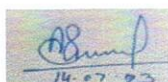
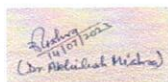


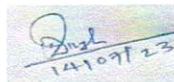
M. Sc. Ag. (Hort.) Vegetable Science Course Structure

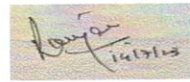
I ST YEAR / I ST SEM						
Course code	Type	Course title	Min credits	CIA	ES E	Max. Marks
VSC 501	Core	Production of Cool Season Vegetable Crops	3(2+1)	50	50	100
VSC 502	Core	Production of Warm Season Vegetable Crops	3(2+1)	50	50	100
FSC 502	Minor	Sub-Tropical and Temperate Fruit Production	3(2+1)	50	50	100
SAC 502	Supporting	Soil Fertility and Fertilizer Use	3(2+1)	50	50	100
PGS 501	Compulsory Non-Credit	Library and Information Services	1(0+1)	50	50	100
PGS 502	Compulsory Non-Credit	Technical Writing and Communications Skills	1(0+1)	50	50	100
TOTAL			14			600
I ST YEAR / II ND SEM						
VSC 503	Core	Growth and Development of Vegetable Crops	3(2+1)	50	50	100
VSC 504	Core	Principles of Vegetable Breeding	3(3+0)	50	50	100
PPTH 507	Minor	Principles of Plant Disease Management	3(2+1)	50	50	100
STAT 511	Supporting	Experimental Designs	3(2+1)	50	50	100
PGS 503	Compulsory Non-Credit	Intellectual Property and Its Management in Agriculture (MOOC)	1(1+0)	50	50	100
PGS 504	Compulsory Non-Credit	Basic Concepts in Laboratory Techniques (MOOC)	1(0+1)	50	50	100
TOTAL			14			600
II ND YEAR / III RD SEM						
VSC 507	Core	Protected Cultivation of Vegetable Crops	2(1+1)	50	50	100
VSC 508	Core	Seed Production of Vegetable Crops	3(2+1)	50	50	100
VSC 514	Core	Post harvest Management of Vegetable Crops	3(2+1)	50	50	100
FLS 512	Minor	Seed Production in Flower Crops	2(1+1)	50	50	100
PGS 505	Supporting	Agricultural Research, Research Ethics and Rural Development Programmers'	1(1+0)	50	50	100
VSC 599	Research	Master's Research (Thesis/Dissertation)	10	-	-	S
TOTAL			21			500
II ND YEAR / IV TH SEM						
VSC 591	Seminar	Master's Course Seminar	0+1	-	-	100
VSC 599	Research	Master's Research (Thesis/Dissertation) Thesis Report Viva-Voce Examination	20+0			
TOTAL			21			S
GRAND TOTAL			70			1800





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M. Sc. Ag. (Hort.) Vegetable Science Course Structure

VSC 501: PRODUCTION OF COOL SEASON VEGETABLE CROPS _

(2+1)

THEORY

Introduction, commercial and nutritional importance, origin and distribution, botany and taxonomy, area, production, productivity and constraints, soil requirements, climatic factors for yield and quality, commercial varieties/hybrids, seed rate and seed treatment, raising of nursery, sowing/planting time and methods, hydroponics and aeroponics, precision farming, cropping system, nutritional including micronutrients and irrigation requirements, intercultural operations, special horticultural practices, weed control, mulching, role of plant growth regulators, physiological disorders, maturity indices, harvesting, yield, post-harvest management (grading, packaging and marketing), pest and disease management and production economics of crops.

Unit I: Bulb and tuber crops- Onion, garlic and potato

Unit II: Cole crops- Cabbage, cauliflower, kohlrabi, broccoli, Brussels sprouts and kale

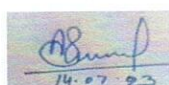
Unit III: Root crops- Carrot, radish, turnip and beetroot

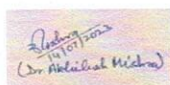
Unit IV: Peas and beans- Garden peas and broad bean

Unit V: Leafy vegetables- beet leaf, fenugreek, coriander and lettuce.

