KARNATAK UNIVERSITY, DHARWAD
ACADEMIC (S&T) SECTION
ಕರ್ನಾಟಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಧಾರವಾಡ
ವಿದ್ಯಾಮಂಡಳ (ಎಸ್&ಟಿ) ವಿಭಾಗ

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NAAC Accredited
'A' Grade 2014

website: kud.ac.in

No.KU/Aca(S&T)/RPH-394A/2021-22/**1155**   Date: **2 9 OCT 2021**

ಅಧಿಸೂಚನೆ .

ವಿಷಯ: 2021–22ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಿಂದ ಎಲ್ಲ ಸ್ನಾತಕ ಕೋರ್ಸಗಳಿಗೆ 1 ಮತ್ತು 2ನೇ ಸೆಮೆಸ್ಟರ್
        NEP-2020 ಮಾದರಿಯ ಪಠ್ಯಕ್ರಮವನ್ನು ಅಳವಡಿಸಿರುವ ಕುರಿತು.

ಉಲ್ಲೇಖ: 1. ಸರ್ಕಾರದ ಅಧೀನ ಕಾರ್ಯದರ್ಶಿಗಳು(ವಿಶ್ವವಿದ್ಯಾಲಯ 1) ಉನ್ನತ ಶಿಕ್ಷಣ ಇಲಾಖೆ ಇವರ ಆದೇಶ
        ಸಂಖ್ಯೆ: ಇಡಿ 260 ಯುಎನ್ಇ 2019(ಭಾಗ–1), ದಿ:7.8.2021.
     2. ವಿಶೇಷ ವಿದ್ಯಾವಿಷಯಕ ಪರಿಷತ್ ಸಭೆಯ ನಿರ್ಣಯ ದಿನಾಂಕ: 19.08.2021
     3. ಈ ಕಚೇರಿ ಸುತ್ತೋಲೆ ಸಂ.No. KU/Aca(S&T)/RPH-394A/2021-22/18 ದಿ:21.08.2021.
     4. ಸರ್ಕಾರಿ ಆದೇಶ ಸಂ ಇಡಿ 260 ಯುಎನ್ಇ 2019(ಭಾಗ–1),ಬೆಂಗಳೂರು ದಿ. 15.9.2021.
     5. ಎಲ್ಲ ಅಭ್ಯಾಸಸೂಚಿ ಮಂಡಳ ಸಭೆಗಳ ನಡವಳಿಗಳು
     6. ಎಲ್ಲ ನಿಖಾಯಗಳ ಸಭೆಗಳು ಜರುಗಿದ ದಿನಾಂಕ: 24,25–09–2021.
     7. ವಿಶೇಷ ವಿದ್ಯಾವಿಷಯಕ ಪರಿಷತ್ ಸಭೆಯ ನಿರ್ಣಯ ಸಂಖ್ಯೆ: 01 ದಿನಾಂಕ: 28.9.2021.
     8. ಈ ಕಚೇರಿ ಸುತ್ತೋಲೆ ಸಂ.No. KU/Aca(S&T)/RPH-394A/2021-22/954 ದಿ:30.09.2021.
     9. ಎಲ್ಲ ನಿಖಾಯದ ಡೀನರು / ಸಂಪನ್ಮೂಲ ತಜ್ಞರ ಸಭೆ ದಿನಾಂಕ 21.10.2021.
     10. ಎಲ್ಲ ಸ್ನಾತಕ ಅಭ್ಯಾಸಸೂಚಿ ಮಂಡಳ ಅಧ್ಯಕ್ಷರುಗಳ ಸಭೆ ದಿನಾಂಕ 22.10.2021.
     11. ವಿಶೇಷ ವಿದ್ಯಾವಿಷಯಕ ಪರಿಷತ್ ಸಭೆಯ ನಿರ್ಣಯ ಸಂಖ್ಯೆ: 01 ದಿನಾಂಕ: 27.10.2021.
     12. ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಆದೇಶ ದಿನಾಂಕ: 29-10-2021
                    ———

