AC/II(18-19).2.RUV1

S.P.Mandali's

Ramnarain Ruia Autonomous College

Syllabus for DIPLOMA (F.Y.B.Voc)

Program: B.Voc

Course: RUV Subject-GHM101

(Credit Based Semester and Grading System with effect from the academic year 2019–2020)

LEARNING OBJECTIVE

BVoc , Greenhouse Management is a skill based course. The aim is to equip the students with skills in handling a greenhouse independently, supervising various cultivation procedures, both in soil as well as soilless, different propagation techniques conventional, artificial and through plant tissue culture that would enable them to be self employed. Knowledge of post harvest techniques like sorting, grading, bunching, packing, labelling are imparted to them. In order to develop a full- fledged entrepreneur, soft skills like- communication skills, handling of computers, managerial skills, business skills, accounting skills as well as marketing.

The syllabi have been framed keeping the objective of creating an entrepreneur in mind. Papers such as Soil and water management, Integrated Nutrient Management, Integrated Pest Management, Harvesting, Protected Cultivation, Post harvest management, Supply Chain Management. The students are given theoretical as well as practical exposure. Internship related to the theory & practical papers is mandatory.

LEARNING OUTCOME

As an outcome of the course, the students find jobs in many hydroponics start up companies, they also find job as per the job roles prescribed by the ASCI (Agriculture Skill Council of India) Firms engaged in Nursery Management are eager to recruit our students because of their skills in the field of plant propagation techniques both natural, artificial and also through plant tissue culture.

Examinations are conducted by the College as per Semester pattern (two semesters/level) In addition to the said examination, students are evaluated by the Agriculture Skill Council of India on completion of each level. Diploma being NSQF level 5, Advanced Diploma - NSQF Level 6 and B.Voc Degree - Level 7. Therefore in addition to the B.Voc degree awarded by the College affiliated to the University of Mumbai, the students are also awarded Diploma, Advance Diploma and B.Voc degree as the case may be by the Agriculture Skill Council of India.

EVALUATION

Students are evaluated continuously throughout the year. 60:40 evaluation pattern is followed where 60% weightage is given to Skill Component and 40% to the General Component.
Examination is split as internal examination and external examination, where 60% is for external (theory) and 40% internal. The internal examination is further split to internal examination for theory as well as practical.
For continuous assessment, the mode of evaluation are in the form of assignments, model making, presentations, video based tests , projects, case studies maintenance of various systems and greenhouse,

The students are assessed separately by the Agriculture Skill Council of India (ASCI) . The students are awarded Diploma, Advanced Diploma and B.Voc Degree in Green House Management by ASCI, Government of India in addition to the Diploma, Advanced Diploma and Degree awarded by the College in affiliation with University of Mumbai.

Course Code	UNIT	Semester I TOPICS	Credits (Theory)	Credits (Practical)
Skill Component			**5**	13
RUVGHM101	**Soil and Water Management – I**		2	4
	I	Pedology		
	II	Soil Cultivation		
RUVGHM102	**Integrated Nutrient Management – I**		1	3
	I	Plant nutrition		
	II	Manures and Fertilizers		
RUVGHM103	**Integrated Pest Management – I**		1	4
	I	Plant pathology		
	II	Entomology		
RUVGHM104	**Introduction to Protected Cultivation - I**		**1**	**2**
	I	Basics of Greenhouse		
	II	Nursery development and management		
RUVGHMP101-RUVGHMP104	**Practical based on theory of Skill Component**		5	**13**
General Component				
RUVGHM105	Communication Skills – I & ICT Skills – I Business Skills – I		3	5
	I	Basic Language Skills		
	II	Basics of Computer-I		
RUVGHM106	**Environmental Studies**		3	1
	I	Ecological degradation		
	II	Sustainability		
RUVGHMP105& RUVGHMP106	**Practicals based on theory of General Education Component**		6	6
	Total Credits			**30**

Semester II

Course Code	UNIT	TOPICS	Credits (Theory)	Credits (Practical)
Skill Component (Greenhouse Advanced Operations)			**4**	8
RUVGHM201		**Protected Cultivation – I**	3	6
	I	Greenhouse cultivation		
	II	Soilless Cultivation		
RUVGHM202		**Harvesting – I**	1	2
	I	Harvesting – I		
	II	Postharvest Technology – I		
RUVGHMP201-RUVGHMP202		**Practicals based on theory of Skill**	4	8
General Education Component			**4**	8
RUVGHM203		**Communication Skills - II& ICT Skills – II**	2	4 (T)
	I	Communication Skills - II		
	II	ICT Skills - II		
RUVGHM205		**Business Skills – II & Managerial Skills – I**	2	4 (T)
	I	Management of Meetings		
	II	Managerial Skills – I		
RUVGHM203& RUVGHMP204		**Practicals based on theory of General Education Component**	4	8 (T)
RUVGHMP 205 (Skill)		**Work Integrated Learning – I** (internship -greenhouse/polyhouse design and structures, maintenance of greenhouse, trouble shooting)	0	6
		Total Credits	**30**	

Detail Syllabus

COURSE CODE	SEMESTER 1	Cr
RUVGHM	**SKILL COMPONENT (GREENHOUSE BASIC OPERATIONS)**	
RUVGHM101	**Soil and Water Management – I**	2
	Unit I –Pedology Soil Genesis, Factors of soil formation, Soil profile and its development, Functions of Soil, Types of Soils of India. **Unit II - Soil Cultivation** Implements required for soil cultivation. Types of soil cultivation. Soil Fertility- Types of soil organisms and their interaction, **Unit III - Water Management** - Water quality, different irrigation methods, selection of different irrigation methods depending upon crops and fertigation. The relation between water properties and water infilteration capacity of soil.	
RUVGHM102	**Integrated Nutrient Management – I**	1
	Unit I - Plant nutrition - Macro nutrients, Micronutrients, Essential nutrient, Beneficial nutrient. **Unit II –Manures and Fertilizers-** Manures: Definition, importance, important manures FYM(compost), oil cakes, green manure, organic manures and vermicompost. Liquid fertilizer - Vermiwash, Beejamrit, Jeevamrit, Dhananjayamrit, Cow urine. **Unit III** - Fertilizers: Definition, Types – Straight, Compound and mixed. Nitrogenous $(NH_4)_2$ SO4, Urea, Ca $(NO_3)_2$, NH_4Cl, Phosphatic	
RUVGHM103	**Integrated Pest Management – I**	1
	Unit I – Plant pathology - Definition and Concept of plant pathology, Introduction and Importance of Plant Pathogens, Causes and Survival of plant pathogens. **Unit II – Entomology** - Introduction and Importance of Insects, Classification of Insect pests, Non-insect pests, Dispersal and Movement of insects. Non-insect pest - Nematodes and their control **Unit III -** Diseases and pests attacking leafy vegetable crops and their control	
RUVGHM104	**Introduction to Protected Cultivation - I**	1

