

UNIVERSITY OF MUMBAI
No. UG/138 of 2016-17

CIRCULAR:-

The Principals of the affiliated Colleges in Arts, Science and Commerce and the Heads of recognized Institutions concerned are hereby informed that the recommendation made by the Faculty of Science at its meeting held on 11th August, 2015 has been accepted by the Academic Council at its meeting held on 31st August, 2015 **vide** item No. 4.10 and subsequently approved by the Management Council at its meeting held on 31st August, 2015 **vide** item No.12 and that in accordance therewith, in exercise of the powers conferred upon the Management Council under Section 54 (1) and 55 (1) of the Maharashtra Universities Act, 1994 and the Ordinances 6295 and 6296 and Regulations 9002, 9003, 9004 and 9005 relating to the eligibility criteria as per the Credit Based Semester and Grading System for the Master of Vocation Program in faculties of Arts/Commerce/Science in the Course of Green House Management degree program are introduced, which is available on the University's web site (www.mu.ac.in) and that the same has been brought into force with effect from the academic year 2015-16.

Sd/-
REGISTRAR

MUMBAI - 400032

2nd February 2016
To,

The Principals of the affiliated Colleges Arts, Science & Commerce and the Heads of Recognized Institutions concerned.

A.C/410/31/08/2015

M.C/12/31/08/2015

No. UG/138-A of 2016

MUMBAI-400 032

Copy forwarded with Compliments for information to:-

- 1) The Deans, faculties of Arts, Science & Commerce,
- 2) The Professor-cum-Director, Institute of Distance & Open Learning (IDOL)
- 3) The Director, Board of College and University Development,
- 4) The Co-Ordinator, University Computerization Centre,
- 5) The Controller of Examinations.

Sd. Goswami
Deputy Registrar
Under Graduate Studies

PTO

AC 31/8/2015

M.Voc. Sem I and II – Green House Management Syllabus Credit Based and Grading System To be implemented from the Academic year 2015-2016

4.10

UNIVERSITY OF MUMBAI



Syllabus for the M.Voc. Sem I and II

Program: M.Voc.

Course : Green House Management

(Credit Based Semester and Grading System with effect from the academic year 2015–2016)

UNIVERSITY OF MUMBAI
ORDINANCES, REGULATIONS, SCHEME AND SYLLABUS FOR
M. VOC COURSE IN GREEN HOUSE MANAGEMENT

6295 (O) Title: M.Voc. in Green House Management.

9002 (R) Duration:
 Two years full time –Post-graduate Course

9003 (R) Total credits and study hours per semester:

<u>Component</u>	<u>Credits</u>	<u>Study Hours</u>
<u>Skill Component</u>	Total 14	210 hours
	Theory 06 –02 papers of 03 credits each	90 hours
	Practical –08 credits	120 hours
<u>General Education Component</u>	Total 10	150 hours
	Theory 06 – 02 papers of 03 credits each	90 hours
	Practicals – 04 credits	60 hours
<u>Total per semester for all the three years</u>	24 Credits	360 hours

6296 (O) Eligibility:

Following candidates are eligible for admission

- B.Voc in Green House Management/BSc Agriculture/ BSc Horticulture/ B Sc in any Biological Science (will have to undergo a Bridge Course).
- Admission will be granted on merit on the basis of the total marks at the B Sc examination and as per the guidelines of the University of Mumbai.

9004 (R) Intake capacity: 25

9005 (R) Teacher's Qualification:

Core Faculty:

- MSc in Horticulture or Agriculture

OR

- MSc in Botany with NET/SET cleared and a minimum of 05 years of teaching experience of Horticulture- theory and practical.

OR

- Exemption from NET/SET will be granted to candidates who hold a PhD degree in Horticulture or Botany provided they were registered for PhD before 11th July 2009.

Visiting Faculty:

- Horticulturist or Agriculturist with specialization in the relevant field.



