

Term Information

Effective Term Summer 2013

General Information

Course Bulletin Listing/Subject Area Evol, Ecology & Organismal Bio
Fiscal Unit/Academic Org Evolution, Ecology & Org Bio - D0390
College/Academic Group Arts and Sciences
Level/Career Graduate
Course Number/Catalog 7890
Course Title Agricultural Acarology
Transcript Abbreviation Ag Acar
Course Description An intensive review of mites associated with crops, ornamental plants, and stored food products with emphasis on taxonomy and ecology of these animals.
Semester Credit Hours/Units Fixed: 4

Offering Information

Length Of Course 12 Week (May + Summer)
Flexibly Scheduled Course Always
Does any section of this course have a distance education component? No
Grading Basis Letter Grade
Repeatable Yes
Allow Multiple Enrollments in Term No
Max Credit Hours/Units Allowed 8
Max Completions Allowed 2
Course Components Workshop
Grade Roster Component Workshop
Credit Available by Exam No
Admission Condition Course No
Off Campus Never
Campus of Offering Columbus

Prerequisites and Exclusions

Prerequisites/Corequisites Permission of instructor
Exclusions

Cross-Listings

Cross-Listings

Subject/CIP Code

Subject/CIP Code 26.0701
Subsidy Level Doctoral Course
Intended Rank Masters, Doctoral, Professional

Quarters to Semesters

Quarters to Semesters

Modified or re-envisioned course that includes substantial parts of the content and learning goals of one or more quarter courses

List the current courses by number and title that are to be subsumed into proposed course

ENT 871

Requirement/Elective Designation

The course is an elective (for this or other units) or is a service course for other units

Course Details

Course goals or learning objectives/outcomes

- Identify mites in agricultural situations, whether pest or predator
- Understand the evolutionary aspects of predator-prey dynamics within agro-ecosystems
- Understand the basic strategies for chemical and biological control

Content Topic List

- Identification of mites in crops, ornamentals or stored products to major group, and know how to move on from that to more specific identification
- Critical analysis of studies on predator-prey interactions involving mites in agroecosystems
- Discussion of practical strategies for biological or chemical control of mite pests

Attachments

- EEOB 7890 Agricultural syllabus.docx

(Syllabus. Owner: Lanno, Roman P.)

Comments

- This course is part of the Summer Acarology Program that was part of the Entomology curriculum but has been transferred to EEOB since Dr. Hans Klompen is now in EEOB. Will be offered as a two-week course, Lecture – 3.5 h/day/12 days; Lab – 6.5 h/day/12 days.

I'm forced to select at least one course length, none of which is appropriate for this course. I selected May+summer since that's when it will be offered. *(by Lanno, Roman P. on 01/17/2013 01:55 PM)*

- Please provide a sample syllabus. The combination of 14, 7, 3.5 wk and flexibly scheduled seems excessive.

Please justify. *(by Hadad, Christopher Martin on 01/10/2013 10:46 PM)*

COURSE REQUEST
7890 - Status: PENDING

Last Updated: Vankeerbergen, Bernadette
Chantal
02/04/2013

Workflow Information

Status	User(s)	Date/Time	Step
Submitted	Lanno, Roman P.	01/09/2013 03:42 PM	Submitted for Approval
Approved	Lanno, Roman P.	01/09/2013 03:49 PM	Unit Approval
Revision Requested	Hadad, Christopher Martin	01/10/2013 10:46 PM	College Approval
Submitted	Lanno, Roman P.	01/17/2013 01:55 PM	Submitted for Approval
Approved	Lanno, Roman P.	01/17/2013 02:02 PM	Unit Approval
Approved	Hadad, Christopher Martin	01/18/2013 05:19 PM	College Approval
Pending Approval	Nolen, Dawn Jenkins, Mary Ellen Bigler Vankeerbergen, Bernadette Chantal Hogle, Danielle Nicole Hanlin, Deborah Kay	01/18/2013 05:19 PM	ASCCAO Approval

EEOB 7890
AGRICULTURAL ACAROLOGY
CREDIT HOURS: 4

NATURE OF PROGRAM AND FUNDING:

Agricultural Acarology is part of the Acarology Summer Program, which has been in continued existence since 1951. The program offers highly intensive 1-3 week courses aimed at teaching mite taxonomy and systematics with an emphasis on learning to identify the various groups of mites. Agricultural Acarology aims at mites important to agriculture, especially plant associates and their predators, while other courses concentrate on acarines of medical and veterinary importance (Medical Veterinary Acarology; EEOB 7891), and in soil and litter habitats (Soil Acarology; EEOB 7892). The three advanced level courses at the program are team taught by guest lecturers recognized as specialists in their fields, under supervision of OSU graduate faculty. Participants include professionals, postdocs, and graduate students coming from all over the world (foreign enrollment recently over 50%).

