



ShriVaishnavVidyapeethVishwavidyalaya, Indore
ShriVaishnav Institute of Agriculture Science
B.Sc. Agriculture Science

BSAG202: CROP PRODUCTION TECHNOLOGY –II RABI CROP

SUBJECT CODE	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
		THEORY			PRACTICAL		L	T	P	CREDITS
		END SEM University Exam	Two term exam*	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BSAG202	CROP PRODUCTION TECHNOLOGY-II RABI CROP	60	20	20	30	20	2	2	1	5

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C-Credit;
***Teacher Assessment** shall be based on following components: Quiz / Assignment / Project / Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective:

To study the Origin, geographical distribution, economic importance different practices and yield of Rabi crops

Course Outcomes:

1. Student will able to understand the cultural practices and yield of Rabi crops
2. Student will able to recognize the Rabi crops

Unit-1

Origin, geographical distribution, economic importance, soil and climatic requirements, verities, cultural practices and yield of Rabi crops; wheat and barley.

Unit-2

Origin, geographical distribution, economic importance, soil and climatic requirements, verities, cultural practices and yield of Rabi crops; pulses –chickpea, lentil, peas.

Unit-3

Origin, geographical distribution, economic importance, soil and climatic requirements, verities, cultural practices and yield of Rabi crops; oil seeds –rape seed, mustard and sunflower.

Unit-4

Origin, geographical distribution, economic importance, soil and climatic requirements, verities, cultural practices and yield of Rabi crops; sugar crops –sugarcane; medicinal and aromatic crops –mentha, lemon grass and citronella.

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Unit-5

Origin, geographical distribution, economic importance, soil and climatic requirements, varieties, cultural practices and yield of Rabi crops Forage crops-barseem, Lucerne and oat

Practical: BSAGL 207

Sowing methods of wheat and sugarcane, Identification of weeds in rabi season crops, study of morphological characteristics of rabi crops, study of yield contributing characters of rabi season crops, yield and juice quality analysis of sugarcane, study of important agronomic experiments of rabi crops at experimental farms. Study of rabi forage experiments, oil extraction of medicinal crops, visit to research stations of related crops

Books:

1. Text book of field crops production, Rajendra Prasad, commercial crops, volume II, Technical Editor, ICAR New Delhi (2015)
2. Modern Technique of Raising field crops, Chhida Singh, Rajbir Singh, Oxford and IBH Publishing New Delhi (2018)

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BSAG203: FARMING SYSTEM , SUSTAINABLE AGRICULTURE & AGROCHEMICALS

SUBJECT CODE	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
		THEORY			PRACTICAL		L	T	P	CREDITS
		END SEM University Exam	Two term exam*	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BSAG203	FARMING SYSTEM, SUSTAINABLE AGRICULTURE & AGROCHEMICALS	60	20	20	30	20	3	2	1	5

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C-Credit;

***Teacher Assessment** shall be based on following components: Quiz / Assignment / Project / Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective:

To study different cropping system in India and different chemical use in agriculture

Course Outcomes:

1. Student will able to understand different types of fertilizers, herbicides, insecticides
2. Student will able to understand effect of cropping system on sustainable agriculture

Unit-1

Farming Systems –scope, importance, and concept. Types and systems of farming system and factors affecting types of farming , Farming system components and their maintenance, Cropping system and patter, multiple cropping system, Efficient cropping system and their evaluation, Allied enterprises and their importance , Tools for determining production and efficiencies in cropping and farming system ;

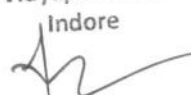
Unit-2

Sustainable agriculture –problems and its impact on agriculture, indicators of sustainability, adaptation and mitigation, conservation agriculture strategies in agriculture, HEIA, LEIA and LEISA and its technique for sustainability, Integrated farming system –historical background, objectives and characteristics ,components of IFS and its advantages, Site specific development of IFS model for different agroclimatic zones, resource use efficiency and optimization techniques.


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Unit-3

Resource cycling and flow of energy in different farming system , farming system and environment , visit of IFS model in different farming system, farming system and environment , Visit of IFS model in different agro-climatic zones of nearby states University / institute of farmers field

Unit-4

An introduction to agrochemicals, their type and role in agriculture, effect on environment, soil human and animal health, merits and demerits of their uses in agriculture, management of agrochemicals for sustainable agriculture. Fungicide –Classification – Inorganic fungicides – characteristics, preparation and use of Zineb and Maneb. Systemic fungicides characteristics and use. Introduction and classification of insecticides.

Unit-5

Insecticide act and rules, Insecticides banned, withdrawn and restricted use. IGRs Biopesticides, Reduced risk insecticides, Botanicals, plant and animal systemic insecticides their characteristics and uses.

