SKILL FACULTY OF AGRICULTURE

B. Voc. (Agriculture)

Scheme-3 Year Course

2023-26

SHRI VISHWAKRMA SKILL UNIVERSITY

DUDHOLA, PALWAL

Program Learning Outcome

PO.1: To acquire knowledge on concepts of organic agriculture and understand the procedure of organic certification.

PO.2: To expand breadth of knowledge and expertise in soil fertility and fertilizer management.

PO.3: To understand the techniques of seed science and vegetable production.

PO.4: To identify the pest and manage them through Integrated method.

PO.5: To provide the sound knowledge of vermicompost production and Mushroom cultivation.

PO.6: To provide hand hold exposure on agriculture -allied sectors like Diary, Apiculture, Aquaculture, etc.

PO.7: To understand the techniques of Post-Harvest Management and Micro-irrigation system.

PO.8: To understand mechanics of Agri entrepreneurship.

B. Voc. Agriculture - Semester I

Category	Subject Code	Subjects	Credits			Hours			Theory (Marks)			Practical Marks			Total
			Th	P	To	Th	P	To	I	E	To	I	E	To	
General Education Component	AGB-21101	Communication Skills	3	1	4	45	30	75	30	70	100	35	15	50	150
	AGB-21102	Fundamental of Computers	3	1	4	45	30	75	30	70	100	35	15	50	150
			6	**2**	**8**	**90**	**60**	**150**	**60**	**140**	**200**	**70**	**30**	**100**	**300**
	AGB-21103	Fundamental of Rural Development	3	1	4	45	30	75	30	70	100	35	15	50	150
Skill Education Component	AGB-21104	Organic Farming – 1	3	2	5	45	60	105	30	70	100	35	15	50	150
	AGB-21105	Organic Farming – 2	3	2	5	45	60	105	30	70	100	35	15	50	150
	AGB-21106	Hydroponic Techniques	3	2	5	45	60	105	30	70	100	35	15	50	150
			12	**7**	**19**	**180**	**210**	**390**	**120**	**280**	**400**	**140**	**60**	**200**	**600**
		Total	**18**	**9**	**27**	**270**	**270**	**540**	**180**	**420**	**600**	**210**	**90**	**300**	**900**

B. Voc. Agriculture - Semester II

Category	Subject Code	Subjects	Credits			Hours			Theory (Marks)			Practical (Marks)			Total
			Th	P	To	Th	P	To	I	E	To	I	E	To	
General Education Component	AGB-21201	MOOC/Online Contents - I	3	0	3	45	0	0	30	70	100	0	0	0	100
	AGB-21202	MOOC/Online Contents - II	2	0	2	30	0	0	30	70	100	0	0	0	100
			5	**0**	**5**	**75**	**0**	**0**	**60**	**140**	**200**	**0**	**0**	**0**	**200**
Skill Education Component	AGB-21203	**OJT** Organic Farming (120 hrs) Hydroponic Techniques (165 hrs) Agriculture Practices (405 hrs)	0	23	23	0	690	690	0	0	0	350	150	500	500
			0	**23**	**23**	**0**	**690**	**690**	**0**	**0**	**0**	**350**	**150**	**500**	**500**
		Total	**5**	**23**	**28**	**75**	**690**	**690**	**60**	**140**	**200**	**350**	**150**	**500**	**700**

Complete Syllabus

SEMESTER-1

Subject: Communication Skills

Subject Code: AGB-21101

Course Credit: 04 (3-1-0)

Max. Marks: 100 (30I+70E); 50 (35I+15E)

Course Objectives:

Develop effective communication skills among the students for the business world.

Learning Outcome:

After completion of course student will bale to…

- Able to differentiate in the vowels and consonants that can help the students to pronounce words better and be able to learn phonetics.
- Learn the correct pronunciation of the words helping in the reduction of Mother Tongue Influence. Able to communicate effectively and will have improved verbal communication.
- Learn to frame the sentences properly with the correct formation. This will improve the written skills of the students.
- Able to write paragraphs on different topics with the correct usage of vocabulary and will improve the written as well as verbal communication.
- Learn the correct usage of the punctuation marks, will draft formal & informal emails and will comprehend the article.

