

DEPARTMENT OF BOTANY

SYLLABUS FOR FOUR YEAR UNDERGRADUATE PROGRAMME

FIRST AND SECOND SEMESTER

(APPROVED BY ACADEMIC COUNCIL VIDE RESOLUTION NO. 3, DATED: 04 – 07 – 23)



ARYA VIDYAPEETH COLLEGE (AUTONOMOUS)

ARYA NAGAR, GUWAHATI – 16

INDEX

Serial No	Content	Page No.
1	Structure of Four Year Undergraduate Course	1
2	Semester Wise Credit Distribution	2
3	List of Papers	3
4	First Semester Syllabus	4
5	Second Semester Syllabus	15

Structure of Four Year Undergraduate Course

Semester	Type	Core	Minor	SEC	IDC	AEC	VAC/FC	IN
	Credit	4	4	3	3	2	4(2 + 2)	2
I		CE-1114	MN-1114	SE-1113	ID-1113	AE-1112	VL-1112 (Two Courses)	-
II		CE-2114	MN-2114	SE-2113	ID-2113	AE-2112	VL-2112 (Two Courses)	-
III		CE-3214	MN-3214	SE-3213	ID-3213	AE-3212	-	-
		CE-3224						
IV		CE-4214	MN-4214	-	-	AE-4212	-	IN-4212
		CE-4224						
		CE-4234						
V		CE-5314	MN-5214	-	-	-	-	-
		CE-5324						
		CE-5334						
		CE-5344						
VI		CE-6314	MN-6214	-	-	-	-	-
		CE-6324						
		CE-6334						
		CE-6344						
VII		CE-7414	MN-7314	-	-	-	-	-
		CE-7424						
		CE-7434						
		CE-7444						
VIII		CE-8414	MN-8314	-	-	-	-	-
		CE-8424**						
		CE-8434**						
		CE-8444**						

**Students who secure more than 7.5 CGPA at the end of third year (6th semester) may opt for a research dissertation of 12 credits instead of the three core papers.

Course code: First two letters is the abbreviation of course component

First digit implies semester number

Second digit implies course level

Third digit implies course number

Fourth digit implies credit points per course.

Digit	Course Level
1	100 - 199
2	200 - 299
3	300 - 399
4	400 - 499

Semester Wise Credit Distribution

Semester	CREDIT DISTRIBUTION							
	CORE	MINOR	SEC	AEC	IDC	VAC/FC	IN	TOTAL
FIRST	1 x 4	1 x 4	1 x 3	1 x 2	1 x 3	2 x 2	--	20
SECOND	1 x 4	1 x 4	1 x 3	1 x 2	1 x 3	2 x 2	--	20
THIRD	2 x 4	1 x 4	1 x 3	1 x 2	1 x 3	--	--	20
FOURTH	3 x 4	1 x 4	--	1 x 2	--	--	1 x 2	20
FIFTH	4 x 4	1 x 4	--	--	--	--	--	20
SIXTH	4 x 4	1 x 4	--	--	--	--	--	20
SEVENTH	4 x 4	1 x 4	--	--	--	--	--	20
EIGHT	4 x 4	1 x 4	--	--	--	--	--	20

SEC: SKILL ENHANCEMENT COURSE

AEC: ABILITY ENHANCEMENT COURSE

IDC: INTERDISCIPLINARY COURSE

VAC/FC: VALUE ADDED COURSE

IN: INTERNSHIP

Abbreviation of Course Components:

CE (Core), MN (Minor), SE(Skill Enhancement Course), AE (Ability Enhancement Course), VL (Value added Course), ID (Interdisciplinary Course), IN (Internship)

LIST OF PAPERS:

CORE:

1. Biodiversity (Microbes, Algae, Fungi and Archegoniate)(BT – CE – 1114)
2. Plant Ecology and Taxonomy (BT – CE – 2114)

MINOR:

1. Biodiversity (Microbes, Algae, Fungi and Archegoniate) (BT – MN – 1114)
2. Plant Ecology and Taxonomy (BT – MN – 2114)

SKILL ENHANCEMENT COURSE:

1. Gardening(BT – SE – 1113)
2. Floriculture and Interior Decoration with Indoor Plants (BT – SE – 2113)

MULTIDISCIPLINARY/INTERDISCIPLINARY COURSE:

1. Plant Biodiversity (BT – ID – 1113)
2. Plants and Human Welfare (BT – ID – 2113)

FIRST SEMESTER

PAPER NAME: Biodiversity (Microbes, Algae, Fungi and Archegoniate)

PAPER CODE: BT – CE – 1114

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY: 3 CREDITS

Total Lectures: 45

COURSE OBJECTIVE:

The course includes modules on basic knowledge of the plant kingdom viz. Microbes, Algae, Fungi and Archegoniatae, with the main objective of giving a sense of mooring to the undergraduates.

