

Study Scheme & Syllabus of Bachelor of Vocations in Agriculture (B. Voc. Agriculture)

Batch 2020



By

**Board of Studies Agriculture
Department of Academics**

IK Gujral Punjab Technical University Jalandhar

IK Gujral Punjab Technical University Jalandhar
B. Voc. (Agriculture) Batch 2020 Onwards

Semester First

Course code	Course Title	Load Allocation		Marks Distribution		Total	Credits
		L	P	Internal	External		
BVAG101-18	Horticulture -Fruit Crops	2	0	40	60	100	2
BVAG102-18	Chemistry of Agrochemicals	2	0	40	60	100	2
BVAG103-18	Agro Meteorology	2	0	40	60	100	2
BVAG104-18	Introductory Agronomy	2	0	20	30	50	2
BVAG105-18	Soil Science	2	0	20	30	50	2
BVAG106-18	Principles of Plant Pathology	2	0	40	60	100	2
BVAG107-18	Horticulture -Fruit Crops (Practical)	0	2	20	30	50	1
BVAG108-18	Agro Meteorology (Practical)	0	2	20	30	50	1
BVAG109-18	Soil Science (Practical)	0	2	20	30	50	1
BVAG110-18	Principles of Plant Pathology (Practical)	0	2	20	30	50	1
BVAG111-20	Practices in Project Planning and Evaluation	0	5	00	100	100	5
BVAG112-20	Project Report on availability of quality Agrochemicals	0	5	00	100	100	5
BVAG113-20	Visit to commercial orchards and fruit nurseries	-	-	Satisfactory / Un-Satisfactory			4
	Total	13	18	280	620	900	30

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BVAG101- Horticulture- Fruit Corps

SECTION - A

Definition, importance and divisions of horticulture. Climatic zones, area and production of different fruit crops; Selection of site, fencing and wind break. Planting systems, high density planting, planning and establishment.

SECTION - B

Propagation methods: conventional and non-conventional. Methods of training and pruning. Use of growth regulators in fruit production.

SECTION - C

Fundamentals for cultivation of horticultural crops, Package of practices for the cultivation of major fruits -mango, citrus, grapes, guava, apple, litchi and papaya.

SECTION - D

Package of practices for the cultivation of Minor fruits - pineapple, pomegranate, ber, fig, loquat, Banana, phalsa, pear, plum, peach.

Books Recommended

- 1). Fundamentals of Plant propagation: Hartmann
- 2). Fruits: Ranjit singh
- 3). Basic Horticulture: Jatinder Singh
- 4). Fruit Production (vol. 1 and 2): T.K Bose
- 5) Package of practices for fruit crops- PAU Ludhiana
- 6) Handbook of Agricultural Sciences- S.S. Singh

Unit I

Organic chemistry as prelude to agrochemicals. Diverse types of agrochemicals.

Unit II

Herbicides-major classes, chemistry and use of 2,4-D, atrazine, glyphosate, butachlor, benthocarb, Plant growth regulators .

Unit III

Fungicides - major classes, Chemistry and use of carbendazim, carboxin, captan, tridemorph and copper oxychloride.

Unit IV

Synthetic organic insecticides, major classes, chemistry and use of some important insecticides under each class. Botanical insecticides (neem), pyrethrum and synthetic pyrethroids.

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BVAG103-18 Introductory Agro Meteorology

SECTION - A

The earth and its Atmosphere: Environmental factors in agriculture; Elements and factors of climate; Latitudinal and seasonal distribution of temperature and precipitation; Basic parameters in Weather forecasting.

SECTION - B

Agro-climatology: Definition and scope; the role of climate in soil and natural vegetation and livestock distribution with practical examples.

SECTION -C

Impact of climatological factors in crop and livestock distribution in India: Effects of weather on sowing, growth, maturity and harvesting of crops, cropping pattern.

SECTION - D

Weather hazards, their occurrence and impact on agriculture, climate classifications in India and Punjab: Climates of the world & their agricultural potentials with special reference to India.

BOOKS RECOMMENDED

1. The Earth and its Atmosphere by D. R. Bates.
2. Introduction to Climatology for the Tropics by J. D. Yeade.
3. General Climatology by Critbbfierd & Hewarda.
4. Agriculture Meteorology by H. S. Mavi.
5. Fundamentals of Agro Meteorology: G.S Mahi
6. Agro Meteorology : S R Reddy

BVAG104-18 Introductory Agronomy

SECTION - A

Evolution of agriculture, farm tools through ages, classification of crops, their geographical distribution and factors responsible, impact of Agriculture on trade and industry, comparative yield of crops in Punjab and other states.

SECTION - B

Agronomy as a science and its relationship with other sciences; Germination, maturity harvesting and storage of crop plants; Tillage principles, requirement for minimum tillage, seed bed preparation, characteristics of good seed beds, methods of sowing and their suitability under different conditions. Seeding practices in relation to kind of seed, time of sowing, soil moisture, etc. Tillage practices for different soil types and crops.

SECTION - C

Weed characteristics, dissemination, competition for growth factors and losses caused by them. Common methods of weed control.