	Unit I – Basics of Greenhouse - Concepts, principles and Importance. Green House World Scenario, Status in India, Study of the working of the various components of a greenhouse. Classification of greenhouse based on suitability and cost, as per structure, glazing, number of span, environmental control. Based on shape and utility, Based on Covering material, Cost and Location. Frame work for various types of green houses. Construction of floors and Layout. **Unit II -** Planning and Designing- Site selection, Design according to the location**,** orientation, climate, load bearing capacity. **Unit III - Nursery development and management** Cultivation and propagation of potted plants, fruit/ flower/ vegetable/ medicinal plant/ succulents through conventional methods.	
	GENERAL EDUCATION	
RUVGHM105	**Communication Skills – I& ICT Skills – I and Business Skills – I**	**3**
	Unit I - Communication Skills – I - Basic Language Skills Basic Grammar and Usage, Writing of CV, Verbal Communication, **Unit II - ICT Skills – I- Basics of Computers** Definition of Computer, Hardware Component, System Unit, able to switch on & off the computer. **Unit III – Business Organisation** - Meaning of Business, Commerce and Industry – Business Organisation -Types of Business Organisation- Merits and demerits of Sole Trading Concern, Partnership and Joint Stock Companies. **Business Objectives – Business objectives, Classification of objectives.**	
RUVGHM106	**Environmental Studies – I**	**3**
	Unit I - Ecological degradation- Greenhouse gas emission, Deforestation, Air and Water pollution, **Unit II -** Depletion and conservation of Biodiversity Environmental Impact Assessment **Unit III –Sustainability** Introduction & Principles of Sustainability,	
DIPLOMA	**SEMESTER 2**	
RUVGHM201	**Protected Cultivation – I**	**3**
	Unit I-Greenhouse cultivation Knowledge of operating the curtains, vents, fan pads. Preparation of soil for planting, special agricultural techniques. **Unit II -** Oxygenic cultivation of fenugreek, coriander and Okra. Plant propagation- cutting, grafting, budding, layering.	

	Unit III - Soilless Cultivation Origin and History Soilless Culture, its advantages and Disadvantages, Soilless cultivation verses soil cultivation. Active and passive types and Components of Soilless Cultivation.	
RUVGHM202	**Harvesting – I**	**1**
	Unit I-Harvesting – I Crop physiology of leafy vegetable crops spinach, amaranth, fenugreek, coriander and Okra. **Unit II -** Harvesting indices of crops grown under greenhouse condition. Harvesting tools and their design aspects. **Unit III – Postharvest Technology – I** Quality parameters of the above crops. Postharvest handling of above crops.	
RUVGHMP203 (SC)	**Work Integrated Learning – I** (internship - greenhouse/polyhouse design and structures, maintenance of greenhouse trouble shooting).	
	Mode of Evaluation: Evaluation by the organization offering internship.	
	GENERAL EDUCATION	
RUVGHM204	**Communication Skills - II & ICT Skills - II**	
	Unit I - Communication Skills - II Record keeping, report writing, types of report writing. **Unit II -** Personal grooming, appearing for interviews. **Unit III - ICT Skills - II** Connections, Basic knowledge of MS word, creating files, and other functions of MS	
RUVGHM205	**Business Skills – II & Managerial Skills – I**	
	Unit -I - Management of Meetings –selling skills, social etiquette and telephone etiquette, role play and body language. **Unit -II - Managerial Skills – I** Introduction to General Management, Organization and Management of office, Functions of Management, Principles of Management. **Unit III -** Developing self awareness on issues of emotional intelligence, self learning.	
	PRACTICALS	
Course Code	**SEMESTER I**	**Credits**
	SKILL COMPONENT	

RUVGHMP101	**Soil and Water Management – I**	**4**
	Identification of types of soil based on physical properties.(Mechanical analysis of soil)	
	Method of Collection soil sample for analysis from various fields / sources.	
	Identification of different irrigation systems	
	Components of drip irrigation system	
	Components of sprinkler irrigation system	
	Identification of different soil types of India using map.	
	Health & Safety at the work place	
RUVGHMP102	**Integrated Nutrient Management – I**	**3**
	Test for fertilizers	
	Test for manures	
	Preparation of compost	
	Preparation of vermicompost	
	Identification of green manure,	
	Identification of biofertilizers – Poultry manure, Oilcakes, Horse manure, Cow manure, Farmyard manure.	
	Comparative study of organic and inorganic nutrient provided plant growth	
RUVGHMP103	**Integrated Pest Management – I**	**4**
	Study of different types of greenhouses insect pest and non insect pest	
	Collection and identification of insect pests attacking greenhouse crops	
	Study of diseases infecting leafy vegetables and their control measures	
	Study of pests attacking leafy vegetables and their control measures.	
	Study of pathogens of different hydroponic systems and their control measures	
	Health & Safety to be practiced to keep away pest and disease.	
RUVGHMP104	**Introduction to Protected Cultivation**	**2**

	Study of different types of greenhouses	
	Study of components of greenhouse, core material and covering material their fabrication, erection and construction,	
	Basic conversions from one unit to the other.	
	Calculation of the number of plants to be accommodated in a given greenhouse.	
	Estimation of construction cost for basic greenhouse model	
	Estimation of operating costs and return from Green house.	
	Potting and repotting of plants	
	Propagation of vegetables, flowering and fruiting crop through conventional methods – Seeds, bulbs, corm, runners and suckers.	
	Health & Safety in a greenhouse.	
	GENERAL COMPONENT	
RUVGHMP105	**Communication Skills –I, ICT Skills – I & Business Skills – I**	**3**
	Basic Language – Worksheets.	
	Resume writing	
	Preparation for mock interview.	
	Study of various components of computer	
	Switching on and off Computers.	
	Practical on business skill	
	Organisational structure/ Chart in various types of business houses- Proprietary firm, partnership firm,, joint stock companies and corporation.	
	Hierarchy chart and roles of each individual in a decentralised structure	
RUVGHMP106	**Environmental Studies – I**	**1**
	Determination of salinity of given water sample	
	Determination of hardness of the given water sample	
	Identification of the components of a vertical wall /garden	
	Study of the components and the working of a biogas plant	

	PRACTICALS	
	SEMESTER-II	
Course Code	**SKILL COMPONENT**	**CREDITS**
RUVGHMP201	**Protected Cultivation – I**	**6**
	Operating the curtains, vents, fan pads.	
	Sterilization of soil in a greenhouse	
	Preparation of different soil mixture	
	Preparation of bed and planting techniques for leafy vegetables.	
	Plant propagation through cutting	
	Plant propagation through budding	
	Plant propagation through layering	
	Plant propagation through grafting	
	Study of different components of hydroponics system	
	Transplanting seedlings/ cuttings to hydroponics system	
	Assignment- soilless cultivation of a leafy vegetable	
	Health & Safety while carrying out soilless cultivation./hydroponics	
RUVGHMP202	**Harvesting – I**	**2**
	Study of different harvesting techniques	
	Identification of different tools used in harvesting of leafy vegetable crop.	
	To identify the harvesting indices of leafy vegetables.	
	Nutrient analysis of crop grown in greenhouse.	
	Postharvest handling of above crops	
	Comparative study of protein and chlorophyll of organically and inorganically grown plant	

	GENERAL COMPONENT	
RUVGHMP203	**Communication Skills - II& ICT Skills - II**	**4**
	Letter writing (Formal, Informal) {Job application, permission letter}	
	Resume writing	
	Record keeping.	
	MS Word – Create a file, folder, alignments,spacing.....	
	Health & Safety at the work place	
RUVGHMP204	**Business Skills – II & Managerial Skill - I**	**4**
	Managing a meeting- Seating arrangement according to protocol	
	Agenda of a meeting.	
	Minutes of a meeting	
	Mock meeting	
	Phone etiquettes	
RUVGHMP205	**Work Integrated Learning – I (Internship)- Skill component (15 days-** greenhouse/polyhouse design and structures, maintenance of greenhouse, trouble shooting)	**6**

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- Alex Lauric and Victor h Ries. *Floriculture, Fundamentals and Practices* .Agrobios, India
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- Principles of drip irrigation system, Dr. M.S. Mane, B.L.Ayare,Dr. S.S.Magar., New Delhi
- Principles of sprinkler irrigation, Dr. M.S. Mane,Dr.B.L.Ayare. Jain Bros., New Delhi

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Syllabus for DIPLOMA (S.Y.B.Voc)

Program: B.Voc

Course: RUV Subject-GHM301

(Credit Based Semester and Grading System with effect from the academic year 2018–2019)

