

BOARD OF STUDIES

IN

B.Voc Horticulture

2024-2025

DEPARTMENT OF HORTICULTURE

SYLLABUS FOR B.VOC HORTICULTURE



PITHAPUR RAJAH'S GOVERNMENT COLLEGE

Autonomous and Accredited with 'A' Grade by NAAC (3.17 CGPA)

KAKINADA – 533 001, E G Dist., ANDHRA PRADESH

PRGC HORTICULTURE BOS 24-25

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS),
KAKINADA**

Department of Horticulture

The Board of Studies meeting for B.Voc **Horticulture** subject during the academic year **2024-2025** is conducted at the Department of Horticulture on **30-04-2024** with Dr.M.Krishna Rao, Lecturer in-Charge in the chair along with the following members

Name, Designation and Address

Signature

1. Chair Person:

Dr. M.Krishna Rao

Lecturer in-charge

Dept. of BOTANY & HORTICULTURE

P.R.G.C.(A), Kakinada

 30/4/24

2. Adikavi Nannaya University Nominee:

Dr. J.SUNITHA,

Principal GDC Kovvur

Mobile: 9441050910

E-mail: drjsuneetha@gcrjy.ac.in

online

3. Members Nominated by Executive Council of the College:

A. Subject Expert 1:

Mrs. KNVSN Eswari

Lecturer incharge Botany

A.S.D.G.D.C for women (A), Kakinada,

Mobile: 9948899093

 30/4/2024

B. Subject Expert 2:

Dr. J.Koteswara rao

Lecturer in Botany

GDC, Puttur, Chittoor District

Mobile: 9490209107

Email Id :- drkotiaubot@gmail.com

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C. Member from Research Organization:

Smt P.SWATHI

Assistant Director,

Dept. of Agriculture, Pithapuram

Mobile: 9848350962

E-Mail: swathi3002@yahoo.com

 30/4/24

PRGC BOTANY BOS 24-25

Name, Designation and Address

Signature

Alumni Member:

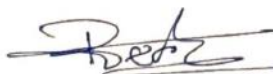
Dr. D R SALOMI SUNEETHA
Professor & Head
Dr YSR Horticultural University
Venkatramannagudem-534101
W.G Dist
Mobile: 9491608088
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online

1.Members from the College:

A. Faculty member:

1. P.Rajesh
Guest faculty in Horticulture


20/4/24

2. Ch. Usha Satya Bala
Guest faculty in Horticulture

Ch. Usha Satya Bala

B.STUDENT MEMBERS

1. E. Navya Sri
II B.Sc HBC

E. Navya Sri

2. K.Jhancy Lakshmi
II B.voc Horticulture

K. Jhancy lakshmi

C. Parent Member

1. M. Rajendra Babu
Ph.no:-7981019361



PRGC BOTANY BOS 24-25

PRGC HORTICULTURE BOS 24-25

PEDAGOGY

Commissionerate of Collegiate Education, AP, Vijayawada

Development of Unit-wise Pedagogy for Conventional Subjects under CBCS

Broad Guidelines and Models

Pedagogy is a set of diverse teaching or instructional strategies and methods used by the teacher in an educational institution to facilitate effective learning by students. Diverse methods are used because learning is dependent on multiple ways but not on any one method such as lecturing. There is no single, universal approach that suits all situations

Pedagogy is the art and science of teaching. Different strategies used in different combinations with different groupings of students will ensure learning outcomes. Some strategies for teaching certain skills and fields of knowledge are more appropriate than the others. Some approaches are better suited to certain student backgrounds, learning styles and abilities. Effective pedagogical practice promotes the wellbeing of students, teachers and the community - it improves students' and teachers' confidence and contributes to their sense of purpose for being at college.

Although it is the privilege of the teacher to choose or design his/her own pedagogical methods it is also his/her responsibility to ensure proper learning by all students in the class. A few pedagogical methods designed and implemented in the last several decades remain time-tested and popular across the world. The effectiveness of ICT and other educational technologies as a support to pedagogy in the recent years was found to be immense.

The following are some of the pedagogical methods commonly practiced. They are given Pedagogical Strategy or method (PS) Numbers for common use in academic and teaching plans.

- I. **Common Strategies:** Common pedagogical strategies suggested to be used for preparing teaching plan (preferably in circles and matrices) for each unit of subject syllabus.

<i>Sno</i>	<i>PS</i>	<i>Pedagogic Strategy/Method</i>	<i>Practice</i>	<i>Advantages</i>
1	P1	Lecture	Continuous teaching by a teacher to a large number of students for about one hour	Useful in transmitting organized knowledge in a systematic way
2	P2	Demonstration	Showing a process with the help of real, dummy or simulated material	Applied for learning a practical aspect along with skills
3	P3	Question & Answer	Teacher asks questions before, during or after lecture or demo	Feedback on student level of understanding. Useful in assessing teacher's own progress.

