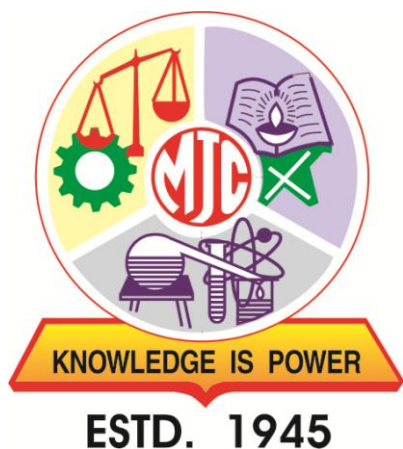


KCES's

Moolji Jaitha College (Autonomous), Jalgaon



SYLLABUS

B. Voc. Green House Technology

[W.e.f. Academic Year: 2019-20]

F. Y. B. Voc. - Green House Technology (NSQF Level V)					
Semester I					
General Education Component					
Paper No.	Paper Code	Paper Title	Mode	Credits	Marks
1	GHT-111	Introduction to Computer - I	Theory	02	100
2	GHT-112	Soft Skills Development - I	Theory	02	100
3	GHT-113	Computer Literacy Skills Lab	Practical	04	100
4	GHT - 114	Soft Skills Development Lab - I	Practical	04	100
Total				12	400
Skill Development Component					
5	GHT - 121	Basics of Plant Biology part I	Theory	02	100
6	GHT 122	Basics of Plant Biology part II	Theory	02	100
7	GHT 123	Introduction to Soil Science and Techniques for Soil and water Analysis	Theory	02	100
8	GHT - 124	Preparation of soil and water samples for analysis in the lab, sanitation and safety (AGR/N8101 & AGR/N8105)	Practical	04	100
9	GHT - 125	Calibration of equipments and preparation of different types of solutions; Soil and water health card (AGR/N8106 & AGR/N8107)	Practical	04	100
10	GHT - 126	Estimation of N, P, K and OC	Practical	04	100
Total				18	600
Total Credits = General Education Component + Skill Development Component					12+18=30

Semester II: Green House Technology					
General Education Component					
Paper No.	Paper Code	Paper Title	Mode	Credits	Marks
1	GHT-211	Introduction to Computer - II	Theory	02	100
2	GHT-212	Soft Skills Development - II	Theory	02	100
3	GHT-213	Office Operations Lab - I	Practical	04	100
4	GHT-214	Soft Skills Development Lab - II	Practical	04	100
Total				12	400
Skill Development Component					
5	GHT-221	Nursery techniques and Vegetative Propagation	Theory	02	100
6	GHT-222	Plant nutrients and its management	Theory	02	100
7	GHT-223	Design, Layout and installation of green house	Theory	02	100
8	GHT-224	Nursery techniques and Vegetative Propagation	Practical	04	100
9	GHT-225	Green House Media and Nutrient Management	Practical	04	100
10	GHT-226	Design, Layout and installation of green house	Practical	04	100
Total				18	600
Total Credits = General Education Component + Skill Development Component					12+18=30

Detailed Syllabus

GHT -111: Introduction to Computer - I

Period : 30

Credit: 02

Unit 1 - Basics of Computer

Periods: 10

1.1 Computer: definition, characteristics, advantages and disadvantages

1.2 Generations of computer

1.3 Block diagram of computer

1.4 Types of computer: analog, digital and hybrid

Unit 2 – Memory

Periods: 08

2.1 Overview of Memory

2.2 Types of Memory

a. Primary Memory: RAM and ROM

b. Secondary Memory: Hard disk, CD, DVD, USB flash memory & Solid state memory

Unit 3 - I/O Devices

Periods: 12

3.1 Concept of software and hardware, Relationship between software and hardware

3.2 Input devices - Keyboard, Mouse, Scanner, Joystick, MICR, OMR, Bar Code Reader

3.3 Output devices - Monitor: *CRT, Flat panel & Touch screen*, Printer: *Dot Matrix, Ink-jet & Laser*, Plotter

3.4 Ports: overview, types – audio, graphics, network, USB and HDMI

Recommended Books:

