




SYLLABUS OF DIPLOMA IN ORGANIC URBAN FARMING

As per the guidelines of NSQF it is expected to include Skill component of the courses can vary from 60 % to 70% of the total credits, and the balanced credits shall be of general education component. In this syllabus Skill component is of 60% and General Component is of 40% i.e. respectively 18 credits and 12 Credits for Practical's and Theory.

Semester wise Papers and Workload.

Semester I				Semester II			
Papers	Type	Credits	Hrs.	Papers	Type	Credits	Hrs
Paper I	Theory	2.4	36	Paper I	Theory	2.4	36
Paper II	Theory	2.4	36	Paper II	Theory	2.4	36
Paper III	Theory	2.4	36	Paper III	Theory	2.4	36
Paper IV	Theory	2.4	36	Paper IV	Theory	2.4	36
Paper V	Theory	2.4	36	Paper V	Theory	2.4	36
Paper VI	Practical	4	120	Paper VI	Practical	4	120
Paper VII	Practical	4	120	Paper VII	Practical	4	120
Paper VIII	Practical	4	120	Paper VIII	Practical	4	120
Hands on Training	Hands on Training	06	180	Hands on Training	Hands on Training	06	180
		30	720			30	720
Total Credits in a year 60/ 1440 Hrs.							


 अनंतराव पवार महाविद्यालय, पिरंगट
 ता. मुळशी, जि. पुणे-४१२११५.



Diploma in Fruits and Vegetables Drying/ Dehydration Technician:-

Outline of the Syllabus

Semester I		Semester II	
DOT 111: Theory Paper I	Core Subject: Introduction to organic Urban Farming (36 Lectures)	DOT 211: Theory Paper I	Diseases and Pests of vegetable and Fruits (36 Lectures)
DOT112: Theory Paper II	Vegetable Cultivation Part-I (36 Lectures)	DOT 212: Theory Paper II	Bio fertilizers and Bio pesticides(36 Lectures)
DOT 113: Theory Paper III	Vegetable Cultivation Part-II (36 Lectures)	DOT 213: Theory Paper III	Packing, Grading, Direct Marketing and organic Certification (36 Lectures)
DOT 114: Theory Paper IV	Vegetable & Fruits PlantssCultivation Part- III (36 Lectures)	DOT 214: Theory Paper IV	Organic Farming Management(36 Lectures)
DOT 115: Theory Paper V	General and Environment Education (36 Lectures)	DOT 215: Theory Paper V	General Education (36 Lectures)
DOP 116 : Practical Paper I	- Practical Based on Paper I and II (30 P)	DOP 216: Practical Paper I	Practical Based on Paper II (30P)
DOP 117: Practical Paper II	Practical Based on Paper III (30 P)	DOP 217: Practical Paper II	Practical Based on Pape. I (30 P)
DOP 118: Practical Paper III	Practical Based on Paper IV and V (30 P)	DOP 218: Practical Paper III	Practical Based on Paper III, IV and V (30 P)



Semester: - First (30 Credits)

DOT 111: Paper: - I: - Core Subject: - Introduction to organic Urban Farming (36 L)

Course Outcome: -

- To introduce the student for organic farming.
- To provide the actual practical knowledge of Organic farming.
- To provide knowledge of ancient as well as modern technologies.
- To develop agriculture skill in student.
- To develop self-employability in student.

1.	Concept and Definition of organic Urban farming	06
	Concept, Definition, Present status at industrial level in India and Maharashtra.	
2	Need and advantages of organic farming	06
	Need of organic farming, Advantages of organic farming, Role of Desi cow in organic farming and Cow dung and urine based products.	
3	Importance of Crop rotation	03
	Crop Rotation method, Crop Plant use in Crop rotation	
3	Equipment's of organic urban farming	04
	Pots, Racks, Sprayer, Garden tools, Power trailer, Seed Processor, Harvesting Equipment	
4	Selection of Site	03
	Components of site selection- soil quality, sunlight, water availability	
5	Biology of the plant	04
	Morphology and anatomy of plant parts with function, Type of Tissue, Xylem, Phloem, Stomata.	