4	P4	Discussion, Debate or Collaboration	Student activity after the lecture, video or other teacher activity. Small groups (Pair-learning: with two students) to large groups.	Spreads knowledge and ideas in students under group learning and consolidates basic learning. Communication skills are inculcated.
5	P5	Audio & Video	Play ready-made or teacher made audio/video on the topic	Brings in external expertise and better understanding through visuals or animations
6	P6	Virtual or Online learning	Students work with computer simulated models and processes. Stored or online. Learning directly through internet utilizing standard resources	Well crafted three dimensional models and processes give inside information and real time feelings. Access to vast and highly qualitative learning resources on the internet. A computer skill is inculcated.
7	P7	Assignment or Case Study	Easy, medium and critical assignments include compiling of information from standard books to preparing creative solutions and models to problems	Independent learning, critical thinking, judging and creativity are promoted. Writing skills are enhanced.
8	P8	Study (Research) Project	Students undertake a local problem and make research study on it towards its solution or betterment	Inculcates habit of learning by research. Trains in traits such as identifying problem, survey, collecting compiling and analyzing of information, drawing conclusions, report writing etc. Spoken and written communication skills are enhanced.
9	P9	Hands on Study	Students work in a field, industry, organization or under a professional for covering especially a practical part of syllabus	Provides on real time experience to students. Gives professional training. Trained in job/work skills.

10	P10	Class Seminar	Student teaches a part of the unit as a supplement to the lecturer	Student independent learning will be consolidated and inculcates such traits as comprehension, teaching skills, interaction , public speaking etc. . Communication skills are enhanced.
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II. **Test:** Teaching learning every Unit shall end with a test. This can be denoted as **PT** . Test can be used not only as an assessment and measurement tool but also as an effective learning strategy. Questions shall be designed in such a way that the student needs to learn in several dimensions from test to test to answer the questions.

III. **Additional Strategies:** Fifteen more Additional Strategies are given in Table -2. These may be employed by the individual Lecturer based on the subject, unit, classroom situation etc. The teacher may mark **Px** for any of these additional strategies in the teaching plans, cycles and matrices.

<i>Sno</i>	<i>Pedagogic Strategy/Method</i>	<i>Practice</i>	<i>Advantages</i>
1	Quiz	Small student teams compete to answer random questions from the quiz master	Best used for extracting precise but dispersed information
2	Brainstorming	A small or large group of students gather their ideas on new concepts or aspects	Useful in preparing curious background for a new item of learning. . A soft skill is inculcated.
3	Role Play	Students take the role of actual persons in the field and enact the process	Creates a sense of understanding leading to responsible learning. . A soft skill is inculcated.
4	Modeling	Students prepare models of the existing and futuristic situations, real and imaginary. Includes problem solving, physical models, maps, figures and virtual models	Useful in developing skills integrated with knowledge in practical situations. One of the best ways of problem solving. Use of ICT will enhance the outcomes.
5	Peer review	A group of students reviewing the work of other students and also that of authors	Trains in developing insights for better understanding and judging
6	Games & Puzzles	Students solving subject related problems through available game models of designing their own models	Strengthens problem solving traits and invokes use of intelligence

7	Tutorial	Teacher interacting with small groups of students for reviewing the performance of both teacher and students	A good mechanism for obtaining feedback and midway corrections
8	News paper presentation	Teacher or a student presenting the day's matters related to the subject and on-going chapter resulting a discussion for a while	Relates theory to practice, especially the latest practice, a much needed regular intervention
9	Invited lecture	An expert or a faculty teaching a part of the unit in the classroom or at his/her place	Covers the in-house shortages and the students get the advantage of listening to an expert on that topic
10	Panel discussion	Discussing a topic by a panel of teachers, experts or students.	A variety of angles and solutions emerge for a single problem broadening of the minds of students. . A soft skill is inculcated.
11	Bulletin board	Students pin the papers they worked out on curricular topics for sharing with others	Motivates students to express themselves, promotes comprehension, writing abilities and freedom of expression.
12	Open text book study	Students study, discuss or answer a test (specially designed) by openly using a standard text book in a session	Motivates a relationship between students and standard books, a life long benefit. Helps in preparing assignments
13	Student magazine	A student magazine is periodically published with academic articles contributed by students	The art of scientifically expressing is encouraged which has both present and future value. It enhances understanding of a standard book or research paper. . A soft skill is inculcated.
14	Report/Review writing	Students write reports or reviews on case studies, projects, books or material	Promotes critical writing and reporting among students. A soft skill is inculcated.
15	Others		

I. Outline Model Pedagogic Strategy Cycle:

There may be one or more Pedagogic cycles for a single unit depending on the number and nature of the topics in it.