Theory

UNIT 1

Communication: Meaning of Communication, Importance of Communication, Types of Communication, Process of Communication, Communication network in an organization, Barriers to Communication, Essentials of good Communication

UNIT II

Grammar and Usage: Subject and verb agreement, Tenses: simple past (negatives/interrogatives) present perfect, past perfect continuous, past perfect, expressing future time (will and going to), Passive voice (perfect tenses and modals), Modals (must, should ought to, would), Linking words (to like

because although, instead of, if, as, since, who, which that, when however, in spite of), Reported speech, statements, questions (yes/no)

UNIT III

Reading Skills: Prose texts: The Gift of the Magi by O. Henry, Poems: Death the Leveller by James Shirely, Mending wall – Robert Frost, Drama: Refund by Fritz Karinthy

UNIT IV

Listening Skills: The process of listening, Types of listening, Benefits of effective listening, Barriers to listening.

UNIT V

Writing Skills: Paragraph Writing:(Describing objects, describing people, Narrating events, stories); Letter Writing: Application for leave Application for jobs, asking for information from various agencies (e.g. Last date for getting prospects; price of items before placing orders) Note making;

Ending (punctuation, spelling, appropriate vocabulary, structures)

Practical

1. Greetings and starting a conversation.
2. Nov Verbal Communication Techniques during conversation.
3. Verbal Communication Techniques during Conversation.
4. PPT presentation.
5. Debate.
6. Situational dialogues / Role play.
7. Telephonic skills.
8. Group Discussions

Recommended Reading

- Sethi, J & et al. A Practice Course in English Pronunciation, Prentice Hall of India, New Delhi.
- Sen, Leena. Communication Skills, Prentice Hall of India, New Delhi.
- Prasad, P. Communication Skills, S.K. Kataria& Sons.

- Bansal, R.K. and J.B. Harrison. Spoken English, Orient Language.
- Roach Peter. English Phonetics and Phonology.
- A.S. Hornby's. Oxford Advanced Learners Dictionary of Current English, 7th Edition.
- Prasad, P. The Functional Aspects of Communication Skills, Delhi.
- McCarthy, Michael. English Vocabulary in Use, Cambridge University Press.
- Rajinder Pal and PremLata. English Grammar and Composition, Sultan Chand Publication.
- Idioms & Phrases (English-Hindi), Arihant Publication (India) Pvt. Ltd.
- One Word Substitution, Dr. Ashok Kumar Singh, Arihant Publications (India) Pvt,Ltd

Subject- Fundamental of Computers
Subject Code: AGB-21102
Course Credit: 04 (3-1-0)
Max. Marks: 100 (30I+70E); 50(35I+15E)

Course Objectives: Course is designed to impart knowledge and skills required to learn fundamentals of computers

Learning Outcomes:

- To understand basics of computer and working with Operating System.
- To know the concept of input and output devices
- To develop working skills with MS Office
- Enable to access internet technology.

Theory

UNIT-1

Introduction to Computer System: Basic Applications of Computer; Input Output Devices, Computer Memory, Concepts of Hardware and Software, Computer Virus: Definition, Types of viruses, Characteristics of viruses, Anti-virus software.

UNIT-II

Number System: Introduction to number system, Decimal to Binary and Vice Versa, Decimalto Octal and Vice Versa, Decimal to Hexa-Decimal and Vice Versa, ASCII Codes.

UNIT-III

Operating System: Overview of operating system: Definition, Functions of operating system, Need and its services, Types of operating system, Batch Processing, Multiprocessing, Multiprogramming, Time-Sharing, On-Line Processing, Real-Time Processing.

UNIT-IV

Understanding Office Applications: Introduction to MS Word, Introduction to MS Excel and its applications, Introduction to MS PowerPoint, Menus, Shortcuts, Document types, Formatting documents, spread sheet and presentations, Working with Spreadsheets, Different templates, Macros, Mail merge.

UNIT-V

Networking: Network Technologies, Introduction to Internet and protocol, Network

connecting devices, Topologies, HTTP, HTTPS.