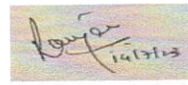
PRACTICAL

1. Scientific raising of nursery and seed treatment
2. Sowing and transplanting
3. Description of commercial varieties and hybrids
4. Demonstration on methods of irrigation, fertilizers and micronutrients application
5. Mulching practices, weed management
6. Use of plant growth substances in cool season vegetable crops
7. Study of nutritional and physiological disorders
8. Studies on hydroponics, aeroponics and other soilless culture
9. Identification of important pest and diseases and their control
10. Preparation of cropping scheme for commercial farms
11. Visit to commercial farm, greenhouse/polyhouses
12. Visit to vegetable market


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VSC 502: PRODUCTION OF WARM SEASON VEGETABLE CROPS

(2+1)

THEORY

Introduction, commercial and nutritional importance, origin and distribution, botany and taxonomy, area, production, productivity and constraints, soil requirements, climatic factors for yield and quality, commercial varieties/hybrids, seed rate and seed treatment, raising of nursery including grafting technique, sowing/planting time and methods, precision farming, cropping system, nutritional including micronutrients and irrigation requirements, intercultural operations, special horticultural practices namely hydroponics, aeroponics, weed control, mulching, role of plant growth regulators, physiological disorders, maturity indices, harvesting, yield, post-harvest management (grading, packaging and marking), pest and disease management and economics of crops.

Unit I: Fruit vegetables- Tomato, brinjal, hot pepper, sweet pepper and okra

Unit II: Beans- French bean, Indian bean (Sem), cluster bean and cowpea

Unit III: Cucurbits- Cucumber, melons, gourds, pumpkin and squashes

Unit IV: Tuber crops- sweet potato, elephant foot yam, tapioca, taro and yam

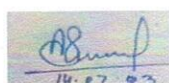
Unit V: Leafy vegetables- Amaranth and drumstick

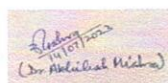
PRACTICAL

1. Scientific raising of nursery and seed treatment
2. Sowing, transplanting, vegetable grafting
3. Description of commercial varieties and hybrids
4. Demonstration on methods of irrigation, fertilizers and micronutrients application
5. Mulching practices, weed management
6. Use of plant growth substances in warm season vegetable crops
7. Study of nutritional and physiological disorders
8. Studies on hydroponics, aeroponics and other soilless culture
9. Identification of important pest and diseases and their control
10. Preparation of cropping scheme for commercial farms
11. Visit to commercial farm, greenhouse/polyhouses
12. Visit to vegetable market
13. Analysis of benefit to cost ratio

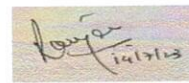
VSC 503: GROWTH AND DEVELOPMENT OF VEGETABLE CROPS

(2+1)


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THEORY

Unit I: Introduction and phytohormones- Definition of growth and development; Cellular structures and their functions; Physiology of Phyto-hormones functioning/biosynthesis and mode of action; Growth analysis and its importance in vegetable production

Unit II: Physiology of dormancy and germination- Physiology of dormancy and germination of vegetable seeds, tubers and bulbs; Role of auxins, gibberellins, cytokinins and abscisic acid; Application of synthetic PGRs including plant growth retardants and inhibitors for various purposes in vegetable crops; Role and mode of action of morphactins, antitranspirants, anti-auxin, ripening retardant and plant stimulants in vegetable crop production.

Unit III: Abiotic factors- Impact of light, temperature, photoperiod, carbon dioxide, oxygen and other gases on growth, development of underground parts, flowering and sex expression in vegetable crops; Apical dominance

Unit IV: Fruit physiology- Physiology of fruit set, fruit development, fruit growth, flower and fruit drop; parthenocarp in vegetable crops; phototropism, ethylene inhibitors, senescence and abscission; fruit ripening and physiological changes associated with ripening

Unit V: Morphogenesis and tissue culture- Morphogenesis and tissue culture techniques in vegetable crops; Grafting techniques in different vegetable crops

PRACTICAL

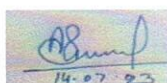
1. Preparation of plant growth regulator's solutions and their application
2. Experiments in breaking and induction of dormancy by chemicals
3. Induction of parthenocarp and fruit ripening
4. Application of plant growth substances for improving flower initiation, changing sex expression in cucurbits and checking flower and fruit drops and improving fruit set in solanaceous vegetables
5. Growth analysis techniques in vegetable crops
6. Grafting techniques in tomato, brinjal, cucumber and sweet pepper.

