elimination method.
	    • Graphical method.
		20%	10 Marks

UNIT-2	**Function:**
	Definition.
	    • Types of function.
	      o Single valued function.
	      o Multivalve function.
	      o Implicit function.
	      o Composite function.
	      o Inverse function.
	➢ Graph of a linear function.
	    o Slope and intercept of a linear function $y=a+bx$
	    o Equation of a linear function passes through two points (x_1,y_1) and (x_2,y_2)
	    o Functions in Economics.
	Examples..
		20%	10 Marks

UNIT-3	**Set Theory**
	• Methods of describing a set:
	• Tabular method
	• Rule or Property method.
	➢ Definitions of some sets.
	    o Subset of a set.
	    o Equality of two sets
	    o Power set
	    o Universal set.
	    o Singleton set
	    o Disjoint sets.
	➢ Set operations
	    • Intersection of sets
	    • Union of sets.
	    • Complement of a set.
	    • Difference of two sets.
	    • Symmetric difference set
	    • Ven diagrams
	➢ Algebraic rules of set operations.
	    • Laws for complementation
	    • Commutative laws.
	    • Distributive laws.
	    • Associative laws.
		20%	10 Marks

	• De Morgan's laws • Cartesian product of two sets.. • Examples		
UNIT-4	**Permutations and Combinations** • Fundamental principle of counting.. ➢ Permutations. ➢ Theorem Permutation of things not all different. • Permutation when repetition is allowed. • Examples. ➢ Combinations. Theorem. • Examples.	40%	20 Marks

Reference Books		
1.	Robert R. Stoll | 1 October 1979	Set Theory and Logic (Dover Books on Mathematics) Paperback – 1 October 1979
2.	CHARLES C. PINTER (2014)	A Book of SET THEORY . DOVER PUBLICATIONS, INC. Mineola, New York
3.	Robert R. Stoll	**Linear Algebra and Matrix Theory (Dover Books on Mathematics)** Kindle Edition
4.	Steve Warner(2018) .	**Pure Mathematics for Beginners: A Rigorous Introduction to Logic, Set Theory, Abstract Algebra, Number Theory, Real Analysis, Topology, Complex Analysis, and Linear Algebra** Paperback – 25 September 2018
5.	B J VENKATACHALA(2020)	**Functional Equations Revised & Updated 2nd Ed (9788172867812)** Paperback – 1 January 2020
6.	Hari Kishan	**Theory Of Equations** Paperback – 13 July 2022
7.	Ramesh Chandra	Permutation And Combinations. Notion Press Media Pvt Ltd
8.	Richard A. Brualdi	**INTRODUCTORY COMBINATORICS, 5TH EDITION** Paperback – 18 July 2019
9.	Karmel P.H.(1963)	Applied Statistics for Economics, 2nd ed.
10.	Prof H.D. Shah.	ગાણિતિક આંકડાશાસ્ત્ર, યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ – અમદાવાદ, ગુજરાત.
11.	M.C.Jayswal(1974)	અર્થ વિષયક આંકડાશાસ્ત્ર, યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ – અમદાવાદ, ગુજરાત.
12	Sancheti, V K Patel	Mathematical Statistics

VEER NARMAD SOUTH GUJARAT UNIVERSITY, SURAT

Syllabus Of Statistics For B.COM Sem-II

AS PER NEP- 2020

To be implemented from the academic year 2023-24

Statistics

F.Y.B.COM Semester-II
Statistics for Business (Minor) - Credit 4

Objective:

OBJECTIVE
The main objective of this course is to provide fundamental knowledge of probability, mathematical expectation and use of probability distribution. The purpose is to make the students aware about the concept of probability and its application in mathematical expectation and probability distributions.

Course Outcome:

CO1	Understand the basic concept of probability and its uses for advance study.
CO2	Understand the basic idea about how to utilize the concept of probability to find expected value of a random variable.
CO3	Understand basic concept of probability distribution and its application.
CO4	Understand basic terminology about discrete and continuous variable.
CO5	Apply the course content for the further study of statistics.