Practical

- Various Components of Computer
- Internal And External DOS Commands
- MS Word
- MS Excel
- MS Power Point
- Introduction to Internet and protocol
- Network connecting devices
- Web Browser and E-mail
- Topologies
- HTTP, HTTPS

Recommended reading:

- Patt,Yale and Patel, Sanjay. 2019. Introduction to Computing Systems: From bits and gates to C & beyond. McGraw Hill.
- Elahi, Ata. 2017. Computer Systems, Digital Design, Fundamentals of Computer Architecture and Assembly Language. Springer.
- Norton, Peter. 2017. Introduction to Computers. McGraw Hill Education.
- Maluth, John Monyjok. 2016. Basic Computer Knowledge (Computer Basics Book 1). Zaccheus Entertainment.
- Ravichandran. A. 2014. Fundamentals of Information Technology. Khanna Book Publishing Company.
- Sinha, Priti and Sinha, Pradeep K. 2004. Computer Fundamentals. BPB Publications.

Subject- Fundamental of Rural Development
Subject Code: AGB-21103
Course Credit: 04 (3-1-0)
Max. Marks: 100 (30I+70E); 50(35I+15E)

Course Objectives

Course is designed to understand the impact of macro policy level changes on different sections of the rural population in India

Learning Outcomes

This subject will develop the impact of climate change on agriculture and its related impact on food security

UNIT -I

Rural Economy and Development: Basic understanding of sociology in terms of society (caste, class, creed, race, gender etc), Basic understanding of Indian villages and their pattern in terms socio, economic, political and cultural pattern, History of Rural development, History of Govt. Development Programmes Initiatives for Rural development, Panchayati Raj Institutions.

UNIT –II

Rural Communication and extension: Models of Communication SMCRE model, Relation of SMRCE with diffusion and adoption, Extension methods of Communication, individual contact, group contact and mass contact methods. organizing groups discussion, farm and home visit, leaflet, pamphlets etc., Communication Skills, Communication exercises, Effective ways of communication, SHG a tool, Evolution of SHG, SHG a tool for development, Addressing women development, Women vis-à-vis rural India to keep records, Group meeting, models of SHGs, SHG and credit) , different way to approach the community and mobilize women; Basic of accounting : Book keeping, cash book ledger.

UNIT – III

Concept of – Rural Women, Adult and Non-Formal Education- Need of education, Research- Types of Research, Social Research Development, Tools for data collection- Questionnaire, Survey methods, Case study etc., Rural Health- Rural health conditions with focus on child health, Agriculture Extension- Agriculture in India, Agriculture research in India, Micro Credit

UNIT-IV

Understanding Cooperatives – History of cooperative and models of cooperatives, MACS

Act.Livelihood & Livelihood models, Group recognition test, tracking of Loans, Different formatsetc. Bank linkage; & Micro Finance -Models of Micro finance, Regulatory frame work, need of financial services, MIS- Importance and Standards in MF- Calculating OTR, PAR, Rep.Rate, rating groups, Transparency- Transparency in social life, MFI, Work, etc.

Practical

- A case study to understand the problems of Women in Rural Area.
- A case study to understandthe working of NGO.
- To conduct Market research.
- To conduct Social Research; Case study forvarious agriculture extension services.
- Case study to understand the working of SHG.
- A visit to Rural Bank. An activity to develop communication skills.
- Micro-credit system- A visit withany NGO or Government organization.
- An activity that involves basics of accounting.

Recommended Reading:

- Tahir, Hussain; Tahir, Mary and Tahir Riya. 2020. Fundamentals of Rural Development. Dreamtech Press.
- Sreedhar, G. and Rajasekhar, D. 2014. Rural Development in India. Concept Publishing Company (P) LTD.
- Ray, G. L. 2006. Extension Communication and Management. Naya Prakashan, Kolkata
- Adivi Reddy, A. 2001. Extension Education. Sri Lakshmi Press, Bapatla.
- Chitambar, J. B. 1997. Introductory Rural Sociology. Wiley Eastern Limited, New Delhi

Subject- Organic Farming - 1 (AGR/Q1201, V1.0)
Subject Code: AGB-21104
Course Credit: 05 (3-2-0)
Max. Marks: 100 (30I+70E)

Course Objectives: This subject will develop an understanding the concept of organic farming their scope, importance and to ensure safe and healthy food production.

Learning Outcomes

On successful completion of this course, the students will be able to:

- Understand the benefits of organic farming
- Develop critical understanding on various aspects of organic cultivation.
- Gain knowledge about the soil and nutrient management.
- Enable to manage weeds in organic field.