The summer program is designed to be largely funded by course fees paid by non-OSU participants (salary for OSU faculty during the Summer Program is not paid by the program). This covers basic materials and travel fees for the various lecturers. No new OSU funding is requested.

INSTRUCTIONAL STAFF:

Co-organizers: Hans Klompen klompen.1@osu.edu 614 292 7180
 Glen Needham needham.1@osu.edu

Guest lecturers (for 2013, composition varies over time)

James Amrine	West Virginia University, Morgantown, WV
Philipp Chetverikov	Saint Petersburg State University, St. Petersburg, Russia
David James	Washington State Univ., Prosser, WA
Gilberto de Moraes	University São Paulo, Piracicaba, Brazil
Ronald Ochoa	SEL, USDA, Beltsville, MD.
Barry OConnor	University of Michigan, Ann Arbor, MI
Maurice Sabelis	University Amsterdam, The Netherlands
Cal Welbourn	Florida State Collection of Arthropods, Gainesville, FL

GRA

MEETING TIMES: MTWRF 8:30am - 8:00pm, Sa 8:30am - 5pm, Su 1:00pm - 8:00pm

FORMAT: : Three 1-1.5 hr lectures/day (morning, afternoon, evening), morning and afternoon lectures followed by 2-3 hr lab periods. Saturday evening and Sunday morning: no classes. Starting on Monday, continuing for 12 days ending on Friday (5:00pm). Courses continue through any holidays (e.g. July 4th).

GOALS AND OBJECTIVES: Primarily, students will learn to identify mites in crops, ornamentals or stored products to species or genus, whether plant parasite or predator. In addition students will gain a good understanding of the types of damage done by specific mite groups. They will understand evolutionary aspects of predator-prey dynamics within agro-ecosystems and will be able to critically evaluate existing studies in that area. They will have a basic understanding of chemical and biological control strategies and will be able to coherently discuss alternate approaches.

GRADING AND EXAMS: Based on participation, results of quizzes during the week, and results for a comprehensive final exam (optional for non-OSU participants). Total 150 points, 5 unscheduled quizzes (10 points each), final exam (60 points), participation 40 points. Quizzes and the final exam will consist of unknown specimens (requiring identification to family and/or instar), with one or more follow-up questions. The exam will be scheduled about a week after the workshop. Final letter grades will be assigned according to OSU norm (A: 93-100%, A-: 90-92.9 %, B+: 87-89.9 %, etc.).

COURSE MATERIALS: Specific references (for different subsections of the course) will be provided. This includes most taxonomic keys used (printed) and pdf's of supporting material. All this is part of the course pack.

General references (not required, available in classroom):

Alberti, G. & Coons, L. B. (1999) Volume 8C. Acari: Mites. In: F. W. Harrison & R. F. Foelix (Eds), *Microscopic anatomy of invertebrates. Vol. 8. Chelicerate Arthropoda*. John Wiley & Sons, Inc., New York, NY, pp. 515-1215.

Gerson, U., Smiley, R. L. & Ochoa, R. (2003) *Mites (Acari) for pest control*. Oxford: Blackwell Science, pp. xv, 539 pp.

Krantz, G. W. & Walter, D. E. (2009) A manual of acarology. In. Texas Tech University Press, Lubbock, TX.

Walter, D. E. & Proctor, H. C. (1999) *Mites: Ecology, Evolution and Behaviour*. New York: CABI Publishing, p. 322.

ABSENCE POLICY: The tight schedule of these workshops does not leave time for make-up quizzes etc. Cases will be handled on an individual basis.

RESOURCES AND EXPECTATIONS: Students are encouraged to ask questions during lecture and lab, as well as outside of class. Resources, including outlines of PowerPoint lecture presentations will be posted on EEOB Media. Nearly all the specimen and literature resources of the OSU Acarology Collection will be available. Bringing your own material for examination / identification is encouraged, although the expectation is to work primarily with material provided. Microscope equipment provided and specimens used are valuable. Those abusing equipment or specimens will be removed from the course.

