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S.B.V.P.Samaj's

Sahakar Maharshi Bhausaheb Santuji Thorat College of Arts, Science & Commerce, Sangamner- 422605

Teaching Plan of Theory Courses

Academic Year : 2015-2016

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Term/Semester :I Class :T.Y.BSc   Subject : Computational Botany

Month & Year	Title of the Topic	No. of Lectures	Test / Tutorial
15 June 2015	**Admission Process**		
July-2015	**1. Introduction to Biostatistics** a. Definition b. Statistical terms : Population, sample, primary and secondary data, qualitative and quantitative data, parameter and statistics, attributes, variables, discrete and continuous variables, statistical error, linear and non-linear functions of statistics, frequency, and its distribution c. Scope, applications and uses of biostatistics	03	Tutorial – 1
	2. Sample and sampling **a**. Definition **b**. Sampling unit, sample and population **c**. Types of sampling i. Random sampling – with replicates, without replicates, systematic sampling, stratified sampling ii. Non-random sampling- Purpose, quota sampling **d**. Need of randomness **e**. Achieving randomness i. Lottery methods ii. Use of random number table **f**. Merits and limitations of sampling	04	
	3.Collection and representation of data **a**. Classification of data i. Meaning and need of classification ii. Objectives of classification iii. Classification according to class interval iv. Overlapping and non-overlapping frequency table **b**. Methods of representation of statistical data i. Essential features of tabular presentation ii. Advantages of tabular presentation iii. Graphic representation of data and its advantages iv. Types of graphic representation 1. Histogram 2. Frequency polygon 3. Frequency curve 4. Scatter or dot diagram v. Merits and limitations of graphic representation vi. Diagrammatic representation of data 1. Line diagram 2. Bar diagram 3. Pie diagram	05	
Aug- 2015	**4. Measures of central tendency of grouped and ungrouped data** a. Simple arithmetic mean, its merits and limitations b. Averages of position: Median and mode, their merits and limitations	04	Test – 1
	5.Measures of dispersion a. Meaning of dispersion- i. Range: Computation in individual, discrete and continuous series, coefficient of range, merits and limitations ii. Mean deviation and standard deviation: computation for grouped and ungrouped data, merits and limitation iii. Variance: Definition, coefficient of variance	04	

	6.Correlation and regression **a**. Definition and types of correlation **b**. Coefficient of correlation and its properties **c**. Methods of studying correlation: Scatter diagram and Karl Pearson's coefficient of correlation **d**. Coefficient of determination (r^2) **e**. Regression analysis i. Definition and types of regression ii. Linear regression	04	
Sept-2015	**7. Probability and types of theoretical probability distribution** **a.** Concept of probability **b**. Binomial distribution **c**. Poisson distribution **d**. Normal distribution i. Normal distribution curve ii. Relationship between normal curve area and standard deviation iii. Properties of normal distribution curve	04	
	8.Tests of significance of mean **a**. Introduction **b**. Statistic and its standard error **c**. Meaning of statistical hypothesis, level of significance, null hypothesis and alternative hypothesis **d**. Student's 't' test: unpaired and paired test **e**. $\square$ 2 test as a test of goodness of fit and its significance	04	
	9.Computation of seed testing and plant growth indices **a**. Seed germination and early seedling growth. i. Germination percentage ii. Mean germination time (MGT) iii. Germination index (GI) iv. Germination speed (GS) v. Vigor index (VI) **b**. Seed germination and early seedling growth under stress i. Promptness index (PI) ii. Germination stress tolerance index (GSI), iii. Plant height stress tolerance index (PHSI) iv. Root length stress tolerance index (RLSI) v. Dry matter stress tolerance index (DMSI) **c**. Plant growth indices i. Absolute Growth Rate (AGR) ii. Crop Growth Rate (CGR) iii. Relative Growth Rate (RGR) iv. Leaf Area Index (LAI)	10	
Oct- 2015	**10. Analysis of data on vegetation studies** **a.** Data obtained from quadrates and transects methods i. Frequency ii. Percent frequency iii. Relative frequency iv. Density v. Relative density vi. Abundance vii. Dominance **b**. Computation of crop/vegetation biomass using satellite data i. Simple Ratio (SR) or Ratio Vegetation Index (RVI) ii. Difference Vegetation Index (DVI), iii. Normalised Difference Vegetation index (NDVI) or greenness index	06	Tutorial – 2 & Field Visit