        ಮೇಲ್ಕಾಣಿಸಿದ ವಿಷಯ ಹಾಗೂ ಉಲ್ಲೇಖಿಗಳನ್ವಯ ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಆದೇಶದ ಮೇರೆಗೆ, 2021–22ನೇ
ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಿಂದ ಅನ್ವಯವಾಗುವಂತೆ, ಎಲ್ಲ B.A./ BPA (Music)/BVA/ BTTM/ BSW/ B.Sc./B.Sc. Pulp & Paper
Science/ B.Sc. (H.M)/ BCA/ B.A.S.L.P./ B.Com/ B.Com (CS)/ & BBA   ಸ್ನಾತಕ ಕೋರ್ಸಗಳ 1 ಮತ್ತು 2ನೇ
ಸೆಮೆಸ್ಟರ್ಗಳಿಗೆ NEP-2020 ರಂತೆ ವಿಶೇಷ ವಿದ್ಯಾವಿಷಯಕ ಪರಿಷತ್ ಸಭೆಯ ಅನುಮೊದಿತ ಪಠ್ಯಕ್ರಮಗಳನ್ನು ಈಗಾಗಲೇ
ಪ್ರಕಟಪಡಿಸಿದ್ದು, ಮುಂದೆ ದಿನಾಂಕ 04.10.2021 ವರೆಗೆ ಸರಕಾರವು ಕಾಲಕಾಲಕ್ಕೆ ನೀಡಿದ ನಿರ್ದೇಶನಗಳನ್ನು ಅಳವಡಿಸಿಕೊಂಡು
ದಿನಾಂಕ 27.10.2021 ರಂದು ಜರುಗಿದ ವಿದ್ಯಾವಿಷಯಕ ಪರಿಷತ್ ಸಭೆಯಲ್ಲಿ ಅನುಮೊದನೆ ಪಡೆದು ಕ.ವಿ.ವಿ. ಅಂತರ್ಜಾಲ
www.kud.ac.in ದಲ್ಲಿ ಭಿತ್ತರಿಸಲಾಗಿದೆ. ಸದರ ಪಠ್ಯಕ್ರಮಗಳನ್ನು ಕ.ವಿ.ವಿ. ಅಂತರ್ಜಾಲದಿಂದ ಡೌನಲೋಡ ಮಾಡಿಕೊಳ್ಳಲು
ಸೂಚಿಸುತ್ತ ವಿದ್ಯಾರ್ಥಿಗಳ ಹಾಗೂ ಸಂಬಂಧಿಸಿದ ಎಲ್ಲ ಬೋಧಕರ ಗಮನಕ್ಕೆ ತಂದು ಅದರಂತೆ ಕಾರ್ಯಪ್ರವೃತ್ತರಾಗಲು ಕವಿವಿ
ಅಧೀನದ/ಸಂಲಗ್ನ ಮಹಾವಿದ್ಯಾಲಯಗಳ ಪ್ರಾಚಾರ್ಯರುಗಳಿಗೆ ಸೂಚಿಸಲಾಗಿದೆ.

                                                        ಕುಲಸಚಿವರು.

ಅಡಕ: ಮೇಲಿನಂತೆ
ಗೆ,
ಕರ್ನಾಟಕ ವಿಶ್ವವಿದ್ಯಾಲಯದ ವ್ಯಾಪ್ತಿಯಲ್ಲಿ ಬರುವ ಎಲ್ಲ ಅಧೀನ ಹಾಗೂ ಸಂಲಗ್ನ ಮಹಾವಿದ್ಯಾಲಯಗಳ
ಪ್ರಾಚಾರ್ಯರುಗಳಿಗೆ. (ಕ.ವಿ.ವಿ. ಅಂತರ್ಜಾಲ ಹಾಗೂ ಮಿಂಚಂಚೆ ಮೂಲಕ ಬಿತ್ತರಿಸಲಾಗುವುದು)

ಪ್ರತಿ:
1. ಕುಲಪತಿಗಳ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
2. ಕುಲಸಚಿವರ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
3. ಕುಲಸಚಿವರು (ಮೌಲ್ಯಮಾಪನ) ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿಗಳು, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
4. ಅಧೀಕ್ಷಕರು, ಪ್ರಶ್ನೆ ಪತ್ರಿಕೆ / ಗೌಪ್ಯ / ಜೆ.ಎ.ಡಿ. / ವಿದ್ಯಾಮಂಡಳ (ಪಿ.ಜಿ.ಪಿಎಚ್.ಡಿ) ವಿಭಾಗ, ಸಂಬಂಧಿಸಿದ
   ಕೋರ್ಸಗಳ ವಿಭಾಗಗಳು ಪರೀಕ್ಷಾ ವಿಭಾಗ, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.
5. ನಿರ್ದೇಶಕರು, ಕಾಲೇಜು ಅಭಿವೃದ್ಧಿ / ವಿದ್ಯಾರ್ಥಿ ಕಲ್ಯಾಣ ವಿಭಾಗ, ಕ.ವಿ.ವಿ. ಧಾರವಾಡ.