Semester III

Course Code	UNIT	TOPICS	Credits (Theory)	Credits (Practical)
Skill Component				
RUVGHM301	**Soil and Water Management – II**		2	4
	I	Soil management		
	II	Water management		
RUVGHM302	**Integrated Nutrient Management – II**		1	3
	I	Plant Nutrient		
	II	Absorption and translocation		
RUVGHM303	**Protected Cultivation – II**		1	4
	I	Greenhouse Cultivation		
	II	Soilless cultivation		
RUVGHM304	**Integrated Pest Management-II**		**1**	**2**
	I	Important Diseases of Vegetable crops/ Fruit Crops and their Control		
	II	Important Pests of Vegetable crops/Cut flowers/Fruit Crops and their control.		
RUVGHMP301-RUVGHMP304	**Practical based on theory of Skill Component**		5	**13**
General Component				
RUVGHM305	**Communication Skills – III& ICT Skills - III**		2	4
	I	Communication Skills		
	II	ICT Skills		
RUVGHM306	**Business Skills –III& Managerial Skills - II**		2	4
	I	Business Skills –III		
	II	Managerial Skills - II		
RUVGHMP305& RUVGHMP306	**Practicals based on theory of General Education Component**		4	8
	Total Credits		**30**	

SEMESTER IV

Course Code	UNIT	TOPICS	Credits (Theory)	Credits (Practical)
Skill Component				
RUVGHM401	**Protected Cultivation – III**		2	5
	I	Green house cultivation of fruit vegetable and flower		
	II	Hydroponics		
RUVGHM402	**Harvesting – II**		1	2
	I	Scope of Harvesting Techniques		
	II	Postharvest Technology – II		
RUVGHMP401-RUVGHMP402	**Practicals based on theory of Skill**			
General Education Component				
RUVGHM403	**Accounting- I**		2	2(T)
	I	Introduction to Accounting		
	II	Recording Transactions		
RUVGHM405	**Marketing – I & Supply Chain Management- I**		4	4 (T)
	I	Marketing		
	II	Supply Chain Management		
RUVGHM403& RUVGHMP404	**Practicals based on theory of General Education Component**			
RUVGHMP 405 (Skill)	**Work Integrated Learning – II** (internship -greenhouse/polyhouse design and structures, maintenance of greenhouse, trouble shooting)- 30 days			8
	Total Credits		**30**	

Detail syllabus

COURSE CODE	SEMESTER III	Cr
RUVGHM	SKILL COMPONENT	
RUVGHM301	**Soil and Water Management – II**	2
	Unit I- soil management Elementary component of soil, soil water retention, Plant Nutrients and Availability in Soil pH; Acidifying and Liming of Soils, Soil-Water Relationships. Soil sterilization, Use of nanosilver for sterilization **Unit II Water management** Precipitation, interception, evaporation, transpiration and factors influencing them. **Unit III -** Installation of drip irrigation system, appropriate irrigation system for cultivation of vegetables and fruit crop. Calculation of emitter size depending on the cultivated crops.	
RUVGHM302	**Integrated Nutrient Management – II**	1
	Unit- I Plant Nutrient – Macro nutrients - Nitrogen, Phosphorus Potassium, Sulphur. Micronutrient - Calcium, Magnesium, Iron, Manganese, Copper, Zinc, Boron, Molybdenum Orthosalicylic acid . **Unit II -** Functions and Deficiency Symptoms of Essential Minerals : Major and Minor elements required by plants, Functions and Deficiency Symptoms, Dosage calculation of fertilizer and nutrient appropriate to the plant (vegetable and fruits) **Unit –III Absorption and translocation** Mineral Salt absorption and translocation. Types of Absorption: passive and active, Factors affecting salt absorption, Translocation.	
RUVGHM303	**Protected Cultivation – II**	1
	Unit I–Greenhouse Cultivation Greenhouse cultivation of fruit (Strawberry and cucumber)/ flower (Gladiolus and Rose) & leafy vegetable (lettuce) indigenous and exotic. Bed preparation in greenhouse for fruit/ vegetables crop. **Unit II–Soilless cultivation** Hydroponics: Commercial Aspects and Recent Advancements Commercial Aspects, Advancements, Benefits of	

	Hydroponics/Soilless Cultivation. **Unit III -** Static solution culture, Continuous-flow solution culture — NFT technique , Aeroponics, Ebb and flow or flood and drain sub-irrigation, Deep water culture, Top-fed deep water culture Hydroponics in Greenhouse	
RUVGHM304	**Integrated Pest Management-II**	**1**
	Unit I -Important Diseases of Vegetable crops/ Fruit Crops and their Control Viral diseases: Leaf curl (Chilli, tomato, Papaya), Mosaic (Tomato, Crucifer, Cucurbit), Bacterial diseases: Bacterial wilt (Tomato), Citrus Canker (Citrus) Fungal diseases: Anthracnose (Chilli), Powdery mildew (Chilli, cucurbits, rose, gerbera), Downy mildew (Onion, Crucifer, cucurbit), Fusarium Wilt (Tomato, Crucifers, Cucurbits, Fruit crops), Alternaria leaf spot (Crucifers, Chilli/Capsicum) Basic principles of greenhouse/field scouting. Various equipments to be used in scouting (Magnifying glasses etc.) **Unit II- Important Pests of Vegetable crops/Cut flowers/Fruit Crops and their control**. Aphids (Chilli, Brinjal, Cucurbits, Crucifers), Leaf Miner (Brinjal, Cucurbits, Crucifers, White Fly (Chilli, Brinjal) Thrips (Chilli, Rose, Carnation, Fruit crops), Mites (Chilli, Fruit crops), Caterpillar (Crucifer, Fruit crops), Fruit Borer (Brinjal, Cucurbits), Scouting and monitoring of insect & pest . Various mechanical controls (traps, sticky plates etc), natural enemies used for control. **Unit III - Principles and methods of pest control**: Physical, Chemical and Biological, IPM, Exclusion :Plant Quarantine and Inspection, Quarantine rules and regulations	
	GENERAL EDUCATION	
RUVGHM305	**Communication Skills – III & ICT Skills – III**	**2**
	Unit I Communication Skills Preparing for Group Discussions, Preparing for Oral Presentations **Unit II -** Conducting interviews, making of project report, conducting meetings. Making posters, advertisements **Unit III - ICT Skills** Power point presentation, MS office outlook, internet surfing, e-mail, installation of software.	
RUVGHM306	**Business Skills –III & Managerial Skills - II**	**2**
	Unit I - Business Skills –III	

	Project management and planning - Economics and business plan **Unit II -** Agripreneurship- Concept of Agripreneurship, Functions and clarifications of agripreneurs, Policies governing agripreneurs, Case studies of successful agripreneurs **Unit III -Managerial Skills - II** Team building- developing teams and team work, advantages of team, leading team, team membership, building relationship skills for developing positive interpersonal communication, importance of supporting communication, coaching and counselling, defensiveness and disconfirmation, principles of supportive communication, skill analysis and application in the above area.	
ADVANCED DIPLOMA	**SEMESTER IV**	
RUVGHM401	**Protected Cultivation – III**	**2**
	Unit I-Green house cultivation of fruit vegetable and flower Cultivation of cherry tomato (Fruit) , coloured capsicum and exotic (Leek). Cultivation of gerbera and carnation (Flower) **Unit II - Hydroponics** Techniques in Hydroponics –Passive sub-irrigation, Dutch bucket, Deep water culture, Bubbleponics, Fogponics. Aggregate Media used for Hydroponics. **Unit III -** Importance of media with reference to porosity and water holding capacity, Root zone management, Importance of media sterility. Maintenance of hydroponics systems – Sterilisation, cleaning, trouble shooting. Economics of a hydroponic set up.	
RUVGHM402	**Harvesting – II**	**1**
	Unit I–Scope of Harvesting Techniques Crop physiology of fruit vegetable crops (cherry tomato and coloured capsicum) and flowering crops (Gerbera and carnation and Rose) **Unit II -** Harvesting indices of the above crops and their impact on shelf life. Methods of harvesting Harvesting tools and their design aspects. **Unit III – Postharvest Technology – II** Quality parameters of the above crops. Postharvest handling of above crops, Standard grades for cut flowers.	
	GENERAL EDUCATION	
RUVGHM403	**Accounting- I**	**2**