SECTION - D

Maintenance of soil fertility and soil productivity-green manuring, crop rotation, multiple cropping, mixed cropping, relay cropping, rain fed and dryland farming.

BOOKS RECOMMENDED

1. *Principles of Crop Husbandry* by Ayres.
2. *Principles of Agronomy* by Pearson.
3. *Hand Books of Agriculture* by I. C. A. R.
4. *Agricultural Resources* by A.S.Atwal and H.S.Mavi.
5. Package of Practices for Crops of Punjab -Kharif/Rabi,Punjab Agricultural University Ludhiana.
6. *Punjab Plants, Check-List* by M. Sharma

BVAG 105-18 Introductory Soil Science

SECTION - A

Concept of land: soil and soil science; Composition of earth crust and its relationship with soils; Rocks and minerals; Weathering. Soil forming factors and processes; Soil profile; Elementary taxonomic classification of soils; Soils of Punjab and India.

SECTION - B

Soil physical properties-Soil texture: textural classes; Soil structure- classification, soil aggregation and significance, soil consistency, soil crusting, bulk density and particle density of soils and porosity, their significance and manipulation.

SECTION - C

Soil water: retention and potentials, soil moisture constants, movement of soil water- infiltration, percolation, permeability, drainage and methods of determination of soil moisture, thermal properties of soil, influence of soil temperature and air on plant growth.

SECTION -D

Soil colloids: properties, nature, types and significance; Sources of charges in clay minerals; Introduction of saline and alkaline soils, Ion exchange, CEC; AEC - factors affecting and adsorption of ions; Soil organic matter decomposition, mineralization, humus; Carbon cycle, C: N ratio; Soil organisms - their beneficial and harmful roles.

BOOKS RECOMMENDED

1. Pedology : J L Sehgal
2. Nature and properties of soil: Nyle C. Brady & Ray R. Well
3. Handbook of Agricultural Sciences- S.S. Singh

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BVAG106-18 Principles of Plant Pathology

Section-1

Definition, objectives, history, terms and concept of plant pathology.

Section-2

Introduction, importance and general characters of fungi, bacteria, nematodes and viruses.

Section-3

Survival and dispersal of plant pathogens, Phenomenon of infection; defense mechanisms in plants; Plant disease epidemiology and forecasting.

Section-4

General principles of plant disease management. Plant quarantine and inspection. Genetic, cultural, biological, physical and chemical methods of plant disease management. Integrated plant disease management

Books Recommended:

1. Plant Pathology in India by S.S. Chahal
2. Introduction to Principles of Plant Pathology by R.S. Singh
3. Principles of Plant Pathology by M.K. Dasgupta

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BVAG107-18 Horticulture-Fruit Crops (Practical)

Practical: Horticultural tools and their uses. Containers and potting mixtures. Plant and seed propagation, scarification, and stratification. Layout and planting systems. Methods of pruning and training. Training of ber, grape and pomegranate. Pruning of ber, grape, phalsa, fig, apple, pear, peach. Identification of important species and varieties of fruits. Micro Irrigation methods. Methods of fertilizer application. Formulations of growth regulators, powder, solution and lanolin paste for propagation. Application of growth regulators for improving fruit set, fruit size, quality, delaying and hastening ripening.

BVAG108-18 Agro Meteorology (Practical)

Practical: Site selection for Agrometeorological Observatory. Project on setting up, recording and maintenance of instruments in a meteorological observatory. Measurement of temperature, rainfall, evaporation, atmospheric pressure, sunshine duration, solar radiation, wind direction, wind speed and relative humidity. Study of weather forecasting and synoptic charts. Processing, presentation and interpretation of climatic data in relation to crops.

BVAG109-18 Soil Science (Practical)

Practical: Collection and processing of soil samples for analysis of organic carbon, pH, EC, available N, P, K and S. Study of a soil profile, Determination of bulk density and particle density. Identification of rocks and minerals, soil texture determination, soil moisture determination, Soil moisture constants- field capacity, infiltration rate, water holding capacity.

BVAG110-18 Principles of Plant Pathology (Practical)

Acquaintance to plant pathology laboratory equipments. Preparation of culture media for fungi and bacteria. Isolation techniques and preservation of plant disease samples. Study of important plant pathogenic genera. Demonstration of Koch's postulates. Study of different groups of fungicides and antibiotics. Bio-control of plant pathogens; Visit to remote sensing laboratory and experimental area.

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BVAG111-20 Practices in Project Planning and Evaluation

Preparation and monitoring of different kinds of projects concerning agriculture and their analysis in terms of various economic feasibility criteria; Practices in management of farm resources, farm budgeting and accounting with emphasis on production, marketing and export of seed, commercial dairy and crops, agro-processing, farm power and machinery. Work experience in optimum decision-making using farm management principles. Students will be guided regarding estimation of capital requirements, credit appraisal, credit use and repayment schedules for different agricultural enterprises and high-tech agriculture; Training in cost-benefit analysis, capital budgeting techniques, economic and financial analysis, pay-back period, present value, internal rate of return and sensitivity analysis on practical field situations, Introduction to market orientation and demand forecasting techniques.