KARNATAK UNIVERSITY, DHARWAD

04 - Year B.A. (Hons.) Program

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SYLLABUS

Subject: APPLIED STATISTICS

[Effective from 2021-22]

DISCIPLINE SPECIFIC CORE COURSE (DSCC) FOR SEM I & II,

OPEN ELECTIVE COURSE (OEC) FOR SEM I & II and

SKILL ENHANCEMENT COURSE (SEC) FOR SEM I

AS PER N E P - 2020

Karnatak University, Dharwad
Four Years Under Graduate Program in APPLIED **STATISTICS** for B.A. (Hons.)
Effective from 2021-22

Sem	Type of Course	Theory/ Practical	Instruction hour per week	Total hours of Syllabus / Sem	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks	Credits
I	DSCC 1 -P-I	Theory	03 hrs	42	02 hrs	40	60	100	03
	DSCC1 -P-II	Theory	03 hrs	42	02 hrs	40	60	100	03
	OEC-1	Theory	03 hrs	42	02 hrs	40	60	100	03
	*SEC-1	Practical	03 hrs	30	01 hr	20	30	50	02
II	DSCC2-P-I	Theory	03 hrs	42	02 hrs	40	60	100	03
	DSCC2-P-II	Theory	03 hrs	42	02 hrs	40	60	100	03
	OEC-2	Theory	03 hrs	42	02 hrs	40	60	100	03
	Details of the other Semesters will be given later								

* Student can opt digital fluency as SEC or the SEC of his/ her any one DSCC selected

Name of Course (Subject): **Applied** STATISTICS

Programme Specific Outcome(PSO):

On completion of the 03/ 04 years Degree in STATISTICS students will be able to:

PSO 1 : Acquire fundamental/systematic or coherent understanding of the academic field of Statistics and develop and demonstrate an ability to understand major concepts in various disciplines of Statistics and its applications

PSO 2 : Demonstrate the ability to use skills in Statistics and different practicing areas for formulating and tackling Statistics related problems and identifying and applying appropriate principles and methodologies to solve a wide range of problems associated with Statistics of various studies

PSO 3 : Understand procedural knowledge that creates different types of professionals related to subject area of Statistics, including professionals engaged in government/public service and private sectors

PSO 4 : Plan and execute Statistical experiments or investigations, analyze and interpret data/information collected using appropriate methods, including the use of appropriate statistical software including programming languages, and report accurately the findings of the experiment/investigations

PSO 5 **:** Have a knowledge regarding use of data analytics tools like SPSS

PSO 6 **:** Develop an ability to critically assess a standard report having graphics, probability statements and analyze, interpret the data and hence help policy makers to take a proper decision

PSO 7 : Recognize the importance of statistical modelling and computing, and the role of approximation and statistical approaches to analyze the real problems of different disciplines using various statistical tools

PSO 8 **:** Demonstrate relevant generic skills and global competence such as

    a. Problem-solving skills that are required to solve different types of Statistics related problems with well-defined solutions, and tackle open-ended problems, that belong to the disciplinary-area boundaries;

    b. Investigative skills, including skills of independent thinking of Statistics-related issues and problems;

    c. Communication skills involving the ability to listen carefully, to read texts and reference material analytically and to present information in a concise manner to different groups/audiences of technical or popular nature;

    d. Analytical skills involving paying attention to details and ability to construct logical arguments using correct technical language related to Statistics and ability to translate them with popular language when needed;

    e. ICT skills;

    f. Personal skills such as the ability to work both independently and in a group.

PSO 9 **:** Undertake research projects by using research skills- preparation of questionnaire, conducting national sample survey, research projects using sample survey, sampling techniques

PSO 10 : Understand and apply principles of least squares to fit a model to the given data, study the association between the variables, applications of Probability Theory and Probability Distributions

B.A. Semester – I

Subject: APPLIED STATISTICS
Discipline Specific Course (DSC)

The course STATISTICS in I semester has two papers (Paper I & II) for 06 credits: Each paper has 03 credits. Both the papers are compulsory. Details of the courses are as under.