Plant bio-pesticides for ecological agriculture, Bio-insect repellent

BSAGL 208 Practical:

Sampling of fertilizers and pesticides, Pesticides application technology and study about various pesticides appliances. Calculation of doses of insecticides to be used. To study and identify various formulations of insecticide available kin market. Estimation of nitrogen in Urea. Estimation of water soluble P_2O_5 and citrate soluble P_2O_5 in single super phosphate. Estimation of potassium in Muraite of potash / Sulphate of Potash by flame photometer.

Book :

1. Manures Fertilizers & Agrochemicals, Author TNAU, Agrimoon.com (2018)

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BSAG 204: PRINCIPLES OF SEED TECHNOLOGY

SUBJECT CODE	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
		THEORY			PRACTICAL		L	T	P	CREDITS
		END SEM University Exam	Two term exam*	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BSAG 204	PRINCIPLES OF SEED TECHNOLOGY	60	20	20	30	20	3	2	1	6

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C-Credit;

***Teacher Assessment** shall be based on following components: Quiz / Assignment / Project / Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective:

To study seed and different aspect of seed technology

Course Outcomes:

1. Student will able to understand character and different class of seed
2. Student will able to understand seed processing, assessment and seed marketing strategy

Unit-1

Seed and seed technology: Introduction, definition and importance. Deterioration causes of crop varieties and their control; Maintenance of genetic purity during seed production, seed quality.

Unit-2

Definition, Characters of good quality seed, different classes of seed. Foundation and certified seed production of important cereal, pulses, oil seeds, fodder and vegetables.

Unit-3

Seed certification, phases of certification, phases of certification, procedure for seed certifications, field inspections. Seed Control Order 1983, Varietal identification through Grow Out Test and Electrophoresis, Molecular and Biochemical test, Detection of genetically modified crops, Transgene contamination in non-GM crops, GM crops and organic seed production.

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Unit-4

Seed drying, processing and their steps, seed testing for quality assessment, seed treatment, its importance, method of application and seed packing. Seed storage; general principles, stages and factors affecting seed longevity during storage. Measures for pest and disease control during storage.

Unit-5

Seed marketing: structure and organization, sales generation activities, promotional media. Factors affecting seed marketing, Role of WTO and OECD in seed marketing. Private and public sectors and their production and marketing strategies.

Practical:BSAGL 209

Seed production in major cereals: Wheat, Rice, Maize, Sorghum, Bajra and Ragi. Seed production in major pulses: Urd, Mung, Pigeonpea, Lentil, Gram, Field bean, pea. Seed Production in major oil seeds: Soybean, Sunflower, Rapeseed, Groundnut and Mustard. Seed production. Seed Production in important vegetable crops. Seed sampling and testing: Physical purity, germination, viability etc. Seed and seedling vigor test. Genetic purity test: Grow out test and electrophoresis. Seed certification: Procedure, Field inspection, Preparation of field inspection report. Visit to seed production farms, seed testing laboratories and seed processing plant

Books:

1. Seed Technology, R. L. Agarwal, Oxford & IBH Publishing, New Delhi (2017)
2. Seed Technology, Dharendra Khare, M.S. Bhale, Scientific Publishers (India) 2017

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BSAG 205: FUNDAMENTALS OF HORTICULTURE

SUBJECT CODE	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
		THEORY			PRACTICAL		L	T	P	CREDITS
		END SEM University Exam	Two term exam*	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BSAG 205	FUNDAMENTALS OF HORTICULTURE	60	20	20	30	20	2	2	1	5

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C-Credit;
***Teacher Assessment** shall be based on following components: Quiz / Assignment / Project / Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective:

To study importance, branches and scope of horticultural crops

Course Outcomes:

1. Student will able to understand Horticultural plant proagation methods
2. Student will able to understand Horticultural crops and it`s related aspects

Unit-1

Horticulture – Its definition and braches, importance and scope ; horticultural and botanical classifications , Climate and soil for horticultural crops.

Unit-2

Plant Propagation- methods and propagating structures; Seed dormancy, seed germination, principles of orchard establishment.

Unit-3

Principles and methods of training and pruning, juvenility and flower bud differentiation

Unit-4

Unfruitfulness pollination, pollinizers and pollinators; fertilization and parthenocarpy; medicinal and aromatic plants; importance of plant bio-regulators in horticulture.