Sr.No.	Course Inputs (As per UGC Model Curriculum)	Weightage	Marks
Unit - 1	Probability: ➢ Probability as a concept: Random experiments, Sample space, Events, mutually exclusive events, Exhaustive event, equally likely event, Independent events the three approaches for defining probability, Addition and Multiplication laws of probability; ➢ Conditional probability	20%	10
Unit-2	Mathematical Expectations: ➢ Random variable: Discrete and Continuous ➢ Expectation of a function for discrete random variable ➢ Properties of Mathematical expectation (without proof) ➢ Expectation of a linear combination of random variable for discrete case only (no proof required) ➢ Mean, variance and covariance in terms of expectation (up to two variables only), some exercises related to discrete random variables.	30%	15
Unit-3	Discrete Probability Distribution: ➢ Concept of Probability distribution ➢ Binomial, Poisson and Hyper geometric distribution, - their properties and their applications	30%	15
Unit-4	Continuous Probability Distribution: ➢ Properties of Normal distribution ➢ Normal distribution, Exponential Distribution and their Application	20%	10
	Grand Total	100%	50

Reference Books:		
1.	Goon A.M., Gupta M.K. and Dasgupta B. (2000):	Fundamentals of Statistics, Vol. I & II, 8th Edn. The World Press, Kolkata.
2.	Miller , Irwin and Miller, Marylees (2006):	John E. Freund's Mathematical Statistics With Applications, (7th Edn.), Pearson education. Asia.
3.	Mood, A.M. Graybill, F.A. And Boes , D.C. (2007):	Introduction to the theory of Statistics, 3rd Edn.,(Reprint), Tata McGraw –Hill Pub. Co. Ltd.
4.	Pavate D.C. Bhagwat	The Element Calculus : Popular Prakashan, Bombay
5.	Gupta S.P	Statistical Method : S. Chand & Co., New Delhi
6.	Rohtgi V.K.	An Introduction to probability theory and mathematical statistics : Wiley EstemLtd.
7.	S.C. Gupta & V.K. Kapoor	Fundamentals of Mathematical Statistics : S. Chand & Co., New Delhi
8.	Prof. H.D. Shah	ગાણિતિકઆંકડાશાસ્ત્ર ,યુનિવર્સીટી ગ્રંથનિર્માણ બોર્ડ- અમદાવાદ , ગુજરાત
9	ડો.આર.એસ.પટેલ	સંશોધન માટે આંકડાશાસ્ત્રીય પ્રયુક્તિઓ - Jay Publication
10	Dr. R T Ratani	પ્રયુક્ત આંકડાશાસ્ત્ર, ગુજરાત યુનિવર્સીટી ગ્રંથનિર્માણ બોર્ડ- અમદાવાદ , ગુજરાત
11	M.C.Jayswal(1974)	અર્થ વિષયક આંકડાશાસ્ત્ર, યુર્નિવસિટી ગ્રંથ નિર્માણ બોર્ડ – અમદાવાદ, ગુજરાત.
12	B L Agarwal	Programmed Statistics, Third Edition

Statistics

B.Com

(SEMESTER - II)

Course Code:

Course Title: **Business Mathematics and Statistics-II**

Course Category: Multi Disciplinary

Credit: 4 Credit

Implementation year: A. Y. 2023-24

Course Objective: The main objective of this course is to provide fundamental knowledge of differentiation, integration and matrices to the students and also to give them practical knowledge so that they can utilize for the real life problem.

Course Outcomes:

CO1	Understand the basic concept of differentiation and also will be able to apply it in economics.
CO2	Understand relation the basic concept of integration and also will be able to understand the difference between differentiation and integration.
CO3	Solve problems of maximizing profit and minimizing loss.
CO4	Understand basic concepts of matrices and determinants and also will be able to apply the concept of matrix in real life practical problem.
CO5	Apply the course content for the further study of statistics.

Teaching Methodology: Class work, discussion, self study, seminars/ presentations and assignments.

Evaluation method: 30% Internal Assessment and 70% External Assessment.

Sr.No.	Course Inputs (As per UGC Model Curriculum)	Weightage	Marks
Unit -1	Differentiation: ➢ Concept of a function ➢ Limits of a function ➢ Definition and Rules (Without Proof) of differentiation ➢ Derivatives of a Composite function ➢ Second order derivative ➢ Maxima and minima of function ➢ Necessary condition for existence of maxima & maxima ➢ Maxima &Minima of a function and its application to problems relating to business, Commerce and Economics	**40%**	**20**
Unit-2	Integration: ➢ Introduction ➢ Definition of integration ➢ simple rules of integration ➢ some standard results of integration ➢ Definite integration ➢ Application Of integration	**20%**	**10**
Unit-3	Matrices: ➢ Definition of a Matrix ➢ Types of Matrices ➢ Algebra of Matrices ➢ Adjoint of a Matrix ➢ Determinant of Matrix ➢ Finding inverse of a matrix through Adjoint ➢ Solution of a system of linear equations having unique solution using inverse of Matrix(For Two & Three Variables)	**40%**	**20**
	Grand Total	**100%**	**50**

