

Deendayal Upadhyay Kaushal Kendra (DDUKK)



Syllabus For **M. Voc. (AOM)**

w.e.f. July, 2019-20

Faculty of Agriculture

**MAHATMA GANDHI CHITRAKOOT GRAMODAYA
VISHWAVIDYALAYA, CHITRAKOOT SATNA (MP)**

M. Voc. (AOM)
(w.e.f. July, 2019-20)

Semester	Component	Course Code	Name of Paper	Credit	Hours	Remark
I st	Skill Component	MV-AOM-101	Concept of Horticulture	4(2+2)	90	
		MV-AOM-102	Nursery Management	3(1+2)	75	
		MV-AOM-103	Organic Horticulture	3(1+2)	75	
		MV-AOM-104	Work Integrated Learning -I (ASCI NSQF: Level 8) (Part 1) /Vegetable Production Management	8(2+6)	210	
			Sub Total	18(6+12)	450	
	General Component	MV-AOM-1G01	Business Communication Skill	4(2+2)	90	
		MV-AOM-1G02	Industrial MIS	5(2+3)	120	
		MV-AOM-1OP1	Optional Subject: Paper I (Subject to be chosen from General Elective)	3(2+1)	75	**
			Sub Total	12(6+6)	285	
			Total of First Semester	30(12+18)	735	
II nd	Skill Component	MV-AOM- 201	Protected Cultivation	3(2+1)	60	
		MV-AOM- 202	Commercial Floriculture	4(2+2)	90	
		MV-AOM- 203	High density Orchard Management	3(1+2)	75	
		MV-AOM- 204	Work Integrated Learning -I (ASCI NSQF: Level 8) (Part II) Processing of Vegetables	8(2+6)	210	
			Sub Total	18(7+11)	435	
	General Component	MV-AOM-2G01	Quantitative Techniques	2(2+0)	30	
		MV-AOM-2G02	Project Management	5(3+2)	105	
		MV-AOM-2G03	VSR	2(1+1)	45	
		MV-AOM-1OP2	Optional Subject: Paper II (Subject to be chosen from General Elective)	3(2+1)	60	**
			Sub Total	12(8+4)	240	
			Total of Second Semester	30(15+15)	675	
			Total of First Year	60(27+33)	1410	
III rd	Skill Component	MV-AOM-301	Specialization Group (A) Paper I	3(2+1)	60	
		MV-AOM-302	Specialization Group (A) Paper II	3(2+1)	60	

		MV-AOM-303	Specialization Group (B) Paper I	3(2+1)	60	
			Specialization Group (B) Paper II	3(2+1)	60	
			Industrial Training (related to ASCI level 9)	10(0+10)	300	
			Seminar & Report Writing	4(0+4)	120	
			GST and other Business Taxation Rules	4(3+1)	75	
	Total of Third Semester			30(11+19)	735	
IVth	Skill Component	MV-AOM-401	Specialization Group (A) Paper III	3(2+1)	60	
		MV-AOM-402	Specialization Group (A) Paper IV	3(2+1)	60	
		MV-AOM-403	Specialization Group (B) Paper III	3(2+1)	60	
		MV-AOM-404	Specialization Group (B) Paper IV	3(2+1)	60	
		MV-AOM-405	Major Project	16(0+16)	480	
		MV-AOM-406	Corporate Social Responsibility (CSR)	2(1+1)	45	
	Total of Fourth Semester			30(9+21)	765	
	Total of Second Year			60(20+40)	1500	
	Grand Total of all Semester			120(54+66)	2790	

****Two courses are to be chosen by a candidate under CBCS pattern for the General Component from the subjects mentioned in the table.**

Optional Papers:**

MV-AOM-1OP1	Operation Research	3(2+1)
MV-AOM-1OP2	Business Law & Ethics	3(2+1)
MV-AOM-1OP3	Agri Business Management	3(2+1)
MV-AOM-2OP4	Business Economics	3(2+1)
MV-AOM-2OP5	Logistic & Supply Chain Management	3(2+1)
MV-AOM-2OP6	E Commerce and Legal Provisions in Agri Business	3(2+1)
One course has to be chosen in 1st semester out of the 1st three subjects and another course in 2nd semester out of the last three subjects.		