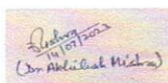
VSC 504: PRINCIPLES OF VEGETABLE BREEDING

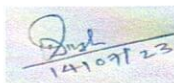
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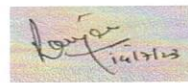
THEORY

Unit I: Importance and history- Importance, history and evolutionary aspects of vegetable breeding


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and its variation from cereal crop breeding

Unit II: Selection procedures- Techniques of selfing and crossing; Breeding systems and methods; Selection procedures and hybridization; Genetic architecture; Breeding for biotic stress (diseases, insect pests and nematode), abiotic stress (temperature, moisture and salt) resistance and quality improvement; Breeding for water use efficiency (WUE) and nutrients use efficiency (NUE)

Unit III: Heterosis breeding- Types, mechanisms and basis of heterosis, facilitating mechanisms like male sterility, self-incompatibility and sex forms

Unit IV: Mutation and Polyploidy breeding; Improvement of asexually propagated vegetable crops and vegetables suitable for protected environment

Unit V: Ideotype breeding- Ideotype breeding; varietal release procedure; DUS testing in vegetable crops; Application of In vitro and molecular techniques in vegetable improvement.

PRACTICAL

1. Floral biology and pollination behaviour of different vegetables
2. Techniques of selfing and crossing of different vegetables viz., Cole crops, okra, cucurbits, tomato, eggplant, hot pepper, etc.
3. Breeding system and handling of filial generations of different vegetables
4. Exposure to biotechnological lab practices.
5. Visit to breeding farms

VSC 507: PROTECTED CULTIVATION OF VEGETABLE CROPS

(2+1)

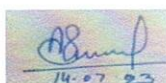
THEORY

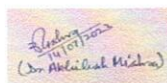
UNIT I: Scope and importance- Concept, scope and importance of protected cultivation of vegetable crops; Principles, design, orientation of structure, low and high cost polyhouses/greenhouse structures

UNIT II: Types of protected structure-Classification and types of protected structures- greenhouse/polyhouses, plastic-non plastic low tunnels, plastic walk in tunnels, high roof tunnels with ventilation, insect proof net houses, shed net houses, rain shelters, NVP, climate control greenhouses, hydroponics and aeroponics; Soil and soilless media for bed preparation; Design and installation of drip irrigation and fertigation system

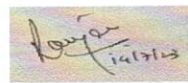
UNIT III: Abiotic factors- Effect of environmental factors and manipulation of temperature, light, carbon dioxide, humidity, etc. on growth and yield of different vegetables.

UNIT IV: Nursery raising- High tech vegetable nursery raising in protected structures using plugs and portrays, different media for growing nursery under protected cultivation; Nursery problems and management technologies including fertigation


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UNIT V: Cultivation of crops- Regulation of flowering and fruiting in vegetable crops; Technology for raising tomato, sweet pepper, cucumber and other vegetables in protected structures, including varieties and hybrids, training, pruning and staking in growing vegetables under protected structures

UNIT VI: Solutions to problems- Problems of growing vegetables in protected structures and their remedies, physiological disorders, insect and disease management in protected structures; Use of protected structures for seed production; Economics of greenhouse crop production.