COURSE OUTCOME:

Combination of theoretical and practical components of this course will provide comprehensive information and insight into the fascinating world of microbes and plants. Hand on training will help students learn use of the microscope, mounting, section cutting and staining techniques for the study of plant materials. Making drawing in practical records will enhance understanding morphology and structural details and related functional aspects in diverse plant groups. This paper is both informative and interesting and will enable student to learn about biodiversity not only as plant or nature lover but also for higher academic pursuits, particularly in the field of biological sciences, environment and biodiversity conservation.

Unit- I:Microbes (Lectures:9)

Viruses : General Structure, DNA virus (T Phase), Lytic and Lysogenic Cycle, RNA virus (TMV). Economic Importance

Bacteria: General Characteristic and Cell structure, Reproduction – Vegetative, Asexual and Recombination (Conjugation, Transformation and Transduction), Economic importance

Unit- II:Algae (Lectures: 9)

General characteristic, Range of thallus organization and reproduction, Classification of algae (F E Fritsch classification), Morphology and life cycles of *Nostoc*, *Chlamydomonus*, *Vaucheria*, and *Polysiphonia*, Economic importance of algae..

Unit- III: Fungi (Lectures: 9)

General characteristic, nutrition, reproduction and classification (G.C Ainsworth classification). Life cycles of Rhizopus (Zygomycota), Phytophthora (Oomycetes) Penicillium, (Ascomycota), Puccinia Agaricus (Basidiomycota), Symbiosis Association – Lichen. General account and significance of Mycorrhiza.

Unit- IV: Introduction to Archegoniate(Lectures: 2)

Unifying features of archegoniates, Transition to land habit, alternation of generation.

Unit- V: Bryophytes (Lectures: 6)

General characteristic, adaptation of land habit, Classification (upto family), Morphology, anatomy and reproduction of *Marchantia*, *Anthoceros* and *Polytrichum*, Ecology and economic importance of bryophytes with special mention of *Sphagnum*.

Unit- VI: Pteridophytes(Lectures: 5)

General characteristics, classification, Early land plants – *Rhynia* and *Psilotum*. Morphology, anatomy and reproduction of *Selaginella*, and *Pteris*. Heterospory and seed habit, Stellar evolution.

Unit- VII: Gymnosperms (Lectures: 5)

General characteristics, Classification. Morphology, anatomy and reproduction of *Cycas*, *Pinus* and *Gnetum*, Ecological and economical importance.

PRACTICAL (Lectures: 30)

1. Model of Virus - T Phage; Lytic and Lysogenic Cycle from Photographs
2. Study of bacterial reproduction – Binary Fission and Conjugation from slides / photographs
3. Gram staining process
4. Study of vegetative and reproductive structure of *Nostoc*, *Chlamydomonas* and *Polysiphonia*
5. Study of vegetative and reproductive structure of *Penicillium* and *Puccinia*
6. Study of vegetative and reproductive structure of *Marchantia* and *Polytrichum*
7. Study of vegetative and reproductive structure of *Selaginella*,
8. Study of vegetative and reproductive structure of *Cycas* and *Gnetum*.

RECOMMENDED BOOKS:

1. Pelczar, M. J. (2001) – Microbiology, 5th Edition, Tata McGraw – Hill Co, New Delhi.
2. Sarma, P. D. (2009) – Microbiology, Latest Edition, Rastogi Publication , Meerut.
3. Sahu, D. (2000) – Farming the Ocean : Sea Weeds Cultivation and Utilization. Ara Vali International, New Delhi.
4. Kumar, H. D. (1999) – Introductory Phycology. Affiliated East West Press, Delhi

5. Alexopoulos, C. J.; Mims, C. W.; Blackwell, M. (1996) – Introductory Mycology, J. and Sons, 4th Edition.
6. Vashista, P. C.; Singha, A. K., Kumar, A. (2010) – Pteridophyta, S. Chand, Delhi, India.
7. Parihar, N. S. (1991) – An Introduction to Embryophyta, Vol I – Bryophyta, Central Book Depot. Allahabad.
8. Bhatnagar, S. P.; Moitra, A. (1996) – Gymnosperms, New Age International (P) Ltd, Publishers, New Delhi, India.