Under Skill Component a student has to study two specialisation as appearing under Group A and Group B.

Specialization Group (A): Horticulture

Paper	Subject Code	Name of Paper	Credit
I	MV-AOM- 301	Post-Harvest Management and Value Addition in Horticultural Crops	3(2+1)
II	MV-AOM- 302	Production technology for Medicinal and Aromatic Crops	3(2+1)
III	MV-AOM- 303	Fundamental of Landscaping and Garden Design	3(2+1)
IV	MV-AOM- 401	Horti- Business Management and Export	3(2+1)
V	MV-AOM- 402	Agri Processing and Packaging	3(2+1)
VI	MV-AOM- 403	Production Technology of Spice Crops	3(2+1)

Specialization Group (B): Watershed Management

Paper	Subject Code	Name of Paper	Credit
I	MV-AOM- 303	Soil and Water Conservation	3(2+1)
II	MV-AOM- 304	Watershed related Survey and Planning	3(2+1)
III	MV-AOM- 403	Design of Watershed Structures	3(2+1)
IV	MV-AOM- 404	Case Study related to Watershed Management	3(2+1)

Presently two specialisations have been offered:

- 1. Horticulture**
- 2. Watershed Management**

More options for specialisation may be offered later.

SEMESTER I

1. MV-AOM 101 Concept of Horticulture CREDIT 4(2+2)

Economic importance and classification of horticultural crops and their culture and nutritive value, area and production, exports and imports, fruit and vegetable zones of India and of different states, nursery management practices, soil and climate, vegetable gardens, nutrition and kitchen garden and other types of gardens – principles, planning and layout, management of orchards, planting systems and planting densities. Production and practices for fruit, vegetable and floriculture crops, nursery techniques and their management. Principles and methods of pruning and training of fruit crops, types and use of growth regulators in horticulture, water management, weed management, fertility management in horticultural crops, cropping systems, intercropping, multi-tier cropping, mulching, bearing habits, factors influencing the fruitfulness and unfruitfulness. Rejuvenation of old orchards, top working, frame working, principles of organic farming. Practical: Features of orchard, planning and layout of orchard, tools and implements, layout of nutrition garden, preparation of nursery beds for sowing of vegetable seeds, digging of pits for fruit plants, planting systems, training and pruning of orchard trees, preparation of fertilizer mixtures and field application, preparation and application of growth regulators, layout of different irrigation systems, identification and management of nutritional disorder in fruits and vegetables, assessment of bearing habits, maturity standards, harvesting, grading, packaging and storage.

2. MV-AOM 102 NURSERY MANAGEMENT CREDIT 3(1+2)

Introduction, life cycles in plants, cellular basis for propagation, sexual propagation, apomixis, polyembryony, chimeras. Principles factors influencing seed germination of horticultural crops, dormancy, hormonal regulation of germination and seedling growth.

Seed quality, treatment, packing, storage, certification, testing. Asexual propagation – rooting of soft and hard wood cutting under mist by growth regulators. Rooting of cuttings in hotbeds. Physiological, anatomical and biochemical aspects of root induction in cuttings. Layering – principle and methods. Budding and grafting – selection of elite mother plants, methods. Establishment of bud wood bank, stock, scion and inter stock, relationship – Incompatibility. Rejuvenation through top working – Progeny orchard and scion bank. Micro-propagation – principles and concepts, commercial exploitation in horticultural crops. Techniques - in vitro clonal propagation, direct organogenesis, embryogenesis, micrografting, meristem culture. Hardening, packing and transport of micro-propagules. Nursery – types, structures, components, planning and layout. Nursery management practices for healthy propagule production.

3. MV-AOM 103 ORGANIC HORTICULTURE CREDIT 3(1+2)

Organic horticulture – definition, synonyms and misnomers, principles, methods, merits and demerits. Organic farming systems, components of organic horticultural systems, different organic inputs, their role in organic horticulture, role of biofertilizers, biodynamics and the recent developments. EM technology and its impact in organic horticulture, indigenous practices of organic farming, sustainable soil fertility management, weed management practices in organic farming, biological/natural control of pests and diseases, organic horticulture in quality improvement. GAP - Principles and management, HACCP exercise, certification of organic products and systems, agencies involved at national and international levels, standards evolved by

different agencies. Constraints in certification, organic horticulture and export, IFOAM and global scenario of organic movement, post-harvest management of organic produce.

