Nematode Diagnostics (NEM 6942)

Course Format: 1 hour lecture, 2 hour lab

Credit Hours: 2 credits

Prerequisites: None

Instructor: Tesfamariam Mengistu (Tesfa), email: tmekete@ufl.edu

Course Description: Nematode diagnosis with particular emphasis on plant-parasitic nematodes, the diseases they cause, and their management.

Course Objective: Develop an appreciation for the role of nematodes in the environment in general, and in agricultural crop production in particular.

Expected Learning Outcomes: Upon completion of this course, student will be able to:

1) Demonstrate familiarity with economically important groups of nematodes
2) Recognize common nematode diseases of plants, their symptoms, importance, and management.
3) Develop control methods for pest species.
4) Implement basic laboratory techniques for extraction, identification, culturing, and manipulation of common nematode species.
5) Implement nematode threshold levels to different crop species.

Texts:
- Chen et al (ed); Nematology advances and perspectives: nematode management and utilization.
- Grover C. Smart and Khuong B. Nguyen. Illustrated key for the identification of common nematodes in Florida (copy provided in the class)

GRADING

- Lab and assignment reports (20%)
- Midterm exam (30%)
- Final exam (50%)

Grading scale
A  90 - 100 points
B+ 88 - 89 points
B  80 - 87 points
C+ 78 - 79 points
C  70 - 77 points
D  60 - 69 points
E  <60

**Exams (Mid and final):** All exams will be comprehensive but will emphasize material covered during lectures. All exams will be written and will include short answer and essay questions.

**Laboratory Exercises:** Lab reports and unknown identification reports will be required. Unidentified nematode samples will be made available and each student shall identify the unknown to genus based on published keys.

**Lecture schedule**

- **Class 1**  Introduction, nature of nematodes and diseases
- **Class 2**  Classification and Identification Keys
- **Class 3**  Feeding habits and symptoms
- **Class 4**  Nematode sampling, extraction techniques, and damage threshold levels
- **Class 5**  Nematodes of quarantine importance
- **Class 6**  Nematode management
- **Class 7**  Field visit to Plant City
- **Class 8**  Root-knot and Cyst nematodes
- **Class 9**  Root-lesion, burrowing and rice root nematodes and disease interactions
- **Class 10** Mid-Term Exam
- **Class 11** Reniform, Citrus, Virus vector and forest nematodes
- **Class 12**  Field visit to Lake Alfred
- **Class 13** Stem and Foliar nematodes – Aphelenchids, *Ditylenchus* and *Anguina*
Lab Schedule

Lab 1  Introduction
Lab 2  Light microscopy, plant parasitic vs non parasitic nematodes
Lab 3  Ectoparasitic nematodes
Lab 4  Root-knot and cyst nematodes
Lab 5  Nematode Extraction Techniques (soil & roots)
Lab 6  Nematode counting techniques and data presentations
Lab 7  Nematode damage threshold functions
Lab 8  Virus vector and Forest nematodes
Lab 9  Mid-term exam
Lab 10 Reniform and Citrus nematodes
Lab 11 Plant-parasites and virus vector nematodes of the order Dorylimida
Lab 12 Visit to Lake Alfred
Lab 13 Nema cocktail
Lab 14 Final exam