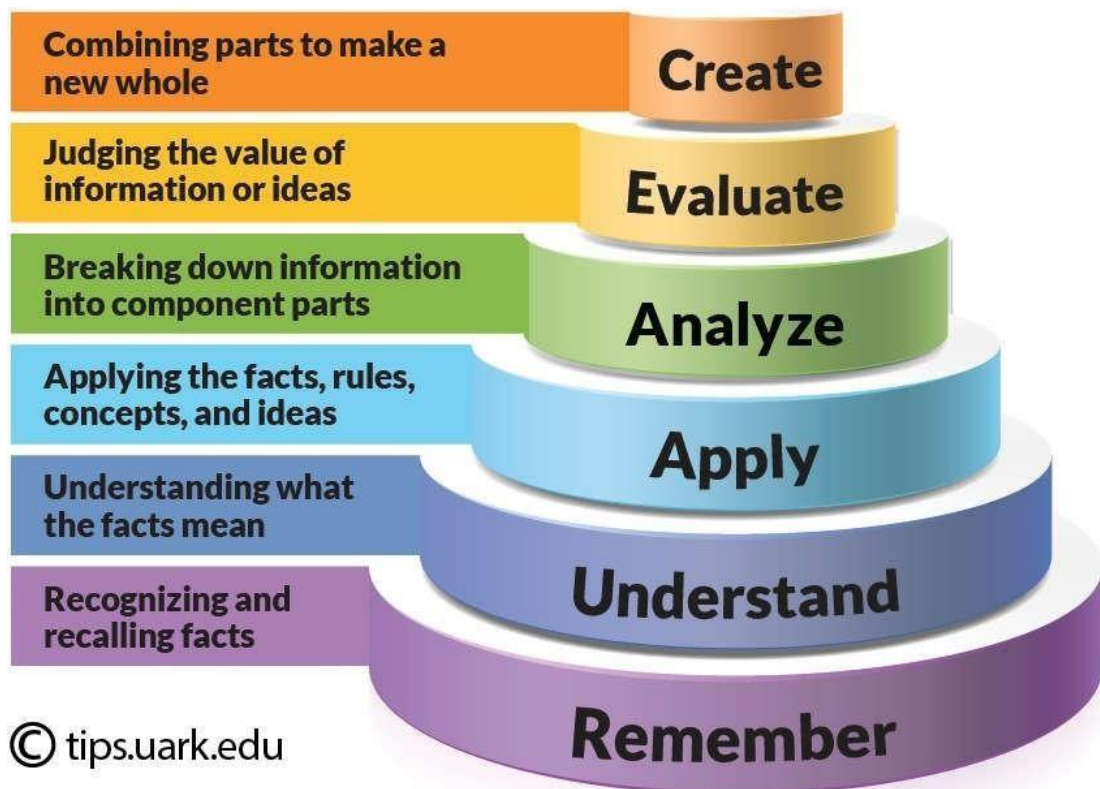
II. Other aspects:

1. The subject pedagogy development committee members shall examine each unit of each paper of their subject under CBCS and prepare pedagogic strategies for facilitating effective teaching and learning of the unit.
2. The pedagogic strategies can be adopted from the tables 1 & 2 above. If necessary,

- they may add more strategies suitable to their subject to table -2.
3. They shall prepare teaching plans for each unit and give explanation foot notes so that teachers across the state will understand the intentions of the committee members
 4. A cycle of Pedagogic Strategies shall be given for each unit with relevant footnotes. A model cycle is given below.
 5. A list of suggested suitable topics shall also be given for strategies like case study, assignments, models, project work, class seminar, videos and their open online sources (such as Swayam or NPTEL), websites for online learning etc.
 6. It is intended to publish the subject-wise teaching plans and circulate them among colleges. Hence, the teaching plans with pedagogic strategies shall be prepared in the best possible way.

BLOOMS REVISED TAXONOMY

A group of cognitive psychologists, curriculum theorists and instructional researchers, and testing and assessment specialists published in 2001 a revision of



Bloom's Taxonomy with the title *A Taxonomy for Teaching, Learning, and Assessment*. This title draws attention away from the somewhat static notion of “educational objectives” (in Bloom’s original title) and points to a more dynamic conception of classification.

The authors of the revised taxonomy underscore this dynamism, using verbs and gerunds to label their categories and subcategories (rather than the nouns of the original taxonomy).

		Critical Thinking			Evaluation
				Synthesis	Appraise
				Arrange	Argue
				Analysis	Assess
				Analyze	Choose
				Appraise	Compare
		Application	Apply	Collect	Conclude
				Arrange	Contrast
		Comprehension	Calculate	Combine	Convince
				Associate	Criticize
				Change	Critique
Knowledge			Complete	Create	
Arrange	Compute	Conduct	Combine	Design	Decide
Cite	Convert	Construct	Connect	Develop	Defend
Collect	Discuss	Demonstrate	Debate	Devise	Determine
Count	Distinguish	Discover	Detect	Explain	Evaluate
Define	Estimate	Dramatize	Determine	Formulate	Grade
Delineate	Explain	Employ	Diagram	Generate	Judge
Describe	Express	Illustrate	Differentiate	Group	Justify
Duplicate	Extend	Interpret	Discriminate	Integrate	Measure
Identify	Extrapolate	Interpolate	Distinguish	Invent	Rank
Label	Generalize	Manipulate	Examine	Manage	Rate
List	Give examples	Modify	Experiment	Modify	Recommend
Match	Indicate	Operate	Infer	Order	Revise
Name	Infer	Predict	Inspect	Organize	Score
Order	Locate	Prepare	Inventory	Plan	Select
Outlines	Paraphrase	Practice	Order	Prescribe	Support
Point	Predict	Produce	Outline	Propose	Value
Quote	Restate	Relate	Point out	Rearrange	
Read	Review	Show	Question	Reconstruct	
Recall	Rewrite	Sketch	Relate	Reorganize	
Recite	Summarize	Solve	Select	Setup	
Recognize	Tell	Translate	Separate	Specify	
Record	Translate	Use	Subdivide	Substitute	
Relate			Test	Tell	
Repeat			Utilize	Transform	
Report					
Reproduce					
Select					
Specify					
State					
Tell					