- Computer Fundamentals by P. K. Sinha, BPB Publications
- Fundamentals of Computers by V. Rajaraman, PHI
- Fundamentals of Computers by E Balagurusamy, Tata McGraw-Hill Education
- Absolute Beginner's Guide to Computer Basics by Miller, Pearson Education India, 2007
- Computer Literacy BASICS by Connie Morrison, Dolores Wells, Cengage Learning
- Personal Computing Demystified by Larry Long, McGraw Hill Professional
- Computer Concepts: Illustrated Introductory by Dan Oja, June Jamrich Parsons, Cengage Learning

GHT -112: Soft Skills Development - I

Period : 30

Credit: 02

Unit 1- Sentence

Periods: 03

1.1 Definition

1.2 Types of sentence - declarative, interrogative, imperative and exclamatory

1.3 Affirmative and negative sentence

1.4 Subject and predicate

Unit 2 - Parts of speech

Periods: 10

2.1 Parts of speech: nouns, pronouns, adjectives, verbs, adverbs, prepositions, conjunction and interjection

Unit 3 - Tense

Periods: 10

3.1 Present tense: simple, continuous, perfect, perfect continuous

3.2 Past tense: simple, continuous, perfect, perfect continuous

3.3 Future tense: simple, continuous, perfect, perfect continuous

Unit 4 - Determiners

Periods: 05

4.1 Articles

4.2 Demonstrative

4.3 Possessive

4.4 Quantifier

Unit 5 – Modals

Periods: 02

5.1 Modals: can, could, may, might, will, would, shall, should and must

5.2 Basic punctuation rules

5.3 Basic capitalization rules

5.4 Synonym and antonym

Recommended Books:

- Elementary English Grammar & Composition For Class-7 by N.K. Aggarwala, Goyal Brothers Prakashan
- Basic English Grammar by Howard Sargeant, Saddleback Educational Pub
- Middle School English Grammar and Composition by P. C. Wren, S. Chand Publishing

GHT -113: Computer Literacy Skills Lab

Period : 120

Credit: 04

S.No.	Name of Practical	No. of Practical
01	Introduction to various components of computer system	04
02	Acquisition of computer hardware	01
03	Acquisition of computer software	01
04	Installing peripherals of computer with start and shutdown process	02
05	Use of mouse comfortably	05
06	Use of keyboard for typing	05
07	Use of start menu, windows explorer, recycle bin, network and control panel	04
08	Use of taskbar and desktop context (right click) menu	03
09	Use of various windows utility programs	05
10	Installing and uninstalling of computer software	02
11	Files and folder management in windows explorer	04
12	Data access and management in network	02
13	Scanning the document	02

Recommended Books:

- Absolute Beginner's Guide to Computer Basics by Miller, Pearson Education India, 2007
- Computer Literacy BASICS by Connie Morrison, Dolores Wells, Cengage Learning
- Personal Computing Demystified by Larry Long, McGraw Hill Professional
- Computer Concepts: Illustrated Introductory by Dan Oja, June Jamrich Parsons, Cengage Learning

GHT -114: Soft Skills Development Lab - I

Period : 120

Credit: 04

Practical No.	Name of Practical	No. of Practical
01	Learn to handle dictionary to search word meaning	01
02	Find the meaning of 50 common nouns from dictionary	04
03	Find the meaning of 50 abstract nouns from dictionary	04
04	Find the meaning of 50 adjectives from dictionary	04
05	Find the meaning of 50 verbs from dictionary	04
06	Develop listening skills by listening various songs, documentaries and podcast	03
07	Read the news from the newspaper	04
08	Read the editorial from the newspaper	04
09	Read the article from the magazine	04
10	Learn and practice to introduce about yourself	02
11	Tell your favorite story	03
12	Speak about your favorite personality	03

Recommended Books:

- Elementary English Grammar & Composition For Class-7 by N.K. Aggarwala, Goyal Brothers Prakashan
- Basic English Grammar by Howard Sargeant, Saddleback Educational Pub
- Middle School English Grammar and Composition by P. C. Wren, S. Chand Publishing

