Syllabus for B.Sc. (Hons) Agriculture Year – II (Sem. III)

Subject Code: 16AS0314

Subject Short Name: Nem. 3.1

Subject Name: Fundamentals of Nematology

Objective:

1. To impart knowledge on history, economic importance of plant parasitic nematodes, morphology, biology, host parasitic relationship of nematodes.
2. To impart knowledge on nematode pests of different crops of national and local importance and their management.

Credits Earned: 2 Credits (1+1)

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

- Identify the disease which is caused by nematodes.
- Control the disease caused by nematodes.
- Get detailed knowledge about Plant Parasitic nematode and their biology.
- Extract nematode from soil and infected plant samples.

Teaching Scheme (Hours)			Credits	Theory Marks			Tutorial/ Practical Marks		Total Marks
Theory	Tutorial	Practical		ESE (E)	Mid Sem (M)	Progressive Assessment (PA)	Viva (V)	Term work (TW)	
1	0	2	2	40	20	20	10	10	100

Theory Content:

Unit	Topics	Contact Hours
1	Introduction: History of phytonematology, habitat and diversity, economic importance of nematodes.	**1**
2	General characteristics of plant parasitic nematodes.	**1**
3	Nematode: definition, general morphology and biology	**2**
4	Classification of nematodes up to family level with emphasis on groups containing economically important genera	**2**
5	Classification of nematodes on the basis of feeding/ parasitic habit	**1**

6	Symptoms caused by nematodes with examples	**1**
7	Interaction between plant parasitic nematodes and disease-causing fungi, bacteria and viruses.	**2**
8	Nematode pests of crops: Rice, wheat, vegetables, pulses, oilseed and fiber crops, citrus and banana, tea, coffee and coconut.	**1**
9	Different methods of nematode management: Cultural methods, physical; methods, biological methods, Chemical methods, Plant Quarantine, Plant resistance	**2**
10	Integrated Nematode Management	**2**
	Total	**15**

Practical Content:

Unit	Topics	Contact Hours
1	Sampling methods, collection of soil and plant samples	**2**
2	Extraction of nematodes from soil and plant tissues following Cobb's sieving and decanting technique, Baermann funnel technique	**4**
3	Picking and counting of plant parasitic nematode	**2**
4	Identification of economically important plant nematodes up to generic level with the help of keys and description: *Meloidogyne, Pratylenchus; Heterodera, Tylenchulus*, *Xiphinema*, and *Helicotylenchus etc*.	**2**
5	Study of symptoms caused by important nematode pests of cereals, vegetables, pulses, plantation crops etc.	**2**
6	Methods of application of nematicides and organic amendments.	**2**
	Total	**14**

Reference Books:

- Economic Nematology-Edited by J.M. Webster. 1972. Academic Press.
- Plant Parasitic Nematodes (Vol-1) by Zukerman, Mai, Rohde. 1971. Academic Press.
- Plant Parasitic Nematodes of India: Problems and Progress by - Gopal Swarup, D. R. Dasgupta, P. K. Koshy. 1986. IARI
- Text book on Introductory Plant Nematology -R.K. Walia and H.K. Bajaj. 2020. IARI

Suggested Theory distribution:

The suggested theory distribution as per Bloom's taxonomy is as per 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	Understand	Apply	Analyze	Evaluate	Create
25%	25%	20%	10%	10%	10%

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 white 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 class-rooms.
3. Practical examination will be conducted at the end of semester for evaluation of performance of students in laboratory/ field.
4. Students will use supplementary resources such as online videos, NPTEL videos, e-courses, Virtual Laboratory.