DEPARTMENT OF STATISTICS, COMPUTER APPLICATION AND IPR

Course Code	Course Title	Credit Hours
	Compulsory Courses	
AG-309	Statistical Methods	2(1+1)
AG-410	Agri-Informatics	2(1+1)
AG-509	Intellectual Property Rights	1(1+0)
	Remedial Course	
AG-111B	Elementary Mathematics	2(2+0)

STATISTICS, COMPUTER APPLICATION AND IPR

1. Statistical Methods   2(1+1) AG-309

Theory

Introduction to Statistics: Definitions, Aims, Limitations and its Applications in Agriculture, Classification and Tabulation, Diagrammatic and Graphical Representation of Data, Measures of Central Tendency: Mean, Median, Mode; Measures of Dispersion: Range, Mean Deviation, Standard Deviation, Variance, Coefficient of Variation and Standard Error of Mean(S.E.); Definition and Types of Correlation, Scatter Diagram, Karl Pearson's Coefficient of Correlation, Regression, Two Lines of Regression, Regression Coefficient and its Properties, Relationship between Correlation Coefficient and Regression Coefficient. Test of Significance: Introduction to Test of Significance, Concept of Random Sample and Statistic, Test ofSignificance based on Z, t, F and Chi-Square (χ^2) Statistics, Chi- Square (χ^2) test of Goodness of Fit, Test of Independence of Attributes in 2x2 Contingency Table. Introduction to Analysis of Variance, Analysis of One Way and Two Way Classification, Introduction to Sampling Methods, Simple Random Sampling with andwithout replacement, Use of Random Number Tables for selection of Random Sample.

Practical

Diagrammatic and Graphical representation of data, Measures of Central Tendency: Computation of Arithmetic mean, Median and Mode for Ungrouped and Grouped data. Measures of Dispersion: Computation of Mean deviation, Standard deviation, Variance and Coefficient of Variation for Ungrouped and Grouped data. Calculation of Correlation Coefficient and Determination of Regression Line,Calculation based on t, Z, F test, Chi-Square (χ^2) test of Goodness of Fit, Chi-Square(χ^2) test of Independence of Attributes in 2x2 contingency table, Analysis of Variancefor One Way and Two Way Classification.

2. Agri-Informatics 2(1+1) AG-410

Theory

Introduction to Computers, Operating Systems, definition and types, Applications of MS-Office for document creation & Editing, Data presentation, interpretation and graph creation, statistical analysis, mathematical expressions. Database, concepts and types, uses of DBMS in Agriculture, World Wide Web (WNW): Concepts and components.

e-Agriculture, concepts and applications, Use of ICT in Agriculture, Computer-controlled devices (automated systems) for Agri-input management, Smartphone Appsin Agriculture for farm advises, market price, Post-harvest management etc; Geospatial technology for generating valuable agri information, Decision support systems, concepts, components and applications in Agriculture, Agriculture Expert System, SoilInformation Systems etc for supporting Farm decisions.

Practical

Study of Computer Components, accessories, practice of important DOS Commands, Introduction of different operating systems such as windows, Unix/ Linux, Creating, Files & Folders, File Management. Use of MS-WORD and MS Power-pointfor creating, editing and presenting a scientific Document MS-EXCEL - Creating a spreadsheet, use of statistical tools, writing expressions, creating graphs, analysis of scientific data. MS-ACCESS: Creating Database, preparing queries and reports, demonstration of Agri-information system, Introduction to World Wide Web (WWW), Introduction of Geospatial Technology for generating valuable information for Agriculture, Hands on Decision Support System.

3. Intellectual Property Rights 1(1+0) AG-509

Theory

Introduction and meaning of intellectual property, brief introduction to GATT, WTO, TRIPS and WIPO, Types of Intellectual Property and legislations covering IPRin India: Patents, Copyrights, Trademark, Industrial design, Geographical indications, Integrated circuits, Trade secrets, Patents Act 1970 and Patent system in India, Origin and history including a brief introduction to UPOV for protection of plant varieties, Protection of plant varieties under UPOV and PPV&FR Act of India, Plant breeder's

rights, Registration of plant varieties under PPV&FR Act 2001, breeders, researcherand farmers rights.

REMEDIAL COURSE

5. Elementary Mathematics   2(2+0)   AG-111B
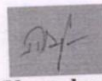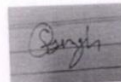
Theory

Straight lines: Distance Formula, Section Formula (internal and external division), Equation of co-ordinate axes, Equation of lines parallel to axes, Two point form of equation of line, Normal form of equation of line, Point of intersection of twostraight lines, Angles between two straight lines, Parallel lines. Circle: Equation of circle whose center and radius is known, general equation of a circle, Equation of circlepassing through three given points, Equation of circle whose diameters is line joining two points (X_1, Y_1) & (X_2, Y_2). Differential & Integral Calculus: Definition, limit andcontinuity of a function, Simple problems on limit and continuity, Differentiation of x^n, e^x, a^x, $\log x$ & $\sin x$, $\cos x$, $\tan x$, $\cot x$, $\sec x$ & $\csc x$ from first principle, Derivatives of sum, difference, product and quotient of two functions, Differentiation of functions of functions (Simple problem based on it), Logarithmic differentiation (Simple problem based on it), Differentiation by substitution method (Simple problems based on it). Integration of simple functions, Integration by Parts: Integration of Product of two functions, Integration by substitution method. Determinants and Matrices: Introduction of determinants, Properties of determinants up to 3rd order and their evaluation, Definition of Matrices, type of Matrices and properties, Addition, Subtraction, Multiplication, Transpose and Inverse of a matrix up to 3rd order.
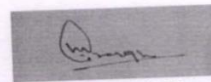
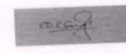**Dr. (B. P. Singh)**   **Dr. (Nagendra Singh)**   **Dr.(Sudhir Kumar Singh)**   **Dr. (Manish Kumar Singh)**
Member   Member   Member   External Member

Dr. (R. R. Kushwaha)   **Dr. (Rajendra Prasad Kaushal)**   **Dr. (Om Prakash Singh)**
External Member   Convener   Dean (*FoA*)