PAPER NAME: Biodiversity (Microbes, Algae, Fungi and Archegoniate)

PAPER CODE: BT – MN – 1114

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY: 3 CREDITS

Total Lectures: 45

COURSE OBJECTIVE:

The course includes modules on basic knowledge of the plant kingdom viz. Microbes, Algae, Fungi and Archegoniatae, with the main objective of giving a sense of mooring to the undergraduates.

COURSE OUTCOME:

Combination of theoretical and practical components of this course will provide comprehensive information and insight into the fascinating world of microbes and plants. Hand on training will help students learn use of the microscope, mounting, section cutting and staining techniques for the study of plant materials. Making drawing in practical records will enhance understanding morphology and structural details and related functional aspects in diverse plant groups. This paper is both informative and interesting and will enable student to learn about biodiversity not only as plant or nature lover but also for higher academic pursuits, particularly in the field of biological sciences, environment and biodiversity conservation.

Unit- I:Microbes (Lectures: 9)

Viruses : General Structure, DNA virus (T Phase), Lytic and Lysogenic Cycle, RNA virus (TMV). Economic Importance

Bacteria: General Characteristic and Cell structure, Reproduction – Vegetative, Asexual and Recombination (Conjugation, Transformation and Transduction), Economic importance

Unit- II:Algae (Lectures: 9)

General characteristic, Range of thallus organization and reproduction, Classification of algae (F E Fritsch classification), Morphology and life cycles of *Nostoc*, *Chlamydomonus*, *Vaucheria*, and *Polysiphonia*, Economic importance of algae..

Unit- III: Fungi (Lectures: 9)

General characteristic, nutrition, reproduction and classification (G.C Ainsworth classification). Life cycles of Rhizopus (Zygomycota), Phytophthora (Oomycetes) Penicillium, (Ascomycota), Puccinia Agaricus (Basidiomycota), Symbiosis Association – Lichen. General account and significance of Mycorrhiza.

Unit- IV: Introduction to Archegoniate(Lectures: 2)

Unifying features of archegoniates, Transition to land habit, alternation of generation.

Unit- V:Bryophytes (Lectures: 6)

General characteristic, adaptation of land habit, Classification (upto family), Morphology, anatomy and reproduction of *Marchantia*, *Anthoceros* and *Polytrichum*, Ecology and economic importance of bryophytes with special mention of *Sphagnum*.

Unit- VI: Pteridophytes(Lectures: 5)

General characteristics, classification, Early land plants – *Rhynia* and *Psilotum*.Morphology, anatomy and reproduction of *Selaginella*, and *Pteris*. Heterospory and seed habit, Stellar evolution.

Unit- VII: Gymnosperms (Lectures: 5)

General characteristics, Classification. Morphology, anatomy and reproduction of *Cycas*, *Pinus* and *Gnetum*, Ecological and economical importance.

PRACTICAL (Lectures: 30)

1. Model of Virus - T Phage; Lytic and Lysogenic Cycle from Photographs
2. Study of bacterial reproduction – Binary Fission and Conjugation from slides / photographs
3. Gram staining process
4. Study of vegetative and reproductive structure of *Nostoc*, *Chlamydomonus* and *Polysiphonia*
5. Study of vegetative and reproductive structure of *Penicillium* and *Puccinia*
6. Study of vegetative and reproductive structure of *Marchantia* and *Polytrichum*
7. Study of vegetative and reproductive structure of *Selaginella*,
8. Study of vegetative and reproductive structure of *Cycas* and *Gnetum*.