GHT -121: Basics of Plant Biology Part I

Total Hours: 30

Credits: 02

Unit 1: Basics of Plant Biology

Periods: 08

Biological kingdom; Classification of plant kingdom; Characteristics of each group; Evolution of different groups; Special characters of Angiosperms

Unit 2: Plant Morphology

Periods: 10

Morphology of flowering plants; Roots, stem, leaves, inflorescence, flower, fruits: General concept and its modification

Unit 3: Plant Anatomy

Periods: 12

Types and functions of cell and tissues; conducting tissues, stomata types and its function

Recommended Books:

- Ganguly, H.C. & K. S. Das (1986) College Botany Vol.-I (6th Edition), New Central Book Agency, Calcutta, India
- Lawrence G.H.M. (1951) Taxonomy of Vascular plants. Macmillan, New York, USA.
- Pandey, B.P.(1997) Taxonomy of Angiosperms. S. Chand & Company Ltd., New Delhi, India.
- Subramanyam, N.S. (1997) Modern Plant Taxonomy. Vikas Publishing house, New Delhi, India.
- Mukerjee Susilkumar(1984) College Botany Vol III Published by J.N. Sen. B.S.I. New Central Book Agency Calcutta.
- Kochhar, P. L. Plant Ecology, Genetic and Evolution, S. Nagin and Co. Ltd., New Delhi, India
- Harold Charles Bold, *et.al*, "Morphology of Plants and Fungi", 1987, Harper and Row Publications
- V.K.Jain, "Fundamentals of Plant Physiology", S.Chand Publications, New Delhi
- S.N.Pandey and B.K.Sinha, "Plant Physiology", 4th Edition, Vikas Publishing House

GHT -122: Basics of Plant Biology Part II

Total Hours: 30

Credits: 02

Unit 1: Plant Physiology

Periods: 18

Plant water relations: photosynthesis, Translocation of solutes: Respiration; Growth hormones

Unit 2: Elementary cytology and Genetics

Periods: 12

Cell structure and its organelles, prokaryotic and eukaryotic cell; cell cycle, Mendel's laws

Recommended Books:

- Ganguly, H.C. & K. S. Das (1986) College Botany Vol.-I (6th Edition), New Central Book Agency, Calcutta, India
- Lawrence G.H.M. (1951) Taxonomy of Vascular plants. Macmillan, New York, USA.
- Pandey, B.P. (1997) Taxonomy of Angiosperms. S. Chand & Company Ltd., New Delhi, India.
- Subramanyam, N.S. (1997) Modern Plant Taxonomy. Vikas Publishing house, New Delhi, India.
- Mukerjee Susilkumar (1984) College Botany Vol III Published by J.N. Sen. B.S.I. New Central Book Agency Calcutta.
- Kochhar, P. L. Plant Ecology, Genetic and Evolution, S. Nagin and Co. Ltd., New Delhi, India
- Harold Charles Bold, *et.al*, "Morphology of Plants and Fungi", 1987, Harper and Row Publications
- V.K.Jain, "Fundamentals of Plant Physiology", S.Chand Publications, New Delhi
- S.N.Pandey and B.K.Sinha, "Plant Physiology", 4th Edition, Vikas Publishing House

GHT-123: Introduction to Soil Science and Techniques for Soil and water Analysis

Total Hours: 30

Credits: 02

Unit 1: Introduction to soil science and its analysis

Periods: 6

General concept on rock formation; different types of soil and its characteristics; soil map of India and special reference to Maharashtra; composition of soil; need analysis

Unit 2: Safety and hygiene of the lab and person

Periods: 6

Familiarity with lab and equipments; Need of safety and hygiene in the lab; precaution, disinfection and fumigation

Unit3: Preparation of water and soil sample for analysis hours

Periods: 6

Collection of sample, its categorization, drying, sieving and storage

Unit 4: Calibration of instruments and solution preparation

Periods: 6

Understanding of different terms for preparation of solution; Different types of solution and method of preparation; calibration of instruments and least count

Unit 5: Analysis and report making

Periods: 6

Understanding of NPK ratio, different methods of estimation of N, P, K and OC; Preparation of soil health card