UNIT-I

Planning for Organic Farming (AGR/N1201).

Introduction to organic farming: concept, scope and importance and need of organic farming in India, transition to organic farming, estimation the cost, time and budget of organic farming, phased approach to be taken to transition to organic farming, prepare crop portfolios – multiple cropping, feasible crop prepares yearly plan / crop schedule, need of safe farming practices. Government and NGOs initiatives for organic farming.

UNIT-II

Crop Selection & seed treatment under organic farming (AGR/N1202)

Crop selection: identification of main crop and companion crop, plan for intercrop, mixed crop, relay crop, trap crop etc, plan for crop rotation cycle, selection of seed variety –insect pest resistant, non-genetically modified etc,

Seed treatment: organic practices for seed treatment, inputs/material to be used for organic seed treatment, preparation of inputs for seed treatment, implementation of seed treatment.

UNIT-III

Soil nutrient management under Organic farming (AGR/N1203)

Concept of soil nutrient management under organic farming: soil activation and soil enhancement, importance of top soil in organic cultivation, various methods of activating microbial activity in top soil, prepare various organic inputs that can increase soil microbial activity, apply soil activating inputs effectively, soil testing, soil amendment, manuring, land preparation, green manure crop, farm yard manure, use of bio mass, vermicompost, vermiwash, permaculture, implementation of soil enhancement methods, protocol preparation

for basal dose application & top dressing.

UNIT-IV

Weed control under Organic Farming (AGR/N1204)

Identification of weeds: identify the types of weed in the crop, weed management, undertake mechanical/manual weeding process at appropriate time to avoid crop damage, mulching sheets for cultivation, use bio-herbicides for weed control wherever feasible, mechanized weedcontrol equipment.

Tools/Equipment Required: White Board, Marker, Laptop, projector, Record Keeping Book, receipts, voucher, Soil testing kit, plastic bags, labels, plough, seed drill, leveller, tractor, Sprayer, bio fertilizers, irrigation tools & equipment, container, Storage infrastructure -cool chamber, crate, bags, Nose masks, first aid kit.

Practical

- Study of different organic materials and manures; Green manuring for organic farming.
- Preparation of enrich compost and vermicompost.
- Identification of different types of weeds and different weedcontrol equipment's,
- Soil testing of farm land, soil amendment in organic farming.
- Estimation of the cost and time of organic farming.
- Preparation of crop schedule in organic farming.
- Visit of organic farms to study the various components and their utilization.

Recommended Reading

- Maliwal, P L. 2020. Principles of Organic Farming. Scientific Publishers.
- Somasundaram, E.; Nandhini, D Udhaya and Meyyappan, M. 2019. Principles of Organic Farming, with theory and practicals. New India Publishing Agency
- Mallick, Prabal. 2018. Organic Urban Farming, the Indian Way: Comprehensive Guide to Organic Gardening for Urban Spaces in India.
- Reddy, S R. 2017. Principles of Organic Farming. Kalyani Publication.
- Palaniappan, S.P. 2010. Organic Farming: Theory and Practice. Scientific Publishers Journals Dept.
- Sharma, Arun K. 2002. A Hand Book of Organic Farming. Agro-Bios.

Subject- Organic Farming - 2 (AGR/Q1201, V1.0)
Subject Code: AGR-21105
Course Credit: 05 (3-2-0)
Max. Marks: 100 (30I+70E); 50(35I+15E)

Course Objectives

To create awareness about organic farming and to familiarize with organic crop management practices, organic standards and certification.

Learning Outcomes

On successful completion of this course, the students will be able to:

- Understand the importance of irrigation system in Organic cultivation.
- Enable to know about IPDM, Post- harvest techniques and business prospects of organic farming.
- Acquire knowledge of organic crop certification.
- Develop a safe and secure organic production system.

UNIT 1

Irrigation Management under Organic farming (AGR/N1205)

Characteristics of good irrigation system, the micro irrigation techniques, tools/equipment required for micro irrigation, optimum moisture level required for the farm.