4. MV-AOM 104 VEGETABLE PRODUCTION MANAGEMENT CREDIT 8 (0+8)

COOL SEASON

Cultural operations (fertilizer application, sowing, mulching, irrigation, weed control) of winter vegetable crops and their economics; Experiments to demonstrate the role of mineral elements, plant growth substances and herbicides; study of physiological disorders; preparation of cropping scheme for commercial farms; visit to commercial greenhouse/ polyhouse.

WARM SEASON

Cultural operations (fertilizer application, sowing, mulching, irrigation, weed control) of summer vegetable crops and their economics; study of physiological disorders and deficiency of mineral elements, preparation of cropping schemes for commercial farms; experiments to demonstrate the role of mineral elements, physiological disorders; plant growth substances and herbicides; seed extraction techniques; identification of important pests and diseases and their control; maturity standards; economics of warm season vegetable crops.

BUSINESS COMMUNICATION SKILL

MV-AOM-1G01

CREDIT 4(2+2)

Hours 90

UNIT-I

Meaning, objectives of communication, Significance of Communication in business organization and its process.

UNIT-II

Barriers to communication, essentials of effective communication, channels of communication, media of communication.

UNIT-III

Nature and characteristics of group communication, Committees: meanings, essentials, Advantages and Disadvantages and types of committees. Conferences: Meanings, essentials, Importance and difference between conference and committee.

UNIT-IV

Drafting of effective business letter, practice of business letters (a) Enquires & replies (b) Order and their execution (c) Complaints and adjustment (d) Collection letter (e) Sales letter and Memo.

UNIT-V

Drafting of notice, Agenda, Minutes, Report writing, Effective listening, Public speech, Interviewing skills.

Practical:

1. Case Study on Communication skills
2. Case study on Communication Channel

3. Drafting Notice, Agenda
4. Report writing
5. Letter writing
6. Interview Demos

References:

1. Pal Rajendra & Korlahalli J S- Essentials of Business Communication- Sultan Chand
2. Business Communication- Kalra, Chitkara, Mittal-Ramesh Books Depo
3. Business Communication- Singhal, Mittal- Ramesh books Depo
4. Business Communication- Mittal, Garg, Saxena- Ramesh books Depo.

INDUSTRIAL MIS

MV-AOM-1G02

CREDIT 5(2+3)
Hours 120

Unit – I:

SEMESTER II

1. MV-AOM 205 PROTECTED CULTIVATION CREDIT 3(2+1)

Greenhouse – World scenario, Indian situation: present and future, Different agro-climatic zones in India, Environmental factors and their effects on plant growth. Basics of greenhouse design, different types of structures – glasshouse, shade net, poly tunnels - Design and development of low cost greenhouse structures. Interaction of light, temperature, humidity, CO₂, water on crop regulation - Greenhouse heating, cooling, ventilation and shading. Types of ventilation- Forced cooling techniques - Glazing materials - Micro irrigation and Fertigation. Automated greenhouses, microcontrollers, waste water recycling, Management of pest and diseases – IPM. Designs of greenhouse, low cost poly tunnels, nethouse- Regulation of light, temperature, humidity in greenhouses, media, greenhouse cooling systems, ventilation systems, fertigation systems, special management practices, project preparation for greenhouses, visit to greenhouses.

2. MV-AOM 206 COMMERCIAL FLORICUTURE CREDIT 4 (2+2)

Commercial flower production; Scope and importance; Global Scenario in cut flower production and trade, varietal wealth and diversity; Soil and Environment; Special characteristics and requirements; cut flower, loose flowers, dry flowers and floral oil trade. Propagation and multiplication; IPR issues related to propagation of materials; Greenhouse management; Soil/media decontamination techniques; Microirrigation; nutrition and fertigation; slow release fertilizers and biofertilizers; influence of environmental parameters, light, temperature, moisture, humidity and CO₂ on growth and flowering; regulation for quality flowers. Flower forcing and year-round flowering through physiological interventions; Chemical regulation; Environmental manipulation; Harvest indices; Harvesting techniques; Post-harvest handling; Precooling, pulsing, packing, marketing; Export potential; Agri Export Zones. Crop specific practices – rose, anthurium, orchids, carnation, gladioli, gerbera, lilioms, heliconia, bird of paradise, *Jasminum* sp., marigold, tuberose, crossandra. Floral oil industry, floral concrete production, extraction methods, recent advances.