	Unit I -Introduction to Accounting: Need and Importance, Accounting principles, Generally accepted accounting principles, Double entry system-Principles of Double Entry system of Book Keeping-Advantages and disadvantages of Double entry system. Types /Classification of Accounts- Personal accounts – Real accounts - Nominal accounts - Fundamental rules of Debit and Credit Rules for Personal accounts – Real accounts-Nominal Accounts **Unit II -Recording Transactions**: Journal - Meaning– importance - Simple entries- Journal – functions – importance - Types of Journal –General – Special /Subsidiary Books (Cash Book, Purchase Day Book, Sales Day Book, Returns Inward Book, Returns Outward Book, Bills Receivable Book and Bills Payable Book) **Unit III -** Ledger Accounts- Ledger Posting - General Ledger-Sub-Ledger (Customers' Ledger, Suppliers Ledger, Employees ledger)	
RUVGHM404	**Marketing – I & Supply Chain Management- I**	**4**
	Unit I- Marketing – I Marketing - Nature, importance-scope-concepts of marketing – selling concept – modern concept- selling vs. Marketing – service marketing. Marketing Mix – (Product Mix - Price Mix - Place Mix -Promotion Mix) - Importance of marketing mix Market Segmentation- meaning- bases- benefits – limitations – Requirements of effective segmentation – Market Targeting – strategies. Meaning- features- need and importance of study of consumer behavior- The Consumer Decision making Process – factors influencing consumer behavior- buying motives- - steps in buying decision making. **Unit II -Supply Chain Management - I** Documentation, Technology used in supply chain management, Functions and Importance – Process – SCM Flows (Material, information/data, Money) – Flow Components (Transportation, Warehousing, Sourcing, Returns Management, Post Sales Service) **Unit III -** SCM Strategies – Make Vs Buy – Push Vs. Pull	
	PRACTICALS	
Course Code	**SEMESTER III**	**Credits**

	SKILL COMPONENT	
RUVGHMP301	**Soil and Water Management – II**	**4**
	Identification of specific mineral deficiency symptoms in plants (soil/soilless)	
	Identification of different type of soil	
	Determine the heavy metal content from the soil.	
	Determine the heavy metals content in water	
	Test for salinity of the given water sample	
	Test for hardness of the given water sample.	
	Installation of various irrigation and irrigation water management	
	Interpretation of soil testing report	
RUVGHMP302	**Integrated Nutrient Management – II**	**3**
	Test for the presence of nitrogen , phosphorus, potassium in the leafy, fruit and root vegetable	
	Test for the presence of boron, calcium, iron, copper in the leafy, fruit and root vegetable	
	To study the effect of orthosalicylic acid on food crops.	
	Dosage calculation of fertilizer	
	Dosage calculation of nutrient appropriate to the plant (vegetable and fruits) & Apply nutrient as per demand of the crop.	
RUVGHMP303	**Protected Cultivation – II**	**4**
	Bed preparation in greenhouse for fruit/ flowering crops	
	Identification of types of hydroponics systems.	
	Setting up a hydroponic system	
	Cultivation of lettuce in hydroponic and soil	
	Cultivation of pakchoi in hydroponic and soil	

	Study of EC, salinity of various growing media used in hydroponics.	
	Comparative study of the plants grown in soil and under soilless conditions.	
	Study of the different types of materials used for construction of a basic hydroponics system and its economics.	
RUVGHMP304	**Integrated Pest Management-II**	**2**
	Preparation of organic pesticides	
	Study of the common diseases infecting plants grown in greenhouse.	
	Preparation of inorganic pesticides	
	Study of the common pests attacking plants grown in greenhouse.	
	Scouting of pests and diseases.	
	Comparative study of organic and inorganic pesticides	
	Study of mechanical and biological control of pests attacking greenhouse plants	
	Study of available insecticides / pesticides and reading the label.	
	Computation of doses insecticides / pesticides.	
	Handling and storage of pesticides	
	GENERAL COMPONENT	
RUVGHMP305	**Communication Skills – III &ICT Skills – III**	**4**
	Group Discussions,	
	Oral Presentations	
	Conducting interviews,	
	Conducting meetings.	
	Making posters,	
	Advertisements	
	Project report,	

	Power point presentation	
	MS outlook	
	Internet surfing	
	Email	
	Installation of software	
RUVGHMP306	**Business Skills –III & Managerial Skills - II**	**4**
	Team building- advantages of team Leading team team membership Building relationship skills for developing positive interpersonal communication Importance of supporting communication Defensiveness and disconfirmation Principles of supportive communication Skill analysis and application in the above area.	
	Make a business plan of an agrienterprise and consider the subsidies and grants through government's policies, Bank loans	
	Study of fixed capital, recurring capital, miscellaneous expenses, project return, profit, loss and break even points.	
	Study of the components and the working of a biogas plant	
	PRACTICALS	
	SEMESTER-IV	
Course Code	**SKILL COMPONENT**	**CREDITS**
RUVGHMP401	**Protected Cultivation – III**	**5**
	Study of micro-irrigation system generally used in a greenhouse.	
	Study of different type of aggregate media used in hydroponic system	
	Water holding capacity of different media used in hydroponic	

	Study of the different types of automations implemented in a greenhouse made under Indo-dutch system.	
	Training and pruning of cherry tomato	
	Hand pollination in tomato and zucchini	
	Study of controlling of various environmental parameters in a semi- automatically controlled greenhouse.	
	Identification of varieties of cherry tomato and carnation cultivated in greenhouse	
	Report on greenhouse maintenance	
RUVGHMP402	**Harvesting – II**	**2**
	Study of maturity index and harvesting of cherry tomato	
	Identification of different implements used for harvesting fruits	
	Different Techniques of harvesting of vegetables	
	Quality checking of greenhouse harvested vegetables	
	Grading of greenhouse cultivated vegetables	
	Study of the various factors for fixing the price of the crops grown in a greenhouse.	
	GENERAL COMPONENT	
RUVGHMP403	**Accounting- I**	**2**
	Journal entries	
	Maintaining ledgers	
	Control accounts	
	Trial balances	
	Then preparation of financial statements	
	Report	
RUVGHMP404	**Marketing – I & Supply Chain Management- I**	**4**
	Marketing of green house crops cultivated by you.	
	Supply chain management in relation to agriproduce and its uniqueness in perishability.	