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1. Pelczar, M. J. (2001) – Microbiology, 5th Edition, Tata McGraw – Hill Co, New Delhi.
2. Sarma, P. D. (2009) – Microbiology, Latest Edition, RastogiPublication , Meerut.
3. Sahu, D. (2000) – Farming the Ocean : Sea Weeds Cultivation and Utilization. AraVali International, New Delhi.
4. Kumar, H. D. (1999) – Introductory Phycology. Affiliated East West Press, Delhi

5. Alexopoulos, C. J.; Mims, C. W.; Blackwell, M. (1996) – Introductory Mycology, J. and Sons, 4th Edition.
6. Vashista, P. C.; Singha, A. K., Kumar, A. (2010) – Pteridophyta, S. Chand, Delhi, India.
7. Parihar, N. S. (1991) – An Introduction to Embryophyta, Vol I – Bryophyta, Central Book Depot. Allahabad.
8. Bhatnagar, S. P.; Moitra, A. (1996) – Gymnosperms, New Age International (P) Ltd, Publishers, New Delhi, India.

PAPER NAME: Gardening

PAPER CODE: BT – SE – 1113

Total Credits: 3 (Theory: 2 + Project/Practical/Tutorial: 1)

THEORY: 2 Credits

TOTAL LECTURES: 30

COURSE OBJECTIVE:

A course work on gardening would equip the students to join the horticultural field as farm / estate management, plantation experts, supervisors and project coordinators etc. Besides research and teaching aspects, it would qualify the students to join as consultant of projects, landscape architect etc with proper training. One can also work as entrepreneur and offer employment to others.

COURSE OUTCOME:

After completing the course students will get service career opportunities which include such jobs as floral designers, groundskeepers, landscape designers, architects and horticultural therapists. Professional qualification combined with an inclination towards gardening and such other activities produces efficient floriculturists as well as horticulturists and landscaping professionals.

Unit I:Introduction: (Lectures: 6)

Definition of Gardening, History, Types, Features and Component of gardening.

Unit II: Technique of Gardening: (Lectures: 5)

Planning and Layout for different types of gardens.

Unit III:Preparation of Propagules: (Lectures: 6)

Sowing, raising of seeds and seedlings; Types and Process of vegetative propagations.

Unit IV:Management of Garden: (Lectures: 9)

Gardening operations: Soil laying, Manuring, Watering, Management of pests and diseases and Harvesting

Unit V:Prospect of Gardening: (Lectures: 4)

Future prospects and values of gardening

PRACTICAL/PROJECT: (Lectures/Hours: 30)

Project / Field work based on the syllabus of theory course.

RECOMMENDED BOOKS:

1. Bose, T. K. and Mukherjee, D. (1972) – Gardening in India, Oxford and IBH Publishing Co., New Delhi.
2. Edmond Musser and Andres – Fundamentals of Horticulture, McGraw Hill Book Co., New Delhi.
3. Johnson, H. Principles of Gardening : The Practice of the Gardener's Art.

PAPER NAME: Plant Biodiversity

PAPER CODE: BT – ID – 1113

Total Credits: 3 (Theory)

THEORY

Total Lectures: 45

COURSE OBJECTIVE:

This course will provide comprehensive information and insight into the fascinating world of Biodiversity. A proper orientation for the students that would make them own up responsibility for conservation of our exploited and threatened biological natural resources.

COURSE OUTCOME:

After completing the course, the student will learn about biodiversity not only as plant or nature lover but also for higher academic pursuits, particularly in the field of biological sciences, environment and biodiversity conservation.

Unit-I: Introduction of Biodiversity: (Lectures: 6)

Definition, history, objectives, type and interdisciplinary approaches of Plant Biodiversity.

Unit-II: Function of Biodiversity: (Lectures: 6)

Human and Societal need – food and nutrition security, energy, medicine and pharmaceutical development and fresh air and water

Unit-III: Challenges for Biodiversity: (Lectures: 13)

Climate change, Pollution - air, water and land, destruction of habitat, invasive of exotic species, over exploitation of natural environment. Afforestation

Unit-IV: Sustainable development and Conservation of Biodiversity: (Lectures: 13)

Concept, threats and principle of sustainable development. Causes of unsustainability. Social forestry, Ex-situ and In-situ conservation, deforestation, traditional approaches of plant conservation.