DISABILITIES STATEMENT: In accordance with University policy and the Americans with Disability Act, academic accommodations may be made for any student who notifies the instructor of the need for an accommodation. It is imperative that the student take the

initiative to bring such needs to the instructor's attention, as the instructor is not legally permitted to inquire about such particular needs of students. Students who may require special assistance in emergency evaluations should contact the instructor as to the most appropriate procedures to follow in such situations. Contact Disability Support Services at 292-3307 for additional services.

Students are expected to adhere to the Code of Student Conduct (http://studentaffairs.osu.edu/resource_csc.asp). According to University policy, your instructors are obligated to report any instance of academic misconduct, and the potential consequences include loss of credit for an assignment or exam and a failing grade for the course.

STATEMENT OF DIVERSITY: The instructors of this course are committed to promoting a welcoming climate for all students. For more information on diversity see the OSU website (<http://www.osu.edu/diversity/>). The instructors welcome suggestions, questions, and comments. Any exchange of ideas will be conducted with confidentiality, safety, and respect as guiding principles.

OUTLINE OF THE COURSE:

Monday

Introduction

Lecture 1: Introduction course, Acari vs. other Chelicerates

Lab 1: Dissection mesostigmatid mite: terminology, basic morphology

Lecture 2. Basic development, reproduction, life-history, economic importance

Lab 2: Collection from soil; set up Berlese funnels

Lecture 3. Development

Tuesday

Parasitiformes

Lecture 4. Derived Mesostigmata: Parasitina, Dermanyssina

Lab 3. Parasitina, Dermanyssina.

Lecture 5. Basal Mesostigmata: Sejina, Trigynaspida, Uropodina

Lab 4. Basal Mesostigmata.

Lecture 6. Ecology

Wednesday

Lecture 7. Introduction Parasitiformes, Opilioacarida, Holothyrida, Ixodida

Lab 5. Opilioacarida, Holothyrida, Ixodida

Lecture 8. Tick physiology and epidemiology (guest lecture Needham)

Lab 6. Tick collection methods; collecting from animals (vertebrate and insect);
wrap-up Parasitiformes

Lecture 9. Host parasite evolution, disease transmission

Thursday

Acariformes, Trombidiformes

Lecture 10: Introduction Acariformes. Endeostigmata, basal Trombidiformes (Eupodina, Anystina)

Lab 7: Endeostigmata, Eupodina, Anystina

Lecture 11: Eleutherengona

Lab 8: Collecting from plants: spider mites, Eriophyoids
Lecture 12: Biocontrol
Friday
Lecture 13: Parasitengona (incl. chiggers, water mites)
Lab 9: Parasitengona; water mite collecting
Acariformes, Sarcoptiformes
Lecture 14: Oribatida
Lab 10: Oribatida
Lecture 15: Phoresy and genetic systems
Saturday
Lecture 16: Astigmata
Lab 11: Astigmata
Lecture 17: Astigmata
Lab 12: Identification of unknowns

OUTLINE OF THE COURSE (specific topics for lectures may vary depending on the lecturers involved, and the composition and interests of the participants)

Miscellaneous Mesostigmata (guest lecturer De Moraes).

Lecture & Lab. 1 Introduction to the workshop.

Lecture & Lab. 2 Uropodidae, Parasitidae

Lecture & Lab. 3 Ascidae, Laelapidae

Phytoseiidae (guest lecturers De Moraes, Sabelis)

covers morphology, systematics, ecology, and use in biocontrol

Lectures 4-8

Labs 4-8

Tetranychidae (guest lecturers Welbourn, Ochoa, James, Sabelis)

Welbourn will focus on systematics and morphology

Sabelis and James will focus on ecology, biocontrol, and evolution of mite plant interactions

Lectures 9-14

Labs 9-14

Tenuipalpidae (guest lecturers Welbourn, Ochoa)

Lecture 15-16

Labs 15-16

Heterostigmata (guest lecturers Welbourn, Ochoa)

Lectures 17-19

Labs 17-19

Miscellaneous Trombidiformes (Welbourn)

Lecture & Lab. 20 Introduction predatory Prostigmata, Anystina

Lecture & Lab. 21 Eupodina, Tydeoidea, Bdelloidea

Lecture & Lab. 22 Raphignatoidea, Cheyletoidea

Lecture & Lab. 23 Parasitengona

Eriophyoidea (guest lecturers Amrine, Chetverikov)

covers morphology, systematics, ecology, direct and indirect pathology

Lectures 24-28

Labs 24-28

Astigmata, mainly stored products mites (guest lecturer OConnor)

covers morphology, systematics, ecology, and collection techniques

Lectures 29-33

Labs 29-33