SRI KRISHNADEVARAY UNIVERSITY:: ANANTAPURAMU

UG CBCS SYLLABUS
VI Semester
(2017-2018)

# STATISTICS

## VI SEMESTER- SYLLABUS

## (Mathematics Combinations)

(AS PER CBCS AND SEMESTER SYSTEM)

III YEARS

w.e.f. 2017-2018

AP STATE COUNCIL OF HIGHER EDUCATION
CBCS - PATTERN FOR STATISTICS

# SRI KRISHNADEVARAYA UNIVERSITY: ANANTAPURAM
## STATISTICS SYLLABUS (SEMESTER WISE) CBCS
## WITH EFFECT FROM
## THE ACADEMIC YEAR 2017-18 (WITH Maths combination)

| Semester | Paper | Subject | Hrs. | Credits | IA | ES | Total |
|---|---|---|---|---|---|---|---|
| FIRST YEAR | | | | | | | |
| Semester I | Paper-I | Descriptive Statistics and Probability | 6 | 4 | 25 | 75 | 100 |
| Semester II | Paper-II | Mathematical Expectation and Probability Distributions | 6 | 4 | 25 | 75 | 100 |
| SECOND YEAR | | | | | | | |
| Semester III | Paper-III | Statistical Methods | 6 | 4 | 25 | 75 | 100 |
| Semester IV | Paper-IV | Statistical Inference | 6 | 4 | 25 | 75 | 100 |
| THIRD YEAR | | | | | | | |
| Semester V | Paper-V | Sampling Techniques and Design of Experiments | 5 | 4 | 25 | 75 | 100 |
| | Paper-VI | Quality, Reliability | 5 | 4 | 25 | 75 | 100 |
| Semester VI | Elective Papers | | | | | | |
| | Elective-I-Paper VII(A) | Applied Statistics | 5 | 4 | 25 | 75 | 100 |
| | (or) | | | | | | |
| | Elective-II-Paper VII(B) | Demography & vital Statistics | 5 | 4 | 25 | 75 | 100 |
| | Cluster Papers | | | | | | |
| | Cluster-1-P-VIII-(A-1) | Operations Research | 5 | 4 | 25 | 75 | 100 |
| | Cluster-1-P-VIII-(A-2) | Numerical Analysis | 5 | 4 | 25 | 75 | 100 |
| | Cluster-1-P-VIII-(A-3) | Project | 5 | 4 | 25 | 75 | 100 |
| | (or) | | | | | | |
| | Cluster-2-P-VIII(B-1) | Advanced Experimental designs | 5 | 4 | 25 | 75 | 100 |
| | Cluster-2-P-VIII-(B-2) | Actuarial Statistics | 5 | 4 | 25 | 75 | 100 |
| | Cluster-2-P-VIII-(B-3) | Project | 5 | 4 | 25 | 75 | 100 |

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**ANDHRA PRADESH STATE COUNCIL OF HIGHER EDUCATION**
**B.A/B.Sc STATISTICS Syllabus under CBCS**
**(w.e.f 2017-2018) (With Mathematics)**
**Structure of Statistics Syllabus under CBCS(VI Semester)**

## ELECTIVE PAPERS

| YEAR | SEMESTER | PAPER | TITLE OF PAPER | MARKS | WEEKLY WORK LOAD |
|---|---|---|---|---|---|
| III YEAR | Select either Elective I (or) Elective II | VII(A) Elective | Applied Statistics | 75+25=100 | 3Hrs |
| | | VII(A) Practical | Applied Statistics (Practical) | 25+25=50 | 2Hrs |
| | | (or) | | | |
| | | VII(B) Elective | Demography & vital Statistics | 75+25=100 | 3Hrs |
| | | VII(B) Practical | Demography & vital Statistics (Practical) | 25+25=50 | 2Hrs |

## CLUSTER PAPERS

| Year | Semester | Paper | Title of Paper | Marks | Weekly work load |
|---|---|---|---|---|---|
| III YEAR | Select either Cluster –I (or) Cluster-II | Cluster-I | | | |
| | | VIII(A-1) | Operations Research(75+25) + Practical(25+25) | 75+25=100 25+25=50 | 3HrsTheory +2HrsPractical |
| | | VIII(A-2) | Numerical Analysis + Practical(25+25) | 75+25=100 25+25=50 | 3HrsTheory +2HrsPractical |
| | | VIII(A-3) | Project | 75+25=100 | 5Hrs |
| | | (or) | | | |
| | | Cluster-II | | | |
| | | VIII(B-1) | Advanced Experimental designs (75+25) +Practical(25+25) | 75+25=100 25+25=50 | 3HrsTheory +2HrsPractical |
| | | VIII(B-2) | Actuarial Statistics + Practical(25+25) | 75+25=100 25+25=50 | 3HrsTheory +2HrsPractical |
| | | VIII(B-3) | Project | 75+25=100 | 5Hrs |

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**Instruction to the Question Paper setter**

The question paper setter is required to follow the instructions mentioned below.

