SEMESTER - III			
NMEI	**Plant Resource Utilization**		
Course Code:21UBON31	**Hrs/week: 2**	**Hrs/Semester:30**	**Credit:2**

Objectives:

- To provide knowledge on distribution, cultivation, harvesting techniques and uses of crop plants
- Toknowthecommercialvaluesofplantsresources
- Toappreciatetherelevanceofcropplantstotheeconomyofthepeople

CourseOutcomes:

CO. No.	Upon completionof thiscourse,studentswillbeableto	PSO addressed	CL
CO-1	comprehend history of agriculture and scope of agricultural crops	3	Re
CO-2	acquiretheknowledge ongeographicalareaofcultivation, productionandmarketing of various foodcrops andtheirfinishedgoods	1	Un
CO-3	graspimportanceoftropicalandtemperate fruitsforhumanwellbeing	3	Ap
CO-4	accessthevalueofspices,condimentsand beverage ininternationaltradesandconfectioneryindustries	3	Ev
CO-5	understandthewealthofcashcropsinIndiaandtheir importanceinimprovingtradeandindustrialgrowth	3	Ev
CO-6	substantiate fibersareanalternativesourceofplastics	5	Un
CO-7	explaintheuseofbeveragesandtheirproduction	6	Un
CO-8	learnaboutthecultivationpracticesandextractionof oilfromoilcrops	6	Cr

SEMESTER - III			
NMEI	**Plant Resource Utilization**		
Course Code:21UBON31	**Hrs/week: 2**	**Hrs/Semester:30**	**Credit:2**

UNIT I: Botanical description, distribution, cultivation, harvesting and economic and nutritional valuesof cereals:rice, wheat, maize.

UNIT II: Botanical description, distribution, cultivation, harvesting and economic and nutritional values of legumes:soyabean ,blackgram, green gram and bengalgram. Vegetables: stem– potato, garlic, herbage– cabbage, cauliflower, fruit-tomato, brinjal.

UNIT III: Botanical description, distribution, cultivation, harvesting and economic and nutritional valuesof fruits: tropical fruits – banana and papaya.

UNIT IV: Botanicaldescription, distribution, cultivation, harvesting and economic and nutritional values of spices and condiments: roots – asafoetida, stem – ginger, bark –cinnamon, leaf – curry leaves, flower bud – clove, fruit – capsicum, coriander and blackpepper.

UNIT V: Beverages: botanical description, distribution, cultivation, harvesting and economic and nutritional values ofteaand wine preparation from fruits. Oil extraction techniques

– lemon grass oil and cinnamon oil.

Textbook:

1. PandeyB.P.EconomicBotany. New Delhi: S. Chand. 1999.

Books forReference:

1. ChrispeelsM.JandSandavaD.*Plants,FoodandPeople*.SanFancisco: W.H.Preeman& Co.,1977.
2. KoccharS.L.*Economic BotanyoftheTropics*. India:MacMillanLtd. Fourthedition, 2012.
3. SammbamurtyA.V.S.S and SubrahmanyamN.S.*AtextbookofModernEconomicBotany*.India: CBSpublishers and Distributors.2008.
4. SharmaO.P.*HillsEconomicBotany*. NewDelhi:Tata Mc Graw Hill.Co.Ltd., 1996.
5. SunidhiMiglani.*TextBookofEconomicBotany*.Delhi: ABSBooks. 2016.
6. SwaminathanMandKocharS.L.*PlantsandSociety*.Macmillan Education., 1989.
7. WickensG.E.*Economic Botany.PrinciplesandPractices*. New York:
8. Springer, Kluer Academic Publishers, 2004.

SEMESTER III			
Skill Based Elective	**Gardening and Nursery Management**		
Course Code:21UBOS32	**Hrs/week:2**	**Hrs/Semester:30**	**Credit:2**

Objectives:

- To supply elite planting material of the highest possible quality forest abolishment of neworchards.
- To grow plants in an open environment, maintain a good quality of plants and protect the plants from pests and diseases.
- To create awareness about kitchen gardening, to improve skills for growing fresh and safe vegetables without use of any pesticide.