These “action words” describe the cognitive processes by which thinkers encounter and work with knowledge:

- **Remember**
 - Recognizing
 - Recalling
- **Understand**
 - Interpreting
 - Exemplifying
 - Classifying
 - Summarizing
 - Inferring
 - Comparing

- **Apply**
 - Executing
 - Implementing
- **Analyze**
 - Differentiating
 - Organizing
 - Attributing
- **Evaluate**
 - Checking
 - Critiquing
- **Create**
 - Generating
 - Planning
 - Producing

In the revised taxonomy, knowledge is at the basis of these six cognitive processes, but its authors created a separate taxonomy of the types of knowledge used in cognition:

- **Factual Knowledge**
 - Knowledge of terminology
 - Knowledge of specific details and elements
- **Conceptual Knowledge**
 - Knowledge of classifications and categories
 - Knowledge of principles and generalizations
 - Knowledge of theories, models, and structures
- **Procedural Knowledge**
 - Knowledge of subject-specific skills and algorithms
 - Knowledge of subject-specific techniques and methods
 - Knowledge of criteria for determining when to use appropriate procedures
- **Meta cognitive Knowledge**
 - Strategic Knowledge
 - Knowledge about cognitive tasks, including appropriate contextual and conditional knowledge
 - Self-knowledge

S.No	Semester	Title of the Course (Paper)	Hours/ Week	Max. Marks (SEE)	Marks in CIA	Credits
1.	Sem V	General principles of Fruits and Vegetable preservation	03	50	50	04
2.	Sem V	Recent advances in Horticulture	03	50	50	04
3.	Sem VI	LONG TERM INTERNSHIP (APPRENTICESHIP)				

**PITHAPUR RAJAH'S GOVERNMENT COLLEGE [A]:: KAKINADA
PLAN OF ACTION FOR AY 2024-25**

DEPARTMENT:BOTANY & HORTICULTURE

S.No	Activity planned	Dates/ Period
1	National/International Conference	4-07-2024 TO 05-07-2024
2	Monthly Examinations on competitive examination lines	Monthly
3	Certificate course-1 (CONDUCT ATLEAST ONE IN THE ACADEMIC YEAR)	AUGUST
4	Value added course -1	AUGUST
5	Diploma course - 1	SEPTEMBER
6	Guest Lectures - 4	AUGUST & NOVEMBER
7	Workshop	OCTOBER
8	MoUs - 3 (Target)	In 2024-25
11	Research publications - 5 (target)	2024-25
12	Community Outreach programs: (I Pogram is mandatory in the semester)	One in each Semester
13	Plantation of saplings in Adopted village	DECEMBER
14	Best Practices	2024-25
15	Field trip	OCTOBER AND JANUARY

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA

DEPARTMENT OF HORTICULTURE

HORTICULTURE COURSE STRUCTURE AND SYLLABUS

Horticulture Model Blue Print for the Question paper and choice for III Year (w.e.f. 2024 - 25 Academic Year)

S.No	Type of Questions	To be given in the Question paper			To be Answered		
		No. of Questions	Marks Allotted to each Question	Total marks	No. of Questions	Marks Allotted to each Question	Total marks
1	<u>SECTION-A</u> ESSAY QUESTIONS (EQ)	6	10	60	3	10	30
2	<u>SECTION-B</u> SHORT ANSWER QUESTIONS (SAQ)	7	5	35	4	5	20
Total Questions & Total Marks =		13	-	95	7	-	50

$$\text{Percentage of choice given} = \frac{95 - 50}{100} \times 100 = \frac{45}{100} \times 100 = 45$$

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA

B. Voc (Horticulture) SEMESTER – V CORE - IX

RECENT ADVANCES IN HORUCULTURE

(Total hours of teaching – 60 @ 04 Hrs. / Week)

Learning Outcomes: Students at the successful completion of the course will be able to:

- Understand the basic concepts of dryland horticulture and its prospects.
 - Acquire skills in relation to management of soil and water in dryland farming.
 - Demonstrate skills on various methods to check the water loss during farming.
 - Understand the cultivation practices of certain crops suitable for dryland farming.
-

UNIT I (10h)

Watershed management objectives, approaches, steps in watershed development. Importance and principles of organic farming in horticultural crops, sources and importance of organic matter.

UNIT II (10h)

Flower arrangement- Ikebana & Western trend. Principles of flower arrangement, tools & equipment, dehydrated flowers, dehydration methods, maintenance of flower shape, procedure for embedding, pot- pourri.

UNIT III (10h)

Bonsai- suitable plants for Bonsai; Aesthetics with plant parks, classification of Bonsai, requirements of Bonsai pot, Training and pruning, potting & repotting, general care. Terrarium culture.

UNIT IV (10h)

Apiculture, bee-keeping flora in India, bee- keeping technology, equipment, Honey extraction. Mushroom production nutritional aspects, recipes. Home scale industry prospects.

PRACTICALS

1. Visit to Mushroom production unit.
2. Classification of Bonsai and steps of growing a Bonsai.
3. Flower arrangement in different styles.
4. Preparation of bouquets.
5. Terrarium Culture.
6. Visit to Apiculture unit.
7. Visit to Drip- Micro irrigation project areas of horticultural farms.
8. Visit to local vermicompost unit.
9. Visit to watershed management centre.