	Supply chain management in relation to agriproduce and its uniqueness in fragileness.	
	Supply chain management in relation to agriproduce and its uniqueness in quality.	
	Survey supply chain of greenhouse produce	
RUVGHMP 405 (SC)	**Work Integrated Learning – II** (internship - greenhouse/polyhousedesign and structures, maintenance of greenhouse, trouble shooting)- 30 days	**8**

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S.P.Mandali's

Ramnarain Ruia Autonomous College

Syllabus for DIPLOMA (T.Y.B.Voc)

Program: B.Voc

Course: RUV Subject-GHM501

(Credit Based Semester and Grading System with effect from the academic year 2018–2019)

SEMESTER V

SEMESTER VI

Course Code	UNIT	TOPICS	Credits (Theory)	Credits (Practical)
Skill Component				
RUVGHM501	**Soil and Water Management – III**		2	4
	I	Soil management		
	II	Water management		
RUVGHM502	**Integrated Nutrient Management – III**		1	3
	I	Plant nutrition and Fertilizers		
	II	Principles, Methods and Advantages of Organic cultivation		
RUVGHM503	**Protected Cultivation – IV**		1	3
	I	Greenhouse Cultivation		
	II	Micropropagation		
RUVGHM504	**Post Harvest Management and Value Addition**		**1**	**3**
	I	Post Harvest Handling of cut flowers, fruits and vegetables		
	II	Principals of food preservation		
RUVGHMP501-RUVGHMP504	**Practical based on theory of Skill Component**			
General Component				
RUVGHM505	**Managerial Skills - III**		2	2
	I	Human Resources Management		
	II	Business Ethics		
RUVGHM506	**Marketing – II & Supply Chain Management - II**		4	4
	I	Market Research		
	II	Supply Chain Management		
RUVGHMP505& RUVGHMP506	**Practicals based on theory of General Education Component**			
	Total Credits		**30**	

Course Code	UNIT	TOPICS	Credits (Theory)	Credits (Practical)
Skill Component				
RUVGHM601	**Protected Cultivation – V**		2	6
	I	Cultivation of cut flowers, fruits and vegetables		
	II	Basic Management in a greenhouse		
RUVGHMP601	**Practicals based on theory of Skill**			
General Education Component				
RUVGHM602	**Accounting - II**		3	3(T)
	I	Cash Book (single column, double column and three column)		
	II	Introduction to Income statements		
RUVGHM603	**Marketing - III**		3	3 (T)
	I	Elements in marketing		
	II	Branding and Promotion		
RUVGHM602& RUVGHMP603	**Practicals based on theory of General Education Component**			
RUVGHMP 606 (Skill)	**Work Integrated Learning – III** (internship -greenhouse/polyhouse design and structures, maintenance of greenhouse, trouble shooting)45 days			10
	Total Credits		**30**	

Syllabus in detail

	SEMESTER 5	
Course code:	**SKILL COMPONENT**	**Credits**
RUVGHM501	**Soil and Water Management – III**	**2**
	Unit I–Soil management Adverse Effect of use of fertilizers / pesticides in soil, soil pollution, Reclaimation of soil. Soil health and generation of soil health card. Improvement of soil fertility and health by using soil organisms/microorganisms. **Unit II–Water management** Installation of sprinkler irrigation system, maintenance of sprinkler irrigation system, Sprinkler Irrigation Output Calculations, Units of Water Measurement **Unit III -** Benefits. Fertigation systems Injectors and plumbing; Controlling pH, EC, and pathogens, Determining fertilizer rates, Chemigation	
RUVGHM502	**Integrated Nutrient Management – III**	**1**
	Unit I -Plant nutrition and Fertilizers **Types of Fertilizers:** Straight fertilizers, Complex fertilizers, Mixed fertilizers, Nitrogenous (Ammonium sulphate, Urea, Calcium nitrate), Phosphatic (Superphosphate, Bone meal), Potassic (Muriate of Potash, Potassium sulphate), Neem coated urea, muriate of potash, Solid and Liquid fertilizers - Physical and Chemical properties of fertilizers, Different fertilizer grades for macro and micro elements , Methods of Fertilizer application: Broadcasting, Placement, Pellet application, Starter solutions, Foliar application, (Fertigation), Soil Injection and Aerial application. Unit value calculation of fertilizer and its dosage Calculations for different greenhouse crops **Unit II - Principles, Methods and Advantages of Organic cultivation** Principles, practices and importance in modern crop production, Types of organic farming, Planting, managing soil quality, Weed Management, diseases and pest management ,Organic Fertilizers: Advantages and inconveniences of organic fertilizers, Naturally occurring organic fertilizers: Manures, Slurry, Worm castings, Peat, Seaweed, Humic Acid, Guano, Swage, Sludges, Production of organic Fertilizers:Compost, Bloodmeal, Bone meal, Humic acid, Sea weed extracts, Natural enzyme digested proteins- Fish meal, Feather meal, Decomposing Crop	

	residue (Green Manure), Vermicompost **Unit III -** Organic Pesticides: Types of Organic pesticides, Homemade Organic pesticides, Biopesticides Cultivation of green fillers plants (Dracaena, Palm etc), Cultivation of foliage filler plants	
RUVGHM503	**Protected Cultivation – IV**	**1**
	Unit I–Greenhouse Cultivation Greenhouse cultivation of fruit (peach & nectarine, raspberry)/ flower (Orchid and anthurium). Bed preparation in greenhouse for fruit (exotic)/ flower (Anthurium), growing media of orchid, conditions, maintenance of orchid. Indoor hydroponics using LED system. **Unit II-Micropropagation-** Micropropagation of greenhouse flowering plants.	
RUVGHM504	**Post Harvest Management and Value Addition**	**1**
	Unit I -Post Harvest Handling of cut flowers, fruits and vegetables - Post–harvest handling, Methods of grading, packaging, cooling storage conditions/environmental requirements and treatments. Prepare postharvest standard operating procedures for fruits and vegetables production in accordance with FSMA. Value Added Products - Fresh Flower arrangements (Indian, Japanese and western styles), Drying techniques, Dry Flower arrangement, Dry flower products. Food processing Industry **Unit II - Principals of food preservation** – Basic principles and methods of preservation of fruits and vegetables, Causes of postharvest deterioration and its prevention or minimize deterioration. **Unit III** Preservation - Methods of improving the shelf life of fruits and vegetables, prolonging the vase life of cut flowers, Adulterants/chemicals used for promoting the shelf life and attractive colours of fruits and vegetables. Transportation & Packaging - Methods of packing and transport of cut flowers, fruits and vegetables to market, Labelling of the packaged cut flowers, fruits and vegetables. Packaging of exotic flavouring agents Safety measures: Describe legal regulation pertaining to workplace, control of substance hazardous to health, handling, storage and disposal of waste etc.	

	GENERAL EDUCATION	
RUVGHM505	**Managerial Skills - III**	**2**
	Unit I - Human Resources Management Building relationship skills for developing positive interpersonal communication, importance of supportive communication, coaching and counselling, defensiveness and disconfirmation, principles of supportive communication, **Unit II** Personal interview management, skill analysis and application on above areas **Unit III - Business Ethics** Corporate Social Responsibility	
RUVGHM506	**Marketing - II & Supply Chain Management - II**	**4**
	Unit I- Marketing **Market Research -** process -merits – techniques and tools of data collection- problems or limitations, Product Planning and development – new product development stages, Product life cycle – strategies, Branding- factors influencing branding- strategies **Unit II -Supply Chain Management - II** Role of Information Technology in SCM- Impact of Internet and E-Business – IT enabled SCM, Future of SCM, SCM networks- **Unit III** The new Manufacturing and Distribution Practices in the light of Globalized Economy – Local and International Supply Chains – Outsourcing – Inventory Management.	
	SEMESTER VI	
	SKILL COMPONENT **(GREENHOUSE ADVANCED MANAGEMENT)**	
RUVGHM601	**Protected Cultivation – V**	**2**
	Unit I - Cultivation of cut flowers, fruits and vegetables Greenhouse cultivation of vegetable (Zucchini, Broccoli)/ flower (*Chrysanthemum* and *Lilium*). Bed preparation in greenhouse for above mentioned fruit and flower crop. **Unit II- Basic Management in a greenhouse** Greenhouse general management, Pest & Disease	