SEMESTER I

Course Code	UNIT	TOPIC HEADINGS	Credits	L / Week
Skill Component				
PVGHM101	<u>Commercial Farming Techniques</u>			
	I	Green House Cultivation of Exotic flowers & vegetables	3	2
	II	Hydroponics in Green House		2

PVGHM102	Title of the Paper: <u>Water Management And Fertilizers</u>			
	I	Irrigation Practices in Green House	3	2
	II	Fertigation		2

PVGHM103	General component			
	Title of the Paper: <u>Organic Horticulture</u>			
	I	Organic Farming Technology	3	2
	II	Effective Microorganism(EM) Technology in Agriculture		2

PVGHM104	Title of the Paper: <u>Fundamentals & Applications of Nanotechnology</u>			
	I	Fundamentals of Nanotechnology	3	2
	II	Nanotechnology in Agriculture		2

PVGHMP101	Practicals based on theory -Skill component		08	
PVGHMP102	Practicals based on theory -General component		04	

SEMESTER II

Course Code	UNIT	TOPIC HEADINGS	Credits	L / Week
PVGHM201	Title of the Paper: <u>Mutation Induction in Green House</u>			
	I	Mutation Induction	3	2
	II	Application of mutation induction		2

PVGHM202	Title of the Paper: <u>Micropropagation of Green House Crops</u>			
	I	Micropropagation and Hardening of Plants suitable for Green House-I	3	2
	II	Micropropagation and Hardening of Plants suitable for Green House-II		2

PVGHM203	Title of the Paper: <u>Hazard Analysis and Critical Control points (HACCP)</u>			
	I	HACCP-I	3	2
	II	HACCP-II		2

PVGHM204	Title of the Paper: <u>Entrepreneurship</u>			
	I	Entrepreneurship-I	3	2
	II	Entrepreneurship-II		2

PVGHMP201	Practicals based on theory -Skill component		08	
PVGHMP202	Practicals based on theory -General component		04	

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SEMESTER I : SKILL COMPONENT

SEMESTER I PVGHM 101		
Paper I- COMMERCIAL FARMING TECHNIQUES	L	Cr
30		3
Unit I: GreenHouse Cultivation of Exotics Flowers and Vegetables. <ul style="list-style-type: none"> • Important Aspects of Cultivation. • Cultivation Techniques Green House (5 examples) 		
Unit II: Hydroponics in Green House <ul style="list-style-type: none"> • Various Methods of hydroponics • Types of Media • Merits and Demerits 		

SEMESTER I PVGHM 102		
Paper II : WATER MANAGEMENT AND FERTILIZERS	L	Cr
30		3
Unit I: Irrigation Practices in Green House <ul style="list-style-type: none"> • Methods of Irrigation • Irrigation Water Quality and Management • Irrigation Practices in Open Field • Irrigation System Designs 		
Unit II: Fertigation <ul style="list-style-type: none"> • Manures, Fertilizers and Agrochemicals • Types of Fertilizers • Methods of Fertigation • Calculating fertilizer rates 		

SEMESTER I : PVGHMP101		
Sr.No	PRACTICAL Paper I: Skill Component	Cr
1	Soil Analysis : Soil ph , Moisture , Water holding capacity and Electrical Conductivity	8
02 to 06	Cultivation of Exotic flower / vegetables	
07 to 10	Cultivation of Leafy/ Fruity / Medicinal plants using hydroponics	
11	Calculation of fertilizer	
12	Elemental testing of soil and fertilizer using flame photometer	

GENERAL COMPONENT

SEMESTER I PVGHM 103	L	Cr
Paper III : ORGANIC HORTICULTURE	30	3
<u>Unit I: Organic Farming Technology</u> <ul style="list-style-type: none"> • Concept of Organic Farming • Organic Production Requirements <ul style="list-style-type: none"> o Biological Intensive Nutrient Management <ul style="list-style-type: none"> § Organic manures, vermicomposting, green manuring, recycling of organic residues. o Integrated Disease and Pest Management <ul style="list-style-type: none"> § Use of Biocontrol Agents, Biopesticides, pheromones, Trap crops, bird perches, weed management. • Quality Considerations <ul style="list-style-type: none"> o Certification o Labelling o Accreditation Process o Marketing and Exports 		
<u>Unit II: EM (Effective Micro-organism) Technology in Agriculture</u> <ul style="list-style-type: none"> • Concept of EM • Benefits of EM Technology • EM in Vegetable Production • EM in Gardens/ Orchards/ Lawns • EM in Pest Control 		