SUGGESTED READINGS

- Neol Kings bury, 1997. The ultimate planting guide.
- Chada, K. L and Grewal, J. S. Advances in Horticulture Volume 2, 3, 4, 6 and 12. ICAR, Malhotra Publishing House, New Delhi.
- Sharma, V. K. Advances in Horticulture. Deep & Deep publication Pvt. Limited, New Delhi, India.

SEMESTER V PAPER – CORE IX
RECENT ADVANCES IN HORUCULTURE

	P.R Government College (Autonomous) Kakainada	Program & Semester B.Voc - V			
Course Code	RECENT ADVANCES IN HORUCULTURE				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites	Knowledge on Dryland Horticulture	4	0	2	4

L- Lecture; T-Tutorial; P-Practical; C-Credit

COURSE OUTCOMES

On completion of the course, the students will be able to -		Cognitive Domain
CO 1	Recognize and explain the latest technologies and innovations in horticulture.	Remembering/ Understanding
CO 2	Use recent techniques in plant breeding, pest management, and soil improvement.	Application
CO 3	Assess the effectiveness of new tools and equipment in horticultural practices.	Analyzing
CO 4	Incorporate recent advances to promote sustainability and environmental responsibility in horticulture.	Knowledge & Application
CO 5	Understand and discuss current trends and research developments in the horticulture industry.	Understanding & Application

Knowledge	Skill	Employability	Entrepreneurship
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CO-PO-PSO Mapping

(1:Slight [Low]; 2: Moderate [Medium]; 3: Substantial [High]; ‘-‘ : No correlation)

Low = 10-25%

Moderate = 25-60%

High = 60-100%

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	1	2	2	2	1	2	2	2	2
CO2	3	2	2	2	2	2	1	1	1	1
CO3	1	2	2	2	3	3	2	2	3	1
CO4	1	2	3	2	2	3	1	2	2	2
CO5	1	2	3	2	3	3	1	2	3	3

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA

B. Voc (Horticulture) SEMESTER – V CORE - X

GENERAL PRINCIPLES OF FRUITS AND VEGETABLE PRESERVATION

(Total hours of teaching – 60 @ 04 Hrs. / Week)

Learning Outcomes: Students at the successful completion of the course will be able to:

- Identify various types of fruits and vegetables and explain their nutritive value.
 - Understand the fragile nature of fruits and vegetables and causes for their damage.
 - Explain various methods of preservation for fresh fruits and vegetables.
 - Get to know the value-added products made from fruits and vegetables.
-

Unit I (10h)

Importance of fruit and vegetable. Preservation – Definition of preservation- Classify the different methods of preservation. Causes of post-harvest losses

UNIT II (10h)

Principles of preservation – preservation of microbial decomposition- preservation of self-decomposition by enzymes- preservation of damage by insects, rodents, animals etc. Principles and methods of preservation. Preservation by Asperis, High Temperature, low temperature, chemicals – Drying, filtration, carbonation, sugar, salt, fermentation, acids, oil and spices, antibiotics, irradiation

UNIT III (10h)

Unfermented fruit beverages: Preparation and preservation of unfermented fruit beverages, juices, RTS, Nectar, Cordial, Squash, Syrup, Crush. Jams, Jellies and Marmalades – Procedure for preparation. Problems of Jam production. Jelly: Important considerations in jelly making and problems of jelly preparations

UNIT IV (10h)

Preparation of sauces and ketchups, pickles, salads. Food laws: Fruit Product Order- Food Standardization and Regulatory agencies in India preservatives and colours permitted and prohibited in India

PRACTICALS

1. Preparation of syrups and brines
2. Preparation of Jams.
3. Preparation of Jellies and Marmalades.
4. Preparation of RTS/ Squash/ syrup.
5. Preparation of Candies and preserves.
6. Dehydration of Fruits and vegetables.
7. Preparation of Pickles (Hot and Sweet).
8. Preparation of Sauces.
9. Preparation of Ketchups.
10. Visit to Processing units.

SUGGESTED READINGS

- Desrosier, N. W. 1959. The Technology of Food Preservation AVI Publishing Co., Inc., Connecticut, USA.
- Hulme, A. C. 1970. The Biochemistry of Fruits and their Products. Academic Press, London.
- Lal, G., Siddappa, G. S and Tadon, N. G. L. 1986. Preservation of Fruits and Vegetables ICAR, New Delhi.

SEMESTER V PAPER – CORE X

GENERAL PRINCIPLES OF FRUITS AND VEGETABLE PRESERVATION

	P.R Government College (Autonomous) Kakinada	Program & Semester B.Voc - V			
Course Code	GENERAL PRINCIPLES OF FRUITS AND VEGETABLE PRESERVATION				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites	Knowledge on Dryland Horticulture	4	0	2	4

L- Lecture; T-Tutorial; P-Practical; C-Credit

COURSE OUTCOMES

On completion of the course, the students will be able to -		Cognitive Domain
CO 1	Identify and describe various methods of preserving fruits and vegetables, including canning, freezing, drying, and pickling.	Remembering/ Understanding
CO 2	Demonstrate proper techniques for selecting, preparing, and storing produce to ensure safety and quality in preservation processes.	Application
CO 3	Recognize and implement food safety and hygiene standards to prevent contamination and spoilage during preservation.	Analyzing
CO 4	Assess how different preservation methods affect the nutritional value and quality of preserved fruits and vegetables.	Knowledge & Application
CO 5	Develop and execute a preservation project, including planning, processing, and evaluating the results, with accurate record-keeping and labeling.	Understanding & Application