Recommended Books:

- Sumati Narayan & Tahir Ali, "Manual of Soil, Plants & Water Analysis", 2016, Daya Publication house, New Delhi
- Sanjay K. Goswami , "Labrotary Manual-Soil, Plants & Water Analysis" Cornell Nutrient Management Sprear Progress
- Arundhati Nimbalkar , "Soil, Plants & Water Analysis Manual", 2015, Scitus Academics LIC
- M.A.Wani , "Soil, Plants & Water Analysis Manual", 2011
- Dhyan Singh , Chhonkar P.K., & Bs Dwivedi, "Manual on Soil, Plant & Water Analysis, Westville Publication House, New Delhi.

GHT -124: Preparation of soil and water samples for analysis in the lab, sanitation and safety (AGR/N8101 & AGR/N8105)

Total Hours: 120

Credits: 04

- Drawing/lay out plan for new laboratory (AGR/ N8101)
- Identification of major lab instruments and its least count
- Methods of lab cleaning, mopping , use of disinfectants, fumigation of the lab
- Different chemicals, lab wares, equipments and their use
- Antidotes for different hazardous chemicals and other safety measures; first aid and its use
- Measuring of liquid up to 0.5 ml and Demonstration of titration method
- Weighing of solid up to 1 mg
- Estimation of pH of different solutions
- Estimation of EC and TDS
- Understanding of lab assistant on different aspects (AGR/N8111)

GHT -125: Calibration of equipments and preparation of different types of solutions; Soil and water health card (AGR/N8106 & AGR/N8107)

Total Hours: 120

Credits: 04

Practicals:

1. Functioning of spectrophotometer
2. Preparation of soil samples for analysis
3. Conduct analysis of different parameters of water (AGR/N 8109)
4. Methods of soil sampling from farmers field and processing soil samples for analysis.
5. Preparation of different solutions Normal, Molar, Molal
6. Demonstration of osmosis and transpiration
7. Different types of register and formats
8. Preparation of soil health card

GHT -126: Estimation of N, P, K and OC

Total Hours: 120

Credits: 04

Practicals:

1. Estimation of N
2. Estimation of P
3. Estimation of K
4. Estimation of OC

Semester II: Green House Technology					
General Education Component					
Paper No.	Paper Code	Paper Title	Mode	Credits	Marks
1	GHT-211	Introduction to Computer - II	Theory	02	100
2	GHT-212	Soft Skills Development - II	Theory	02	100
3	GHT-213	Office Operations Lab - I	Practical	04	100
4	GHT-214	Soft Skills Development Lab - II	Practical	04	100
Total				12	400
Skill Development Component					
5	GHT-221	Nursery techniques and Vegetative Propagation	Theory	02	100
6	GHT-222	Plant nutrients and its management	Theory	02	100
7	GHT-223	Design, Layout and installation of green house	Theory	02	100
8	GHT-224	Nursery techniques and Vegetative Propagation	Practical	04	100
9	GHT-225	Green House Media and Nutrient Management	Practical	04	100
10	GHT-226	Design, Layout and installation of green house	Practical	04	100
Total				18	600
Total Credits = General Education Component + Skill Development Component					12+18=30

GHT -211: Introduction to Computer - II

Total Hours: 30

Credit:02

Unit 1 – Multimedia

Periods: 03

1.1 Overview

1.2 Elements of multimedia - text, image, audio, video and animation

1.3 Advantages, disadvantages and applications of multimedia

Unit 2 - Network

Periods: 06

2.1 Overview

2.2 Types - LAN, MAN and WAN

2.3 Network topology - star, bus, ring, mesh and hybrid

2.4 Understanding terminologies: server, client, internet and web

Unit 3 - Data Communication

Periods: 06

3.1 Overview

3.2 Components - message, sender, receiver, medium and protocol

3.3 Transmission media - guided media and unguided media

3.4 Types - simplex, half duplex and full duplex; Serial and Parallel

Unit 4 - Operating system

Periods: 06

4.1 Overview

4.2 Functions

4.3 Types - batch, time-sharing, distributed, network and real-time

Unit 5 - DBMS

Periods: 06

5.1 Overview of table, database and DBMS

5.2 Advantages and disadvantages of DBMS

5.3 DBMS users - end user, sophisticated users, application programmers and DBA

Unit 6 - Emerging trends

Periods: 03

6.1 Tablet Computer

6.2 Artificial intelligence

6.3 Virtual reality

6.4 3D printing

6.5 Navigation technology

6.6 VFX

Recommended Books:

- Computer Fundamentals by P. K. Sinha, BPB Publications
- Fundamentals of Computers by V. Rajaraman, PHI
- Fundamentals of Computers by E Balagurusamy, Tata McGraw-Hill Education

GHT -212: Soft Skills Development - II

Total Hours : 30

Credit: 2

Unit 1: Basics of Communication

Periods: 10

Communication and communication skill : general concept; different types of communications and its importance; Process of communication; Barriers to Communication; The Seven Cs of Effective Communication (Completeness, Conciseness, Consideration, Concreteness, Clarity, Courtesy, Correctness), purpose of professional communication; Importance of effective communication

Unit 2: Communication at Work Place

Periods: 10

Letter Components and Layout, Planning a letter, Process of Letter writing, E-mail Communication, Memo and Memo reports, Employment Communication: Notice agenda and Minutes of meeting, Brochures, Notice, circular and memo

Unit 3: Report Writing

Periods: 4

Effective writing, type of business reports, structure and kinds of reports, writing of abstracts and summaries, writing definitions

Unit 4: Job communication

Periods: 2

Job application: cover letter, CV, resume, appointment letter and resignation letter

Report: overview, structure and types

Unit 5: Communication network and other communication skills

Periods: 4

Communication networks types and advantage and disadvantages of it; Reading skills, listening skills, note-making, précis writing, audio-visual aids, and oral communication; better public speaking and presentation

Reference:

- Aruna Koneru, "Professional Communication", 2008, McGraw Hill Education, ISBN 978-0070660021
- Herta A Murphy, Herbert W Hildebrandt, Jane P Thomas, "Effective Business Communications", 7th Revised edition (1997) , McGraw-Hill Publishing. ISBN: 978-0070443983
- Urmila Rai, "Business Communication", 2011, Himalaya Publishing House , ISBN 978-8183184380/ 978-9350247990
- R.C. Sharma and Krishna Mohan, "Business Correspondence and Report Writing" , 4 edition (2010), McGraw Hill Education, ISBN: 978-0070681989
- Dale Carnegie, "How to win friends and influence people" Reprint 2016 Rupa Publications India Pvt. Ltd. New Delhi

GHT -213: Office Operations Lab - I

Period : 120

Credit: 04

Practical No.	Name of Practical	No. of Practical
01	Introduction to office suite software	01
02	Basic operations in office suite software	01
03	Page layout operations by using word processing software	02
04	Editing a document by using word processing software	04
05	Formatting a document by using word processing software	04
06	Inserting illustrations in the document by using word processing software	04
07	Inserting header, footer and page numbering in the document by using word processing software	04
08	Performing the table operations in the document by using word processing software	04
09	Formatting the table in the document by using word processing software	04
10	Viewing the document by using word processing software	04
11	Preparing a document through mail merge by using word processing software	04
12	File type conversions (docx to pdf and pdf to docx)	02
13	Pages management operations of pdf files	02

Recommended Books:

- MS-Office by S. S. Shrivastava, Firewall Media, 2008
- Learning Ms Office 2007 by Ramesh Bangia, Khanna
- MS Office 2007 in A Nutshell by Saxena Sanjay, Vikas Publishing House

GHT -214: Soft Skills Development Lab - II

Period : 120

Credit: 04

Practical No.	Name of Practical	No. of Practical
01	Learn social etiquettes	01
02	Learn business etiquettes	01
03	Learn telephone etiquettes	01
04	Learn to ask for and give information	01
05	Learn to make requests and responding to requests	01
06	Tell about industry visit to your friend	02
07	Conversation with your friend regarding to plan for a trip	02
08	Write informal letters	05
09	Write inquiry letters	05
10	Write complaint letters	05
11	Write your resume	03
12	Write a covering letter for applying job	02
13	Write a resignation letter	02
14	Prepare a notice	02
15	Prepare a oral presentation on the given topic	03
16	Group discussion	04