Sign.of the Subject Teacher   **Sign of Head of Department**

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Teaching Plan of Theory Courses

Academic Year : 2015-2016

Term/Semester :II   Class :T.Y.BSc   Subject : Plant Breeding And Seed Technology

Month & Year	Title of the Topic	No. of Lectures	Test / Tutorial
15Nov.2015	**A. PLANT BREEDING**		Tutorial – 3
	1. Introduction, scope and importance Definition, scope of plant Breeding and importance	02	
	2. Conventional techniques, methods and practices of breeding **(a) Plant introduction and acclimatization** i. Concept, objectives ii. Types of plant introduction iii. Advantage, limitations/ Disadvantages and achievements. **(b) Selection methods** i. Concept, ii. Types of selections –mass selection, pure line selection and clonal selection. iii. Advantage and disadvantages/limitations, achievements. **(c) Hybridization** i. Definition and Concept, ii. Difficulties in crop hybridization and precaution to be taken during hybridization iii. General procedure of hybridization iv. Parent selection in a breeding program v. Criteria for selecting parents **Breeding Methodology** i. Pedigree method ii. Bulk method iii. Single-seed descent method iv. Backcross method, Achievements **(d) Heterosis and hybrid vigour** i. Concept ii. Causes of heterosis- dominance hypothesis iii. Applications	10	
Dec-2015	**3. Alternative breeding techniques** **(a) Mutation breeding** Introduction and concept Types of Mutation induced mutagenesis mutagens used -Chemical and physical mutagensmethods of working Gamma gardens, concept and designApplications (b) **Importance of Polyploidy and aneuploidy in crop improvement** Properties of polyploids, Methods of obtaining polyploids Methods used in obtaining haploids Production of triploids in plant breeding Applications and achievements	08	
	4. Breeding for stress tolerance Mechanisms and genetic bases of resistance/tolerance to biotic and abiotic stresses in plants, Breeding for resistance/tolerance. Molecular Approaches Characteristics evaluated for drought tolerance Characteristics evaluated for insect/pest tolerance Achievements	04	
Jan-2016.	**B. SEED TECHNOLOGY**		Tutorial – 4 & Field Visit
	5. Introduction Definition of seed, Stages of Seed Production, Classes of Seed (nucleus seed, breeders seed, foundation seed, certified seed and truthful seed),	02	

	Role of seed technolog		
	6Seed certification General procedure of seed certification, field inspection, observation during inspection, field count, Duties of seed inspector.	02	
	7.Seed processing Concept Principle and techniques of processing of seeds	02	
	8.Seed sampling, storage and packaging Seed sampling, Types of seed samples,Samplingequipments. Factor affecting seed storage and need of seed storage, Methods of protection and control,Air conditioning and dehumidification,Sanitation and fumigation of seed stores. Seed sorting and bagging, bag weighing, bag closing, type of bag closer, Labelling and maintaining lot identify, lot numbers, seed pellets, Handling and stacking, Maintenance of seed processing record.	06	
Feb 2016	**9.Physical purity analysis** Definition of purity components ,Procedure ODV test Reporting and results	03	
	10.Seed Testing **A. Moisture Testing** By air oven method Moisture meters.	03	
	B. Germination testing Definition and objectives, General principles and requirements, Procedure and methods (Paper, Sand and Soil) Seedling evaluation.	03	
	11.Seed Marketing Marketing- Basic concepts, supply & demand, price equilibrium, seed transportation, storage, cost & returns, cost processing, packing and marketing, Organization for seed marketing, seed markets in India, structure & working	03	
Mar 2017	**Practical Exam**		

Sign.of the Subject Teacher   **Sign of Head of Department**