3. MV-AOM 207 HIGH DENSITY ORCHARD MANAGEMENT CREDIT 3(1+2)

HIGH DENSITY ORCHARD MANAGEMENT: Layout of orchards – methods of planting – manuring and irrigation methods – training and pruning of different fruit crops – judging maturity standards of major fruit crops – pest and disease management in fruit crops. Visit to commercial orchards – fruit processing unit. Orchard planning and budgeting – Calendar of operation for important fruit crops. Working out cost of cultivation for important fruit crops - Maintenance of orchard accounts and records. Crops: Tropical fruits – Mango, Banana, Grapes, Papaya, Sapota, Guava, Acid Lime, apple, Avocado, Apple and Pear.

Canopy management - importance and advantages; factors affecting canopy development.

Canopy types and structures with special emphasis on geometry of planting, canopy manipulation for optimum utilization of light. Light interception and distribution in different types of tree canopies. Spacing and utilization of land area - Canopy classification; Canopy management through rootstock and scion. Canopy management through plant growth inhibitors, training and pruning and management practices. Canopy development and management in relation to growth, flowering, fruiting and fruit quality in temperate fruits, grapes, passion fruits, mango, sapota, guava, citrus and ber.

4. MV-AOM 208 PROCESSING OF VEGETABLES CREDIT 8 (0+8)

Spoilage of fresh and processed horticultural produce; biochemical changes and enzymes associated with spoilage of horticultural produce; principal spoilage organisms, food poisoning and their control measures. Role of microorganisms in food preservation. Raw materials for processing. Primary and minimal processing; processing equipments; Layout and establishment of processing industry, FPO licence. Importance of hygiene; Plant sanitation. Quality assurance and quality control, TQM, GMP. Food standards – FPO, PFA, etc. Food laws and regulations. Food safety – Hazard analysis and critical control points (HACCP). Labeling and labeling act, nutrition labeling. Major value added products from vegetables. Utilization of byproducts of vegetable processing industry; Management of waste from processing factory. Investment analysis. Principles and methods of sensory evaluation of fresh and processed vegetables.

QUANTITATIVE TECHNIQUES

MV-AOM-2G01

CREDIT 2(2+0)
Hours 30

UNIT-I:

Meaning and uses of regression analysis, Regression lines, Regression co-efficient, Regression equations (a) by using means, SD and coefficients of correlation and (b) by using method of least square.

UNIT-II:

Meaning and uses of time series, Analysis, Components of time series, Measurement of trend by using moving average method and method of least square, Measurement of seasonal variation by using simple average method (monthly and quarterly).

UNIT-III:

Meaning and importance of the concept of probability, basic terminology, calculation of probability, Addition theorem, multiplication theorem

UNIT IV:

Association of attribution, Chi-square test, Meaning and uses of Chi-square measure.

UNIT V:

Tests and Hypothesis: Concept of standard error, test of significance, t-test, F-test, Z-test.

References:

1. Gupta S.P.- Statistical Methods- Sultan Chand
2. N.P.Agrawal- Quantitative Technique- Ramesh Book Depo

PROJECT MANAGEMENT

MV-AOM-2G02

CREDIT 5(3+2)
Hours 120

Unit- I

Identification of Investment Opportunities: Project ideas, screening of ideas, environment scanning & opportunity analysis, Government regulatory framework.

Unit - II

Technical Analysis: Material & inputs, Production technology, Product mix, Plant location & Layout, Selection of plant & equipment.

Unit- III

Profitability, Financial projection & tax Consideration: cost of production, Break even analysis, projected balance sheet, profit & loss account & cash flow statement, provisions & consideration for computing taxable income.

Unit – IV

Appraisal Criteria & Process: Methods of appraisal under certainty, risk & Uncertainty. Investment appraisal. Project appraisal techniques.