	management, **Unit III** Environment management, Irrigation management & Hygiene management.	
	GENERAL EDUCATION	
RUVGHM602	**Accounting - II**	**3**
	Unit I – Cash Book (single column, double column and three column) Bill of Exchange: Meaning – Definition – Importance, Promissory Note – Recording bill transaction (honoring, dishonoring, discounting). Accounting for Depreciation: Meaning, Importance, Methods of providing depreciation (straight line, diminishing, annuity), Reserves and Provisions, Introduction to Final accounts of Sole Traders: Manufacturing, Trading, and Profit and Loss Account and Balance Sheet , Assets - Current Assets- Tangible assets – (equipment – building – stock –cash)- Intangible assets – goodwill –trademarks – patents, Liabilities – Current Liabilities – Loans- Accounts Payable –accrued expenses, Equity – Shareholders loans – capital stock – retained earnings, Networth –meaning and importance -Importance of balance sheet. **Unit II – Introduction to Income statements** Introduction to income statement terms(revenue, operating Expenses, operating income, net income- net profit before tax – net profit after tax) – Purpose and importance of income statements , Ratio Analysis- Ratio Analysis – **Unit III -** Meaning and definition- Balance Sheet Ratios- Current Ratio - Liquid Ratio - Debt Equity Ratio- Revenue Statement Ratios - Gross Profit Ratio - Net Profit Ratio	
RUVGHM603	**Marketing - III**	**3**
	Unit I -Elements in marketing- Documentation, terms of sale for domestic and international shipments, Packing, storage, transportation, distribution, financing, Types of marketing – direct (pick your own, road side sale, farmers market,) - indirect(terminal market firms, brokers, processors, cooperatives) - Retail outlets - Online marketing. **Unit II – Branding and Promotion**	

	Brand development, brand positioning, brand promotion, Advertising and sales budgets, Integrated Marketing communication -features, **Unit III -** Marketing Challenges and Opportunities, legal implications of branding.	
RUVGHMP604 (Skill)	**Work Integrated Learning – III** (internship - greenhouse/polyhouse design and structures, maintenance of greenhouse, trouble shooting)-45 days	**10**
	PRACTICALS	
	SEMESTER V	
Course Code	**SKILL COMPONENT**	**CREDITS**
RUVGHMP501	**Soil and Water Management – III**	**4**
	Study about soil health card	
	Measuring soil moisture with gypsum blocks.	
	Indoor hydroponics using LED system	
	Improvement of soil fertility and health by using soil organisms/microorganisms.	
	Installation of sprinkler irrigation system,	
	Maintenance of sprinkler irrigation system	
	Units of Water Measurement Benefits in sprinkler system	
	Sprinkler Irrigation Output Calculations	
RUVGHMP502	**Integrated Nutrient Management – III**	**3**
	Identification of fertilizers	
	Unit value calculation of fertilizer	
	Dosage calculation for Fertigation	
	Preparation of two organic fertilizer	
	Preparation of inorganic fertilizer	
	Identification of organic fertilizer	
	Visit – Report	
RUVGHMP503	**Protected Cultivation – IV**	**3**
	Cultivation of flowering (Lilium and Chrysanthemum) plants in green house	
	Cultivation of fruit (zucchini and Broccoli) crops in green house	
	Micropropogation of greenhouse flowers	
	Development of a mobile application for monitoring the greenhouse parameters.	

	Project	
	Visit/ report	
	GENERAL COMPONENT	
RUVGHMP504	**Post Harvest Management and Value Addition**	**3**
	To access the quality of the given fruit/ vegetable using refractometer	
	To study the various methods of packing of flowers, fruits and vegetables	
	To increase the shelf life of the given cut flower, fruits and vegetables	
	To test for different adulterants in fruits, vegetables and their products	
	Ikebana - Moribana	
	Safety and hygiene to be maintained during packing and transporting flower, fruits and vegetables.	
RUVGHMP505	**Managerial Skills - III**	**2**
	Managing shooting troubles in hydroponic system	
	Managing shooting troubles in irrigation system	
	Managing shooting troubles in plant health	
	Managing shooting troubles in plumbing	
	Limitations of analytical problem solving	
RUVGHMP506	**Marketing –II & Supply chain management**	**4**
	Transportation and export -Documentation	
	Transportation and export- Custom clearance	
	Transportation and export- Billing	
	Report	
	SEMESTER 6	
	SKILL COMPONENT	
RUVGHMP601	**Protected Cultivation – V**	**4**
	Cultivation of flowering plants /fruit crops/ vegetables in green house	
	Development of mobile application for monitoring pests and diseases	
	Bending of roses	
	Disbudding of Roses	
	Trellising of cucurbits, tomato	

	Staking of plants	
	Netting of carnation	
	Preparation of crop rotation chart in greenhouse	
	Bed preparation of tomato with grids	
	Technique of spraying of pesticide	
	Identification of varieties of cucumbers, tomato, capsicum, rose, gerbera and lily	
	Visit/Report	
	GENERAL COMPONENT	
RUVGHMP602	**Accounting - II**	**4**
	Managing Finance	
	Taxation	
	Audit	
RUVGHMP603	**Marketing-III**	**6**
	Prepare a supply chain management plan for fruit, flower and vegetable.	
	Prepare a write up or presentation of supply chain produce	
	Report	
RUVGHMP604 (Skill)	**Work Integrated Learning – III** (internship - greenhouse/polyhouse design and structures, maintenance of greenhouse, trouble shooting)-45 days	10

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- Greenhouse Pest Management : Contemporary Topics in Entomology - Raymond A. Cloyd

MODALITY OF ASSESSMENT

Theory Examination Pattern:

Semester I

A) Internal Assessment - 40%

B) **Paper I**

C) **30 marks**

Sr No	Evaluation type	Marks
1	One Assignment	25
2	Maintenance of Biogas plant	15

A) **Paper II**

B) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Maintenance of Greenhouse	10

A) **Paper III& IV**

B) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Second Assignment	10

A) **Paper V& VI**

B) **60 marks**

Sr No	Evaluation type	Marks
1	One Assignment	20
2	Second Assignment	20
3	Presentation	20

Semester II

D) **Internal Assessment - 40%**

E) **Paper I**

F) **60 marks**

Sr No	Evaluation type	Marks
1	One Assignment	25
2	Second Assignment	25
3	Maintenance of Biogas plant	10

C) **Paper II**

D) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Maintenance of Greenhouse	10

C) **Paper III & IV**

D) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Second Assignment	10

Semester III

G) **Internal Assessment - 40%**

H) **Paper I**

I) **40 marks**

Sr No	Evaluation type	Marks
1	One Assignment	30
2	Maintenance of Biogas Plant	10

E) **Paper II**

F) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Maintenance of Greenhouse	10

E) **Paper III & IV**

F) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Second Assignment	10

C) **Paper V & VI**

D) **40 marks**

Sr No	Evaluation type	Marks
1	One Assignment	20
3	Presentation	20

Semester IV

J) **Internal Assessment - 40%**

K) **Paper I**

L) **50 marks**

Sr No	Evaluation type	Marks
1	One Assignment	25
2	Second Assignment	25

G) **Paper II**

H) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Maintenance of Greenhouse	10

G) **Paper III & IV**

H) **40 marks**

Sr No	Evaluation type	Marks
1	One Assignment	20
2	Second Assignment	20

Semester V

M) **Internal Assessment - 40%**

N) **Paper I**

O) **40 marks**

Sr No	Evaluation type	Marks
1	One Assignment	30
2	Maintenance of Biogas Plant	10

I) **Paper II**

J) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Maintenance of Greenhouse	10

I) **Paper III & IV**

J) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Second Assignment	10

E) **Paper V & VI**

F) **60 marks**

Sr No	Evaluation type	Marks
1	One Assignment	20
2	Second Assignment	20
3	Presentation	20

