INSTITUTE	**FACULTY OF AGRICULTURE**
PROGRAM	**BACHELOR OF SCIENCE (Hons.) AGRICULTURE**
SEMESTER	**3**
COURSE TITLE	**PRODUCTION TECHNOLOGY FOR VEGETABLES AND SPICES**
COURSE CODE	**16AS0308**
COURSE CREDITS	**2**

Objective:

1 To explore the importance of vegetables and spices in human nutrition and study classification of vegetables.

2 To know more about origin, area, climate soil, improved varieties and cultivation practices such as time and methods of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting and yield study the crops like Fruits and Vegetables, Cole crops such as Cabbage, Cauliflower, Knolkhol, Seed spices.

Course Outcomes: After completion of this course, student will be able to:

1 Students will illustrate the importance of vegetables and spices.

2 Students will learn more about scientific methods and the classification of vegetables and spices.

3 Students will gain a comprehensive understanding of the different types of the vegetable garden, a particular kitchen gardening.

4 Students will impart basic knowledge about the origin, area, climate, soil, improved varieties and cultivation practices such as time and methods of sowing, transplanting techniques, planting distance, fertilizer requirements, irrigation, weed management, harvesting and yield of vegetables and spices.

5 Students will be educated about the physiological disorders related to major vegetables and spices.

Pre-requisite of course: Students will able to know about different vegetable and spice crops.

Teaching and Examination Scheme

Theory Hours	Tutorial Hours	Practical Hours	ESE	IA	CSE	Viva	Term Work
1	0	2	50	30	20	25	25

Contents : Unit	Topics	Contact Hours
1	**Importance of vegetables & spices in human nutrition and national economy.** Importance of vegetables & spices in human nutrition and national economy.	1

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Contents : Unit	Topics	Contact Hours
2	**Production technology of Fruit vegetables: Brinjal, Tomato, Chilli, Okra** AND SPICES Production technology of Fruit vegetables: Brinjal, Tomato, Chilli, Okra	2
3	**Production technology of Cucurbits: Bottle gourd, Watermelon** Production technology of Cucurbits: Bottle gourd, Watermelon	1
4	**Production technology of Cole crops: Cabbage and cauliflower; Tuber crop: Potato** Production technology of Cole crops: Cabbage and cauliflower; Tuber crop: Potato	2
5	**Production technology of Spices: Turmeric, Ginger, Cardamom, Black paper** Production technology of Spices: Turmeric, Ginger, Cardamom, Black paper	2
6	**Production technology of Cucurbits: Cucumber, ridge gourd, bitter gourd, Pointed gourd, Musk melon** Production technology of Cucurbits: Cucumber, ridge gourd, bitter gourd, Pointed gourd, Musk melon	2
7	**Production technology of Legumes: Pea, Clusterbean, Cow pea** Production technology of Legumes: Pea, Clusterbean, Cow pea	2
8	**Production technology of Root vegetables: Radish, Carrot, Beet root** Production technology of Root vegetables: Radish, Carrot, Beet root	1
9	**Production technology of Tuber: Sweet potato, Leafy vegetables: Palak and amaranthus** Production technology of Tuber: Sweet potato, Leafy vegetables: Palak and amaranthus	2
10	**Production technology of Bulb crops: Onion, Garlic** Production technology of Bulb crops: Onion, Garlic	1
11	**Production technology of Seed Spices: Fennel, Cumin, Fenugreek, Coriander** Production technology of Seed Spices: Fennel, Cumin, Fenugreek, Coriander	2
Total Hours		**18**

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Identification of vegetables & spices crops and their seeds** Identification of vegetables & spices crops and their seeds	2
2	**Classification of Vegetables and Types of Vegetable Garden** Classification of Vegetables and Types of Vegetable Garden	2
3	**Kitchen garden** Kitchen garden	2

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Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
4	**Raising of nursery for vegetables** Raising of nursery for vegetables	2
5	**Raising of nursery for spice crops** Raising of nursery for spice crops	2
6	**Direct seed sowing of vegetable crops** Direct seed sowing of vegetable crops	2
7	**Sowing of spice crops** Sowing of spice crops	2
8	**Transplanting of vegetables seedlings** Transplanting of vegetables seedlings	2
9	**Fertilizer application in vegetables and spices** Fertilizer application in vegetables and spices	2
10	**Harvesting of different vegetable crops and spice crops** Harvesting of different vegetable crops and spice crops	2
11	**Preparation of vegetables and spices for market after harvesting** Preparation of vegetables and spices for market after harvesting	2
Total Hours		**22**

Textbook :

1 NA, NA, NA, NA

References:

1 Modern Technology in Vegetable Production, Modern Technology in Vegetable Production, Pranab Hazra, A. Chattopadhyay, K. Karmakar and S. Dutta., New India Publishing Agency, 2010

2 Basic Concepts of Vegetable Science, Basic Concepts of Vegetable Science, Neeraj Pratap Singh, International Book Distributing Co., 2007

3 Production Technology of Spices and Plantation Crops, Production Technology of Spices and Plantation Crops, Shanmugavelu, K.G., N. Kumar and K.V. Peter, Agrobios, 2005

4 Vegetable Crops Vol. II & III, Vegetable Crops Vol. II & III, Bose, T. K, Kabir, J., Maity T. K., Parthasarathy V. A., and Som M. G., Naya Prokash, 2002

Suggested Theory Distribution:

The suggested theory distribution as per Bloom's taxonomy is as follows. This distribution serves as guidelines for teachers and students to achieve effective teaching-learning process

Distribution of Theory for course delivery and evaluation

Remember / Knowledge	Understand	Apply	Analyze	Evaluate	Higher order Thinking
25.00	25.00	20.00	10.00	10.00	10.00

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Instructional Method:

1. The course delivery method will depend upon the requirement of content and need of students. The teacher in addition to conventional teaching method by black board may also use any of tools such as demonstration, role play, quiz, brain storming, MOOCs etc.
2. The internal evaluation will be done on the basis of continuous evaluation of students in the laboratory and class-room.
3. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.
4. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.

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