Recommended Books:

- Business Communicator – V.K. Jain, O. P. Biyani, S. Chand, New Delhi.
- The Communicator – Board of Editors , Orient Blackswan Pvt. Ltd
- The Art of Powerful Communication – Dinesh K. Vohra, Are Maria Publications, Pune

GHT-221: Nursery techniques and Vegetative Propagation

Total Hours: 30

Credits: 02

Unit: 1 Nursery General

Periods: 06

Introduction to nursery, types, need and importance; Establishment of Nursery; Nursery-site selection, lay out, records; Nursery management, problems and its control; Nursery accreditation and certification

Unit: 2 Nursery Management

Periods:06

Different types of nursery beds – flat beds, raised beds and sunken beds, their merits and demerits; Different types of media, tools and equipments, fertilizer and pesticides; Nursery structures - Potting, repotting; Common diseases of ornamental plants

Unit: 3 Seed Propagation

Periods: 06

Seed as propagates, its morphology; Germination of seeds; Seed dormancy and viability; Seed treatment; Seed testing; Commercial vegetable seedling production

Unit 4: Vegetative propagation part 1

Periods: 06

Asexual reproduction-importance, advantage and disadvantages; Propagation through stolons, runners, offsets, bulbs, corms, rooted crowns, division, cuttings, layering etc.

Unit 5: Vegetative propagation part 2

Periods: 06

Grafting and budding; Root stock-scion relationship; Top working; Special practices in nursery management; Micro-propagation (tissue culture/*in vitro* culture); Apomixes and polyembryony

Recommended Books:

- Alan Toogood, “American Horticultural Society Plant Propagation: The Fully Illustrated Plant-by-Plant Manual of Practical Techniques”, 1999,
- Graham Clarke & Alan Toogood, “The Complete Book of Plant Propagation” 1992
- VEGETATIVE PROPAGATION TECHNIQUES PERENNIAL CROP SUPPORT SERIES JALALABAD, AFGHANISTAN Publication No. 2007-003-AFG November 18, 2007
- Dueep Jyot Singh, John Davidson & Mendon Cottage Books, “Gardening series Introduction to Plant Propagation: The Essential Guide to Plant Propagation Methods and Techniques” 8 Mar 2015

GHT- 222: Plant nutrients and its management

Total Hours: 30

Credits: 02

Unit 1: Plant nutrient

Periods:06

Essential plant nutrients- Definition, classification of nutrients based on utilization and biochemical functions in plants; Definition of macro and micro nutrients, primary and secondary nutrients; Criteria of essentiality of elements.

Unit 2: Function of major plant nutrient

Periods: 06

Functions and deficiency symptoms of essential nutrient elements- N, P, K and OC in plants

Unit 3: Function of minor plant nutrient

Periods: 06

Functions and deficiency symptoms of essential nutrient elements- Ca, Mg, Fe, and S in plants.

Unit 4: Fertilizers and its application

Periods: 08

N P K fertilizers- definition of fertilizer, their classification, types of fertilizers and composition of nutrients in fertilizers; methods of fertilizer application- solid and liquid forms of fertilizer application and their advantage and disadvantages.

Unit 5: Integrated plant nutrient management (IPNM)

Periods: 04

Definition, component of IPNM and their management

Recommended Books:

- Allen V. Barker and David J. Pilbem, "Handbook of Plant Nutrition", 2007 Taylor and Francis Publications
- J. Benton Jones, Jr., "Plant Nutrition Manual", 1997, CRC Press.
- Lawrence E. Datnoff, Wade H. Elmer, Don M. Huber, "Mineral Nutrition and Plant Disease", 2007, American Phytopathological Society
- M. Naeem, Abid A. Ansari and Sarvajeet Singh Gill, "Essential Plant Nutrients- Uptake, Use Efficiency and Management", 2017 Springer Publications
- Petra Marchner, "Marchner's Mineral Nutrition of Higher Plants", 3rd Edition, Academic Press
- Samuel Tisdale, "Soil Fertility and Fertilizers", 1999, Prentice Hall Publications