Unit – V

Network Techniques PERT and CPM, Project Management Information Systems (PMIS), Project Control: Purposes, Three Types of Control Processes , balance in Control System

Practical:

1. Case study on Feasibility Analysis of starting a new venture.
2. Project life cycle of retailing
3. Selection of project
4. Case study on Project Planning & Coordination
5. Case study on Project Budgeting, negotiation, action plan, etc
6. Analysis of Network Techniques in Retailing & SCM
7. Balance sheet preparation & comparison
8. Analysis of network technique & implementation.

References:

1. Project Management, A Managerial Approach - Jack.RMexdith and Samuel J.Mantel Jr
2. Project Management : S. Choudhury
3. Project Management : Denis Lock

VSR

MV-AOM-2G03

CREDIT 2(1+1)
Hours 45

SEMESTER III

Specialization Group (A): Retail Management

1. MV-AOM 301 Post-Harvest Management and Value Addition in Horticultural Crops CREDIT 3 (1+2)

Importance of post-harvest technology in horticultural crops. Maturity indices, harvesting, handling, grading of fruits, vegetables, cut flowers, plantation crops, medicinal and aromatic plants. Pre-harvest factors affecting quality, factors responsible for deterioration of horticultural produce, physiological and bio-chemical changes, hardening and delaying ripening process. Post-harvest treatments of horticultural crops. Quality parameters and specification. Structure of fruits, vegetables and cut flowers related to physiological changes after harvest. Methods of storage for local market and export. Pre-harvest treatment and precooling, pre-storage treatments. Different systems of storage, packaging methods and types of packages, recent advances in packaging. Types of containers and cushioning materials, vacuum packaging, cold storage, poly shrink packaging, grape guard packing treatments. Modes of transport.

2. MV-AOM 302 PRODUCTION TECHNOLOGY FOR MEDICINAL AND AROMATIC CROPS CREDIT 3(2+1)

Importance of medicinal and aromatic plants in human health, national economy and related industries, classification of medicinal and aromatic plants according to botanical characteristics and their uses, export potential and indigenous technical knowledge; Climate and soil requirements; cultural practices; yield and important constituents of medicinal plants (Mulhati, Isabgol, Rauwolfia, Poppy, Aloe vera, Satavar, Stevia, Safed Musli, Kalmegh, Asaphoetida, Nux vomica, Rosadla etc); Climate and soil requirements; cultural practices; yield and important constituents of aromatic plants (Citronella, Palmarosa, Mentha, Basil, Lemon grass, Rose, Patchouli, Geranium); Climate and soil requirements; cultural practices; yield of under-utilized crops (Rice bean, Lathyrus, Sesbania, Clusterbean, French bean, Fenugreek, Grain Amaranth, Coffee, Tea and Tobacco); Post harvest handling –drawing, processing, grading, packing and storage, value addition and quality standards in herbal products.

3. MV-AOM 303 FUNDAMENTAL OF LANDSCAPING AND GARDEN DESIGN CREDIT 3 (2+1)

Landscape designs, Styles of garden, formal, informal and free style gardens, types of gardens, English, Mughal, Japanese, Persian, Spanish, Italian, Vanams, Buddha garden; Urban landscaping, Landscaping for specific situations, institutions, industries, residents, hospitals, roadsides, traffic islands, damsites, IT parks, corporates; Garden plant components, arboretum, shrubbery, fernery, palmatum, arches and pergolas, edges and hedges, climbers and creepers, cacti and succulents, herbs, annuals, flower borders and beds, ground covers, carpet beds, bamboo groves; Production technology for selected ornamental plants; Lawns, Establishment and maintenance, special types of gardens, vertical garden, roof garden, bog garden, sunken garden, rock garden, clock garden, colour wheels, temple garden, sacred groves; Bio-aesthetic planning, eco-tourism, theme parks, indoor gardening, therapeutic gardening, non-plant components, water scaping, xeriscaping, hardscaping;