Course No.-1 (Paper No. I)

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
Course-01	DSCC	Theory	03	03	42 hrs	2hrs	40	60	100

Course No.1 (Paper-I): Title of the Course (Paper-I): **DESCRIPTIVE STATISTICS I**

Course Outcome (CO):

After completion of course (No.1), students will be able to:

CO 1 : Organize, manage and present data

CO 2 : Analyze statistical data graphically using frequency distributions and cumulative frequency distributions

CO 3 : Analyze statistical data using measures of central tendency, dispersion

CO 4 : Understand Skewness and Kurtosis and their use in studying various characteristics of data

Syllabus- Course 1: Title- DESCRIPTIVE STATISTICS I	Total Hrs: 42
Unit-I Introduction to Statistics and Basic Concepts	**12 hrs**
Meaning, origin, definition, functions, limitations and applications of Statistics. Primary and secondary data, different methods of collection of primary data with merits and demerits. Sources of secondary data. **Classification:** meaning, objectives, types of classifications- Chronological, Geographical, Qualitative and Quantitative classifications with illustrations. Definition of some important terms - class, class limits, class intervals, width of class interval, open-end classes, inclusive and exclusive classes. Formation of discrete and continuous frequency distributions. **Tabulation:** meaning, objectives and rules of tabulation, format of a statistical table and its parts. Types of table, examples of preparation of a blank table and tables with numerical information.	

Unit-II Diagrammatic and Graphical representation of Data	10 hrs
Diagrams: Meaning, importance of diagrams and general rules of construction of diagrams. Types of Diagrams – simple, multiple, component, percentage bar diagrams and pie diagrams with simple illustrations. **Graphs:** Types of Graphs – Histogram, frequency Polygon, frequency curve and Ogives, simple problems, location of mode, median and partition values from the graphs. Difference between diagrams and graphs.	
Unit-III Measures of Central Tendency and Measures of Dispersion	**20 hrs**
Measures of central tendency and essentials of a good measure of central tendency. Types of measures of central tendency: Arithmetic mean, Median, Mode, Geometric mean and Harmonic mean - definition, merits and demerits. Properties of arithmetic mean. Empirical relation between mean median and mode. Problems on both grouped and ungrouped data for all the measures. **Partition values**: Definition and types of partition values: quartiles, deciles and percentiles. Problems on Quartiles for grouped ungrouped data only. **Measures of dispersion**: Essentials of a good measure of dispersion, absolute and relative measures of dispersion. Types of measures of dispersion- Range, Quartile deviation, Mean deviation and standard deviation with relative measures – definition, merits and demerits. Properties of Standard deviation, simple problems on ungrouped and grouped data. **Skewness:** Definition, objectives and types of skewness, explanation of positive and negative skewness with diagrams. Measures of skewness- Karl Pearson's coefficient of skewness and Bowley's coefficient of skewness. Simple problems. **Kurtosis**: Definition and types of kurtosis. Explanation of types of kurtosis with neat diagrams. Measure of skewness based on moments. Difference between skewness and kurtosis.	

Books recommended.

1. Gani S. G., (2001). Sankhyshastra and Ganakayantra. Udaya Ravi Publications, Bijapur.
2. Gupta S. C.(2018). Fundamentals of Statistics, Himalaya Publishing House, Bombay
3. Gupta S P. and V K Kapoor (2020). Fundamentals of Mathematical Statistics, Sultan Chand, New Delhi
4. Johnson, R.A. and Bhattacharyya, G.K. (2006), Statistics: Principles and methods. 5th Edition, John Wiley & Sons, New York.
5. Medhi, J. (2005), Statistical Methods, New Age International.
6. Mukhopadhaya, P (1999). Applied Statistics, New Central Book Agency (P) Ltd., Calcutta

B.A. Semester – I

Subject: APPLIED STATISTICS

Discipline Specific Course (DSC)

Course No.-2 (Paper No. II)

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
Course-02	DSCC	Theory	03	03	42 hrs	2hrs	40	60	100

Course No.2 (Paper-II): Title of the Course (Paper-II) **: DESCRIPTIVE STATISTICS II**

Course Outcome (CO):

After completion of course (No.2), students will be able to:

CO 1 : Know the concept of correlation, various methods of computing correlation coefficients- Karl Pearson's correlation coefficient, Spearman's rank correlation coefficient

CO 2 : Knowledge of types of data reflecting independence or association between two or more attributes.

CO 3 : Carryout spatial analysis.

CO 4 : Knowledge of correlation and regression analysis, regression diagnostics, partial and multiple correlations.

Syllabus- Course 2: Title- DESCRIPTIVE STATISTICS II	Total Hrs: 42
Unit-I Correlation and Regression	**14 hrs**
Definition of relationship, Types of correlation, Methods of measuring correlation, Scatter diagram, Correlation Coefficient for quantitative data: Prof. Karl Pearson's coefficient of linear correlation, its properties, Correlation Coefficient for qualitative data: Spearman's rank correlation coefficient, its properties. Simple regression analysis-regression equations by method of least squares, linear regression coefficients and its properties. Angle between the regression lines.	
Unit-II Association of Attributes and Spatial Statistics	**14 hrs**
Meaning of association of attributes, definition of class of the first order and second order. Methods of studying association. Yule's coefficient of association and its interpretation. Determination of Yule's coefficient of association in case of two attributes. History and introduction, spatial characterization, spatial dependence, spatial auto correlation, spatial association, spatial scaling, spatial sampling, errors in spatial analysis.	

