**Savitribai Phule Pune University**

Satyaniketan’s

**Adv. M.N.Deshmukh Arts, Science & Commerce College Rajur**

**SEMISTER I AND SEMISTER II**

**TEACHING PLAN (2017-18)**

 **(Paper I and II)**

Submitted By

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Satyaniketan's

**Adv.M.N.Deshmukh Arts, Science and Commerce College Rajur**

Tal. Akole, Dist. Ahmednagar. Pin. 422604.

F.Y.B.Sc. Botany (Term I, Paper II) Implemented from Academic Year 2013-14

**Teaching Planning (2017--18)**

BO-112: **INDUSTRIAL BOTANY I** (36 Lectures) Prof. K. J. Kakade

| **Sr. No.** | **Month & Date** | **Unit** | **Topic** | **Lecture** |
| --- | --- | --- | --- | --- |
|  | June | Introduction to Industrial Botany | * 1.1 Concept of Industrial Botany.

1.2 Plant resources and industries: Food, fodder, fibers, medicines, timber, * Dyes, gum, tannins. (Two examples of each resource and the relevant
* Industries with which they are associated).
 | 02 |
|  | July | Floriculture Industry | 2.1 Introduction to floriculture. 2.2 Important floricultural crops, open cultivation practices, harvesting and marketing of Tuberose. 2.3 Greenhouse technology: Concept, advantages and limitations. 2.4 Cultivation practices (greenhouse technology), harvesting and * marketing of Rose and Gerbera
 | 08 |
|  | August | Plant Nursery Industry | 3.1Concept and types of nurseries: ornamental plant nursery, fruit plant nursery, medicinal plant nursery, vegetable plant nursery, orchid nursery, forest nursery (with reference to infrastructure required, outputs, commercial applications and profitability). 3.2 Propagation methods: Seed propagation, natural vegetative propagation and artificial vegetative propagation (Cutting: Stem, Layering: Air layering, Grafting: Stone grafting and Approach grafting, Budding : Tbudding). | 08 |
|  | August | Plant Tissue Culture Industry | 4.1 Concept of tissue culture. 4.2 Culture techniques: Types of explants, preparation of media, methods of sterilization, inoculation techniques, incubation and hardening. 4.3 Commercial significance | 06 |
|  | September | Agri industries: | 5.1 Organic Farming: Concept, need of organic farming, types of organic fertilizers, advantages and limitations. 5.2 Seed industries: Importance of seed industries, seed production, seed processing and seed marketing with reference to cotton. Major seed industries and corporations of India. | 08 |
|  | October | Mushroom Industries: | Mushroom cultivation: Plant resources, cultivation practices of Oyster mushroom, uses of mushrooms, value added products, commercial significance. | 04 |

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**Teaching Planning (2017--18)**

BO-112: **INDUSTRIAL BOTANY II** (36 Lectures) Prof. K. J. Kakade

| **Sr. No.** | **Month & Date** | **Unit** | **Topic** | **Lecture** |
| --- | --- | --- | --- | --- |
|  | December | Bio-fuel Industry | * 1.1 Introduction and advantages.
* 1.2 Concept of biofuel and its need.
* 1.3 Plants used for biofuel production.
* 1.4 Biodiesel production from Caster.
* 1.5 Commercial significance.
 | 06 |
|  | December | Bio-pesticide Industry | 2.1 Concept of bio-control; Integrated Pest Management (IPM). 2.2 Importance of bio pesticides. 2.3 Types of bio pesticides: Indiara, Azadiractin. * 2.4 Commercial significance
 | 06 |
|  | January | Industrial Mycology | 3.1 Introduction 3.2 Important genera of fungi used in various industries and their products. 3.3 Products and applications of Trichoderma, Penicillium, Aspergillus and yeast. 3.4 Commercial significance. | 06 |
|  | January | Bio-Fertilizer Industry | 4.1 Bio fertilizers : concept and need 4.2 Types of bio-fertilizers: Nitrogen fixing bio fertilizer: Rhizobium, Blue green algae. Anabaena associated with Azolla. Phosphate solubilizing biofertilizer: Bacteria and Fungi. 4.3Commercial significance. | 06 |
|  | February | Fruit Processing Industry | 5.1 Fruit processing: concept and need 5.2 Cold storage. 5.3 Types of fruit processing (canned fruits, dried fruit chips, fruit pulp, squash, jam, jelly, pickle and ketchups). 5.4 Commercial significance. | 06 |
|  | February | Plant Pharmaceutical Industry | 6.1 Concept and advantages. 6.2 Types of pharmaceutical products: Churna, Asava and Arishta. 6.3 Drug plants with reference to botanical source, active principles and medicinal uses of Adathoda zeylanica, Tinospora cordifolia and Asperagus racemosus. 6.4 Manufacture of Churna (Triphala churna), Arishta (Ashokarishta) and Asava (Kumariasava). 6.5 Concept of nutraceuticals and cosmeceuticals. 6.6 Commercial significance of Amla and Aloe. | 06 |

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T.Y.B.Sc. Botany (Term I, Paper V) Implemented from Academic Year 2013-14