Unit-V: National and International legal aspects of Biodiversity: (Lectures: 7)

History, framework of laws policies and projects of biodiversity conservation in regional, national and international basis. Importance of National Green Tribunal (NGT)

RECOMMENDED BOOKS:

1. Krishnamurty, K. V. (2018) – An Advanced textbook on biodiversity : Principles and Practice, Oxford & IBH Publishing Co. Pvt Ltd, New Delhi.
2. Hosetty, B. B. and Rama krishan, S. (2016) – Biodiversity : Concept and Conservation, Aavishkar Publishers, Distributors, Jaipur , India
3. Das, B. K. and Banerjee, A. (Edited) (2014) – biodiversity Conservation in India, Concept Publishing Company Pvt. Ltd.

SECOND SEMESTER

PAPER NAME: Plant Ecology and Taxonomy

PAPER CODE: BT – CE – 2114

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY: 3 Credits

TOTAL LECTURES: 45

COURSE OBJECTIVE:

The main objective of study plant ecology is to examine the relationship of plants with the physical and biotic environment. Plant Taxonomy is the science of discovering, identifying, describing, classifying and naming plants. The main objective of plant taxonomy is to identify characteristics of undiscovered species by comparing with known species, to specify characteristics of recently discovered species, to arranged them in respective “taxa” after looking at their similarities and to give them specific names.

COURSE OUTCOME:

Student would have understanding of various ecological parameters of plant in nature pertaining to influencing ecological factors and their analysis of practical datas on individual, population, community and ecosystem level along with their relationships. Student also would have understanding about basic knowledge of plant taxonomy with the modern taxonomic approaches. Practical knowledge of the course material will develop the skill of identification and classification of plant diversity and characterization of angiospermic families along with their phyto geographical analysis.

Unit- I: Ecological Factor (LECTURES: 8)

Soil : Origin, formation, composition, of soil profile., Water : State of water in the environment, precipitation types. Light and Temperature : Variation, optimal and limiting factors; Shelford Law of Tolerance. Adaptation of Hydrophytes and Xerophytes. Biological indicators

Unit-II: Plant Communities (LECTURES: 4)

Characters; Ecotone and Edge Effect; Succession; Processes and Types.

Unit-III: Ecosystem (LECTURES: 8)

Structure; Energy flow trophic organisation; Food chains and Food webs, Ecological Pyramids, Production and Productivity; Bio geochemical Cycle, Carbon, Nitrogen and Phosphorus Cycles

Unit-IV: Phytogeography (LECTURES: 2)

Principle of Bio-geographical Zones; Endemism

Unit-V: Introduction to Plant Taxonomy (LECTURES: 2)

Aim and objective of Plant Taxonomy. Identification, Classification and Nomenclature.

Unit-VI: Identification (LECTURES: 4)

Function of Herbarium, Important Herbaria and Botanical Gardens of the world and India; Documentation: Flora, Kyes – Single access and Multi assess.

Unit-VII: Modern Trends of Taxonomy(LECTURES: 5)

Taxonomy in relation to Palynology, Cytology, Phytochemistry and Molecular data

Unit-VIII: Botanical Nomenclature (LECTURES: 4)

Principles and Rules (ICBN): Ranks and Names; Binomial system, Typification, Author citation, Valid Publication, Rejection of names, Principle of Priority and its Limitation.

Unit-IX: Taxonomic Classification (LECTURES: 2)

Types of classification; Bentham and Hooker system of classification

Unit - X: Angiospermic families (LECTURES: 6)

Poaceae, Orchidaceae, Magnoliceae, Solanaceae, Lamiaceae and.Asteraceae.

PRACTICAL (Lectures: 30)

1. Study of instruments use to measure micro climatic variables –Thermometer, Anemometer, Hygrometer and Luxmeter
2. Study of morphological adaptation of hydrophytes and xerophytes
3. Determination minimal quadrat size for the study of herbaceous vegetation.
4. Study of vegetative and floral characters of Solanaceae, Lamiaceae, Asteraceae and Orchidaceae
5. Collection, processing, drying and preparation of a Herbarium of a wild herbaceous plant species.

RECOMMENDED BOOKS:

1. Kormondy, E. J. (1996) – Concept of Ecology, 4th Edition, Prentice Hall, USA.
2. Sharma, P. D. (2010) – Ecology and Enviornment, 8th Edition, Rastogi Publication, Meerut, India.
3. Singh, G. (2012) – Plant Systematics : Theory and Practice, 3rd Edition, Oxford & IBH Publishing Co Pvt Ltd, New Delhi.
4. Pandey, B. P. (2018) – A Text Book of Botany : Angiosperms, S Chand Publishing, 7361, Ram Nagar, Qutab Road, New Delhi.