Unit-III Multivariate data Analysis	14 hrs
Introduction: Yule's notations, distribution of two variables, distribution of three or more variables, primary and secondary subscripts, Plane of regression and its derivation, estimation of regression coefficients a and b in case of three variables, partial regression coefficient in terms of delta, Residual, properties of residuals, Standard deviation of residuals, Multiple and partial correlation, definition, derivation and their standard properties.	

Books recommended.

1. Agresti, A. (2010): Analysis of Ordinal Categorical Data, 2nd Edition, Wiley.

2. Anderson T.W. and Jeremy D. Finn (1996). The New Statistical Analysis of Data, Springer

3. Freedman, D., Pisani, R. and Purves, R. (2014), Statistics, 4th Edition, W. W. Norton & Company.

4. Gani S. G. (2001), Sankhyshastra and Ganakayantra. Udaya Ravi Publications, Bijapur.

5. Gupta S. C. (2018). Fundamentals of Statistics, Himalaya Publishing House, Bombay

6. Gupta S P. and V K Kapoor, (2020). Fundamentals of Mathematical Statistics, Sultan Chand, New Delhi

7. Johnson, R.A. and Bhattacharyya, G.K. (2006), Statistics: Principles and methods. 5th Edition, John Wiley & Sons, New York.

8. Medhi, J. (2005), Statistical Methods, New Age International.

9. Mukhopadhaya, P. (1999) Applied Statistics, New Central Book Agency (P) Ltd., Calcutta

B.A. Semester I

BA APPLIED STATISTICS

Title of the Course: OEC-1: Statistics in Competitive Examinations

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
OEC	OEC-1	Theory	03	03	42 hrs	2hrs	40	60	100

Course Outcomes (CO)
After the successful completion of the course, the students will be able to

1. Develop the data analysis skills required for Competitive Examinations.
2. Analyze statistical data graphically using frequency distributions and cumulative frequency distributions.
3. Analyze statistical data using measures of central tendency, dispersion.
4. Knowledge to conceptualize the probabilities of events including classical, frequentist and axiomatic approach. Simultaneously they will learn the notion of conditional probability including the concept of Bayes' Theorem.

OEC-1: Statistics in Competitive Examinations	42
Unit –1 Introduction to Statistics and Univariate Data Analysis	18
Definition and scope of Statistics. Presentation: tabular and graphic, including histogram and ogives. Concepts of population and sample. Sampling from finite population - Simple random sampling, Stratified and systematic random sampling procedures (definitions and methods only). Concepts of sampling and non-sampling errors. Partition values-definition and types of partition values: quartiles, deciles and percentiles. Measures of Central Tendency Types of measures of central tendency, Arithmetic mean, Median, Mode, Geometric mean and Harmonic mean - definition, merits and demerits. Properties of arithmetic mean. Empirical relation between mean median and mode. Problems on both grouped and ungrouped data for all the measures. Meaning and objectives of measures of dispersion. Essentials of a good measure of dispersion, absolute and relative measures of dispersion. Types of measures of dispersion- Range, Quartile deviation, Mean deviation and standard deviation with relative measures.	

Unit - 2 : Aptitude Ability and Reasoning	14
Area, Banker's Discount, Surds and Indices, Ratio and Proportion, Simple Interest, Problems on Trains, Profit and Loss, Compound Interest. Reasoning: Number series, Analogy, Classifications, Blood relations Coding-decoding, Puzzle test, Logical Venn diagram. Alphabet-test, Alpha-numerical sequence puzzle, Mathematical operations, Numbers, ranking & time sequence test, Logical sequence test, Arithmetical operations.	
Unit - 3 Probability	10
Probability: Random experiment, sample space, events, mutually exclusive, equally likely and exhaustive events. Classical, statistical and axiomatic definitions of probability, addition and multiplication theorems, Bayes theorem (only statements). Simple numerical problems.	

References

1. Aggarwal R.S., Quantitative Aptitude: by, Publication by S, Chand
2. Freedman, D., Pisani, R. and Purves, R. (2014), Statistics, 4th Edition, W. W. Norton & Company.
3. Gupta S. C. Fundamentals of Statistics, Himalaya Publishing House, Bombay.
4. Gani S. G., Sankhyshastra and Ganakayantra. Udaya Ravi Publications, Bijapur.

