

NEMATODE MORPHOLOGY AND ANATOMY NEM 6101

Course Format: 1 hour lecture, 2 hour lab

Credit Hours: 2 credits

Prerequisites: None

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

Course Description:

- Provides basic and more advanced knowledge on nematode morphology of free-living, plant-parasitic and animal parasitic nematode structures and systems, their function, the diverse reproductive strategies and bionomics
- The course covers detailed morphology and anatomy of nematodes with special emphasis to features that form the basis of identification and classification

Course Objectives:

- Study relationships between shape, structure and function of nematodes
- Correct interpretation of morphological features and systems of nematodes
- Development and evolution of morphological features basic for analyses of relationships between taxa
- Light and TEM microscopy study of morphological features
- Analyze and interpret electron microscopic microphotographs

Expected Learning Outcomes

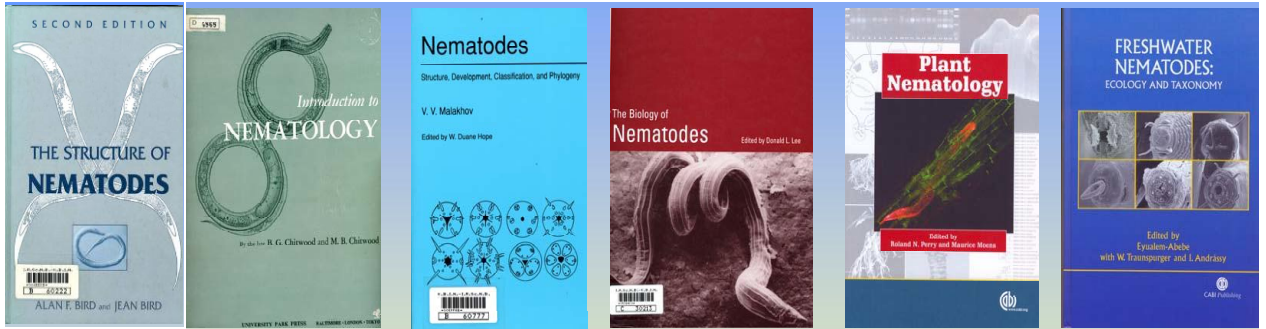
Upon completion of this course, student will be able to:

- Understand the general nematode morphology, structure and functions
- Understand and interpret TEM results

Reference Books (available to borrow from my lab):

- ** The structure of Nematodes, Bird and Bird, 1996 second edition
- Introduction to Nematology, Chitwood and Chitwood, 1974
- The Biology of Nematodes, Donald Lee, 2002

- Nematology: fundamentals and recent advances, Sasser and Jenkins, 1960



Evaluation

Non-period evaluation (10%): Evaluation of the guided lab sessions and independent practical task

Period evaluation (90%): on all elements of the theoretical part of the course by a written (80%) as well as a practical TEM part (10%)

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 SEM practical reports will be required.

Lecture schedule

- Class 1 Introduction and history of nematology
- Class 2 General morphology (structure, function, ontogeny)
- Class 3 External Cylinder I: habitus, body regions, symmetry, Body wall
- Class 4 External Cylinder II: Cuticle, epidermis, body muscles
- Class 5 Pseudocoel
- Class 6 Internal Cylinder: digestive system
- Class 7 Secretory- Excretory system
- Class 8 Nervous system
- Class 9 Mid-Term Exam
- Class 10 Reproductive system
- Class 11 Ontogeny: embryology
- Class 12 Field trip (sample collection to the nearest lake and ocean)
- Class 13 Bionomics: resistant stages and parasitism

- Class 14 Final exam

Lab Schedule

- Lab 1 Introduction
- Lab 2 Cuticular markings
- Lab 3 Cuticular structures and constrictions
- Lab 4 Cuticle permeability
- Lab 5 Hypodermis, Hypodermal Glands and Muscles
- Lab 6 Spindle-shaped muscle cells

- Lab 7 Transmission Electron microscopy I: techniques and procedures
- Lab 8 Transmission Electron microscopy II: Face Views and Lip Region
- Lab 9 Mid-term exam
- Lab 10 Esophagus
- Lab 11 Reproductive structures
- Lab 12 Field trip (sample collection to the nearest lake and ocean)
- Lab 13 General discussion and revision of morphological structures
- Lab 14 Final exam