

UNIVERSITY OF MUMBAI

No.UG/ 232 of 2004

CIRCULAR :

A reference is invited to the scheme of papers of the B.Sc. degree course under the revised pattern vide this office Circular No.UG/9 of 1998 dated 7th January, 1998 and the Principals of the affiliated/constituent colleges in Science are hereby informed that the recommendation made by the Board of Studies in Botany at its meeting held on 26th February, 2004 has been accepted by the Academic Council at its meeting held on 2nd April, 2004 vide item No.4.31 and that in accordance therewith the syllabus in the subject of Botany (Horticulture) at the T.Y.B.Sc. course has been revised as per Appendix and that the same will be brought into force with effect from the academic year 2004-2005.

Mumbai 400 032

7th June, 2004


for REGISTRAR.

To,

Principals of the affiliated Colleges in the faculty of Science.

No.UG/ 232 A of 2004

7th June, 2004

Copy forwarded with compliment for information to :-

- 1) the Dean, Faculty of Science,
- 2) the Chairman, Board of Studies in Botany.


for REGISTRAR.

Copy to :

The Director, Board of College and University Development, the Controller of Examinations/the Deputy Registrar (Eligibility & Migration Section), the Director of Students Welfare, the Personal Assistants to the Vice-Chancellor, the Pro-Vice-Chancellor, the Registrar and the Assistant Registrar, Administrative sub-centre, Ratnagiri, for information.

The Controller of Examinations (10 copies), F. & A. O., (Accounts Section) Fort. (2 copies), Record Section (5 copies), Publication Section (5 copies), D.P., (Enrollment, Eligibility & Migration Section - 3 copies), D.R., (Statistical Unit) (2 copies), D. R., (Accounts Section), Vidyanagari, (2 copies), D. R. (Affiliation Section) (2 copies), Director, U.C.C., I.D.E. Bldg., A. R., Academic Authorities Unit (2 copies) He is requested to treat this as Action taken report on the concerned resolution adopted by the Academic Council Management Council, referred to in the above Circular, and that no separate action taken report will be sent in this connection, A. R., CONCOL (2 copies), BUCTU (1 copy), Dy. Acct. (Unit V) (1 copy), In-charge, Central Computing Facility (1 copy), Receptionist (1 copy), Telephone Operator (1 copy), Secretary, MUASA (1 copy), Supdt., P.G. Section (2 copies).

NRK CIE/6 June 2004

UNIVERSITY OF MUMBAI



Syllabus for T.Y.B.Sc. (Botany) in Horticulture

(with effect from the academic year 2004-2005)

T.Y.B.SC (BOTANY)

HORTICULTURE & GARDENING - I

1. Horticulture and its branches:

- Definition and objectives of Horticulture, Branches of horticulture – Pomology, Olericulture, Landscape Gardening, Nursery development, Production of seeds.
- Allied branches - Apiculture, Sericulture, Social forestry, Exhibition.
- Importance of horticulture to daily life - Nutrition, Hobby, Aesthetic value, Commercial value.

2. Garden Operations – Selection of site, Preparation of Soils for garden, Mulching, Top-dressing blanching, Sowing, Transplanting, Water and watering. Irrigation – Overhead, Surface, Underground, Weeding and Pruning - Principles, Objective and general technique.

3. Propagation practices – Different types with suitable examples.

- i. Seed – Advantages and disadvantages, Method of seed propagation – Sowing, Transplanting of seedling, Hardening, Care of seedlings. Production of Seeds, Handling, Collection and storage, Seed treatment to control diseases.

- ii. Propagation by specialized Vegetative structures bulbs, Tubers, Corms
Rhizomes, Root stock, Runners, Offsets, Suckers.
- iii. Artificial methods of plant propagation:
 - a. Cutting – Root cutting, Stem, Leaf and leaf bud cuttings. Use of PGRs for rooting.
 - b. Layering – Definition, Types:- simple, compound (Serpentine) Air.
 - c. Grafting – Definition, Advantage / disadvantage, Types Stem – detached scion – splice, whip / tongue, slide, veneer, cleft, bark, attached scion, approach, inarching, bridge, bracing, root grafting, epicotyl, stone grafting.
 - d. Budding – Definition, advantage, disadvantage type – T- Budding, shield, patch, ring / angular, skin budding in situ, After care of budded plants.
 - e. Developing new varieties : by hybridization, mutation breeding.
 - g. Micropropagation / Tissue culture, Techniques and general requirements advantages and limitation.

4. MANURES AND FERTILIZERS.

- a. Manures : Definitions, importance, important manures FYM, Compost, oil cakes, green manure, organic manures.
- b. Fertilizers : Definition, Types – Straight, compound and mixed; Nitrogenous $(\text{NH}_4)_2\text{SO}_4$, Urea, $\text{Ca}(\text{NO}_3)_2$, NH_4Cl , Phosphatic (Superphosphate, Bone meal) Potassic (Muriate of Potash, K_2SO_4)

Biofertilizer : Bacteria, Cyanobacteria, Mycorrhiza, Vermiculture, Sea weeds.

5. **Pest and Diseases;** of horticultural plants and their control; Classification of diseases on the basis of symptoms. Types of insect and non-insect pests.