6	Physiology of Plants:-	06
	Photosynthesis, Dormancy, Transpiration, Ascent of sap, Plant Growth regulators, Physiology of Flowering, Stress physiology	
7	Role of Abiotic Factors in plant life	04
	Water, Soil, Humidity, Rainfall and Wind	

Refreneces:-

Plant propogation, Hatman and Koster. Principle and practices

Plant physiology, S.N. Pandey and B.K. Sinha (2014), Vikas Publishing House Pvt. Ltd. India

A.T.B of Plant Physiology, Verma S.K. and Verma Mohit (2007) S. Chand Publications.

Indian Agriculture Book, Dr. Anirudh Kumar, Indian books periodicals Publications.

Organic Farming, Suresh N. Deshnukh, Agrobios Publications.

DOT 112: Paper II: - Core Subject: - Vegetable Cultivation Part-I (36 Lectures)

Course Outcome: -

- To providing the basic knowledge of vegetable.
- To develop skill of cultivation technique of Organic vegetable.
- To understand actual irrigation method.
- To cultivate vegetable in pots.
- To manipulate the production of vegetables.
- This method useful for small area farming or terrace farming.

1	Basic Practices for Preparation of Plantlet Nursery	08
	Bed Preparation, Control conditions, Nursery, Coco peat, Tray for Seed Germination	
2	With reference to Climate and soil, Water, humidity and varieties, Land	09



	preparation and Planting, Crop understanding, Irrigation, Pest, Disease and Harvesting of leafy vegetables Part:- I	
	Fenugreek, Coriander, Spinach, amaranths, Dill,	
3	With reference to Climate and soil, Water, humidity and varieties, Land preparation and Planting, Crop understanding, Irrigation, Pest, Disease and Harvesting of leafy vegetables Part:- II	09
	Green onion, Cabbage, Lemon Grass	
4	With reference to Climate and soil, Water, humidity and varieties, Land preparation and Planting, Crop understanding, Irrigation, Pest, Disease and Harvesting of Fruit vegetables	10
	Brinjal, Tomato, Cucumber, Pumpkin, Okra, Chilly	

Refreneces:-

Organic farming ,Daniel Howard,(2008), Published by Dominant Publisher, New Delhi.

Traditional Organic Farming Practices, E. Somasudaram, D.Ubhaya Nandini (2018), New India Publishing Agency.

Organic farming Component and Management, Dushant Gehlot, , Agrobios Publications Pvt. Ltd.

Organic Urban Farming, Prabal Mallik, The Indian Way, L.L. Somani, Agrotech Publisher Pvt. Ltd.

DOT 113: Paper III: - Vegetable Cultivation Part-II (36 Lectures)

Course Outcome: -

- To providing the basic knowledge of vegetable.



- To develop skill of cultivation technique of Organic vegetable.
- To understand actual irrigation method.
- To understand the method of vegetable cultivation in pots
- To manipulate the production of vegetables
- This method useful for small area farming or terrace farming

1	Land Preparation for Cultivation	05
	Soil type, Soil Nutrients management, Soil Bed Preparation.	
2	Irrigation system installment and water management	05
	Basin Irrigation, Sprinkler, Drip Irrigation, Nutrition through Irrigation System.	
3	With reference to Climate and soil, Water, humidity and varieties, Land preparation and Planting, Crop understanding, Irrigation, Pest, Disease and Harvesting of underground vegetables:- Part:- I	05
	Turnip, Potato, Sweet potato, Ginger, Turmeric	
4	With reference to Climate and soil, Water, humidity and varieties, Land preparation and Planting, Crop understanding, Irrigation, Pest, Disease and Harvesting of underground vegetables:- Part:- II	05
	Onion, Garlic, Carrot, Radish, Beet Root	
5	With reference to Climate and soil, Water, humidity and varieties, Land preparation and Planting, Crop understanding, Irrigation, Pest, Disease and Harvesting of vegetables with Pods:- Part:- I	09
	Cultivation of French Beans, Peas, Drum Stick,	
6	With reference to Climate and soil, Water, humidity and varieties, Land preparation and Planting, Crop understanding, Irrigation, Pest, Disease and Harvesting of vegetables with Pods:- Part:- II	07
	Snow Peas, Kokan Wal-White n Black, Cluster bean/Guvar Beans	

Refreneces:-

Principles of Organic Farming, P.L. Moliwal, Scientific Publishers Pvt. Ltd.