- From Section A 10 questions have to be given out of which 5 questions have to be answered by the student choosing atleast one question from each unit
- From Section B questions of the type A or B should be ask from each unit.
- Questions should be given according to the following manner.

**Max. Marks: 75**

| | SECTION-A | SECTION-B |
|---|---|---|
| **UNIT-I** | 1 Question | 1 Question |
| **UNIT- II** | 1 Question | 1 Question |
| **UNIT- III** | 1 Questions | 1 Question |
| **UNIT –IV** | 1 Question | 1 Question |
| **UNIT – V** | 1 Questions | 1 Question |
| **Total Questions to be given** | 10 Questions | 5 Questions |
| **Total Questions to be Answered** | 5 Questions | 5 Questions |
| **Marks** | 5X5m= 25M | 5X10m=50M |

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# SRI KRISHNA DEVAYARA UNIVERSITY: ANANTAPURAM

## CBCS SYLLABUS (Semester wise) 2017-18

## BA/BSC III YEAR: STATISTICS SYLLABUS

(With Mathematics Combination)

**Semester – VI** **Elective -I.**

## Paper – VII (A) Applied Statistics

### Unit – I

Components of times series with meaning and examples, trend by least squares (straight line and parabola) method and moving average methods. Seasonal indices by simple averages, ratio to moving average, ratio to trend and link relative methods.

### Unit – II

Index numbers – Meaning, problems involved in the construction of index numbers, simple and weighted index numbers, Criteria of good index numbers.Fixed base and chain base index numbers. Cost of living index numbers, wholesale price index numbers, Base shifting splicing and deflation of index numbers.

### Unit – III

Functions and organization of CSO and NSSO. Agricultural, area, yield statistics, national income and its computation.

### Unit – IV

Meaning, Definition, uses, sources of vital statistics, various Death rates and Birth rates.

### Unit – V

Measurement of population growth, crude rate of natural increase, Pearle's vital index, Gross Reproduction Rate [GRR], Net Reproduction Rates [NRR]. Life tables, construction uses of life tables and abridged life Tables.

*Reference Books:*


1. Fundamentals of applied statistics : VK Kapoor and SC Gupta
2. Indian Official statistics – MR Saluja
3. AnuvarthitaSankyakaSastram – Telugu Academy
4. BA/BSc III year paper – III Statistics – applied statistics – Telugu academy by prof.K.Srinivasa Rao, DrD.Giri, DrA.Anand, DrV.PapaiahSastry.


**Practicals**

1. Weighted Index Numbers. 2.Reversal tests. 3.Cost of living Index Numbers. 4.Mortality, Fertility, Re-production rates. 5.Life tables. 6.MS-Excel methods for the Serial Numbers 1,3,5

Time Series – Moving avg Method,
Least Square,
Ratio to ~~trend Method~~ Moving avg Method
Link relative Method.

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# SRI KRISHNA DEVAYARA UNIVERSITY: ANANTAPURAM

## CBCS SYLLABUS (Semester wise) 2017-18

## BA/BSC III YEAR: STATISTICS SYLLABUS

(With Mathematics Combination)

**Semester – VI** **Elective - II**

**Paper – VII (B)** **Demography & vital Statistics**

**UNIT I**

Population Theories: Coverage and content errors in demographic data, use of balancing equations and Chandrasekharan-Deming formula to check completeness of registration data. Adjustment of age data, use of Myer and UN indices, Population composition, dependency ratio.

**UNIT II**

Introduction and sources of collecting data on vital statistics, errors in census and registration data. Measurement of population, rate and ratio of vital events. Measurements of Mortality: Crude Death Rate (CDR), Specific Death Rate (SDR), Infant Mortality, Rate (IMR) and Standardized Death Rates.

**UNIT III**

Stationary and Stable population, Central Mortality Rates and Force of Mortality. Life (Mortality) Tables: Assumption, description, construction of Life Tables and Uses of Life Tables.

**UNIT IV**

Abridged Life Tables; Concept and construction of abridged life tables by Reed-Merrell method, Greville's method and King's Method. Measurements of Fertility: Crude Birth Rate (CBR), General Fertility Rate (GFR), Specific Fertility Rate (SFR) and Total Fertility Rate (TFR).

**UNIT-V**

Measurement of Population Growth: Crude rates of natural increase, Pearl's Vital Index, Gross Reproduction Rate (GRR) and Net Reproduction Rate (NRR).

**SUGGESTED READING:**


1. Mukhopadhyay P. (1999): Applied Statistics, Books and Allied (P) Ltd.
2. Gun, A.M., Gupta, M.K. and Dasgupta, B. (2008): Fundamentals of Statistics, Vol. II, 9th Edition, World Press.
3. Biswas, S. (1988): Stochastic Processes in Demography & Application, Wiley Eastern Ltd.
4. Croxton, Fredrick E., Cowden, Dudley J. and Klein, S. (1973): Applied General Statistics, 3rd Edition. Prentice Hall of India Pvt. Ltd.
5. Keyfitz N., Beckman John A.: Demogrphy through Problems S-Verlag New york.