**Teaching Planning (2017--18)**

BO 335: **Horticulture and Floriculture** (48 Lectures) Prof. K. J. Kakade

| **Sr. No.** | **Month & Date** | **Unit** | **Topic** | **Lecture** |
| --- | --- | --- | --- | --- |
|  | June | Horticulture Introduction | * Definition, branches, scope and economic importance of horticultural crops, export and
* import potential of horticultural crops, Horticultural zones of India and Maharashtra,
* Global and national scenario of horticulture
 | 04 |
|  | June | Horticultural Plants | Nutritive value of fruits and vegetables, Classification of horticultural crops, Classification of Vegetables, Fruits, Ornamental plants, Spices and Flowers | 04 |
|  | July | Horticulture- Methods of Plant Propagation | A. Sexual propagation- importance, seed viability and treatments B. Artificial Vegetative Propagation – Importance, Methods- cutting. Layering, grafting and budding. C. Physiological and Anatomical basis of rooting D. Role of growth regulators in horticulture | 06 |
|  | July | Special Practices in Horticulture | Training and Pruning- objectives, types, systems of trainings Fruit crops- Special practices like Bahar treatment, Girdling, Notching, Ringing, Bending, Vegetable crops special practices- Earthing up, Staking, Blanchin | 06 |
|  | August | Fruits and Vegetables Production Technology | Introduction, soil and climate requirements, commercial varieties, special harvesting and post harvest management, plant protection methods of following Fruits- Banana, Mango, Vegetables- Tomato, peas, Beans | 08 |
|  | August | Ornamental Horticulture | Introduction, Origin and History of Gardens, Famous Indian Gardens, Gardening stylesEnglish garden, Italian Garden, Mughal Garden, Japanese garden, Landscape  | 05 |
|  | September | Floriculture | Introduction, Concept, Definition, Scope and Importance of floriculture, Important floriculture crops and methods of cultivation for cultivation of Aster, Gladiolus, Orchids, Tagetus | 08 |
|  | October | Flower Industry | A- Dry Flowers - Introduction, Indian market of dry flowers, Selection of material, Techniques of drying- Air drying, sun drying, press drying, dessicants, oven and microwave drying methods. Preservation methods, bleaching, dyeing and painting, storage , care of dried flowers, etc. B- Cut Flowers – Introduction, Species and cultivars of Orchids, Anthuriums and Heliconias, Harvesting - Techniques, mode of harvesting, post-harvest handlingconditioning , precooling, pulsing and impregnation, grading, bunching, wrapping packing and cold storage of cut flowers, Indian market of Cut flowers | 07 |

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T.Y.B.Sc. Botany (Term II, Paper III) Implemented from Academic Year 2013-14

**Teaching Planning (2017--18)**

BO 343: **Plant Pathology** (48 Lectures) Prof. K. J. Kakade

| **Sr. No.** | **Month & Date** | **Unit** | **Topic** | **Lecture** |
| --- | --- | --- | --- | --- |
|  | November | Fundamentals of plant pathology | Introduction, Important terminology- Incitants, Host, Parasite, Pathogen, Inoculum, Penetration, Infection, Incubation, Disease, Disease development, Symptoms, Sign, Endophyte, Predisposition, Suscept, Resistance, Epidemic, Etiology.Economic importance of plant diseases, History of plant pathology, Introduction to Indian Agricultural Research Institute (IARI), International Crop Research Institute for Semi Arid Tropics (ICRISAT), Contribution of Anton DeBary and Prof. B.B. Mundkur. | 05 |
|  | November | Disease Development | Concept of disease cycle, Inoculation, Prepenetration, Penetration, Infection, Dissemination. Epidemics- Forms, Decline,, Exponential model. Disease forecasting, Measurement of plant disease and yield loss. | 06 |
|  | December | Defense Mechanisms | Concept and Definition, Types- Preexisting- Structural and chemical, InducedStructural and Biochemical | 03 |
|  | December | Methods of Studying Plant Diseases | Macroscopic study, Microscopic study, Koch"s postulates. Culture technique, Media Types and Preparation, Pure culture methods- streak plate, Pour plate, spread plate, Serial dilution. | 05 |
|  | January | Fungal Plant Diseases | Introduction to fungi as plant pathogens. Study of Diseases- Club root of Crucifers, Downy mildew of Grapes, Head smut of Jowar, Leaf spot of Turmeric, Tikka disease of Groundnut with reference to causal organism, symptoms and signs, disease cycle and control measures. | 05 |
|  | January | Bacterial Plant Diseases | Introduction to bacteria as plant pathogens, Study of Diseases- Citrus Canker, Black arm of Cotton with reference to causal organism, symptoms and signs, control measures.  | 03 |
|  | February | Mycoplasma Plant Diseases | Introduction to Mycoplasma as plant pathogens, Study of Diseases- Grassy shoot disease of sugarcane, Little leaf of brinjal with reference to symptoms and signs, control measures. | 03 |
|  | February | Nematodal Plant Diseases | Introduction to Nematodes as plant pathogens. Study of Diseases- Root knot disease of vegetables, Ear cockle of Wheat with reference to causal organism, symptoms and signs, control measures. | 02 |
|  | February | Viral Plant Diseases | Introduction to Viruses as plant pathogens. Study of Diseases- Tobacco Mosaic Disease, Bunchy top of Banana with reference to causal organism, symptoms and signs, control measures. | 03 |
|  | February | Non Parasitic Diseases | The impact and abiotic causes- Temperature, Soil moisture and relative humidity, Poor oxygen, Poor light, Air pollutants, mineral deficiencies. Herbicide injury, Study of Tip burn of Paddy, Mango necrosis, Black Heart of Potato, Khaira disease of rice. |  |
|  | March | Principles of Plant Disease Control | General account, Quarantine, Eradication, cultural control practices, Biological control, Curative measures, Chemical control, Use of Effective Microorganism Solution (EMS), Microbial Pesticides, IPM | 05 |
|  | March | Molecular Diagnostics and Transgenic in Crop Protection | Introduction, Classical approaches, Use of antibodies, Pathogen derived resistance against bacterial and fungal diseases, Expression of vaccines in plants. | 04 |