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: 2016-2017

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

Month	Title of the Topic	NT 6	Test /
& Year	Title of the Topic	No. of Lectures	Tutorial
15 June 2016	Admission Process		
July-2016	1. Introduction to Biostatistics		Tutorial – 1
	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	03	
	distribution		
	c. Scope, applications and uses of biostatistics 2. Sample and sampling		
	a. Definitionb. Sampling unit, sample and population		
	c. Types of sampling		
	i. Random sampling – with replicates, without replicates, systematic		
	sampling, stratified sampling	04	
	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		
	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	05	
	iv. Types of graphic representation	03	
	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		
Aug- 2016	4. Measures of central tendency of grouped and ungrouped data	04	Test – 1
	a. Simple arithmetic mean, its merits and limitationsb. Averages of position: Median and mode, their merits and limitations	04	
	5.Measures of dispersion		1
	a. Meaning of dispersion- i. Range: Computation in individual, discrete and continuous		
	series, coefficient of range, merits and limitations	04	
	ii. Mean deviation and standard deviation: computation for grouped and	04	
	ungrouped data, merits and limitation		
İ	iii. Variance: Definition, coefficient of variance		

	 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 (r2) e. Regression analysis i. Definition and types of regression ii. Linear regression 	04	
Sept-2016	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. □ 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- 2016	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

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Teaching Plan of Theory Courses

Academic Year: 2016-2017

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.2016	A. PLANT BREEDING		Tutorial – 3
	1. Introduction, scope and importance	02	_
	Definition, scope of plant Breeding and importance	02	
	2. Conventional techniques, methods and practices of breeding		1
	(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	10	
	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		
Dec-2016	3. Alternative breeding techniques		
	(a) Mutation breeding		
	Introduction and concept		
	Types of Mutation		
	induced mutagenesis		
	mutagens used -Chemical and physical mutagensmethods of working	08	
	Gamma gardens, concept and designApplications	08	
	(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		
	4. Breeding for stress tolerance		
	Mechanisms and genetic bases of resistance/tolerance to biotic and abiotic		
	stresses in plants,		
	Breeding for resistance/tolerance.	04	
	Molecular Approaches		
	Characteristics evaluated for drought tolerance		
	Characteristics evaluated for insect/pest tolerance		
I 2017	Achievements R. SEED TECHNOLOGY		T 4 1 4 0
Jan-2017	B. SEED TECHNOLOGY		Tutorial – 4 &
	5. Introduction		Field Visit
	Definition of seed,		
	Stages of Seed Production,	02	
	Classes of Seed (nucleus seed, breeders seed, foundation seed, certified seed		
	and truthful seed),Role of seed technology		

	6Seed certification		
	General procedure of seed certification,		
	field inspection,	02	
	observation during inspection,		
	field count, Duties of seed inspector.		
	7.Seed processing	0.0	
	Concept	02	
	Principle and techniques of processing of seeds		
	8.Seed sampling, storage and packaging		
	Seed sampling, Types of seed samples, Sampling equipment's.		
	Factor affecting seed storage and need of seed storage,		
	Methods of protection and control, Air conditioning and dehumidification, Sanitation and	06	
	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.		
Feb 2017	9.Physical purity analysis	03	
	Definition of purity components ,Procedure	03	
	ODV test		
	Reporting and results		
	10.Seed Testing		
	A. Moisture Testing	03	
	By air oven method		
	Moisture meters.		
	B. Germination testing		
	Definition and objectives,		
	General principles and requirements,	03	
	Procedure and methods (Paper, Sand and Soil)		
	Seedling evaluation.		
	11.Seed Marketing	02	
	Marketing- Basic concepts, supply & demand, price equilibrium, seed	03	
	transportation, storage, cost & returns, cost processing, packing and marketing,		
	Organization for seed marketing, seed markets in India, structure & working		
Mar 2017	Practical exam		

Sign.of the Subject Teacher

Sign of Head of Department