Unit-5

Irrigation –methods, Fertilizer application in horticultural crops

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Practical: BSAGL 210

Identification of garden tools. Identification of horticultural crops. Preparation of seedbed /nursery bed. Practice of sexual and asexual methods of propagation including micro-propagation. Layout and planting of orchard. Training and pruning of fruit trees. Preparation of potting mixture. Fertilizers application in different crops. Visit to commercial nurseries/ orchard

Books:

1. Introduction to Horticulture, Dr. N. Kumar, Rajyalakshmi publications (2017)
2. Fundamentals to Horticulture, Jitendra Singh, KalyaniPublishers (2018)

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BSAG206: FUNDAMENTALS OF PLANT BIOTECHNOLOGY

SUBJECT CODE	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
		THEORY			PRACTICAL		L	T	P	CREDITS
		END SEM University Exam	Two term exam*	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BSAG206	FUNDAMENTALS OF PLANT BIOTECHNOLOGY	60	20	20	30	20	2	2	1	5

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C-Credit;

***Teacher Assessment** shall be based on following components: Quiz / Assignment / Project / Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective:

To study scope of crop biotechnology

Course Outcomes:

1. Student will able to understand tissue culture approach in crop improvement
2. Student will able to understand transgenic approach for crop improvement

Unit-1

Concept and application of plant biotechnology : Scope, organ culture, embryo culture, cell suspension culture, callus culture , anther culture, pollen culture , ovule culture and their applications.

Unit-2

Micro-propagation methods; organogenesis and embryogenesis , synthetic seeds and their significance; Embryo rescue and it's significance; somatic hybridization and cybrids; somaclonal variation and its use in crop improvement.

Unit-3

Cryo-preservation ; Introduction to recombinant DNA methods; physical (Gene gun method), chemical (PEG mediated) and Agrobacterium mediated gene transfer methods.


Unit-4

Transgenics and it's importance in crop improvement


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Unit-5

PCR technique and its applications ; RFLP, RAPD,SSR; Marker assisted breeding in crop improvement, Biotechnology regulations

Practical: BSAGL 211

Composition of various tissue culture media and preparation of stock solution for MS nutrient medium . Callus induction from various explants. Micro-propagation, hardening and acclimatization. Demonstration on isolation of DNA. Demonstration of gel electrophoresis technique and DNA fingerprinting

Books:

1. Fundamentals of Plant Biotechnology, B.D. Singh, Satish serial publishing house, Delhi (2018)
2. Introduction to Plant Biotechnology, H.S. Chawla , Science publisher , 2017

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BSAG 207: CROP IMPROVEMENT-II (RABI CROPS)

SUBJECT CODE	SUBJECT NAME	TEACHING & EVALUATION SCHEME								
		THEORY			PRACTICAL		L	T	P	CREDITS
		END SEM University Exam	Two term exam*	Teachers Assessment *	END SEM University Exam	Teachers Assessment *				
BSAG207	CROP IMPROVEMENT-II (RABI CROPS)	60	20	20	30	20	2	2	1	5

Legends: L - Lecture; T - Tutorial/Teacher Guided Student Activity; P – Practical; C-Credit;
***Teacher Assessment** shall be based on following components: Quiz / Assignment / Project / Participation in Class, given that no component shall exceed more than 10 marks.

Course Objective:

To study crop improvement approach in Rabi Crops

Course Outcomes:

1. Student will able to understand recognize the Rabi crops and it's utilization
2. Student will able to understand major breeding objectives

Unit-1

Centers of origin, distribution of species, wild relatives in different cereals; pulses; oilseed; fodder crops and cash crops; vegetable and horticultural crops.

Unit-2

Plant genetic resources, it's utilization and conservation; study of genetics of qualitative and quantitative characters.

Unit-3

Major breeding objectives and procedure including conventional and modern innovative approaches for development of hybrids and varieties for yield, adaptability, stability, abiotic and biotic stress tolerance and quality (physical, chemical, nutritional).

Unit-4

Hybrid seed production technology of rabi crops.

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Unit-5

Ideotype concept and climate resilient crop varieties for future.

Practical: BSAGL 212

Floral biology, emasculation and hybridization technique indifferent crops species namely Wheat, Oat, Barley, Chickpea , Lentil, Field pea, Rajma, Horse gram, Rapeseed Mustard, Sunflower, Safflower, potato , Berseem, Sugarcane, Tomato, Chilli, Onion; Handling of germplasm and segregating population by different methods like pedigree, bulk and single seed decent methods; Study of field techniques for seed production in Rabi crops; Estimation of heterosis, inbreeding depression and heritability; Layout of field experiments; Study of quality characters, study of donor parents for different characters; Visit to seed production plots; Visit to AICRP plots of different field crops.

Books:

1. Crop Breeding and Biotechnology, Hari Har Ram, Kalyani Publication (2017)
2. Cropping and farming system, Panda S.C. , Agrobios (India) Jodhpur (2017)

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