Organic Farming in Rainfed Agriculture, B.Venkateswartu, , Central Research Institute for Dryland.

Organic farming Component and Management Dushant Gehlot, , Agrobios Publications Pvt. Ltd

Organic Crop Production, Ted Goldammer, , Apex Publishers.

Organic Crop Production, S.S. Walia, Scientific Publishers.

DOT 114: Paper IV: - Vegetable and Fruits Cultivation Part-III (36 Lectures)

Course Outcome: -

- To develop the self-employability
- To complete the daily requirement of vegetable requirement by using small spaces of building
- To provide the actual practical knowledge of vegetable cultivation
- Also develop the supporting product related to organic farming
- To provide training of apiculture
- To developed new parameter of agriculture employability through Spirulina Culturing, mushroom Cultivation.

1	With reference to Climate and soil, Water, humidity and varieties, Land preparation and Planting, Crop understanding, Irrigation, Pest, Disease and Harvesting of Climbing vegetables:-:- Part:- I	08
	Bitter Gourd, Ridge Gourd, Snake Gourd, Cucumber. Hadga	
2	With reference to Climate and soil, Water, humidity and varieties, Land preparation and Planting, Crop understanding, Irrigation, Pest, Disease and Harvesting of Exotic vegetables:- Part:- I	08
	Cherry Tomato, Zucchini, Broccoli, Lettuce, Color Capsicum, Asparagus, Parsley, Celery, Red Cabbage, Cauliflower	



3	With reference to Climate and soil, Water, humidity and varieties, Land preparation and Planting, Crop understanding, Irrigation, Pest, Disease and Harvesting of Fruits Plants:- Part:- I	08
	Papaya, Ficus, Mango, Jamun, Guava, Sapota.	
4	Cultivation of Fruits plant:- Part:- I	04
	Strawberry, Grapes.	
5	Cultivation of Mushrooms- edible and poisonous, culturing and production	03
	Introduction, Types of Mushrooms, Cultivation technology for Oyster	
6	Cultivation of <i>Spirulina</i>	02
	Introduction, Mud pot Cultivation of <i>Spirulina</i> , Benefits of <i>Spirulina</i>	
7	Apiculture	03
	Definition, tools required in bee keeping, Harvesting of Honey.	
8	Desi Cow Management and their Product	
	Milk, Curd, Butter, Ghee, Cow urine based products.	

Refreneces:-

Traditional Organic Farming Practices, E. Somasudaram, D.Ubhaya Nandini (2018), New India Publishing Agency.

Organic farming Component and Management, Dushant Gehlot, Agrobios Publications Pvt. Ltd.

Apiculture in India, Ankit Khandelwal, Indian Council of Agriculture Reearsch.

Fundamentals of Beekeeping T.V.Sathe, , Daya Publishing House, New Delhi.

Spirulina, B.V.Umesh, The Dabur Research Foundation, Unicorn Publishers.

Mushroom Cultivation in India, B.C. Suman, V.P. Sharma, Astral International Pvt. Ltd.

DOT 115: Paper V: - General and Environment Education (36 Lectures)

Course Outcome: -

- To develop marketing skill in student.



- To develop communication skill in student.
- To develop positive thinking in student.
- To know the agriculture diversity.
- To understand the effect of pollution and its effect on agriculture sector.
- To understand the effect of toxic substances on soil born organisms.
- To aware the student with global warming.