Reference Books:		
1.	Parvate D.C. Bhagwat	The element of Calculus: Popular Prakashan, Bombay
2.	Allen R.G.D	Basic mathematics: Macmillan, New Delhi
3.	J.K. Sharma	mathematics for business &Economics, Asian Books private Ltd.
4.	Soni. R.S.	Business mathematics , Pitamber Publishing House
5.	Kapoor. V.K	Business mathematics: sultan Chand & Sons, Delhi
6.	Holden	Mathematics for business and economics: Macmillan India. New Delhi.
7.	S.C.Gupta	"Fundamentals of Mathematical Statistics" S. Chand , New Delhi.
8	GorakhPrasad	Differential calculus, Pothishala Pvt. Ltd., Allahabad (14th Edition-1997).
9.	Karmel P.H.(1963)	Applied Statistics for Economics, 2nd ed.
10.	Prof H.D. Shah.	ગાણિતિક આંકડાશાસ્ત્ર, યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ – અમદાવાદ, ગુજરાત.
11.	M.C.Jayswal(1974)	અર્થ વિષયક આંકડાશાસ્ત્ર, યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ – અમદાવાદ, ગુજરાત.

Statistics

B.Com

(SEMESTER - II)

Course Code:

Course Title: **Statistical Methods For social science.**

Course Category: Multi Disciplinary

Credit **4 Credit**

Implementation year: A. Y. 2023-24

Course Objective: The main objective of this course is to acquaint students with relationship between two variables and two attributes. Learner will be introduced to some statistical methods of analysis of data 1) To compute the correlation coefficient for bivariate data 2) Fitting of regression curve 3) Studying qualitative data 4) Computing various indices and their interpretation

Course Outcomes:

CO1	Students will be able to understand difference between variables and attributes.
CO2	Students will be able to understand relation between two variables and attributes.
CO3	They will also be able to solve problems to find relation between two Variables and attributes.
CO4	Students will be able to understand basic concepts of time series
CO5	Analyze different types of trends

Teaching Methodology: Class work, discussion, self study, seminars/ presentations and assignments.

Evaluation method: 30% Internal Assessment and 70% External Assessment.

Sr.No.	Course Inputs (As per UGC Model Curriculum)	Weightage	Marks
Unit -1	Correlation (For 2 variables Only): ➢ Definition, Types of Correlation, Scatter Diagram ➢ Karl Pearson Correlation co-efficient, Spearman Rank Correlation co-efficient. ➢ Examples	**30%**	**15**
Unit-2	Regression (For 2 variables Only): ➢ Definition ➢ Regression Two Lines ➢ Meaning and it's uses Examples	**20 %**	**10**
Unit-3	Analysis of Categorical data (For 2 attributes Only): ➢ Concept of association between two attributes ➢ Consistency of data ➢ Different types of association ➢ Different methods to find association between two attributes ➢ Examples	**20%**	**10**
Unit-4	Analysis of Time series: ➢ Concept of time series ➢ Causes of variation in time series data ➢ Components of a time series ➢ Determination of trend-moving averages method and method of least squares {including linear, second degree (parabolic trend)} ➢ Computation of seasonal indices by simple averages, moving average method.	**30%**	**15**
	Grand Total	**100%**	**50**

Reference Books:

1.	Hooda, R.P	Statistics for business and economics; Macmillan. New Delhi.
2.	Kendall M.G.(1976)	Time series, Charles Griffin
3.	Goon A.M., Gupta M.K. and Dasgupta B. (2000):	Fundamentals of Statistics, Vol. I & II, 8th Edn. The World Press, Kolkata.
4.	Mood, A.M. Graybill, F.A. And Boes , D.C. (2007)	Introduction to the theory of Statistics, 3rd Edn.,(Reprint). Tata McGraw –Hill Pub. Co. Ltd.
5.	Gun. A.M.Gupta, M.k. and Dasgupta.B.(2008)	Fundamental of Statistics, Vol. II, 9th Edition World press.
6.	YaLun Chou	Statical analysis with business and economics application, Holl; Rinehart &Winster. New York.
7.	Hole & Jessen	Basic Statistics for business and economics: John Wiley and Sons, New York
9.	Karmel P.H.(1963)	Applied Statistics for Economics, 2nd ed.
10.	Prof H.D. Shah.	ગાણિતિક આંકડાશાસ્ત્ર, યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ – અમદાવાદ, ગુજરાત.
11.	M.C.Jayswal(1974)	અર્થ વિષયક આંકડાશાસ્ત્ર, યુનિવર્સિટી ગ્રંથ નિર્માણ બોર્ડ – અમદાવાદ, ગુજરાત.