UNIT 2

Integrated Pest and Disease Management under organic farming (AGR/N1206)

History and Importance of Integrated Pest and Disease Management (IPDM), Principles and tools of IPDM. Calculation of Economic Injury Level (EIL) and Economic Threshhold Level (ETL), Crop infestation, symptoms of disease incidence in crop, stages of pest incidence, use of suitable varieties, Preventive and curative care, Resistant varieties, crop rotation, inter crop, border crop, trap crops, intercultural operations, natural enemies of pest, beneficial insects, bio-insecticides, etc.

UNIT 3

Harvest and Post – harvest management under organic farming (AGR/N1207)

Harvesting of the crop: Crop maturity, moisture content during harvesting, etc, physical admixture during harvesting, harvesting methods and handling of harvested crops, Post-harvest management practices like grading, storage, organically acceptable fumigation,

cold storage, packaging and marketing.

UNIT 4

Undertake Quality assurance & certification in Organic Farming (AGR/N1208)

Organic certification process, Risk management in compliance of standards, Participatory guarantee system, Documentation in third party and PGS certification, Documents needed for selling of organic produce and traceability.

UNIT 5

Undertake business of Organic farming (AGR/N1209)

Economics of organic farming, Connecting with the market and market intelligence, Direct marketing

UNIT 6

Maintain Health & Safety at the work place (AGR/N9903)

Perform General Safety Rules, Knowledge of various health hazards relevant to workplace andbasic first aid training, basic safety checks and other common reported hazards before all farm operation, identify and study the use of equipment, materials safely and correctly, handle the emergency situation in workplace and during any farm operation

Tools/Equipment Required:

White Board, Marker, Laptop, projector, Record Keeping Book, Insect net, Insect box, formalin, cotton roll, microscope, Laminar Air Flow, Autoclave, Oven, Culture Medium, Sample collection box, receipts, voucher, Soil testing kit, plastic bags, labels, plough, seed drill, leveler, tractor, Sprayer, bio fertilizers, irrigation tools & equipment, container, Storage infrastructure -cool chamber, crate, bags, Nose masks, first aid kit.

Recommended Reading:

Practical

- Identification of the symptoms of disease incidence in cereals and some vegetables
- Bio fertilizers/bio inoculants for organic farming.
- ITK for nutrientmanagement
- Non chemical approach for insect, pest, disease and weed management
- General safety measures.
- Post-harvest management: quality aspect, grading, packaging and handling.

- Visit of organic farms to study the various components and their utilization.

Recommended Reading:

- Prashar, Rakesh Kumar. 2022. Organic Safety - Awakening the Safety Mind. Gurucool Publishing
- Introduction to Microirrigation system. 2019, NCERT. kvmt101.pdf (ncert.nic.in)
- Gehlot, D. 2018. Organic Farming: Standards, Accreditation, Certification and Inspection, Agrobios (India)
- Serge Kreiter and Vincenzo Vacante. 2017. Handbook of Pest Management in Organic Farming. CABI Publishing.
- Rathore, N. S., Mathur, G. K. and Chasta, S. S. 2012. Post-Harvest Management and Processing of Fruits and Vegetables. The Energy And Resources Institute.
- Natarajan, T. 2010. Organic farming for business. Swastik Publication.

Subject- Hydroponics Techniques (**AGR/Q0808)**
Subject Code: AGR-21106
Course Credit: 05 (3-2-0)
Max. Marks: 100 (30I+ 70E) 50 (35I+15E)

Course Objectives:

To acquaint students about hydroponic system, selection of crops, light, temperature and humidity interacts with horticultural crops in the greenhouse, plant physiology and environmental management, Nutrient Film Technique, Deep Flow Technique, Ebb & Flow, Wick System, Drip method, aeroponics and Greenhouse / Polyhouse with ongoing hydroponic cultivation.