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# SRI KRISHNA DEVAYARA UNIVERSITY : ANANTAPURAM
## CBCS SYLLABUS (Semester wise) 2017-18
## BA/BSC III YEAR : STATISTICS SYLLABUS
(With Mathematics Combination)

**Semester – VI** **CLUSTER-I**

**Paper – VIII(A-1)** **Operations Research**

**Unit – I**

Meaning and scope of O.R Definition of LPP (Linear Programming Problem). Applications of OR, Modelling in OR, Characteristics of OR, Scope of OR

**Unit – II**

Convex set – extreme point of a convex set, convex combination ,convex hull, convex polyhedron Formulation of Linear Programing Problem, algorithm of LPP

**Unit – III**

Graphical procedure, Graphical Solution of Linear Programming Problems – Standard form and Matrix form of LP Problems –Graphical Method: Formulation of Inequalities – Solution space – Finding optimum solution.

**Unit – IV**

General formulation of LPP, slack and surplus variables, solution of LPP, feasible solution, basic solution, basic feasible solution, unbounded solution, assumptions in LPP, procedure of simplex and simple problems on LPP (no theorems)

**Unit – V**

Artificial variables Techniques-Big –M procedure and problem, Two phase procedure and problem (no theorems)

*Reference Books:*


1. Operations research – Models and methods by ChandrasekarSalimath, BhupendarParashar.
2. Operation Reach – PK Gupta Kantiswaroop, Manmohan
3. Hadly : Linear programming
4. Fundamentals of applied statistics – VK Kapoor and SC Gupta
5. Statistics quality control – R.C Gupta.
6. O.R by Taha
7. BA/BSc III Year paper – IV Statistics – quality, reliability and operations Research – Telugu Academy by DrT.C.Ravichandra Kumar, DrR.V.S.Prasad, DrD.Giri, DrG.S.Devasena.


**Practicals – Semester –VI**

1. Formulation of LPP 2) Graphical Method 3) Simplex
4) Big. - M 5) Two phase Simplex Method

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## CBCS SYLLABUS (Semester wise) 2017-18
## BA/BSC III YEAR : STATISTICS SYLLABUS

(With Mathematics Combination)

**Semester – VI** **CLUSTER -I.**

**Paper-VIII (A-2)** **Numerical Analysis**

Unit-I

Finite differences : Introduction, definitions of $\Delta, \nabla, E$ operators , relation ship between them and properties, Fundamental theorem of Finite differences , missing values by Interpolation (one and two ) and related problems.

Unit-II

Interpolation for equal intervals: definition of Interpolation , assumption , Newton-Gregory forward formula, Newton-Gregory back ward formula, Central difference formulae -Newton-Gauss forward formula, Newton-Gauss forward formula, and related problems

Unit—III

Interpolation for Un equal intervals : Lagrange's formula, Inverse Interpolation - Lagrange's formula, Divided Differences formula- Newton –Divided difference formula , Newton –Divided difference formula is a particular case of Newton-Gregory forward formula.

Unit-IV

Numerical Differentiation-Definition, Derivation of first two derivatives for Newton-Gregory forward formula, Newton-Gregory back ward formula, Central difference formulae -Newton-Gauss forward formula, Newton-Gauss forward formula, and related problems

Unit-V

Numerical Integration : definition, Derivation of General Quadrature equation –Trapezoidal rule, Simpsons 1/3 rd rule, Simpsons 3/8 th rule and Waddles rule and related rule

Practicals-Semester –VI- Paper-VIII

1.Interpolation for equal intervals-Newton-Gregory Forward and Backward formulae
2. Interpolation for equal intervals-Newton-Gauss Forward and Backward formulae
3. Interpolation for un equal intervals-Lagrange's formula and New-Divided difference formula.
4. Numerical Differentiation - Newton-Gregory Forward and Backward formulae
5. . Numerical Differentiation - Newton-Gauss Forward and Backward formulae
6.Numerical Integration - Trapezoidal rule, Simpsons 1/3 rd rule,
7. Numerical Integration -Simpsons 3/8 th rule and Waddles rule

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**SRI KRISHNA DEVAYARA UNIVERSITY: ANANTAPURAM**

**CBCS SYLLABUS (Semester wise) 2017-18**

**BA/BSC III YEAR: STATISTICS SYLLABUS**

**Semester – VI Cluster-I/II**

**PaperVIII(A-3/B-3)-Project Marks:100**

**Statistical analysis for Economic, Business, Science and Biological Problems should done in Excel or SPSS**

**Procedure:**

1. Objective
2. Data Collection
3. Data analysis
4. Comments

These items should be followed by each student. Maximum 20 students can opt one project.

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