Control Methods - chemical, physical, biological methods.

6. **Green house technology :** Meaning, types, layout and construction, irrigation systems. Care and attention. Hardening of plants. Economics of green house production of different vegetables and flowers.

7. **Water shed management :** Importance and scope of water shed development. Definition and classification of water-sheds. Different methods of water shed development and their use for different crops.

8. **Important Horticulture research Institutes:**

- a. Konkan Krishi Vidyapeeth – Dapoli
- b. Indian Institute Of Horticulture Research – Bangalore.
- c. Central Food Technological Research Institute – Mysore.
- d. Central Institute of Medical and Aromatic Plants – Lucknow.
- e. Indian Agricultural Research Institute Regional Station – Pune.
- f. Central Potato Research Institute – Simla
- g. Tropical Botanical Garden And Research Institute – Trivandrum.

HORTICULTURE & GARDENING – II

1. Land- Scape Gardening -

Principles of landscaping and garden design. Important garden features. Paths and Avenues, hedges and Edges, Lawn, flower beds, Arches and pergolas, Fencing, Water bodies, rocks. Plants suitable for different locations and climates. Indoor Garden Terrarium, Soil less garden, Bottled dish garden.

2. Different styles of Gardens :

Hindu, Buddhist, Mughal, English, Japanese

Important Gardens of India – Shalimar(Shrinagar), Vrindavan (Mysore), Dnyaneshwar Udyan(Srinagar), Jayakwadi (Paithan), Veer Jijamata Udyan (Mumbai).

3. Floriculture: – Scope and importance, soil and climatic requirement and cultivation practices for *Gladiolus*, *Gerbera*, Rose and Marigold. Propagation technique, packaging and marketing, enhancing and delaying period of bloom by special methods.

4. Commercial production of the following :-

Tubers	-	Potato and Arum.
Vegetables	-	Tomato & Okra (Lady's finger)
Fruits	-	Mango & Grapes
Spice / Condiment	–	Chilly and Ginger
Medicinal Plant	–	<i>Asparagus</i> (Shatavari) And <i>Acorus</i> (Vekhand)
Aromatic Plant	–	<i>Citronella</i> and Mint

5. **Post – Harvest Technology**

Maturity - Factors responsible for maturity and ripening methods used for delaying ripening.

Harvest - Time of Harvest, harvesting and handling of harvested products

Storage of fresh produce – Types of storages preservation of fruits and vegetables - canning, freezing, drying (Dehydration) pickling, food preservatives, anti-oxidants,

Marketing – Grading, packing and transportation. Ways of increasing the market value and shelf life of horticulture produce.

6. **Horticulture business, management and entrepreneurship development:-**

Horticulture, as a business definition and nature, organization, planning and operations of Horticulture farm business.

Recycling of farm wastes.

Entrepreneurship development

7. **Lawn:**

i. Purpose Preparation of Lawn & Lawn Plants

ii. Turf production and use – purpose and preparation, management.

HORTICULTURE PRACTICAL I

1. Garden implements and their uses.
2. Potting and Repotting , Transplanting.
3. Propagation practices by seed, cutting, layering, budding, grafting.
4. a) Fertilizers – Identification by physical and chemical methods – urea, ammonium sulphate, potassium sulphate, super phosphate. Calculation of Unit Value of nutrients
b) Manures – Identification of plants as green manure – *Glyricidia*, *Crotolaria*, *Leucaena*
Biofertilizers – Identification (Material as Slides) AAM, *Nostoc*, *Rhizopus*.
5. Common weeds – Identification and classification as per standard chart.
6. Diseases and pests – Fungal - Powdery mildew, rust, wilt, blight ,smut
Bacterial – (Canker, Wilt).
Viral (Leaf Mosaic, Leaf curl, Yellow Vein Mosaic)
Insects – Sucking, biting, chewing, borers and ants.
Non-insect pests – Nematodes, Rodents.
7. Green house plants – Information regarding to soil, temperature, irrigation and fertilizer requirements and propagation methods for *Anthurium*, *Begonia*, *Gerbera*, *Orchids*, *Tuberose*, *Dracaena*, *Agloanema*, *Adiantum*.

HORTICULTURE & GARDENING – II

1. Preparation of garden layout.
2. Plants suitable for garden locations – 2 – 3 Examples for each location
3. Method for preparing Bonsai, Bottle garden / Terrarium, Hanging baskets
4. Flower arrangements – Indian, Japanese and Western
5. Preparation of Jams, Jellies, Squashes / Syrups Pickle.
6. Food Contaminant preserved food products
– *Penicillium, Aspergillus, Rhizopus*.
7. Varieties of the following fruits and vegetables :
Vegetables : Tomato, Okra, Brinjal
Spice / Condiments- Chilly
Fruits:- Banana, Grapes, Mango, Watermelon.

Project:

Each student should individually present a project related to any topic related to horticulture. It should be duly certified presented for at practical examination.

Visits:

To Gardens / Parks / Nurseries / Exhibitions / Horticulture industries / Research Stations and record of visits should be duly certified and presented at practical examination.

Journal:

Students will not be allowed for Practical examination without their journal duly certified should be submitted for practical examination.

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