Semester VI

P) **Internal Assessment - 40%**

Q) **Paper I**

R) 40 marks

Sr No	Evaluation type	Marks
1	One Assignment	20
2	Second Assignment	20

K) Paper II

L) 60 marks

Sr No	Evaluation type	Marks
1	One Assignment	30
2	Second Assignment	20
2	Maintenance of Greenhouse	10

K) Paper III

L) 60 marks

Sr No	Evaluation type	Marks
1	One Assignment	20
2	Second Assignment	20
3	Participation in College/ Departmental Fest	20

Semester I,III, V

Semester End Theory Assessment

Paper 1, RUVGHM 101, 301, 501 Soil and Water Management – II

Questions	Options	Marks	Questions on
Q1	Any 5 out of 7	15	Unit I
Q.2	Any 5 out of 7	15	Unit II
Q.3	Any 5 out of 7	30	Unit I & II

Paper 2, 3, 4 Integrated Nutrient Management –II, Protected Cultivation – II and Integrated Pest Management-II

Questions	Options	Marks	Questions on
Q1	Any 5 out of 7	15	Unit I
Q.2	Any 5 out of 7	15	Unit II

Paper 5 Communication Skills – III& ICT Skills - III

Questions	Options	Marks	Questions on
Q1	Any 6 out of 8	18	Unit I
Q.2	Any 6 out of 8	18	Unit II
Q.3	Any 4 out of 6	24	Unit I & Unit II

Paper 6, Business Skills –III & Managerial Skills - II

Questions	Options	Marks	Questions on
Q1	Any 6 out of 8	18	Unit I
Q.2	Any 6 out of 8	18	Unit II
Q3	Any 6 out of 8	24	Unit I & Unit II

Semester V

S) **Internal Assessment - 40%**

T) **Paper I**

U) **40 marks**

Sr No	Evaluation type	Marks
1	One Assignment	30
2	Maintenance of Biogas Plant	10

M) **Paper II**

N) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Maintenance of Greenhouse	10

M) **Paper III & IV**

N) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Second Assignment	10

G) **Paper V & VI**

H) **60 marks**

Sr No	Evaluation type	Marks
1	One Assignment	20
2	Second Assignment	20
3	Presentation	20

Semester VI

V) **Internal Assessment - 40%**

W) **Paper I**

X) **40 marks**

Sr No	Evaluation type	Marks
1	One Assignment	20
2	Second Assignment	20

O) **Paper II**

P) **60 marks**

Sr No	Evaluation type	Marks
1	One Assignment	30
2	Second Assignment	20
2	Maintenance of Greenhouse	10

O) **Paper III**

P) **60 marks**

Sr No	Evaluation type	Marks
1	One Assignment	20
2	Second Assignment	20
3	Participation in College/ Departmental Fest	20

MODALITY OF ASSESSMENT

Theory Examination Pattern:

Semester I

Y) **Internal Assessment - 40%**

Z) **Paper I**

AA) **30 marks**

Sr No	Evaluation type	Marks
1	One Assignment	25
2	Maintenance of Biogas plant	15

Q) **Paper II**

R) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Maintenance of Greenhouse	10

Q) **Paper III& IV**

R) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Second Assignment	10

I) **Paper V& VI**

J) **60 marks**

Sr No	Evaluation type	Marks
1	One Assignment	20
2	Second Assignment	20
3	Presentation	20

Semester II

BB) **Internal Assessment - 40%**

CC) **Paper I**

DD) **60 marks**

Sr No	Evaluation type	Marks
1	One Assignment	25
2	Second Assignment	25
3	Maintenance of Biogas plant	10

S) **Paper II**

T) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Maintenance of Greenhouse	10

S) **Paper III & IV**

T) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Second Assignment	10

Semester III

EE) **Internal Assessment - 40%**

FF) **Paper I**

GG) **40 marks**

Sr No	Evaluation type	Marks
1	One Assignment	30
2	Maintenance of Biogas Plant	10

U) **Paper II**

V) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Maintenance of Greenhouse	10

U) **Paper III & IV**

V) **20 marks**

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Second Assignment	10

K) **Paper V & VI**

L) **40 marks**

Sr No	Evaluation type	Marks
1	One Assignment	20
3	Presentation	20

Semester IV

HH) **Internal Assessment - 40%**

II) **Paper I**

JJ) 50 marks

Sr No	Evaluation type	Marks
1	One Assignment	25
2	Second Assignment	25

W) Paper II

X) 20 marks

Sr No	Evaluation type	Marks
1	One Assignment	10
2	Maintenance of Greenhouse	10

W) Paper III & IV

X) 40 marks

Sr No	Evaluation type	Marks
1	One Assignment	20
2	Second Assignment	20

Practical Examination Pattern

(A)Internal Examination: Marks varied according to the allotted credits

Heading	Practical
Assignments	
Presentation	
Participation	
Video Based Test	
Total	

(B) External (Semester end practical examination): Marks varied according to the allotted credits

Particulars	**Practical**
Laboratory work	
Viva	
Field Report	
Journal	
Total	

PRACTICAL BOOK/JOURNAL

The students are required to present a duly certified journal for appearing at the practical examination.

In case of loss of Journal and/ or Report, a Lost Certificate should be obtained from Head/ Co-ordinator / Incharge of the department; failing which the student will not be allowed to appear for the practical examination.

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Ramnarain Ruia Autonomous College
Credit Based Semester and Grading System - Green House Management syllabus
2019-2020

THEORY

Paper code	Paper name	Total marks	Internal marks	Internal passing	External marks	External passing	Time	Credits
RUVGHM 101	Soil and water management	100	40	16	**60**	24	**2 hrs**	**02**
RUVGHM 102	Integrated Nutrient Management	50	20	08	**30**	12	**1 hr**	**01**
RUVGHM 103	Integrated Pest Management	50	20	08	**30**	12	**1 hr**	**01**
RUVGHM 104	Introduction to protected Cultivation	50	20	08	**30**	12	**1 hr**	**01**
RUVGHM 105	Communication Skills-I, ICT Skills -I &Business Skills -I	150	60	24	**90**	36	**2 hrs**	**03**
RUVGHM 106	Environmental studies -I	150	60	24	**90**	36	**2 hrs**	**03**
	Total	**550**						

GREEN HOUSE MANAGEMENT
FYBVoc
SEMESTER I
PRACTICALS

Paper code	Paper name	Total marks	Internal marks	Internal passing	External marks	External passing	Credits
RUVGHM P101	Soil and water management	200	80	32	**120**	48	**04**
RUVGHM P102	Integrated Nutrient Management	150	60	24	**90**	36	**03**

RUVGHM P103	Integrated Pest Management	200	80	32	**120**	48	**04**
RUVGHM P104	Introduction to protected Cultivation	100	40	16	**60**	24	**02**
RUVGHMP 105	Communication Skills-I, ICT Skills – I & Business Skills - I	250	100	40	**150**	60	**05**
RUVGHMP 106	Environmental studies-I	50	20	08	**30**	12	**01**
	Total	**950**					

Individual Passing for Internal examination and theory examination
Total Marks –550+950 = 1500
Total Credits – 18 (Skill component) + 12 (General Component) = 30 Credits

GREEN HOUSE MANAGEMENT
FYBVoc
SEMESTER II
THEORY

Paper code	Paper name	Total marks	Internal marks	Internal passing	External marks	External passing	Time	Credits
RUVGHM 201	Protected Cultivation - I	150	60	24	**90**	36	**2 ½ hrs**	**03**
RUVGHM 202	Harvesting - I	50	20	08	**30**	12	**1 hr**	**01**
RUVGHM 203	Communication Skills-II & ICT Skills -II	100	40	16	**60**	24	**2 hrs**	**02**
RUVGHM 204	Business Skills -II	100	40	16	**60**	24	**2 hrs**	**02**
	Total	**400**						