Subject: **APPLIED STATISTICS**
SKILL ENHANCEMENT COURSE (SEC)-I

Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Mode of Examination	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
SEC-I	Theory + Practical	02	03hrs	30	Theory (Written)	1hr	20	30	50

SEC-1: Title of the Course: **DATA ANALYSIS WITH EXCEL**

Course Outcome (CO):

After completion of course, students will be able to:

CO 1 : Enter the data, tabulation of data, drawing different diagrams and graphs.

CO 2 : Computing measures of central tendency and dispersion.

CO 3 : Computing and interpreting Skewness and Kurtosis.

CO 4 : Computation and interpretation of correlation and regression**.**

Syllabus- SEC: Title- DATA ANALYSIS WITH EXCEL	Total Hrs: 42
Unit-I Introduction	2+4 **hrs**
Introduction to Excel, understanding of spread sheet, concepts of spread sheet, entering and processing of data, manipulation of data. Explore *Formulas* tab of Excel. **List of Practicals** Demonstration of Excel : Overviews of Excel 1. Create and process spread sheets containing data set with at least 20 variables (*numeric* and *string*) and hence explore data manipulation using *formulas* tab.	
Unit-II Presentation and Summarization of Data in Excel	4+8 **hrs**
Overview of various diagrams and graphs in Excel. Measures of central tendency and dispersion using inbuilt functions of Excel. **List of Practicals** 2. Drawing different types of bar charts, Pie diagram, line graphs and histograms. 3. Computing arithmetic mean, geometric mean, harmonic mean, median, mode, range, quartile deviation, mean deviation and standard deviation.	
Unit-III Analysis of Univariate and Bivariate Data	4+8 **hrs**
Skewness and Kurtosis using Excel, Karl-Pearson's correlation, Regression, Multiple linear regressions. **List of Practicals** 4. Explore nature of data using measures of Skewness and Kurtosis. 5. Explore simple linear correlation and regression (use scatter plot and trend lines) and explore multiple linear regression.	

Books recommended.

1. Gupta S P. and V K Kapoor (2020). Fundamentals of Mathematical Statistics, Sultan Chand, New Delhi
2. Mukhopadhaya, P (1999). Applied Statistics, New Central Book Agency (P) Ltd., Calcutta
3. Robert V. Hogg, Joseph W. McKean and Allen T. Craig (2007). Introduction to Mathematical Statistics, Pearson Education, Asia.
4. Irwin Miller and Marylees Miller, John E. Freunds (2006). Mathematical Statistics with Applications, 7th Ed., Pearson Education, Asia. .
5. Sheldon Ross (2007). Introduction to Probability Models, 9th Ed., Academic Press, Indian Reprint.
6. Manisha Nigam (2019). Data analysis with Excel, 1st edition BPB online, Noida, India.
7. Wayne Winston (2019). Microsoft Excel 2019: Data analysis and Business Modeling, PHI Learning Pvt. Ltd.

Details of Formative assessment (IA) for DSCC/OEC/SEC: 40% weightage for total marks

Type of Assessment	Weightage	Duration	Commencement
Written test-1	10%	1 hr	8th Week
Written test-2	10%	1 hr	12th Week
Seminar	10%	10 minutes	--
Case study / Assignment / Field work / Project work/ Activity	10%	------	--
Total	40% of the maximum marks allotted for the paper		

Faculty of Social Science
04 - Year UG Honors programme:2021-22

GENERAL PATTERN OF THEORY QUESTION PAPER FOR DSCC/ OEC
(60 marks for semester end Examination with 2 hrs duration)

Part-A
1. Question number 1-06 carries 2 marks each. Answer any 05 questions   : 10marks

Part-B
2. Question number 07- 11 carries 05Marks each. Answer any 04 questions   : 20 marks
Part-C

3. Question number 12-15 carries 10 Marks each. Answer any 03 questions   : 30 marks
   (Minimum 1 question from each unit and 10 marks question may have sub
   questions for 7+3 or 6+4 or 5+5 if necessary)

Total: 60 Marks

Note: Proportionate weight age shall be given to each unit based on number of hours prescribed.

B.A. Semester – II

Subject: APPLIED STATISTICS

Discipline Specific Course (DSC)

The course STATISTICS in II semester has two papers (Paper I & II) for 06 credits: Each paper has 03 credits. Both the papers are compulsory. Details of the courses are as under.

Course No.-3 (Paper No. I)

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
Course-03	DSCC	Theory	03	03	42 hrs	2hrs	40	60	100

Course No.3 (Paper-I): Title of the Course (Paper-I): **Title of Paper: STATISTICS FOR ECONOMICS** **Course Outcome (CO):**

After completion of Skill Enhancement course, students will be able to:

CO 1 : Solve problems of economics concerns using demand analysis, supply functions, Gini's coefficient and Lorenz Curve.

CO 2 : Understand the Price and Quantity Index numbers and their different measures, understand the applicability of cost of living Index number.

CO 3 : Know the components and Need for Time series, understand the different methods of studying trend and Seasonal Index.

CO 4 : Carry out time series analysis and predict the future values of given trend.

Syllabus- SEC-1: Title- STATISTICS FOR ECONOMICS	Total Hrs: 42
Unit-I Supply and Demand, Measuring income inequality: Lorenz curve & Gini Coefficient	**14 hrs**
How Markets Work, Markets and Welfare Markets and competition; determinants of individual demand/supply; demand/supply schedule and demand/supply curve; market versus individual demand/supply; shifts in the demand/supply curve, demand and supply together; how prices allocate resources; elasticity and its application; controls on prices; taxes and the costs of taxation; consumer surplus; producer surplus and the efficiency of the markets. Measuring income inequality: Pareto law of Distribution, Lorenz curve and Gini's Coefficient, Limitations and interpretations of GC.	

Unit-II Index numbers	16 hrs
Definition, Problems involved in the construction of index numbers, methods of constructing index numbers of prices and quantities, simple aggregate and price relatives method, weighted aggregate and weighted average of relatives method, important types of weighted index numbers: Laspeyre's, Paasche's, Dorbish-Bowley's, Marshall-Edgeworth, Fisher's, method of obtaining price and quantity index numbers, tests of consistency of index numbers, time reversal test, factor reversal test, and Circular test for index numbers, Uses and limitations of index numbers. Consumer price index number: Problems involved in the construction of cost of living index number, advantages and disadvantages, Aggregative expenditure method and Family budget method for the construction of consumer price index numbers. Applications of Cost of Living Index numbers. Definition and measurement of Inflation rate – CPI and GNP Deflator.	
Unit-III Time Series Analysis	12 hrs
Introduction, definition and components of Time series, illustrations, Additive, Multiplicative and mixed models, analysis of time series, methods of studying time series: Secular trend, method of moving averages, least squares method – linear, quadratic, exponential trend fittings to the data. Seasonal variation - definition, illustrations, measurements, simple average method, ratio to moving average method, ratio to trend method, link relatives method, Cyclical variation- definition, distinction from seasonal variation, Irregular variation- definition, illustrations.	

Books recommended.

1. Gani S. G. (2001). Sankhyshastra and Ganakayantra. Udaya Ravi Publications, Bijapur.

2. Gupta S. C. (2018). Fundamentals of Statistics, Himalaya Publishing House, Bombay

3. Gupta S. C. and V K Kapoor, (2020). Fundamentals of Mathematical Statistics, Sultan Chand, New Delhi

4. Johnson, R.A. and Bhattacharyya, G.K. (2006), Statistics: Principles and methods. 5th Edition, John Wiley & Sons, New York.

5. Levin, Richard, David S. Rubin, Sanjay Rastogi, and H M Siddiqui. (2012). Statistics for Management. 7th ed., Pearson Education

6. Medhi, J. (2005), Statistical Methods, New Age International.

7. Mukhopadhaya, P. (1999). Applied Statistics, New Central Book Agency (P) Ltd., Calcutta

8. Vohra N. D. (2017). Business Statistics, McGraw Hill Education

B.A. Semester – II

Subject: APPLIED STATISTICS
Discipline Specific Course (DSC)

Course No.-4 (Paper No. II)

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
Course-04	DSCC	Theory	03	03	42 hrs	2hrs	40	60	100

Course No.4 (Paper-II): Title of the Course (Paper-II **PROBABILITY AND DISTRIBUTIONS**

Course Outcome (CO):

After completion of course (No.3), students will be able to:

CO 1 : Ability to distinguish between random and non-random experiments.

CO 2 : Knowledge to conceptualize the probabilities of events including classical, frequentist and axiomatic approach. Simultaneously they will learn the notion of conditional probability including the concept of Bayes' Theorem.

CO 3 : Knowledge related to concept of discrete and continuous random variables and their probability distributions including expectation and moments.

CO 4 : Knowledge of important discrete and continuous distributions such as Binomial, Poisson, normal, distributions.