1	Communication Skills	12
	Self-awareness, Self-management, Social awareness, Relationship management, Cohesion clarity, Friendliness, Confidence, Empathy, Respect, Listening, Open mindedness, Tone of voice, Asking good question	
2	Soft Skills	12
	Communication, Self- motivation, Leadership, Responsibility, Teamwork, Problem solving, Decisiveness, Ability to work under pressure and time management, Flexibility, Negotiation and conflict Resolution.	
3	Environmental studies (12 L)	
	1.Biodiversity	04
	Definition, Types of Biodiversity, Agro biodiversity and its application.	
	2. Pollution	04
	Definition, Types of Pollution, Causes of Pollution, Agriculture and pollution	
	3. Global warming	04
	Definition, Factors responsible for global warming, Impact of global warming on Agriculture, Effects of Global warming.	

Refreneces:-

Communication Skill, Sanjay Kumar, Pushpa Lata, OUP India Publishers Pvt. Ltd.

Professional Communication Skill, E.K. Jain, S.Chand Publications.

Text Book of Biodiversity, K.V.Krushnamurthy, CRC PRESS Publishers.

Biological Diversity and its Conservation, Dushyant K.Sharma, Daya Publishing House.

Environmental Pollution, Dr.R.K. Khitoliya, S.Chand Publications.



1. DOT 116: Paper VI: - Practical Based on Paper I and II (30 P)

2. Preparation of pots for cultivation.
3. Study of different organic seed quality analysis
4. Seed Treatment for vegetables
5. Cultivation of Fenugreek in Pots
6. Cultivation of Spinach in Pots
7. Cultivation of Coriander in Pots
8. Cultivation of Amaranths in Pots
9. Cultivation of Dill, in Pots
10. Cultivation of Chilly in Pots
11. Cultivation of Green Onion in Pots
12. Cultivation of Cabbage in Pots
13. Cultivation of Lemon grass in Pots
14. Cultivation of Brinjal in Pots
15. Cultivation of Tomato in Pots
16. Cultivation of Cucumber in Pots
17. Cultivation of Pumpkin in Pots
18. Cultivation of Okra in Pots
19. Cultivation of Chilly in Pots
20. Study method of Crop Rotation.
21. Preparation for climbing of climbing vegetables
22. Study proper harvesting method of vegetables.
23. Study of method use in breaking seed dormancy
24. Method of Cow Urine processing
25. Study of different tools use in organic farming
26. Study of transpiration



27. Study of ascent of sap
28. Study of different hormones
29. Study of measurement growth rate parameter.
30. Basic study of installment of Drip irrigation system
31. Use of installment of automatic irrigation system

DOT 117: Paper VII: - Practical Based on Paper III (30 P)

1. Bed preparation For Cultivation
2. Study of site selection parameter for organic cultivation
3. Preparation of Plantlets in Nursery
4. Study organic seed processing
5. Cultivation of Tumip
6. Cultivation of Sweat Potato
7. Cultivation of Ginger
8. Cultivation of Turmeric
9. Cultivation of Onion
10. Cultivation of Garlic
11. Cultivation of Carrot
12. Cultivation of Radish
13. Cultivation of Beet
14. Cultivation of French been
15. Cultivation of Peas
16. Cultivation of Drumstick
17. Cultivation of Snow Peas
18. Cultivation of **Kokan wal**
19. Cultivation of **Lemon grass**
20. Cultivation of **Celery**
21. Cultivation of **Red Cabbage**



22. Study Ecological factor affecting plant growth
23. Study of pH meter handling, measurement of pH by using pH paper.
24. Study Cup anemometer and rainfall measurement instrument.
25. Study of soil sampling method.
26. Study of installment of Drip Irrigation System
27. Study installment Sprinkler irrigation system.
28. Preparation of Beds
29. Study of Soil nutrition management.
30. Study of recycling of plastic buckets for pot

DOT 118: Paper VIII: - Practical Based on Paper IV and V (30 P)