Knowledge		Skill		Employability		Entrepreneurship	
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CO-PO-PSO Mapping

(1:Slight [Low]; 2: Moderate [Medium]; 3: Substantial [High]; ‘-‘ : No correlation)

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CO1	3	1	2	2	2	1	2	2	2	2
CO2	3	2	2	2	2	2	1	1	1	1
CO3	1	2	2	2	3	3	2	2	3	1
CO4	1	2	3	2	2	3	1	2	2	2
CO5	1	2	3	2	3	3	1	2	3	3

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA

B. Voc (Horticulture)

SEMESTER- V CORE – XIV

PROJECT

1. Nursery visits.
2. Field visits.
3. Agricultural farming.
4. Documentation on Gardening.
5. Methods of Quarantine.
6. Preparation of seedlings- Propagation Techniques.

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA

III B.Voc HORTICULTURE SEMESTER- V

PRACTICAL MODEL QUESTION PAPER

Time: 2 hrs

Title: _____

Marks: 50

A. MAJOR EXPERIMENT

1 X 10 = 10 MARKS

B. MINOR EXPERIMENT

3 X 6 = 18 MARKS

C. SPOTTERS

6 X 2 = 12 MARKS

D. RECORD & VIVA

5 + 5 = 10 MARKS

IIIRD B.VOC
HORTICULTURE
SEMESTER – V
Non-Core Botany

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA

III B. Voc (Horticulture)

SEMESTER – V

Non- Core Botany Paper- 6

SOIL MICROBIOLOGY

Unit-1: soil micro organisms :-

Soil microbiology-definition, scope, significant developments in soil microbiology, contributions- soil as a natural medium for plant growth-microbial ecology-how does soil support microbial life- soil micro flora-plant growth promoting micro organisms(PGPR)-mycorrhiza-organic matter decomposition

Unit-2:Microbial Interactions in The Soil

A. Interactions between microbes-in the soil-positive interactions:-Proto-cooperation(synergism),commensalism,symbiosis(mutualism)-Negative Interactions:-competition, ammensalism (antibiosis or antagonism).parasitism and predation.

B. Plant-microbe interaction:- The Rhizosphere and its effects-microbial activities in rhizosphere- alteration of rhizosphere microflora-root exudates-fungistasis-techniques-rhizosphere and beneficial organisms the Phyllosphere-Charecteristic features of phyllosphere micro flora- phyllosphere effect-microbial communities on leaves-microbial products influencing plant growth

Unit-3:Microbes & nutrient cycles:

Carbon cycle-oxygen, sulphur, phosphorous, iron cycles-nitrogen cycles-nitrification & denitrification-biological nitrogen fixation-"N" fixers-biofertilizers (Biodegradation of Pesticides and Pollutants)

Unit-4:Soil Microbes in Bio remediation & Soil Microbial studies

A. Bioremediation:-Biomagnification & Bioremediation-fungi, Bacteria in Bioremediation-Fate ofpesticides in Soil-Pesticide degrading soil microorganisms-microbes in solid waste disposal (Sanitary land fills & land reclamation)-Composting.

B. Methods used in soil microbial studies -sterilization methods direct microscopic examination of soil-chemical methods-methods for assaying antibiotics and molecular methods in soil microbiology.

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA

III B. Voc (Horticulture)

SEMESTER – V

Non- Core Botany Paper- 6

SOIL MICROBIOLOGY PRACTICALS

SUGGESTED LABORATORY EXERCISES:

1. Soil testing-Soil analysis
2. Isolation of Actinomycetes through Serial dilution
3. Types of Soil Microbes Photographs
4. Isolation of Rhizobium through YEMA
5. Cultivation of Azolla in the garden
6. Observation of Specimens like Tikka disease of Ground nut, Red rot of Sugarcane, Wilt of cotton.

SEMESTER V PAPER – NON- CORE 6

GENERAL PRINCIPLES OF FRUITS AND VEGETABLE PRESERVATION

	P.R Government College (Autonomous) Kakainada	Program & Semester B.Voc - V			
Course Code	SOIL MICROBIOLOGY				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites	Knowledge on Dryland Horticulture	4	0	2	4

L- Lecture; T-Tutorial; P-Practical; C-Credit

COURSE OUTCOMES

On completion of the course, the students will be able to -		Cognitive Domain
CO 1	Identify and describe the types of microorganisms found in soil and their roles.	Remembering/ Understanding
CO 2	Explain how soil microbes affect nutrient cycling, plant growth, and soil health.	Application
CO 3	Perform basic techniques to sample and analyze soil for microbial activity.	Analyzing
CO 4	Use knowledge of soil microbiology to improve soil management and agricultural practices.	Knowledge & Application
CO 5	Recognize and suggest solutions for soil problems related to microbial imbalances or contamination.	Understanding & Application

Knowledge	Skill	Employability	Entrepreneurship
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CO-PO-PSO Mapping

(1:Slight [Low]; 2: Moderate [Medium]; 3: Substantial [High]; '-' : No correlation)

