

NEMATODE SYSTEMATICS AND MOLECULAR PHYLOGENY LABORATORY
NEM 6102L

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Tel: 352-273-3936,
Office: Room 2210, Entomology and Nematology Building

Credit Hours: 2 credits

Prerequisite or/and co-requisite-: NEM 6102 (Nematode systematics and molecular phylogeny)

Meeting Place: Charles Steinmetz Building, Entomology and Nematology, room 2220.

Meeting Time: Laboratory Tuesday and Thursday, periods 3-4.

Office hours: I have very unpredictable lab work duties, so I do not set formal office hours. If you need to meet with me, please set up a meeting during or after class, or send me an email at tmekete@ufl.edu, and I will be glad to schedule a meeting. If you need to reach me other than by e-mail, my office phone is 352-273-3936.

Course Description: **NEM 6102L** is a 2-credit lab course that will provide classical and modern techniques for use in identifying nematodes to species. This course will cover morphological, molecular, and basic bioinformatics tools used in nematode identification. Emphasis will be placed on basic molecular techniques such as DNA extraction and quantification, restriction enzyme digestion, polymerase chain reaction and agarose gel electrophoresis

Learning objectives: upon completion of this course, student will be able to:

- Possess practical background in nematode taxonomy and systematics
- Be acquainted with classical and modern methods in nematode taxonomy
- Utilize common bioinformatics tools to analyze molecular data
- Perform competently in a nematode molecular diagnostics laboratory

Textbook:

Required: There is no required textbook for this course. A course booklet containing laboratory worksheets, protocols and other useful information will be distributed to the students at the beginning of the course. Sources for this booklet include several textbooks and published articles.

Students are responsible for reading relevant materials and articles. Each week, students will have assigned readings, usually from current literature. Examples of the articles we will discuss in class are:

- Tom P. 2004. Nematode molecular diagnostics: from bands to barcodes. *Ann. Rev. Phytopath.* 42: 367-383.
- Floyd R, Eyualem A, Papert A, Blaxter M (2002). Molecular barcodes for soil nematode identification. *Mol. Ecol.* 11: 839-850.
- Foucher A, Bongers T, Noble L, Wilson M (2004). Assessment of nematode biodiversity using DGGE of 18S rDNA following extraction of nematodes from soil. *Soil Biol. Biochem.* 36: 2027-2032.
- Porazinska D, Giblin-Davis R, Powers T, Farmerie W, Kanzaki N, Morris K, Sung W, Thomas W (2009). Evaluating high-throughput sequencing as a method for metagenomic analysis of nematode diversity. *Mol. Ecol. Resour.* 9: 439-1450.

Policy on class attendance and classroom demeanor:

Class attendance is mandatory. Unexcused absences that exceed 3 classes during the semester will lower your class grade by 2 percentage points for each absence. Excused absences after #3 that are related to officially recognized UF activities or accompanied by a doctor's note are not penalized. However, for each absence exceeding your 3rd, in order to prevent the loss of the 2 percentage points, a 5-page paper will be assigned that will include at least 10 citations. Failure to submit or submission of a poor quality paper will lower your class grade by 2 percentage points. Additional details will be provided in these instances. Students are afforded 3 opportunities to recover deducted points.

Grading

The information on UF's grading policies can be found at:

<http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html>

Grading scale (%) and points needed to achieve a grade for this course is as follows:

Grade	Percentage	Points
A	90 - 100	450 - 500
B+	88 - 89	440 - 449
B	80 - 87	400 - 448
C+	78 - 79	390 - 399
C	70 - 77	350 - 389
D	60 - 69	300 - 349
E	<60	0 - 299

Evaluation: The requirements for this course are listed below:

<u>NEM 6102C</u>	<u>Point Value</u>	<u>Total</u>
Laboratory book evaluation (10)	10 each	100
Laboratory project (2)	100 each	200
Homework (10)	5 each	50

1 st Practical exam	50	50
2 nd Practical exam	100	100
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Total		500

Your grade for this course will be based on a possible 500 points and determined by the percentage breakdown presented above. Two practical examinations will be administered. One is scheduled at approximately midterm and the other at the end of the semester. Homework assignments and data sheets for each laboratory will be submitted for grading. Students are required to keep a lab notebook where they maintain accurate record of experiments. It is appropriate to write out lab procedures. Lab books will be collected up to 10 times evaluated.