1. Study of multilayered racks
2. Study different pots use in organic pot farming
3. Cultivation of Bitter Guard in Pots
4. Cultivation of Ridge Guard in Pots
5. Cultivation of Snack Guard in Pots
6. Cultivation of Cherry Tomato in Pots
7. Cultivation of Zucchini in Pots
8. Cultivation of Broccoli in Pots
9. Cultivation of Lettuce in Pots
10. Cultivation of Color Capsicum in Pots
11. Cultivation of Asparagus in Pots
12. Cultivation of Parsley in Pots
13. Cultivation of Celery in Pots
14. Cultivation of Strawberry
15. Cultivation of Papaya
16. Cultivation of ficus.
17. Study of packaging of Exotic Vegetables.
18. Study of Preservation technique of Exotic Vegetables



19. Different bio pesticide use in Exotic Vegetable disease management
20. Cultivation of Spirulina.
21. Study of construction of ponds for Spirulina cultivation
22. Cultivation of Button mushroom
23. Cultivation of Oyster mushroom
24. Study of construction of low budget shade and racks for mushroom cultivation
25. Methods of packaging mushroom
26. Culturing of honey bees
27. Study of processing of honey bees
28. Study of preparation of Cow Milk product- Curd, Butter Milk, Butter, Ghee.
29. Study of preparation of Cow urine product- different Gomutra Ark, packaging
30. Study pollutant- Water, Soil, Air

- **Internship:-**

It is expected to opt for 180 Hrs. Internship in a semester i.e. Daily 06 hrs. for 30 Days On different Farms.



Semester: - Second (30 Credits)

DOT 211: Paper: - I: - Core Subject: - Diseases and Pests of vegetable and Fruits (36 L)

Course Outcome: -

- To learn about disease causing pest.
- To understand the method of studying plant diseases.
- To classify the plant diseases and its pests.
- Familiarize with some common plant diseases of India.
- Gain knowledge on Host parasite interaction process.
- To know about the preventing measures of plant diseases.

1	Fundamentals of diseases of vegetable and fruits.	03
---	---	----



	Introduction, Terminology	
2	Methods of studying Plant diseases.	06
	Macroscopic Diseases, Microscopic Diseases, Culture Technique, Media Types, Media Preparation, Pure culture method, Serial Dilution	
3	Fungal Diseases	04
	Club root of Crucifer, Leaf Curl of Tomato, Leaf spot of Termeric	
4	Bacterial Diseases.	04
	Citrus Canker, Bacterial Soft rot in Tomato, Bacterial spot in cucurbits	
5	Mycoplasma plant diseases.	02
	Little leaf of Brinjal	
6	Nematodal Plant diseases	02
	Root knot diseases of vegetables	
7	Viral plant diseases.	05
	Introduction to virus as a plant pathogen, Tomato mosaic, Cucumber mosaic Watermelon mosaic	
8	Non parasitic diseases.	05
	Impact of abiotic causes- Temperature, Soil Ph , Air pollutants, poor O ₂ , Poor light, Nutritional deficiency, Herbicidal injury. Black heart disease of Potato, Khaira disease of Rice.	
9	Principles of plant disease control.	05
	Biological Control, Chemical Control, Physical Control	

References:-

Plant Pathology, George N. Agrios, Elsevier Publications.

Fundamentals of Plant Pathology, Dr. J.N. Sharma,

**Plant Pathology Pathogens and Plant Diseases, Dr. P.B. Pandey, S. Chands
Publications.**

Principles of Plant Pathology, G.P. Jagtap, Agrobios Publications.

Practical Plant Pathology, Vijay Yadav, New India Publishing Agency.

Plant Pathology, R.S. Mehrotra, , MC GRAW HILL Publications.

DOT 212: Paper: - II: - Bio fertilizers and Bio pesticides (36 Lectures)

Course Outcome: -

- Preparation of bio fertilizers by using microorganisms like fungi, bacteria, algae




- Role of mycorrhiza in growth of crop plants.
- Green manuring, compost preparation and their field application.
- Recycle of biodegradable wastes
- To understand the role cow in organic farming.
- Preparation of bio pesticide by using different plant material
- To understand the integrated pest management.