Learning Outcome

After completing this programme, participants will be able to

- Explore the way light, temperature and humidity interacts with horticultural crops and their connection to greenhouse plant physiology and environmental management.
- Explore the impact irrigation strategies have on growing media and crop production (includes EC, pH, air composition, water content and drain %)
- Monitor plant health, hydroponic environment, nutrient solution, perform routine maintenance checks, maximize greenhouse efficiency and energy conservation.
- • Identify common pests and characteristics of different diseases, and understand the principal factors involving integrated pest management and how to implement bio-controls to control common greenhouse pests (i.e. spider mites, whitefly, thrips, fungus gnats, aphid, russet mite, broad mite, caterpillars, etc

Theory

UNIT I

Introduction: scope and importance of horticulture in India, different plant components and plant food (composition), sources of plant food, importance of roots, types of hydroponics-solution culture and medium culture, crops-food and fodder that can be grown using hydroponics system

Different types of Hydroponic system: NFT – Nutrient Film Technique, DFT – Deep Flow Technique, Ebb & Flow, Wick System, Drip method, Aeroponics and their pros and cons

UNIT II

Hydroponic growth of plants and related operations (AGR/N0822)

Crops and their suitability to hydroponics system, light, temperature and humidity, EC and pH interacts with horticultural crops in the greenhouse, and environmental management, media types, characteristics, and their application, and the principal factors affecting their selection,

Crop spraying (calculate volume, speed and pressure) for different types of systems; Plant physiology: plant structure, photosynthesis, nutrition, characteristics of different root-zone factors and their application, plant food, substrates and nursery medium for the growth of plants Fertigation: application of fertilizations, principal factors involving nutrient management (including basic formula calculations); Common pests and characteristics of different diseases, Integrated Pest Management (IPM) and role of bio-controls to control common greenhouse pests; Plant health, hydroponic environment, nutrient solution, perform routine maintenance checks, maximize greenhouse efficiency and energy conservation

Assess water quality, characteristics of different treatment systems and their application

UNIT-III

Harvesting, grading, storage and marketing activities in a hydroponics system (AGR/N0823)

Post-harvest management: Concepts and importance of including cooling, cleaning, sorting, grading and packing, maturity indices of different crops and time of day to reap, harvesting in the hydroponics system, practices for grading, storage and marketing of the produce of different commodities, practices to maintain operations and production data at the hydroponics farm

UNIT-IV

Manage requirements of a hydroponics system (AGR/N0824)

Requirements for nutrient media, seed grains in accordance with demand forecast, water and electricity requirement for the hydroponics system; suitable conditions for optimum growth in a hydroponics system, monitoring, recording and responding approach to good crop balance.

UNIT V

Basic entrepreneurial activities for small enterprise (AGR/N9908)

Exposure of small enterprises related to hydroponics through case studies, B:C ratio for hydroponics cultivation, sources of funds/ subsidies, target customers, demand and supply of commodities, different marketing channels, relevant legislation and rules, marketing data and basic book keeping, communication skills and digital skills

UNIT-VI

Safety and hygiene in the hydroponics system (AGR/N0825)

Hygiene related to proper drainage of nutrient water, seal any spillage that may occur and prevent birds and animals from accessing it, clean and efficient workplace

Safety with the electrical equipment available in a hydroponic farm and first aid

Unique Tools/Equipment Required:

Greenhouse / Polyhouse with ongoing hydroponic cultivation (media and / or water based), temperature and humidity meter, EC meter, automated curtain operations, mister, fogger, circulatory fans, drip irrigation system with aero drippers, inner (net) curtain, Automated fertigation and humidity control mechanism (sand filter, disc filter, motor, valves, pressure

gauge), calibrated containers and plates to measure run off (water), different types of media samples.

Recommended Reading:

Practical:

- Identification and characterization of different types of growing media for hydroponics systems.
- Development of the monitoring, recording and responding approach to good crop balance.
- Exposure to various small enterprises related to hydroponics through case studies.
- Identify different sources of funds/ subsidies and how to avail the same.
- Identify target customers, demand and supply of commodities.
- Practical based on grading, storage and marketing of the produce of different commodities.
- Practices to maintain operations and production data at the hydroponics farm
- A case study of different types of diseases of selectedcrops and preparation of list of biocontrol's for IPM
- A visit to nearby hydroponic system, designing and construction of different types of hydroponics.

Recommended Reading:

1. Hydroponics Farming in India by Josh Williams
2. Hydroponics, Soilless Gardening by S.L. Jana
3. Hydroponics, How to Do by Dr. Rajan K, Dr. Ramkumar S
4. Hydroponics, Principles and Practices by Dr. Sanbagavalli S, Dr. Ganeshan K
5. Hydroponics For Beginners by Erin Morrow
6. Commercial Hydroponics By John Matson