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SEMESTER I PVGHM 104		L	Cr
Paper IV : FUNDAMENTALS AND APPLICATION OF NANOTECHNOLOGY		30	3
Unit I: Fundamentals of Nanotechnology			
<ul style="list-style-type: none"> • Concept • Types of Nanomaterials • Various methods of nanoparticle synthesis • Charaterisation techniques of nanoparticles • Application of nanotechnology • Fate of nanoparticles in the environment 			
Unit II: Nanotechnology in Agriculture			
<ul style="list-style-type: none"> • Nanoscale Carriers for the efficient delivery of fertilizers, pesticides, herbicides, plant growth regulators. • Optimised Nutrient Management • Application in Plant Protection Products • Nanosensors in Agriculture • Bioremediation 			

SEMESTER I : PVGHMP102		Cr
Sr. No	PRACTICAL Paper II: General Component	4
1	Preparation of Organic Fertilizer	
2	Elemental analysis of the prepared organic fertilizer	
3	Effect of Biofertilizer / EM solution on plant productivity	
4	Preparation of Biopesticide	
5	Synthesis and characterization of nanoparticles	
6	Effect of nanoparticles on seed germination and plant growth	

Sr. No	PRACTICAL Paper I: Skill Component	8
1 to 5	Study of mutation induction in green house crops using radiation or chemical mutagens	
6 to 10	Micropropagation and hardening of green house plants	

SEMESTER II SKILL COMPONENT

SEMESTER II PVGHM 201		L	Cr
Paper I: MUTATION INDUCTION IN GREEN HOUSE		30	3
Unit I: Mutation induction			
<ul style="list-style-type: none"> • Principle of mutation induction • Types of mutation • Induction of mutation in plants 			
Unit II: Applications of Mutation Induction			
<ul style="list-style-type: none"> • Creating novel genetic diversity in ornamentals and vegetables. 			

SEMESTER II PVGHM 202		L	Cr
Paper II: MICROPROPAGATION OF GREEN HOUSE CROPS		30	3
Unit I: Micropropagation and Hardening of plants suitable for green house (3 examples each)			
<ul style="list-style-type: none"> • Flowering plants / Ornamentals • Medicinal / Aromatic plants 			
Unit II : Micropropagation and Hardening of plants suitable for green house (3 examples each)			
<ul style="list-style-type: none"> • Vegetables / under exploited crops / Endangered species 			

SEMESTER II : PVGHMP201		Cr
Sr. No	PRACTICAL Paper I: Skill Component	8
1 to 5	Study of mutation induction in green house crops using radiation or chemical mutagens	
6 to 10	Micropropagation and hardening of green house plants	

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GENERAL COMPONENT

SEMESTER II PVGHM 203	L	Cr
Paper III: HAZARD ANALYSIS AND CRITICAL CONTROL POINTS (HACCP):	30	3
Unit I: HACCP I		
<ul style="list-style-type: none"> • Preventive approach to Food Safety • Principles and Standards 		
Unit II: HACCP II		
<ul style="list-style-type: none"> • Systems and Guidelines • Applications of HACCP • Certification 		

SEMESTER II PVGHM 204	L	Cr
Paper IV: ENTREPRENEURSHIP	30	3
Unit I : Entrepreneurship I		
<ul style="list-style-type: none"> • Concept, Functions and Need • Entrepreneurship Characteristics and competency • Process of Entrepreneurship development. • Help and support to Entrepreneurs 		
Unit II: Entrepreneurship II		
<ul style="list-style-type: none"> • Introduction to Market dynamics o Understanding a market o Competetive Analysis of the market o Patents, Trademarks and Copyright 		

Sr. No	SEMESTER II : PVGHMP201 PRACTICAL Paper II: General Component	Cr
1 to 5	Visit by students to any enterprise of own choice with the help of a questionnaire .The students will record observation regarding : background of entrepreneur, reasons for selecting the entrepreneurial career, starting the enterprise, type of enterprise, process of setting the enterprise, products/ services, production process, investment made and marketing practices followed, profit or loss, growth and development, problems faced, type of satisfaction.	4
6	Preparation of a brief report on the observations made during the study visit to an enterprise.	