PRACTICAL

1. Study of various types of protected structure
2. Study of different methods to control temperature, carbon dioxide and light
3. Study of different types of growing media, training and pruning systems in greenhouse crops
4. Study of fertigation and nutrient management under protected structures
5. Study of insect pests and diseases in greenhouse and its control
6. Use of protected structures in hybrid seed production of vegetables
7. Economics of protected cultivation (Any one crop)
8. Visit to established green/polyhouses/shade net houses in the region

VSC 508: SEED PRODUCTION OF VEGETABLE CROPS

(2+1)

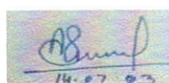
THEORY

UNIT I: Introduction, history, propagation and reproduction- Introduction, definition of seed and its quality, seed morphology, development and maturation; Apomixis and fertilization; Modes of propagation and reproductive behaviour; Pollination mechanisms and sex forms in vegetables; History of vegetable seed production; Status and share of vegetable seeds in seed industry

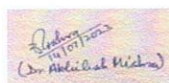
UNIT II: Agro-climate and methods of seed production- Agro-climate and its influence on quality seed production; Deterioration of crop varieties, genetical and agronomic principles of vegetable seed production; Methods of seed production, hybrid seeds and techniques of large scale hybrid seed production; Seed village concept

UNIT III: Seed multiplication and its quality maintenance- Seed multiplication ratios and replacement rates in vegetables; Generation system of seed multiplication; Maintenance and production of nucleus, breeder, foundation, certified/ truthful label seeds; Seed quality and mechanisms of genetic purity testing

UNIT IV: Seed harvesting, extraction and its processing- Maturity standards; Seed harvesting, curing and extraction; Seed processing viz., cleaning, drying and treatment of seeds, seed health and quality enhancement, packaging and marketing; Principles of seed storage; Orthodox and recalcitrant seeds; Seed dormancy



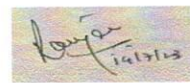
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UNIT V: Improved agro-techniques and field and seed standards- Improved agro-techniques; Field and seed standards in important solanaceous, leguminous and cucurbitaceous vegetables, cole crops, leafy vegetables, bulbous and root crops and okra; clonal propagation and multiplication in vegetative propagated crops; Seed plot technique and true potato seed production in potato

PRACTICAL

1. Study of floral biology and pollination mechanisms in vegetables
2. Determination of modes of pollination
3. Field and seed standards
4. Use of pollination control mechanisms in hybrid seed production of important vegetables
5. Maturity standards and seed extraction methods
6. Seed sampling and testing
7. Visit to commercial seed production areas
8. Visit to seed processing plant
9. Visit to seed testing laboratories

VSC 514: POSTHARVEST MANAGEMENT OF VEGETABLE CROPS

(2+1)

THEORY

UNIT I: Importance and scope- Importance and scope of post-harvest management of vegetables

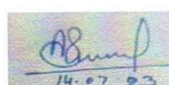
UNIT II: Maturity indices and biochemistry- Maturity indices and standards for different vegetables; Methods of maturity determination; Biochemistry of maturity and ripening; Enzymatic and textural changes; Ethylene evolution and ethylene management; Respiration and transpiration along with their regulation methods

UNIT III: Harvesting and losses factors- Harvesting tools and practices for specific market requirement; Postharvest physical and biochemical changes; Preharvest practices and other factors affecting postharvest losses


UNIT IV: Packinghouse operations- Packing house operations; Commodity pretreatments chemicals, wax coating, precooling and irradiation; Packaging of vegetables, prevention from infestation, management of postharvest diseases and principles of transportation

UNIT V: Methods of storage- Ventilated, refrigerated, modified atmosphere and controlled atmosphere storage, hypobaric storage and cold storage; Zero-energy cool chamber, storage disorders like chilling injury in vegetables.

PRACTICAL



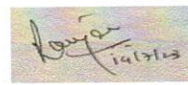
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1. Studies on stages and maturing indices
2. Ripening of commercially important vegetable crops
3. Studies of harvesting, pre-cooling, pre-treatments, physiological disorders- chilling injury
4. Improved packaging
5. Use of chemicals for ripening and enhancing shelf life of vegetables
6. Physiological loss in weight, estimation of transpiration, respiration rate and ethylene release
7. Storage of important vegetables
8. Cold chain management
9. Visit to commercial packinghouse, cold storage and control atmosphere storage

Minor Courses

SAC 502: SOIL FERTILITY AND FERTILIZER USE

(3+1)