Low = 10-25%

Moderate = 25-60%

High = 60-100%

	PO1	PO2	PO3	PO4	PO5	PSO1	PSO2	PSO3	PSO4	PSO5
CO1	3	1	2	2	2	1	2	2	2	2
CO2	3	2	2	2	2	2	1	1	1	1
CO3	1	2	2	2	3	3	2	2	3	1
CO4	1	2	3	2	2	3	1	2	2	2
CO5	1	2	3	2	3	3	1	2	3	3

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA

III B. Voc (Horticulture)

SEMESTER – V

Non- Core Botany Paper- 6

AGRICULTURE MICROBIOLOGY

Unit-1: Microbes & Soil Fertility

A. Microbes in rhizosphere and Phyllosphere

mycorrhiza rhizobia, azospirillum, azotobacter, cyanobacteria, Frankia

C. Outlines of biological nitrogen fixation (non-symbiotic)

B. Plant Growth Promoting microorganisms-

Unit-2: Microbes & Plant diseases.

A. a general account of different plant pathogens: virus, bacteria

B. symptoms, causal organism, disease cycle-environmental relations, management & control

Of following plant diseases: 1. Viral: bunchy top of banana., tungro of rice 2. Bacterial citrus canker., bacterial blight of rice

C. Biological control of plant diseases, biopesticides-biopesticides-nucleopolyhedrovirus (NPV), Bacillus thuringiensis, Pseudomonas fluorescens & Trichoderma viridae

Unit-3: Microbes in environment

A. Microorganisms of environment (soil, water & air)

B. Role of microorganisms in nutrient cycling (carbon, nitrogen, phosphorus, sulphur)

C. Microbial interactions -mutualism, commensalism, antagonism, competition, parasitism, predation

Unit-4: Microbes in pollution control

A. Microbes in potable and polluted waters. E. coli & Streptococcus faecalis as indicators of water pollution.

B. Sanitation of potable water. sewage treatment (primary, secondary & tertiary). outlines of biodegradation of environmental pollutants pesticides.

C. Solid waste disposal- sanitary landfills, composting

D. Microbiology of air & air sampling methods.

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA

III B. Voc (Horticulture)

SEMESTER – V

Non- Core Botany Paper- 6

AGRICULTURE MICROBIOLOGY PRACTICALS

SUGGESTED LABORATORY EXERCISES:

1. Isolation and enumeration of Rhizosphere microflora
2. Isolation and enumeration of Phyllo sphere microflora
3. Isolation of Rhizobium from legume root nodules.
4. Isolation of Azospirillum and Azotobacter.
5. Staining and observation of VAM fungi.
6. Microbial examination of water by coli form test (Multiple tube Fermentation method).

SEMESTER V PAPER – NON- CORE 6

GENERAL PRINCIPLES OF FRUITS AND VEGETABLE PRESERVATION

	P.R Government College (Autonomous) Kakainada	Program & Semester B.Voc - V			
Course Code	AGRICULTURE MICROBIOLOGY				
Teaching	Hours Allocated: 60 (Theory)	L	T	P	C
Pre-requisites	Knowledge on Dryland Horticulture	4	0	2	4

L- Lecture; T-Tutorial; P-Practical; C-Credit

COURSE OUTCOMES

On completion of the course, the students will be able to -		Cognitive Domain
CO 1	Recognize and describe key microorganisms involved in agriculture.	Remembering/ Understanding
CO 2	Explain how microbes impact soil fertility, plant health, and pest management.	Application
CO 3	Use techniques for inoculating plants and soil with beneficial microbes.	Analyzing
CO 4	Evaluate how microbial activity affects crop yields and soil quality.	Knowledge & Application
CO 5	Identify and address issues related to harmful microbes in agricultural systems.	Understanding & Application

Knowledge	Skill	Employability	Entrepreneurship
-----------	-------	---------------	------------------

CO-PO-PSO Mapping

(1:Slight [Low]; 2: Moderate [Medium]; 3: Substantial [High]; '-' : No correlation)

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CO1	3	1	2	2	2	1	2	2	2	2
CO2	3	2	2	2	2	2	1	1	1	1
CO3	1	2	2	2	3	3	2	2	3	1
CO4	1	2	3	2	2	3	1	2	2	2
CO5	1	2	3	2	3	3	1	2	3	3

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA

CERTIFICATE COURSE FOR HORTICULTURE

TITLE : ORGANIC FARMING

2024-25

Total Hours : 45 Hours

Credits : 2

Department of Horticulture will be going to conduct 45 days certificate course in the academic year 2024-25. Certificate issued after completion of the course (assessment necessary for certificate)

Purpose of the course or course out comes :

Self employment ,To encourage the small scale industry, To Earn additional income

1) Qualifications : Degree on going

2) Course : ORGANIC FARMING

3) Medium : English

4) Course duration : 45 hrs.

5) Instructional hrs. (teaching) : 1hr per day

6) Instructional hrs timings : 4pm to 5pm

7) Mode of instructins : off line and online

8) Final assessment : offline or online exam, exam date announced later

9) Instructors : Dr M.Krishna Rao

10) Fee : Exam fee Rs 200/

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA

(W.E.F. 2024-25)

CERTIFICATE COURSE

Total hours of instructions and practicals - 45

ORGANIC FARMING

SYLLABUS

UNIT:-1

9hrs

Organic Farming : Introduction, History and Importance ; Methods, Advantages and Limitations ; Need of Organic Farming in Present Context and future prospects. Organic Ecosystem and their concept : Nutrient Cycling, Eutrophication, Biological Magnification.