Bio fertilizers (18 L)

1	Introduction to Bio fertilizers	03
	Definition, Scope in India and Importance	
2	Types of Bio fertilizers	04
	Biological nitrogen Fixation, Biological phosphate solubilizing, Organic compost, Animal waste base bio fertilizers	
3	Manures	03
	FYM, Compost, Green manure, Vermiculture	
4	Advantages of Bio fertilizers	03
	Impact of Fungi, Bacteria, algae base fertilizer to improve nutritional value of soil	
5	Indian scenario of Bio fertilizers	06
	Institutes and industries involved in Bio fertilizer Production	

Bio pesticides (18 L)

1	Introduction to Bio pesticides	03
	Definition, Scope in India and Importance	
2	Types of Bio pesticides	04
	Plant base Bio pesticide, Fungi base Bio pesticide, Bacteria base bio pesticide, Physical Natural Material as Bio pesticide	
3	Nano Bio pesticides	02
	Plant derived Nano pesticide for agricultural pest control, Recent trends, Future aspect.	
4	Advantages of Bio pesticides	02
	Effectiveness of bio pesticide against various crop diseases Concept of residue free farming	



5	Mass production technology of bio-pesticides	06
	Mass production of Neem based and various plant based bio pesticide- Production Technology, Basic Instrument, Machinery Mass production of Fungi based bio pesticide- Production Technology, Basic Instrument, Machinery	

Refreneces:-

Biofertilizers for Sustainable Agriculture and Environment, Bhupander Giri, Springer Publications.

Biofertilizers in Agriculture and Forestry Subha Rao N.S., MEDITECH Publications.

Biofertilizers, Dr.P.Hyma, Random Publications.

Biofertilizers and Biopesticides, Dr. Shalini Suri, Aph Publishing Corporations.

Biopesticide and Biofertilizers, Krishnendu Acharya, Techno Word Publications.

Biofertilizers and Organic Farming, Himadri Panda, Gene Tech Books Publishers.

DOT 213: Paper III: - Core Subject: - Packing, Grading, Direct Marketing and organic Certification (36 L)

Course Outcome: -

- To understand the proper process of packaging of vegetables.
- To understand the how to increases self-life of vegetable.
- To understand the supply chain between producer to customer.
- Use a vocabulary of marketing term correctly.

- Demonstrate the ability to critically evaluate a marketing program from customer and marketing practitioner viewpoints, including Consideration of ethical implications.
- Communicate clearly, in an organized fashion, the concept of marketing in both oral and written work.
- Demonstrate an understanding of how marketing fit with the other business disciplines within an organization.

1.	Packing	06
	Need of packing types, importance, Pack house, Materials used in packing	
2.	Fruit and Vegetable Packaging	05
	Methods and materials used for Fruit and vegetable packing	
3.	Fruit and Vegetable Grading	05
	Introduction, Importance, Methods used.	
4.	Introduction to Directing Marketing	06
	Definition, Advantages, types, SoP used	
5.	Advances of Direct Marketing	06
	Methodology of Direct Marketing, Characteristics of direct marketing, components of direct marketing, Functions of Directing marketing.	
6.	Success stories of Direct marketing in Agriculture	04
	1. Abhinav Farmers Club 2. Mahaorganic farmer Group 3 Krushi samrudhi organic farmer Group	
7.	Organic Certification	04
	Concept, Agencies, Necessity, Certification process, standards used	

References:-

Organic farming Component and Management, Dushant Gehlot, Agrobios Publications Pvt. Ltd.

Organic Farming and Marketing in India, Abhay Joshi, LAMBERT Academic Publishing.

An Economic Analysis of Organic Farming in Tamilnadu, Sridhar V., LAMBERT Academic Publishing.



DOT 214: Paper IV: - Organic Farming Management (36 Lectures)

Course Outcome: -

- To understand the agriculture related funding agencies.
- To learn about different government subsidy based scheme related to organic farming.
- To learn about low budget organic farming.
- To providing knowledge of farm and crop management.
- To provide knowledge of labor work and time management.
- To understand the relationship management of farmer and customer.