THEORY

UNIT I: Soil fertility and soil productivity; fertility status of major soils group of India; nutrient sources- fertilizers and manures; Criteria of essentiality, classification, law of minimum and maximum, essential plant nutrients - functions and deficiency symptoms, Nutrient uptake, nutrient interactions in soils and plants; long-term effect of manures and fertilizers on soil fertility and crop productivity;

UNIT II: Soil and fertilizer nitrogen-sources, forms, immobilization and mineralization, nitrification, denitrification; biological nitrogen fixation -types, mechanism, microorganisms and factors affecting; nitrogenous fertilizers and their fate in soils; management of fertilizer nitrogen in lowland and upland conditions for high fertilizer use efficiency.

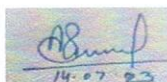
UNIT III: Soil and fertilizer phosphorus-forms, immobilization, mineralization, reactions in acid and alkali soils; factors affecting phosphorus availability in soils; phosphatic fertilizers - behaviour in soils and management under field conditions. Potassium - forms, equilibrium in soils and its agricultural significance; mechanism of potassium fixation; management of potassium fertilizers under field conditions.

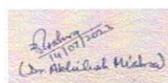
UNIT V: Sulphur - source, forms, fertilizers and their behaviour in soils; role in crops and human health; calcium and magnesium- factors affecting their availability in soils; management of sulphur, calcium and magnesium fertilizers.

UNIT VI: Micronutrients: critical limits in soils and plants; factors affecting their availability and correction of their deficiencies in plants; role of chelates in nutrient availability.

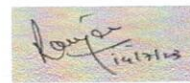
UNIT VII: Common soil test methods for fertilizer recommendations; quantity-intensity relationships; soil test crop response correlations and response functions.

UNIT VIII: Fertilizer use efficiency; site-specific nutrient management; plant need based nutrient management; integrated nutrient management; speciality fertilizers concept, need and category. Current status of speciality fertilizers uses in soils and crops of India.


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UNIT IX: Soil fertility evaluation - biological methods, soil, plant and tissue tests; soil quality in relation to sustainable agriculture, Determination of critical limit, DRIS.

UNIT X: Definition and concepts of soil health and soil quality; Long term effects of fertilizers and soil quality.

PRACTICALS

1. Soil and plant sampling and processing for chemical analysis
2. Determination of soil pH, total and organic carbon in soil
3. Chemical analysis of soil for total and available nutrients (major and micro)
4. Analysis of plants for essential elements (major and micro)

PL PATH 507 PRINCIPLES OF PLANT DISEASE MANAGEMEN

(2+1)

THEORY

UNIT I: Principles of plant disease management by cultural, physical, biological, chemical, organic amendments and botanicals methods of plant disease control, integrated control measures of plant diseases. Disease resistance and molecular approach for disease management.

UNIT II: History of fungicides, bactericides, antibiotics, concepts of pathogen, immobilization, chemical protection and chemotherapy, nature, properties and mode of action of antifungal, antibacterial and antiviral chemicals. Label claim of fungicides.

UNIT III: Application of chemicals on foliage, seed and soil, role of stickers, spreaders and other adjuvants, health *vis-a-vis* environmental hazards, residual effects and safety measures

PRACTICAL

Phytopathometry. Methods of *in-vitro* evaluation of chemicals, antibiotics, bio agents against plant pathogens. Field evaluation of chemicals, antibiotics, bio agents against plant pathogens. Soil solarisation, methods of soil fumigation under protected cultivation. Methods of application of chemicals and bio control agents. ED and MIC values, study of structural details of sprayers and dusters. Artificial epiphytotic and screening of resistance.

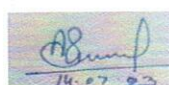
FLS 512 SEED PRODUCTION IN FLOWER CROPS

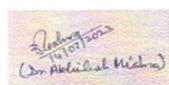
2(1+1)

THEORY

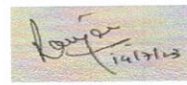
UNIT I: Scenario of Seed Industry: Scope, scenario and importance of seed production in flower crops. Constraints in flower seed production. Marketing and economics of flower seeds.