4. MV-AOM 304 Horti- Business Management and Export 1 (1+0)

Farm management - definition, nature, characteristics and scope. Farm management principles and decision making, production function, technical relationships, cost concepts, curves and functions – factors, product, relationship – factors relationship, product relationship, optimum conditions, principles of opportunity cost-equi-marginal returns and comparative advantages, time value of money, economic of scale, returns to scale, cost of cultivation and production, break even analysis, decision making under risk and uncertainty. Farming systems and types. Planning – meaning, steps and methods of planning, types of plan, characteristics of effective plans. Organizations – forms of business organizations, organizational principles, division of labour. Unity of command, scalar pattern, job design, span of control responsibility, power authority and accountability. Direction – guiding, leading, motivating, supervising, coordination – meaning, types and methods of controlling – evaluation, control systems and devices. Budgeting as a tool for planning and control. Record keeping as a tool of control. Functional areas of management – operation management – physical facilities, implementing the plan, scheduling the work, controlling production in terms of quantity and quality. Materials management – types of inventories, inventory costs, managing the inventories, economic order quantity (EOQ). Personnel management – recruitment, selection and training, job specialization. Marketing management - definitions, planning the marketing programmes, marketing mix and four P's. Financial management – financial statements and ratios, capital budgeting. Project management – project preparation evaluation measures.

5. MV-AOM 305 PRODUCTION TECHNOLOGY OF SPICE CROPS CREDIT 8 (0+8)

Introduction, importance of spice crops-historical accent, present status - national and international, future prospects, botany and taxonomy, climatic and soil requirements, commercial varieties/hybrids, site selection, layout, sowing/planting times and methods, seed rate and seed treatment, nutritional and irrigation requirements, intercropping, mixed cropping, intercultural operations, weed control, mulching, physiological disorders, harvesting, post harvest management, plant protection measures and seed planting material and micro-propagation, precision farming, organic resource management, organic certification, quality control, pharmaceutical significance and protected cultivation of: Black pepper, cardamom, Clove, cinnamon and nutmeg, allspice, Turmeric, ginger and garlic, Coriander, fenugreek, cumin, fennel, ajowain, dill, celery, Tamarind, garcinia and vanilla.

INDUSTRIAL TRAINING (RASCI LEVEL 9)

MV-AOM-305

CREDIT 10(0+10)

Hours 300

Work Integrated Learning is an integral part of the skill component and students have to undertake industrial visit/industrial training/ production/field and market survey/ marketing under it in each semester. Students have to opt for any job role of their choice that is prescribed by the respective SSC at different levels.

SEMINAR & REPORT WRITING

MV-AOM-306

CREDIT 4(0+4)

Hours 120

Practical:

1. Report Writing
2. Letter Writing
3. Resume Writing
4. PPT presentation
5. Presentation Skill
6. Extempore
7. Decision making skills

GST & OTHER BUSINESS TAXATION

MV-AOM-307

CREDIT 4(3+1)

Hours 75

UNIT 1: Introduction to Goods & Service Tax

Objectives and basic scheme of GST, Meaning- silent features- Subsuming of taxes- benefits of implementing GST- Constitutional amendments- Structure of GST (Dual Model)- Central GST- State/ union Territory GST- Integrated GST- GST council.

UNIT 2: GST Acts

Salient features of CGST Act, SGST Act (Karnataka state), IGST Act- Meaning & Definition: Aggregate turnover, Adjudicating authority, agent, business, capital goods, casual goods, casual taxable person, composite supply, Mixed supply, Exempt supply, Outward supply.

UNIT 3: Procedure Under GST

Registration under GST: procedure for registration, person liable for registration, persons not liable for registration, Deemed registration, Compulsory registration, Special provision for casual taxable person and Non-resident taxable persons. Exempted goods & service-rates of GST.

UNIT 4: Central Excise Duty

Concept, Important definition: goods, excisable goods, manufacturer, Classification of goods, Valuation under Central Excise, Ad Valorem Duty and Valuation rules.

UNIT 5: Custom Duty

Introduction and Nature, types of custom duty, Prohibition of Import and Export, Valuation rules, Computation of assessable value and calculation of Custom duty.

Practical:

1. Case study on GST & Valuation
2. Analysis of IGST & CGST
3. GST Procedure
4. Case study on Custom Duty
5. Case study on Central Excise Duty

SEMESTER IV

Specialization Group (A): Retail Management

Specialization Group (B): Information Technology

Optional Papers: