# BAGALKOT UNIVERSITY

Mudhol Road, Jamkhandi – 587301 Dist: Bagalkote

**PROGRAM /COURSE STRUCTURE AND SYLLABUS**

**as per the Choice Based Credit System (CBCS) designed in accordance with**

**Learning Outcomes-Based Curriculum Framework (LOCF) of National Education Policy (NEP) 2020**

**for**

# B.A. Statistics

## For the Academic Year 2024-25

As Per NEP – 2020 and Adapted from RCU Belagavi
Applicable from the Academic Year 2024-25

# B.A. SEMESTER-IV

| Category | Course code | Title of the Paper | Marks | | | Teaching hours/week | | | Credit | Duration of exams (Hrs) |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | IA | SEE | Total | L | T | P | | |
| L7 | | Kannada | 40 | 60 | 100 | 4 | - | - | 3 | 2 |
| | | Functional Kannada | | | | | | | | |
| L8 | | English | 40 | 60 | 100 | 4 | - | - | 3 | 2 |
| | | Hindi | | | | | | | | |
| | | Sanskrit | | | | | | | | |
| | | Arabic | | | | | | | | |
| | | Urdu | | | | | | | | |
| DSC4 | 126BAB04STADSC07T | ANOVA and Design of Experiments | 40 | 60 | 100 | 3 | - | - | 3 | 2 |
| | 126BAB04STADSC08T | Regression Analysis and Econometrics | 40 | 60 | 100 | 3 | - | - | 3 | 2 |
| DSC4 | Another Department Code | Another Department Course Title | 40 | 60 | 100 | 4 | - | - | 4 | 2 |
| | | | 40 | 60 | 100 | - | - | 4 | 2 | 2 |
| AECC | 126COM03XXXAEC03T | Constitution of India | 20 | 30 | 50 | 1 | - | 2 | 2 | 2 |
| VBC7 | 126COM04XXXVBC10B | Physical Education-Sports | 25 | - | 25 | - | - | 2 | 1 | - |
| VBC8 | 126COM04XXXVBC09B | NCC/NSS/R&RS&G) / Cultural | 25 | - | 25 | - | - | 2 | 1 | - |
| | | | | **Total Marks** | **700** | **Semester Credits** | | | **22** | |

# Semester-IV

**Course: BA STATISTICS**
**Discipline Specific Course (DSC)**

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

Course No.7 (Paper-I): Title of the Course (Paper-I): **126BAB04STADSC07T**

**Title of Paper: ANALYSIS OF VARIANCE AND DESIGN OF EXPERIMENTS**

| | | | | |
|---|---|---|---|---|
| **Year** | II | **Course Code: 126BAB04STADSC07T** | **Credits** | 03 |
| **Sem.** | IV | **Course Title: Title of Paper: ANALYSIS OF VARIANCE AND DESIGN OF EXPERIMENTS** | **Hours** | 42 |
| Course Pre-requisites, if any | | NA | | |
| Formative Assessment Marks: 40 | | Summative Assessment Marks: 60 | Duration of ESA :.03 hrs. | |

**Course Outcome (CO):**

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

**CO 1 :** Develop strategic plans for experimentation in scientific research projects.

**CO 2 :** Apply the principles of Design of Experiment to generate experimental designs.

**CO 3 :** Develop problem solving skills for the application of Design of experiments to Agriculture and controlled laboratory experiments.

| **Syllabus-Course 7: 21BA4STSDSCT1: Title of Paper: ANALYSIS OF VARIANCE AND DESIGN OF EXPERIMENTS** | **Total Hrs: 42** |
|---|---|
| **Unit-I Analysis of Variance: One-Way and Two-way Classification** | **18 hrs** |
| Definition of analysis of variance and its basic assumptions. Meaning of assignable and chance variations. ANOVA for one-way classified data-definition, linear mathematical model, assumptions, statement of hypothesis, splitting up of total sum of squares into various component sum of squares, degrees of freedom and ANOVA table. Simple numerical problems one-way classified data.<br>Analysis of variance for two-way classification – definition, linear mathematical model, assumptions, statement of hypothesis, splitting up of total sum of squares into various component sum of squares. Degrees of freedom and ANOVA table. Simple numerical problems on two way classified data. | |
| **Unit-II Design of Experiments: Completely Randomized Design** | **12 hrs** |
| Definition of terms - Experiment, treatment, experimental unit, experimental material, yield, block, precision, experimental error, uniformity trials, and efficiency. Basic principles of design of experiments – Replication, Randomization and Local control. Completely Randomized Design (CRD) - definition, layout, linear mathematical model, assumptions, hypothesis, splitting up of | |

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|---|---|
| sum of squares into various component sum of squares, degrees of freedom and ANOVA table. Merits, demerits and applications of CRD. Simple numerical problems. | |
| **Unit-III Randomized Block Design** | **12 hrs** |
| Introduction and definition of Randomized Block Design (RBD), layout, linear mathematical model, assumptions, statistical hypothesis, splitting up of total sum of squares into various component sum of squares, degree of freedom, and ANOVA table. Merits and demerits of RBD. Applications of RBD. Comparison between CRD and RBD. Simple problems. | |

**Books recommended.**


1. Das, M.N. and Giri, N.C. (1986). Design and Analysis of Experiments, II Edition Wiley Eastern Ltd., New Delhi

2. Goon, A.M., Gupta, M.K. and Dasgupta, B. (1998). Fundamentals of Statistics, Vol. II, The world Press Pvt. Ltd. Kolkatta.

3. Gupta S. P. (2021). Statistical Methods, Sultan Chand and Sons, New Delhi, 46th edition.

4. Gupta S. C. and V. K. Kapoor (2018). Fundamentals of Applied Statistics, Sultan Chand, New Delhi.

5. Mukhopadhaya, P. (2011). Applied Statistics, Books and Allied Ltd.

6. Gani S. G.(2003). Sankhyshastra and Ganakayantra. Udaya Ravi Publications, Bijapur.

# Semester – IV

**Course : BA STATISTICS**
**Discipline Specific Course (DSC)**

**Course No.-8 (Paper No. II): Title of the Course: REGRESSION ANALYSIS AND ECONOMETRICS**

| | | | | |
|---|---|---|---|---|
| **Year** | II | **Course Code: 126BAB04STADSC08T** | **Credits** | 03 |
| **Sem.** | IV | **Course Title: Title of Paper: REGRESSION ANALYSIS AND ECONOMETRICS** | **Hours** | 42 |
| Course Pre-requisites, if any | | NA | | |
| Formative Assessment Marks: 40 | | Summative Assessment Marks: 60 | Duration of ESA:.03 hrs. | |

**Course Outcome (CO):**

After completion of the course, students will be able to:

**CO 1 :** Provide a wider and deeper exposure to the econometric techniques and their application to the discipline of Economics.

**CO 2 :** Gain an understanding of how to solve problems using econometrics that are common to economic modeling.

**CO 3 :** Develop ability to accurately translate complex economic problems into models and so as to solve them by applying econometric techniques.

| **Syllabus-Course 8: 21BA4STSDSCT2: Title- REGRESSION ANALYSIS AND ECONOMETRICS** | **Total Hrs: 42** |
|---|---|
| **Unit-I: Introduction to Econometrics and Simple Regression Analysis** | **18 hrs** |
| Econometrics – definitions – scope – methodology – types. Quantification of hypothetical linear relationship using appropriate data. Two variable regression model, assumptions, method of least squares properties. maximum likelihood method, testing of hypotheses using point and interval estimates, forecasting solving problems using SPSS. | |
| **Unit-II : Multiple Regression Analysis** | **12 hrs** |
| Nonlinear relationships – transformation of variables – functional forms – three variable regression model – applications using SPSS.<br>General linear model (matrix approach) – specification – OLS estimators –The properties of the estimated regression coefficients, hypothesis testing and the construction of confidence intervals of the regression model, problems. | |
| **Unit-III: Problems in regression analysis** | **12 hrs** |

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|---|---|
| Violation of classical assumptions – multicollinearity – autocorrelation — problems – causes – consequences – remedial measures – model specification and diagnostic testing. | |

Books recommended.


1. Damodar N. Gujarathi (2009). Basic Econometrics, New Delhi: Tata McGraw Hill

2. Companies Johnston, J. (1972). Econometric Methods, 2nd Edition, McGraw Hill International.

3. Koutsoyiannis, A. (2004). Theory of Econometrics, 2nd Edition, , Palgrave Macmillan Limited

4. Maddala, G.S. and Lahiri, K. (2009). Introduction to Econometrics, 4th Edition, John Wiley & Sons

5. G.M.K. Madanani (1980). Introduction to Econometrics, second edition, Oxford & IBH Publishing company, New Delhi.

6. Gupta, S.C. and Kapoor, V. K. (2020). Fundamentals of Applied Statistics, Sultan Chand & Sons, New Delhi.