Syllabus- Course 3: Title- PROBABILITY AND DISTRIBUTIONS	Total Hrs: 42
Unit-I: Probability	**14 hrs**
Introduction to probability, Basic concepts: Random experiment, Sample space, Mutually exclusive, exhaustive, equally likely events, complimentary events, classical, statistical and axiomatic definition of probability, properties, Addition theorem of Probability and Definition of independent, dependent events, Conditional probability, Multiplication theorem of Probability without proof. Simple numerical problems. Total probability rule, Bayes theorem (only statement) - applications.	
Unit-II : Random Variable and Mathematical Expectation	**12 hrs**
Definition of a random variable, discrete & continuous random variable, probability mass function, probability density function, distribution function. Definition of mathematical expectation, expected mean and variance of discrete random variable. Properties of Mathematical expectation. Statement of addition and multiplication theorem of expectation. Numerical problems on mathematical expectation.	

Unit-III: Standard Distributions	16 hrs
Bernoulli, Binomial, Poisson distributions – mean, variance. The recursive relations for probabilities of Binomial and Poisson distributions. Fitting of Binomial and Poisson distributions and obtaining expected probabilities. Simple problems. Use of Binomial and Poisson distributions. Definition of normal variate. Application of Normal distribution. Definition of standard normal variate, standard normal distribution and properties of normal curve. Conditions under which binomial distribution tend to normal distribution (Statement only). Finding probabilities and expected numbers when mean and variance are given quartile deviation, mean deviation and standard deviation and problems.	

Books recommended.

1. Agresti, A. (2010): Analysis of Ordinal Categorical Data, 2nd Edition, Wiley.
2. Anderson T.W. and Jeremy D. Finn (1996). The New Statistical Analysis of Data, Springer
3. Freedman, D., Pisani, R. and Purves, R. (2014), Statistics, 4th Edition, W. W. Norton & Company.
4. Gani S. G. (2001). Sankhyshastra and Ganakayantra. Udaya Ravi Publications, Bijapur.
5. Gupta S. C. (2018). Fundamentals of Statistics, Himalaya Publishing House, Bombay
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8. Medhi, J. (2005), Statistical Methods, New Age International.
9. Mukhopadhaya (1999), P. Applied Statistics, New Central Book Agency (P) Ltd., Calcutta.

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Total	40% of the maximum marks allotted for the paper		

B.A. Semester II
Applied Statistics

Title of the Course: OEC-2: Quantitative Aptitude

Course No.	Type of Course	Theory / Practical	Credits	Instruction hour per week	Total No. of Lectures/Hours / Semester	Duration of Exam	Formative Assessment Marks	Summative Assessment Marks	Total Marks
OEC	OEC-2	Theory	03	03	42 hrs	2hrs	40	60	100

Course Outcomes (CO)

After the successful completion of the course the students will be able to

1. Develop the general skills required to Competitive Examinations.
2. Develop general skills required to take decision logically.
3. Solve critical problems related to Analogy & Classification, Blood relations, Direction Sense, Liner

OEC-2: Quantitative Aptitude	42
Unit 1: Numerical Aptitude	18
Number Systems, Computation of Whole Numbers, Decimals and Fractions and relationship between Numbers, Fundamental arithmetical operations. Percentages, Ratios and Proportions, Average, interest, Profit and Loss, Discount use of Tables and Graphs Time and Distance, Ratio and Time, Time and Work.	
Unit – 2 Reasoning and Mental Ability I	12
Coding-Decoding, Symbol notations, Number Series, Analogy & Classification , Blood relations, Direction Sense, Liner arrangement.	
Unit – 3 Reasoning and Mental Ability I	12
Ranking and Comparison, Input & output, Assumptions, Conclusion & Inferences.	

References

1. Aggarwal R.S., Quantitative Aptitude for Competitive Examinations, S, Chand Publication
2. Dinesh Khattar, The Pearson Guide To Quantitative Aptitude For Competitive Examination, Pearson Publication
3. Ningappa A H , Mental Ability: Ashok Publication

Faculty of Social Science
04 - Year UG Honors programme:2021-22

GENERAL PATTERN OF THEORY QUESTION PAPER FOR DSCC/ OEC
(60 marks for semester end Examination with 2 hrs duration)

Part-A

4. Question number 1-06 carries 2 marks each. Answer any 05 questions   : 10marks

Part-B

5. Question number 07- 11 carries 05Marks each. Answer any 04 questions   : 20 marks

Part-C

6. Question number 12-15 carries 10 Marks each. Answer any 03 questions   : 30 marks

   (Minimum 1 question from each unit and 10 marks question may have sub
     questions for 7+3 or 6+4 or 5+5 if necessary)

Total: 60 Marks

Note: Proportionate weightage shall be given to each unit based on number of hours prescribed.