UNIT II: Seed production-Methods: Methods of seed production, agrotechniques for production of nucleus, breeder and certified seeds. Harvesting, seed processing, seed priming, seed chain, packaging and storage.


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UNIT III: Population improvement: Mass selection, progeny selection. Use of incompatibility and male sterility, maintenance of variety and seed production in flower crops.

UNIT IV: F1 hybrids: F1 hybrid seed production advantages, steps involved in hybrid seed production, pollination behaviour and isolation, pollination management methods in production of F1/ hybrids in different flower crops

UNIT V: Seed certification and standards: Seed certification, Seed standards, seed act, plant breeders rights and farmers' rights, Bio safety, handling of transgenic seed crops, importing of seeds and OGL, trade barriers in seed business, sanitary and phytosanitary issues, custom clearance and quarantine.

Crops: Marigold, petunia, antirrhinum, zinnia, pansy, lupin, calendula, phlox, vinca, dianthus, sunflower, annual chrysanthemum, poppy, corn flower, rice flower,

PRACTICALS

1. Seed production of open pollinated varieties
2. Seed production of cross pollinated varieties
3. Steps involved in hybrid seed production
4. Hybrid seed production in different flower crops like marigold, petunia, antirrhinum, zinnia, pansy, lupin, calendula, phlox, vinca, dianthus, sunflower, annual chrysanthemum etc.
5. Visit to seed industry
6. Visit to quarantine facility

Supporting Courses

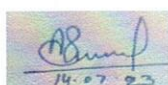
STAT511 EXPERIMENTAL DESIGNS

3(2+1)

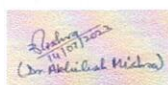
THEORY

UNIT I: Need for designing of experiments, characteristics of a good design. Basic principles of designs- randomization, replication and local control.

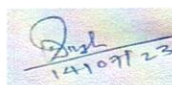
UNIT II: Uniformity trials, size and shape of plots and blocks, Analysis of variance, completely randomized design, randomized block design and Latin square design.



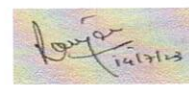
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UNIT III: Factorial experiments, (symmetrical as well as asymmetrical). orthogonality and partitioning of degrees of freedom. Concept of confounding.

UNIT IV: Split plot and strip plot designs, analysis of covariance and missing plot techniques in randomized block and Latin square designs; Transformations, Balanced Incomplete Block Design, resolvable designs and their applications, Lattice design, alpha design - concepts, randomization procedure, analysis and interpretation of results. Response surfaces. Combined analysis.

PRACTICAL

Uniformity trial data analysis, formation of plots and blocks, Fairfield Smith Law, Analysis of data obtained from CRD, RBD, LSD, Analysis of factorial experiments; Analysis with missing data; Split plot and strip plot designs.

Common Compulsory Courses

PGS 501 LIBRARY AND INFORMATION SERVICES

1(0+1)

PRACTICAL

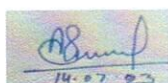
Introduction to library and its services; Role of libraries in education, research and technology transfer; Classification systems and organization of library; Sources of information- Primary Sources, Secondary Sources and Tertiary Sources; Intricacies of abstracting and indexing services (Science Citation Index, Biological Abstracts, Chemical Abstracts, CABI Abstracts, etc.); Tracing information from reference sources; Literature survey; Citation techniques/Preparation of bibliography; Use of CD-ROM Databases, Online Public Access Catalogue and other computerized library services; Use of Internet including search engines and its resources; e-resources access methods.

PGS 502 TECHNICAL WRITING AND COMMUNICATIONS SKILLS

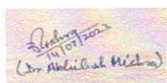
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PRACTICAL

Technical Writing-Various forms of scientific writings- theses, technical papers, reviews, manuals, etc; Various parts of thesis and research communications (title page, authorship contents page, preface, introduction, review of literature, material and methods, experimental results and discussion); Writing of abstracts, summaries, précis, citations etc.; commonly used abbreviations in the theses and research communications; illustrations, photographs and drawings with suitable captions; pagination, numbering of tables and illustrations; Writing of numbers and dates in scientific write-ups; Editing and proof-reading; Writing of a review article. Communication Skills - Grammar (Tenses, parts of speech, clauses, punctuation



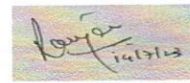
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marks); Error analysis (Common errors); Concord; Collocation; Phonetic symbols and transcription; Accentual pattern: Weak forms in connected speech: Participation in group discussion: Facing an interview; presentation of scientific papers.