Course Outcomes:

CO. No.	Upon completion of this course, students will be able to	PSO addressed	CL
CO-1	recollect scope and basic concepts of gardening	1	Re
CO-2	Understand the different types of gardens and suggest plant choices	2	Un
CO-3	Importance, features and maintenance of commercial gardening.	7	An
CO-4	Acquire knowledge regarding theory and practice of cultural and production techniques and methods.	4	An
CO-5	Equip the skill in landscaping, gardening and floriculture and enhance sense of beautification and aesthetic values	4	Cr
CO-6	Understand the importance, types and establishment of Nursery	5	Un
CO-7	Learn practices like nutrition, water management and pest management	5	Un
CO-8	Develop skills necessary to manage a wholesale nursery	8	Cr

SEMESTER III			
Skill Based Elective	**Gardening and Nursery Management**		
CourseCode:21UBOS32	**Hrs/week:2**	**Hrs/Semester:30**	**Credit:2**

UNIT I: Scope and introduction to gardening. Different types of garden and their suitability.Gardening features, importance of garden and suitable plants for different types of garden. Designing a plan for a commercial garden.

UNIT II: Home garden – suitable plants for home gardening. Detailed aspects ofroof garden, terrace garden and vertical garden. Advantages and limitations of roof, terrace and vertical garden. Plants suitable for different types of gardening. Importance, features and maintenance of commercial gardening.

UNIT III: Different shade loving perennials and flowering trees for commercial/ornamental gardening. Detailed description of potted plants such as outdoor, foliage, flowers, creepers, climbers etc., Introduction to bonsai training, pruning and wiring. Introduction on terrarium technique.

UNIT IV: Introduction, importance, development. Establishment of nursery: Selection ofsite - location, soil and climate for nursery, topography, wind, elevation of nursery place, irrigation and drainage facilities, insects pest and diseases control in nursery. Types ofNursery: multipurpose or mixed nurseries, mono purpose or general nursery, specialized nursery,attached or auxiliary or subsidiary nursery.

UNIT V: Location of nursery: Scientific layout of nursery, collection of mother plantand their management, source of available root stocks and their proper utilization. Use of standardmethods of plant propagation, proper management of seed, arrangement of good selling, propertesting facilities, arrangement of training and demonstration, arrangement of nursery exhibitions.

Text Books:

1. Kumar, N. *Introduction to Horticulture*. Nagercoil,India.Rajalakshmi Publications, 1997.
2. YashwantraoChavanNewDelhi.MaharashtraOpenUniversity,Resource Book on HorticultureNursery Management,ICAR.

Book for Reference:

1. Utpal Banerji. *Horticulture* Jaipur:Mangal Deep Publication, 2008.
2. EdmundSenn-Andrew– Halfacre.*FundamentalsofHorticulture.*TataMc.GrawHill,1977.
3. Randahawa *Floriculture in India.* Alliedpublishers,1985.
4. Mallikarjuna Reddy and Aparna rao *Plant propagation in horticulture.* New Delhi:Pacific book international, 2010.

SEMESTER IV			
Skill Based Elective	**Weed Science**		
Course Code: 21UBOS42	**Hrs/week: 2**	**Hrs/semester: 30**	**Credits: 2**

Objectives

- To provide knowledge on ecology of weeds and its dynamic interaction with human activities
- To evaluate herbicides and its long time impact to environment and non-targeted organism
- To identify and survey weeds distribution and apply various weed management techniques

Course Outcomes:

CO.No.	Upon completion of this programme, students will be able to	PSO addressed	CL
CO-1	characterize and classify weeds	1	An
CO-2	recall the harmful and beneficial effects of weeds	7	Ev
CO-3	comment on method of propagation, dispersal mechanism and its perpetuation in its ecological niches	7	Un
CO-4	recognize competition between crop and weed in terms of light, space, moisture and nutrition	4,7	An
CO-5	investigate allelopathic effects between crops in their rhizosphere	1	Un
CO-6	strategies weed control methods	7	Un
CO-7	reveal the mechanism action of herbicides	5	Re
CO-8	understand the importance of herbicides and correlate its long time impact to the environment and non targeted organisms	8	Ap

SEMESTER IV			
Skill Based Elective	**Weed Science**		
Course Code: 21UBOS42	**Hrs/week: 2**	**Hrs/semester: 30**	**Credits: 2**

UNIT I: Weeds**:** Definition, characteristics and classification of weeds. Harmful and beneficial effects of weeds. Biology and ecology of weeds.

UNIT II: Propagation and persistence**:** Propagation, dispersal and persistence of weeds.

UNIT III: Crop - weed competition**:** Crop - weed competition for light, space, moisture and nutrients. Critical period of crop - weed competition. Allopathic effects of weeds on crops.

UNIT IV: Weed management**:** Principles, prevention, eradication and control of weed. Mechanical, cultural, chemical and biological methods of weed control.

UNIT V: Herbicide**:** Definition. Objectives and scope of herbicide application. Formulation. Mechanism of action of herbicides. Toxic symptoms of herbicide in weeds and crops. Effects of herbicide on the environment.