GREEN HOUSE MANAGEMENT

FYBVoc
SEMESTER II
PRACTICALS

Paper code	Paper name	Total marks	Internal	Internal passing	External	External passing	Time	Credits
RUVGHMP 201	Protected Cultivation - I	300	120	48	**180**	72		**06**
RUVGHM P202	Harvesting - I	100	40	16	**60**	24		**02**
RUVGHMP 203	Communication Skills-II & ICT Skills -II	200	80	32	**120**	48		**04**
RUVGHM P204	Business Skills -II	200	80	32	**120**	48		**04**
RUVGHM P205	**Internship**	**300**	**Passing 150**				**15 days**	**06**
	Total	1100						

Individual Passing for Internal examination and theory examination
Total Marks –400+1100= 1500
Total Credits – 18 (Skill component) + 12 (General Component) = 30 Credits

GREEN HOUSE MANAGEMENT
SYBVoc
SEMESTER III
THEORY

Paper code	Paper name	Total marks	Internal marks	Internal passing	External marks	External passing	Time	Credits
RUVGHM 301	Soil and Water Management – II	100	40	16	**60**	24	**2 hrs**	**02**
RUVGHM 302	Integrated Nutrient Management – II	50	20	08	**30**	12	**1 hr**	**01**
RUVGHM 303	Protected Cultivation – II	50	20	08	**30**	12	**1 hr**	**01**
RUVGHM 304	Integrated Pest Management-II	50	20	08	**30**	12	**1 hr**	**01**
RUVGHM 305	Communication Skills – III& ICT Skills - III	100	40	16	**60**	24	**2 hrs**	**02**
RUVGHM 306	Business Skills – III& Managerial Skills - II	100	40	16	**60**	24	**2 hrs**	**02**
	Total	**450**						

GREEN HOUSE MANAGEMENT
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SEMESTER III
PRACTICALS

Paper code	Paper name	Total marks	Internal marks	Internal passing	External marks	External passing	Credits
RUVGHM P301	Soil and Water Management – II	200	80	32	**120**	48	**04**
RUVGHM P302	Integrated Nutrient Management – II	150	60	24	**90**	36	**03**
RUVGHM P303	Protected Cultivation – II	200	80	32	**120**	48	**04**
RUVGHM P304	Integrated Pest Management-II	100	40	16	**60**	24	**02**
RUVGHMP 305	Communication Skills – III& ICT Skills - III	200	80	32	**120**	48	**04**
RUVGHMP 306	Business Skills – III& Managerial Skills - II	200	80	32	**120**	48	**04**
	Total	**1050**					

Individual Passing for Internal examination and theory examination
Total Marks – 450+1050= 1500
Total Credits – 18 (Skill component) + 12 (General Component) = 30 Credit

GREEN HOUSE MANAGEMENT
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SEMESTER IV

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THEORY

Paper code	Paper name	Total marks	Internal marks	Internal passing	External marks	External passing	Time	Credits
RUVGHM 401	Protected Cultivation – III	100	40	16	**60**	24	**2 hrs**	**02**
RUVGHM 402	Harvesting - II	50	20	08	**30**	12	**1 hr**	**01**
RUVGHM 403	Accounting- I	100	40	16	**60**	24	**2 hrs**	**02**
RUVGHM 404	Marketing – I& Supply Chain Management- I	200	80	32	**120**	48	**3 ½ hrs**	**04**
	Total	**450**						

GREEN HOUSE MANAGEMENT
SYBVoc
SEMESTER IV
PRACTICALS

Paper code	Paper name	Total marks	Internal marks	Internal passing	External marks	External passing	Credits
RUVGHM P401	Protected Cultivation – III	200	80	32	**120**	48	**04**
RUVGHM P402	Harvesting - II	150	60	24	**90**	36	**03**
RUVGHM P403	Accounting- I	200	80	32	**120**	48	**04**
RUVGHM P204	Marketing – I& Supply Chain	100	40	16	**60**	24	

	Management- I						**02**
RUVGHMP 405	Work Integrated Learning – II (internship - greenhouse/polyhouse design and structures, maintenance of greenhouse, trouble shooting)	**400**	Passing 200				**08**
	Total	**1050**					

Individual Passing for Internal examination and theory examination
Total Marks – 450+1050= 1500
Total Credits – 18 (Skill component) + 12 (General Component) = 30 Credits

GREEN HOUSE MANAGEMENT
TYBVoc
SEMESTER V
THEORY

Paper code	Paper name	Total marks	Internal marks	Internal passing	External marks	External passing	Time	Credits
RUVGHM 501	Soil and Water Management – III	100	40	16	**60**	24	**2 hrs**	**02**
RUVGHM 502	Integrated Nutrient Management – III	50	20	08	**30**	12	**1 hr**	**01**
RUVGHM 503	Protected Cultivation – IV	50	20	08	**30**	12	**1 hr**	**01**
RUVGHM 504	Post Harvest Management and Value Addition	50	20	08	**30**	12	**1 hr**	**01**
RUVGHM 505	Managerial Skills - III	100	40	16	**60**	24	**2 hrs**	**02**
RUVGHM 506	Marketing – II & Supply Chain Management - II	200	80	32	**120**	48	**3 ½ hrs**	**04**
	Total	**550**						

GREEN HOUSE MANAGEMENT
TYBVoc
SEMESTER V
PRACTICALS

Paper code	Paper name	Total marks	Internal marks	Internal passing	External marks	External passing	Credits
RUVGHM P 501	Soil and Water Management – III	200	80	32	**120**	48	**4**
RUVGHM P 502	Integrated Nutrient Management – III	150	60	24	**90**	36	**3**
RUVGHM P	Protected Cultivation	150	60	24	**90**	36	**3**

503	– IV						
RUVGHM P 504	Post Harvest Management and Value Addition	150	60	24	**90**	36	**3**
RUVGHMP 505	Managerial Skills - III	100	40	16	**60**	24	**2**
RUVGHMP 506	Marketing – II & Supply Chain Management - II	200	80	32	**120**	48	**4**
	T**otal**	**950**					

Individual Passing for Internal examination and theory examination
Total Marks –550+950= 1500
Total Credits – 18 (Skill component) + 12 (General Component) = 30 Credits

GREEN HOUSE MANAGEMENT
TYBVoc
SEMESTER VI
THEORY

Paper code	**Paper name**	**Total marks**	**Internal**	**Internal passing**	**External**	**External passing**	**Time**	**Credits**
RUVGHM 601	Protected Cultivation - V	100	40	16	60	24	2 hrs	02
RUVGHM 602	Accounting-II	150	60	24	90	36	2 ½ hrs	03
RUVGHM 603	Marketing - III	150	60	24	90	36	2 ½ hrs	03
Total marks		**400**						

GREEN HOUSE MANAGEMENT
TYBVoc
SEMESTER VI
PRACTICALS

Paper code	Paper name	Total marks	Internal marks	Internal passing	External marks	External passing	Credits
RUVGHM P601	Protected Cultivation – III	300	120	48	**180**	72	**6**
RUVGHM P602	Accounting- I	150	60	24	**90**	36	**3**
RUVGHM P604	Marketing – II	150	60	24	**90**	36	**3**
RUVGHMP 605	Work Integrated Learning – II (internship - greenhouse/polyhouse design and structures, maintenance of greenhouse, trouble shooting)	**500**	Passing 250				**10**
	Total	**1100**					

Individual Passing for Internal examination and theory examination
Total Marks –400+1100= 1500
Total Credits – 18 (Skill component) + 12 (General Component) = 30 Credits

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