PAPER NAME: Plant Ecology and Taxonomy

PAPER CODE: BT – MN – 2114

Total Credits: 4 (Theory: 3 + Practical/Tutorial: 1)

THEORY: 3 Credits

TOTAL LECTURES: 45

COURSE OBJECTIVE:

The main objective of study plant ecology is to examine the relationship of plants with the physical and biotic environment. Plant Taxonomy is the science of discovering, identifying, describing, classifying and naming plants. The main objective of plant taxonomy is to identify characteristics of undiscovered species by comparing with known species, to specify characteristics of recently discovered species, to arranged them in respective “taxa” after looking at their similarities and to give them specific names.

COURSE OUTCOME:

Student would have understanding of various ecological parameters of plant in nature pertaining to influencing ecological factors and their analysis of practical datas on individual, population, community and ecosystem level along with their relationships. Student also would have understanding about basic knowledge of plant taxonomy with the modern taxonomic approaches. Practical knowledge of the course material will develop the skill of identification and classification of plant diversity and characterization of angiospermic families along with their phyto geographical analysis.

Unit- I: Ecological Factor (LECTURES: 8)

Soil : Origin, formation, composition, of soil profile., Water : State of water in the environment, precipitation types. Light and Temperature : Variation, optimal and limiting factors; Shelford Law of Tolerance. Adaptation of Hydrophytes and Xerophytes. Biological indicators

Unit-II: Plant Communities (LECTURES: 4)

Characters; Ecotone and Edge Effect; Succession; Processes and Types.

Unit-III: Ecosystem (LECTURES: 8)

Structure; Energy flow trophic organisation; Food chains and Food webs, Ecological Pyramids, Production and Productivity; Bio-geochemical Cycle, Carbon, Nitrogen and Phosphorus Cycles

Unit-IV: Phytogeography (LECTURES: 2)

Principle of Bio-geographical Zones; Endemism

Unit-V: Introduction to Plant Taxonomy (LECTURES: 2)

Aim and objective of Plant Taxonomy. Identification, Classification and Nomenclature.

Unit-VI: Identification (LECTURES: 4)

Function of Herbarium, Important Herbaria and Botanical Gardens of the world and India; Documentation: Flora, Kyes – Single access and Multi assess.

Unit-VII: Modern Trends of Taxonomy(LECTURES: 5)

Taxonomy in relation to Palynology, Cytology, Phytochemistry and Molecular data

Unit-VIII: Botanical Nomenclature (LECTURES: 4)

Principles and Rules (ICBN): Ranks and Names; Binomial system, Typification, Author citation, Valid Publication, Rejection of names, Principle of Priority and its Limitation.

Unit-IX: Taxonomic Classification (LECTURES: 2)

Types of classification; Bentham and Hooker system of classification

Unit - X: Angiospermic families (LECTURES: 6)

Poaceae, Orchidaceae, Magnoliceae, Solanaceae, Lamiaceae and.Asteraceae.

PRACTICAL (Lectures: 30)

1. Study of instruments use to measure micro climatic variables –Thermometer, Anemometer, Hygrometer and Luxmeter
2. Study of morphological adaptation of hydrophytes and xerophytes
3. Determination minimal quadrat size for the study of herbaceous vegetation.
4. Study of vegetative and floral characters of Solanaceae, Lamiaceae, Asteraceae and Orchidaceae
5. Collection, processing, drying and preparation of a Herbarium of a wild herbaceous plant species.

RECOMMENDED BOOKS:

1. Kormondy, E. J. (1996) – Concept of Ecology, 4th Edition, Prentice Hall, USA.
2. Sharma, P. D. (2010) – Ecology and Enviornment, 8th Edition, Rastogi Publication, Meerut, India.
3. Singh, G. (2012) – Plant Systematics : Theory and Practice, 3rd Edition, Oxford & IBH Publishing Co Pvt Ltd, New Delhi.
4. Pandey, B. P. (2018) – A Text Book of Botany : Angiosperms, S Chand Publishing, 7361, Ram Nagar, Qutab Road, New Delhi.