UNIT:-2

9hrs

Composition of soil - soil texture and types, Soil structure, soil Profile, Humus and Soil PH ; Role of Soil in Organic Farming ; Soil Factors affecting Plant growth : Light, Heat, Water, Humidity, PH and Nutrition. C:N Ratio of Good fertile soil.

UNIT:-3

9hrs

Organic Farm Management : Land Preparation – Tools & Techniques ; Preparation of Seed Bed, Manuring, Sowing, Watering and Raising of seedlings ; Crop management : Pest control (Cultural, Biological, Mechanical methods) ; Integrated pest management.

UNIT:-4

9hrs

Crop rotation : Needs and Benefits ; Harvesting and post harvesting management ; Certification and Marketing : Inspection, Certification and Labelling procedure ; Marketing and Export.

HANDS ON TRAINING & PRACTICALS

9hrs

Field visit (with your own expenses)

1 Day

PITHAPUR RAJAH'S GOVERNMENT COLLEGE (AUTONOMOUS), KAKINADA

The **Board of Studies in HORTICULTURE** for the academic year 2024-2025 held in 30-04-2024 in Dept. of Horticulture.

AGENDA:

The board of studies of a department in the college shall

1. Adapting APSICHE syllabus for all Semesters
2. Introducing new papers in V semester.
3. Adapting 50- External evaluation and 50- Internal evaluation for V Semester, 200 for VIth Semesters for complete Internship.
4. Conduct of Semester End Practical examinations for III Year.
5. Approval of conversion of teaching method for some practical oriented topics through audio & video visuals
6. Approval of student online courses including faculty for the year 2024-25.
7. Approval of III Year, V semester syllabus with theory will be finalized by following APSICHE.
8. Approval of NPTEL courses to all Horticulture students
9. Approval to introduce Organic Farming as a Certificate course for III Year.
10. Approval of changes made upto 20%.

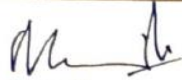
The members of B.O.S in Horticulture discussed all the issues kept in agenda at length and taken following resolutions.

RESOLUTIONS:

1. The Chairperson submitted the syllabus for Horticulture which was adopted from the APSCHE for the Academic year 2024-25.
2. Resolved III Year- V Semester syllabus with theory will be finalized by following APSCHE guidelines in coming one or two months.
3. Resolved to adopt 50 External, 50 Internal evaluations for all III Years students , 200 for VI semester, Internship
4. Resolved to conduct practical for all semesters.
5. Resolved to introduce Certificate Course to all Students with 2 Credits.
6. Resolved to conduct offline exam for Certificate course and certificates will be provided to their respective mails.
7. Resolved to introduce Moocs courses in NPTEL Platform useful for their future career and higher studies as well
8. Resolved to change the syllabus upto 20%.

The BOS Committee Members in the **HORTICULTURE** BOS Meeting has resolved the following members to act as the examiners for both paper setting and paper evaluation.

S.No	Name of the examiner	Location of examiner	Mobile number
1	Dr. A. Srinivas Rao	Govt Arts College, Rajahmundry	9985076306
2	K.V.V.G.K Vara Prasad	Government Degree College, Tuni	9908876727
3	Dr. M. Sulakshana	A S D Womens Degree College, Kakinada	7997633870
4	Mrs. Akula Venkata Lakshmi	VSM Degree College of Arts, Science & Commerce , Ramachandrapuram	9391293659


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Lecturer in-charge
Dept. of botany
PRGC(A), KAKINADA
MOBILE: 9440134559
E-Mail: mortha9@gmail.com

Dr. J. SUNITHA,
University Nominee
Principal GDC Kovvuru
Mobile: 9441050910
E-Mail: drjsuneetha@gcrjy.ac.in

online

Mrs. KNVSN Eswari
Lecturer incharge Botany
A.S.D.G.D.C for women (A), Kakinada,
Mobile: 9948899093


30/4/24

Dr. J. Koteswara Rao
Lecturer in Botany
GDC, Puttur, Chittoor District
Mobile: 9490209107
Email Id :- drkotiaubot@gmail.com

online

Smt P. SWATHI
Assistant Director
Dept. of Agriculture
Pithapuram
Mobile: 9848350962
E-Mail: swathi3002@yahoo.com


30/4/24

Dr. D R SALOMI SUNEETHA
Professor & Head
Dr. YSR Horticulture University
Venkatramannagudem-534101

online

Faculty members:

1. P. Rajesh
Guest faculty in Horticulture

2. Ch. Usha Satya Bala
Guest faculty in Horticulture


30/4/24

Ch. Usha Satya Bala

B. STUDENT MEMBERS

1. E. Navya Sri
II B.Sc HBC
2. K. Jhancy Lakshmi
II B.voc Horticulture

E. Navya Sri

K. Jhancy Lakshmi

C. Parent Member

1. M. Rajendra Babu
Ph.no:-7981019361



PRGC BOTANY BOS 24-25