GHT- 223: Design, Layout and installation of green house

Total Hours: 30

Credits: 02

Unit: 1 Green House General

Periods: 04

Introduction to Green House, scope and importance; Types of Green houses; Potential crop for green house

Unit: 2 Green House: design and layout

Periods: 10

Land survey and leveling; Assessment of structural strength, foundation specifications

Unit: 3 Installation of green house

Periods: 10

Erection of Greenhouse Structures; Covering with nets and shades (Types of glazing material and its characteristics); Checking of gutters

Unit: 4 Maintenance of green house

Periods: 03

Maintenance of erected structures; Maintenance of operational elements of the greenhouse for periodic checking, tightening, greasing etc.

Unit: 5 Health and safety

Periods: 03

Understanding about basic safety checks, operation of all machinery and vehicles and hazards; render appropriate emergency procedures

Recommended Books:

- Bose, T.K. and Som, T. K. 1986. *Vegetable Crops in India*. Naya Prakash, Kolkata.
- Bose, T.K. and Yadav, L.P. 1992. *Commercial Flowers*. Naya Prakash, Kolkata.
- Randhawa, G.S. and Mukhopadhyaya, A. 1994. *Floriculture in India*. Allied Publishers Pvt.Ltd. New Delhi.
- Shanmugavelu, K.G. 1985. *Production Technology of Vegetable Crops*. Oxford and IBM Publishing Co. Pvt. Ltd., New Delhi.
- Prasad S and Kumar U 2003. *Commercial Floriculture*. Agrobios.
- Prasad S and Kumar U 2003. *Greenhouse management of horticultural crops*. 2nd Edition. Agrobios.
- Principles of drip irrigation system, Dr. M.S. Mane, B.L.Ayare, Dr.S.S.Magar., Jain Bros., New Delhi
- Principles of sprinkler irrigation, Dr. M.S. Mane, Dr.B.L.Ayare. Jain Bros., New Delhi

GHT- 224: Nursery techniques and Vegetative Propagation

Total Hours: 120

Credits: 04

Practical:

1. Nursery establishment: Site selection, lay out, planning and records
2. Preparation of different types of nursery beds
3. Potting and repotting of nursery plants
4. Identification of weeds and herbarium preparation
5. Germination of seeds
6. Different methods of Seed treatment
7. Different methods of breaking of Seed dormancy
8. Functioning of different types of tools used in vegetative propagation
9. Vegetative propagation through stolons and runners
10. Vegetative propagation through offsets, bulbs
11. Vegetative propagation through corms, rooted crowns and division
12. Vegetative propagation through Grafting
13. Vegetative propagation through budding
14. Vegetative propagation through cuttings and layering
15. Record keeping of nursery

GHT- 225: Green House Media and Nutrient Management

Total Hours: 120

Credits: 04

Practical:

1. Preparation of compost
2. Preparation of different media as per need
3. Preparation of soilless media
4. To determine the Composition of different nutrient in given Fertilizers
5. Calculation of Fertilizer Dosage. Application of fertilizers as per need
6. Identification of nutrient deficiency of N and its rectification
7. Identification of nutrient deficiency of P and its rectification.
8. Identification of nutrient deficiency of K and its rectification
9. Identification of nutrient deficiency of Zinc and its rectification
10. Identification of nutrient deficiency of Cu and its rectification
11. Identification of nutrient deficiency of Fe and its rectification
12. Identification of nutrient deficiency of Sulphur and its rectification
13. Identification of nutrient deficiency of Molybdenum and its rectification
14. Identification of nutrient deficiency of Boron and its rectification
15. Demonstration of nutrient deficiency chart

**GHT- 226: Design Layout and installation of green house (QP AGR /Q1001
Green House fitter)**

Total Hours: 120

Credits: 04

- 1.AGR/N1001 Design and Layout of Greenhouse
2. AGR/N1002 Installation of Greenhouse Structures
3. AGR/N1003 Maintenance of Greenhouse
4. AGR/N9903 Maintain Health & Safety at the workplace