Text Books

1. Grafts A. S. and Robbins W. W. *Weed Control*. New Delhi: Tata-McGraw-Hill, Publishing Co. Ltd., 1973.
2. Zimdahl R. L. *Fundamentals of Weed Science*. U.S.A: Academic Press, 1983.

Books for Reference:

1. Aldrich R.J. *Weed - crop ecology- principles in Weed Management*. Massachusetts, U. S. A.: Breton Publishers, 1984.
2. Fryer J.D. and Makepeace. *Weed Control Handbook Vol. II*. London: Blackwell Scientific Publication, 1978.
3. Hance R.J. and Holy K. *Weed Control Handbook*. Oxford: Blackwell Scientific Publication, 1990.
4. Narwal S. S. *Allelopathy in Crop Production*. Jodhpur: Scientific Publishers, 1994.
5. Gupta O. P. *Scientific Weed Management*. New Delhi: Today & Tomorrow's Printers & Publishers, second revised & enlarged edition, 1984.
6. Gupta O. P. and Lamba P. S. *Modern Weed Science*. New Delhi: Today and Tomorrow's Printers and Publishers, 1978.
7. Rao V. S. *Principles of Weed Science*. New Delhi: Oxford and IBH Publishing Co. Pvt. Ltd., third edition, 1988.
8. Subramanian S., Mohamed Ali A. and Joya Kumar R. *All about Weed Control*. New Delhi: Kalyani Publishers, 1997.

SEMESTER - III		
Self Study (Compulsory)	**Ethnobotany**	
Course Code: 21UBOSS1		**Credits:2**

Objectives:

- To give an overall view of ethnobotany, tribal medicines and their importance.
- To value the role of tribal people's in biodiversity conservation through their religious experience and their dependence on herbal medicines
- To recommend and dessiminate the importance of traditional medicines and their formulation to the society.

Course Outcomes:

CO. No.	Upon completion of this course, students will be able to	PSO addressed	CL
1.	gain knowledge about the ethnic tribals of Tamil Nadu	1, 2	Un
2.	discuss about the various methods of herbal medicine preparation	1, 2	Cr
3.	identify the different form of herbal medicines	1, 6	Ap
4.	understand the basic knowledge about the plants used in folk religion	6	Ap
5.	understand the status of sthalavriksha in various temples	1, 2	Un
6.	infer the use of sacred grooves in the conservation of medicinal plants	1, 2	Re
7.	apply this knowledge to conserve the endangered plants and forest management	1, 6	Ap
8.	understand the concept of intellectual property rights in tribal medicines	1, 2	Un

SEMESTER - III		
Self Study (Compulsory)	**Ethnobotany**	
Course Code: 21UBOSS1		**Credits:2**

UNIT 1: **Ethnobotany:** Introduction, concept, scope and objectives. Basic knowledge of tribes in India with special reference to Tamil Nadu: Todas, Irulas, Kani and Paliyars. Tribal knowledge towards disease diagnosis, treatment, medicinal plants, plant conservation and cultivation. Tribal medicines and their role in community herbal gardens.

UNIT II: **Herbal Preparations:** Collection of wild herbs. Capsules, compresses, elixirs. Hydro therapy or herbal bath. Herbal oils, liquid extracts or tincture, poultices, salves, slippery elm, slurry tea. Drug adulteration.

UNIT III: **Plants in folk religion:** *Aegle marmelos, Ficus benghalensis, Curcuma domestica, Cyanodon dactylon and Sesamum indicum*. Medicinal uses and their significance: coconut, banana and betel.

UNIT IV: **Role of Ethnobotany in conservation:** Sacred grooves, taboos and deity associated ecological role. Elementary account on the sacred grooves in Tamil Nadu. Sthalavrikshas and its importance. Endangered taxa and forest management.

UNIT V: **Ethnobotany and legal aspect:** Ethnobotany as a tool to protect interests of ethnic groups. Traditional knowledge in relation to Intellectual Property Rights (IPR), Biopiracy.

Books for Reference:

1. Dr. M. P. Singh, B.C. Oraon, Narendra Prasad. *Medicinal Plants*. New Delhi: APH Publishing Corporation, 2009.
2. Ramesh Bhadari. *Medicinal Plants and their Conservation*. New Delhi: Cyber Tech Publications, 2011.
3. Pravin Chandra Trivedi, Sharma N.K..*Ethnomedical plants*. New Delhi: Pointer Publishers, 2004.
4. Rosaline, A. *Pharmacognosy*. Chennai: MJP Publishers, 2011.
5. Jain S.K. *Glimpses of Indian Ethnobotany*. Chennai: MJP Publishers, 2004.