PAPER NAME: Floriculture and Interior Decoration with Indoor Plants

PAPER CODE: BT – SE – 2113

Total Credits: 3 (Theory: 2 + Project/Practical/Tutorial: 1)

THEORY: 2 Credits

Total Lectures: 30

COURSE OBJECTIVE:

There has been a great improvement of the quality of life, leading to a well balanced demand and supply of flowers. As a result, floriculture has blossomed into a viable business segment. So the main objective is in promotion of the floriculture trade leading to development of nursery, seed and bulb production, micro propagation of flowering plants like orchids, silviculture and extraction of essential oils. Thus it would involve with cultivation of ornamental flowers and crops from the time of planting to the time of harvesting.

COURSE OUTCOME:

The main outcome of Floriculture is the generation self-employment opportunities round the year. A course work on floriculture and interior decoration with indoor plants would equip the participants to join the floriculture field as farm/estate managers, plantation experts, supervisors and project coordinators etc. Besides research and teaching are some other avenues of employment in the field. Then it would qualify the candidates to join in the marketing of floriculture products and develop technique of interior decoration with indoor plants for different ventures is emerging as a potential segment of this course.

Unit I:Introduction (LECTURES: 5)

Definition of Floriculture, History, Importance and scope of floriculture.

Unit II: Management (LECTURES: 4)

Nursery Management and routine garden operations and Green House

Unit III:Types and Technique (LECTURES: 10)

Principle, Features and Management of Interior Decorations; Landscaping gardening of Public Places, Highways and Educational Institutions.

Unit IV: Ornamental Plants (LECTURES: 5)

Different types of ornamental plants and their utilization, Indoor Plants, Potted Plants, Hydroponics and Bonsai

Unit IV:Commercial Floriculture (LECTURES: 6)

Production and Packaging of flowers; Methods and impotence of Flower arrangement.
Market potentialities of floriculture.

PRACTICAL/PROJECT:(Lectures/Hours: 30)

Project / Field work based on the syllabus of theory course

RECOMMENDED BOOKS:

1. Randhawa, G. S. and Mukhopadhyay, A. (1986) – Floriculture in India, Allied Publishers.
2. Balaji, S. Kulkarni (2016) – Floriculture and Land scapping, Agro India Publication.
3. Roy, A. Larson (1992) - Introduction to Floriculture, 2nd Edition, Academic Press.

PAPER NAME: Plants and Human Welfare

PAPER CODE: BT – ID – 2113

Total Credits: 3 (THEORY)

Total Lectures: 45

COURSE OBJECTIVE:

This course will provide comprehensive information and insight into the importance of Plants and Human Welfare. It would give the students exposure on how such concepts like herbal technologies that are present and maintained in traditional knowledge systems and how they helps in human welfare

COURSE OUTCOME:

This paper will enable student to learn about biodiversity not only as plant or nature lover but also for higher academic pursuits, particularly in the field of biological sciences, environment and biodiversity conservation.

Unit- I: Microbes and industrial importance (LECTURES: 10)

Introduction, Microbes (Bacteria and Yeast) in diary technology, medicine, bakery, brewery industries.

Unit-II: Forest and Forest Products (LECTURES: 5)

Type of forest, timber, paper, essential oils and other natural products yielding plants.

Unit-III: Mushroom – Technology, Production andMarketing(LECTURES: 9)

Introduction and economic importance, spawn culture, cultivation of mushroom, and harvesting, storage of mushrooms and processing

Unit-IV: Practical utilizations of crop and medicinal plants (LECTURES: 13)

Harvesting and post harvesting processes of different agricultural crops. . Extraction processes of alkaloids, flavonoids for medicine manufacturing.

Unit-V: Ethno-botany andTraditional Indigenous Knowledge (LECTURES: 8)

Definition, aim, objectives and Interdisciplinary approaches of ethnobotany, importance of traditional knowledge, IPR relating traditional knowledge.

RECOMMENDED BOOKS:

1. Pelczar, M. J. (2001) – Microbiology, 5th Edition, Tata McGraw – Hill Co, New Delhi.
2. Verma, V. (2019) - Text Book of Economic Botany.
3. Alam, A (2021) – A Text Book of Economic Botany and Ethnobotany, I. K. International Publisging House Pvt. Ltd.
4. Agarwal, A., Sharma, Y. P. and Jangra, E. (2021) – A Text Book on Mushroom Cultivation : Theory and Practice, Newrays Publishing House.