Students will be given two research projects to describe a new species using classical and molecular methods. Each student must write a scientific paper according to the format used in the Journal of Nematology and a second paper for Zootaxa. Students learn how to write these papers throughout the course with papers due at the end of the semester.

Policy on make-up exams and other work:

A student is permitted to make up a missed exam without penalty if he/she has a conflict between an exam/quiz and a scheduled University-approved activity or if he/she has more than one exam/quiz scheduled at the same time, provided advanced notification is given to the instructor. Students not notifying the instructor and making such arrangements in advance will not be permitted to take the exam and will receive a zero.

Lab Schedule

Lab 1	Introduction
Lab 2	Identification exercise: higher level classifications
Lab 3	Sample processing: fixation, mounting, permanent slides
Lab 4	Order Rhabditida lab exercise
Lab 5	Order Triplonchida lab exercise
Lab 6	Order Mononchida lab exercise
Lab 7	Order Dorylaimida lab exercise
Lab 8	1st Laboratory Practical
Lab 9	SEM exercise I
Lab 10	SEM exercise II
Lab 11	SEM data reading
Lab 12	DNA extraction and quantification methods
Lab 13	RNA extraction and quantification methods
Lab 14	PCR and restriction enzyme digestion
Lab 15	Introduction to programs
Lab 16	Sequencing exercises
Lab 17	Phylogenetic Analysis
Lab 18	NCBI and Bioedit
Lab 19	MEGA
Lab 20	PAUP
Lab 21	WormBase exercise
Lab 22	Public databases (genome browsers) exercise
Lab 23	Alignment and Genbank
Lab 24	Data mining I
Lab 25	Data mining II
Lab 26	Classical and molecular description- Journal of Nematology project due
Lab 27	Classical and molecular description- Zootaxa project due
Lab 28	2nd Laboratory Practical

Grades and Grade Points

For information on current UF policies for assigning grade points, see <https://catalog.ufl.edu/ugrad/current/regulations/info/grades.aspx>

Academic Honesty, Software Use, Campus Helping Resources, Services for Students with Disabilities

Academic Honesty

In 1995 the UF student body enacted an [honor code](#) and voluntarily committed itself to the highest standards of honesty and integrity. When students enroll at the university, they commit themselves to the standard drafted and enacted by students.

The Honor Pledge: We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.

On all work submitted for credit by students at the university, the following pledge is either required or implied: **"On my honor, I have neither given nor received unauthorized aid in doing this assignment."**

Students should report any condition that facilitates dishonesty to the instructor, department chair, college dean, Student Honor Council, or Student Conduct and Conflict Resolution in the Dean of Students Office.

(Source: 2012-2013 Undergraduate Catalog)

It is assumed all work will be completed independently unless the assignment is defined as a group project, in writing by the instructor.

This policy will be vigorously upheld at all times in this course.

Software Use:

All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

Campus Helping Resources

Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- *University Counseling & Wellness Center, 3190 Radio Road, 352-392-1575, www.counseling.ufl.edu/cwc/*
 - Counseling Services
 - Groups and Workshops
 - Outreach and Consultation
 - Self-Help Library
 - Training Programs
 - Community Provider Database
- *Career Resource Center, First Floor JWRU, 392-1601, www.crc.ufl.edu/*

Services for Students with Disabilities

The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues.

0001 Reid Hall, 352-392-8565, www.dso.ufl.edu/drc/