INSTITUTE	**FACULTY OF AGRICULTURE**
PROGRAM	**BACHELOR OF SCIENCE (Hons.) AGRICULTURE**
SEMESTER	**2**
COURSE TITLE	**INTRODUCTORY PLANT NEMATOLOGY**
COURSE CODE	**16AS0209**
COURSE CREDITS	**2**

Objective:

1 To study different types of plant parasitic nematode, its distribution, anatomy, its symptoms and different diseases caused by them.

2 To study different control measures of plant parasitic nematodes.

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

1 Students will be able to identify the disease which is caused by nematodes

2 students will be able to control the disease caused by nematodes

3 Student will get detailed knowledge about Plant Parasitic nematode and their biology.

4 Student will able to extract nematode from soil and infected plant samples.

Pre-requisite of course: To create the awareness among the students about plant diseases caused by nematodes

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	**Introduction, History of phytonematology. Economic importance** Introduction, History of phytonematology. Economic importance	1
2	**General characteristics of plant pathogenic nematodes** General characteristics of plant pathogenic nematodes	1
3	**Nematode general morphology and biology** Nematode general morphology and biology	1
4	**Classification of nematodes up to family level with emphasis on groups containing economically important genera** Classification of nematodes up to family level with emphasis on groups containing economically important genera	2
5	**Classification of plant parasitic nematodes based on feeding habits** Classification of plant parasitic nematodes based on feeding habits	1

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Contents : Unit	Topics	Contact Hours
6	**Identification of economically important plant nematodes up to generic level with the help of keys and description** Identification of economically important plant nematodes up to generic level with the help of keys and description	1
7	**Symptoms caused by nematodes with examples** Symptoms caused by nematodes with examples	1
8	**Interaction between plant parasitic nematodes and disease causing fungi, bacteria and viruses** Interaction between plant parasitic nematodes and disease causing fungi, bacteria and viruses	1
9	**Different methods of nematode management. Cultural methods (Crop rotation, fallowing, soil amendments, other land management techniques)** Different methods of nematode management. Cultural methods (Crop rotation, fallowing, soil amendments, other land management techniques)	2
10	**Physical methods (Soil solarization, hot water treatment)** Physical methods (Soil solarization, hot water treatment)	1
11	**Biological methods, Chemical methods (fumigants, non fumigants)** Biological methods, Chemical methods (fumigants, non fumigants)	1
12	**Resistant varieties , IPM** Resistant varieties , IPM	1
Total Hours		**14**

Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
1	**Methods of survey- sampling methods, collection of soil and samples** Methods of survey- sampling methods, collection of soil and samples	2
2	**Extraction of nematodes from soil and plant tissues following combined Cobb's sieving technique and Baermann funnel technique** Extraction of nematodes from soil and plant tissues following combined Cobb's sieving technique and Baermann funnel technique	2
3	**Counting and estimation of plant parasitic nematodes** Counting and estimation of plant parasitic nematodes	2
4	**Preparation of temporary and permanent mounts** Preparation of temporary and permanent mounts	2
5	**Method of preparation of perineal patterns for identification of species of Meloidogyne** Method of preparation of perineal patterns for identification of species of Meloidogyne	2

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Suggested List of Experiments:

Contents : Unit	Topics	Contact Hours
6	**Study and identification of most important plant parasitic nematodes with special reference to their characteristics and symptomatology** Study and identification of most important plant parasitic nematodes with special reference to their characteristics and symptomatology	2
7	**Experimental techniques used in pathogenicity studies with root -knot nematode** Experimental techniques used in pathogenicity studies with root-knot nematode	2
8	**Studies of nematicides and their formulations** Studies of nematicides and their formulations	2
9	**Methods of nematicides application and their safe use** Methods of nematicides application and their safe use	2
10	**Calculation of nematicides application concentrations** Calculation of nematicides application concentrations	2
Total Hours		**20**

Textbook :

1 NA, NA, NA, NA

References:

1 A text book of Plant Nematology, A text book of Plant Nematology, Walia A. K. & Baja, Science Technology (ICAR), 2020

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

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, brainstorming, MOOCs etc.

2 The internal evaluation will be done on the basis of continuous evaluation of students in the class-room.

3 Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory.

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Instructional Method:

4 Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.

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