PGS 503 INTELLECTUAL PROPERTY AND ITS MANAGEMENT IN AGRICULTURE

1(1+0)

THEORY

Historical perspectives and need for the introduction of Intellectual Property Right regime; TRIPs and various provisions in TRIPs Agreement; Intellectual Property and Intellectual Property Rights (IPR), benefits of securing IPRs; Indian Legislations for the protection of various types of Intellectual Properties; Fundamentals of patents, copyrights, geographical indications, designs and layout, trade secrets and traditional knowledge, trademarks, protection of plant varieties and farmers' rights and biodiversity protection; Protectable subject matters, protection in biotechnology, protection of other biological materials, ownership and period of protection; National Biodiversity protection initiatives; Convention on Biological Diversity; International Treaty on Plant Genetic Resources for Food and Agriculture; Licensing of technologies, Material transfer agreements, Research collaboration Agreement, License Agreement.

PGS 504 BASIC CONCEPTS IN LABORATORY TECHNIQUES

1(0+1)

PRACTICAL

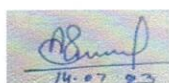
Safety measures while in Lab; Handling of chemical substances; Use of burettes, pipettes, measuring cylinders, flasks, separatory funnel, condensers, micropipettes and vascupets; washing, drying and sterilization of glassware; Drying of solvents/chemicals. Weighing and preparation of solutions of different strengths and their dilution; Handling techniques of solutions; Preparation of different agro-chemical doses in field and pot applications; Preparation of solutions of acids; Neutralisation of acid and bases; Preparation of buffers of different strengths and pH values. Use and handling of microscope, laminar flow, vacuum pumps, viscometer, thermometer, magnetic stirrer, micro-ovens, incubators, sandbath, waterbath, oilbath; Electric wiring and earthing. Preparation of media and methods of sterilization; Seed viability testing, testing of pollen viability; Tissue culture of crop plants; Description of flowering plants in botanical terms in relation to taxonomy

PGS:505 AGRICULTURAL RESEARCH, RESEARCH ETHICS AND RURAL DEVELOPMENT PROGRAMMES

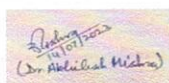
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THEORY

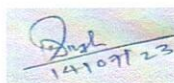
UNIT I: History of agriculture in brief; Global agricultural research system: need, scope, opportunities; Role in promoting food security, reducing poverty and protecting the environment; National Agricultural Research Systems (NARS) and Regional Agricultural Research Institutions; Consultative Group on



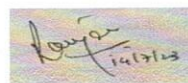
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International Agricultural Research (CGIAR): International Agricultural Research Centres (IARC), partnership with NARS, role as a partner in the global agricultural research system, strengthening capacities at national and regional levels; International fellowships for scientific mobility.

UNIT II: Research ethics: research integrity, research safety in laboratories, welfare of animals used in research, computer ethics, standards and problems in research ethics.

UNIT III: Concept and connotations of rural development, rural development policies and strategies. Rural development programmes: Community Development Programme, Intensive Agricultural District Programme, Special group – Area Specific Programme, Integrated Rural Development Programme (IRDP) Panchayati Raj Institutions, Co- operatives, Voluntary Agencies/Non-Governmental Organisations. Critical evaluation of rural development policies and programmes. Constraints in implementation of rural policies and programmes.

VSC 599 Master's Research (Thesis/Dissertation)

Credits 10.0

Fourth Semester

VSC 599 Master's Course Seminar

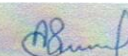
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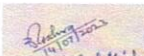
VSC 599 Master's Research (Thesis/Dissertation)

20+0


Thesis Report

Viva-Voce Examination


14.07.23


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(Dr. Anil Kumar)


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