1.	Funding Agencies	05
	District co-operative Banks, Government Banks, Rural Banks, NABARD, Krushi Finance.	
2.	Different Schemes for organic farming	05
	District agencies, State government schemes, Central government scheme, Agriculture Dept. Scheme, Subsidy based scheme.	
	Poly house, Poly tunnel, Shade Net House, Construction and management	04
	Government scheme, Low Budget Construction, Poly house Paper, mates	
3.	Low Budget Organic Farming Models	04
	Shade net, Biogas plant, Reduction of production cost, Low cost Infrastructure, Low budget instrument and machinery.	
4.	Worker and working management	06
	Worker training, skill development in worker, Time management in Working, Development of uniformity in worker.	
5.	Vegetable production Management and control	06



		Vegetable production, quantity production, Costumer Demand, Continuity in production, Quality Control, how to improve production.
6.	Regular Customer Demand and supply Chain management	06
		Different Marketing app, Marketing Order acceptance, Basket Method, Supply chain, feedback management.

Refreneces:-

Organic farming Component and Management Dushant Gehlot, , Agrobios Publications Pvt. Ltd.

Relevance of Organic Farming, B.L. Jana, Avishkar Publishers, Jaipur.

Dr. Smita Diwase, Indian Agriculture and Agri Business Management, Scientific Publishers (India).

Objective Agribusiness Management, Shakti Panigrahy, Scientific Publishers (India).

Agri Business Management, Dr. J.S. Amarnath, Satish Serial Publishing House.

DOT 215: Paper V: - General Education (36 Lectures)

Course Outcome: -

- To develop digital literacy skill.
- To access various tools and applications for learning and skill development.
- To operate variety of hardware and software independently and troubleshoot common problems.
- To create a variety of digital products using appropriate tools and applications and managing digital sources.
- Practice safe, legal and ethical means using ICT.

- By using critical thinking to analyze the elements/facts of a specific situation/Problem and support conclusion with fact.
- To develop Freedoms, Respect, Trust, Reasonability, Forgiveness in students.

1.	ICT skills	18
	Basic Information about Computer, Projector, Notepad, Microsoft Office Word, Microsoft Office Excel, Microsoft Edge, Microsoft Power Point, Microsoft Store, Microsoft outlook, Microsoft Publisher, Google Docs, Mail, APPS, Different Marketing Software, Different Search Engines	
2.	Critical Thinking	06
	Critical Thinking Skill, Observations, Analysis, Inference, Communication, Point of view, Purpose, Assumption, Concepts, Inference, Information, Implication and consequence, Questions, Synthesis.	
3.	Problem Solving	06
	Problem Solving Skill, Analytical Skill, Innovative and creative thinking, A lateral mindset, Adaptability and Flexibility, Level headedness, Initiative, Resilience .	
4.	Value education	06
	Freedoms, Respect, Trust, Reasonability, Forgiveness, Reuse and recycle, Doing your best, Share and care.	

Refreneces:-

ICT in Education, Dr. Vanaja M, Neelkamal Publications

Dr.Arulsamy, Application of ICT in Educations, , Neelkamal Publications

Information and Communication Technology, Durgesh Kumar Mishra, Springer Publications.

Information Communication Technology, Antonio Cartelli, Information Science Refrence Publications.

Peace and Value Educations, Dr. Debashish Paul, Rita Publications.



DOT 216: Paper VI: - Practical Based on Paper II (30P)

1. Introduction to different microorganisms used in bio fertilizer production.
2. Isolation of Phosphate solubilizing micro-organisms from rhizosphere.
3. Isolation of Rhizobium from root nodules of leguminous crop Isolation and purification of *Azotobacter* from soil.
4. Isolation and purification of *Beijerinckia* form soil.
5. Isolation of *Azospirillum*.
6. Isolation Blue Green Algae from soil
7. Isolation of organic matter decomposing microorganisms
8. Mass multiplication of Rhizobium, *Azotobacter*, and *Azospirillum* inoculum
9. Production and application of Blue Green Algae
10. Production of *Azolla* Biofertilizers
11. Methods of application of Biofertilizers
12. Standards for commercial production of Biofertilizers- Quality control of Biofertilizers
13. Analysis of organic manures-organic carbon, total NPK and C: N ratio
14. Fertilizer analysis-Urea, Ammonium sulphate, Pottassium nitrate, Murate of potash and Rock phosphate for their respective nutrients
15. Study of materials required for vermicomposting
16. Study of requirements for vermicomposting
17. Preliminary treatment for composting material
18. Preparation of vermin beds
19. Setting up of a vermin wash unit
20. Harvesting and economics of vermin composting
21. Study of Green manure processing
22. Desi cow milk and waste base product.
23. Preparation of Jivamrut
24. Analysis of nutritional value of different bio fertilizer.



25. Bio fertilizers packaging method and storage.
26. Bio fertilizer Certification and marketing
27. Study of preparation of Dashparni Ark
28. Preparation Neem Kernel Powder.
29. Neem Kernel aqua extraction.
30. Preparation of different plant extract for biopesticide.

DOT 217: Paper VII: - Practical Based on Paper I (30 P)

1. Study of different types media use in plant pathology.
2. Preparation of media for isolation of plant pathogens.
3. Study of Identification of pathogens.
4. Study of mites.
5. Study of fruit flies.
6. Study of aphids.
7. Study of Nematodes.
8. Study of insects.
9. Study of Termites and their effect of fruits plants.
10. Study of pathogen habitat.
11. Study of seed borne diseases.
12. Study air borne diseases.
13. Study of soil borne diseases.
14. Study of seed health testing method.
15. Study of Steak plate culturing method.
16. Study of Pour plate culturing method.
17. Study of spread plate culturing method.
18. Study of Serial dilution method.
19. Study of fungal diseases in vegetable plant
20. Study of Bacterial diseases in vegetable plant
21. Study of Viral diseases in vegetable plant
22. Study of Mycoplasma diseases in vegetable plant



23. Study of Non Parasitic disease in vegetable plant.
24. Study on structure of plant pathogen laboratory.
25. Study of laboratory instrument use in plant pathology.
26. Study of soil sampling.
27. Study of different Agriculture Dept. helping farmer to plant health.
28. Study of Crop insurance.
29. Study of different instrument use in plant protection.
30. Study of role of plant pathology Consultant.

DOT 218: Paper VIII: - Practical Based on Paper III, IV and V (30 P)

1. Study of basic information about computer part.
2. Study of Microsoft Office Word
3. Study of Microsoft Office Excel
4. Study of Microsoft Power Point
5. Study of Microsoft Store
6. Study of Microsoft outlook
7. Study of Microsoft Publisher
8. Study of Google Docs
9. Study of different Mail system
10. Study of different marketing APPS,
11. Different Search Engines
12. Study of Funding Agencies.
13. Study application of different Schemes for organic farming.
14. Study of building low budget biogas construction.
15. Study of instrument use in vegetable quality testing
16. Study of different electronic media use in marketing
17. Study of customer feedback analysis.
18. Study farm management system
19. Study of role farm supervisor
20. Study of residue reduction management system



21. Study basket method in supply chain.
22. Study of cold storage vehicle, their related scheme of government.
23. Study of vegetable order accept and dispatch of vegetable management.
24. Study of proposal writing for funding agencies.
25. Study of different Poly house structuring
26. Study of Poly house polythene paper, Shad nets, Steel and Wood support material
27. Study of group farming and their registration method.
28. Study of different scheme for group farming
29. Study of centralize system management in group farming
30. Study of GST

- **Internship:-**

It is expected to opt for 180 Hrs. Internship in a semester i.e. Daily 6 hrs. for 30 Days On different Farms.


प्रमुख

अनंतराव पवार महाविद्यालय, पिरंगुट
ता. मुळशी, जि. पुणे-४१२११५.