

Florida International University  
Department of Earth and Environment

**INTEGRATED PEST MANAGEMENT – IPM 4020**

**COURSE SYLLABUS**

**FALL SEMESTER 2017**

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**Class Time:** Tuesday and Thursday 11 PM to 12:15 PM  
**Class Room:** Paul Cejas Architecture PCA-180

Instructor:

**Dr. Kateel Shetty**

(305) 348-0178

Office: VH 210

Office hours: MW 1:00 PM to 2:00 PM (by appointment)

E-mail: Contact through course Blackboard message system.

**Course Overview**

As concerns about environmental safety increase worldwide, ways to control agricultural pests with the least possible environmental impact are actively being pursued. Integrated Pest Management (IPM) constitutes a series of pest control tactics and strategies toward more sustainable agriculture, natural resources, and urban and rural health and well-being. The course is designed to provide the students with a working knowledge in developing environmentally sound programs in limiting harmful plant diseases and pests. This course intends to present an overview of IPM, its main components and discuss the ecological underpinnings behind it. The course will emphasize the principles and practices of integrating chemical, cultural, and biological controls and the issues related to pesticides and the environment. Theoretical and practical considerations will be intermingled. The course will emphasize current concepts but will also pay particular attention to emerging technologies. Students will take part in IPM related field and lab activities. Guest lecturers, field and lab visits of importance to understanding the practical aspects of IPM will be arranged during the semester based on available dates.

Method of instruction is traditional lectures mixed with student discussion on relevant journal articles. Part of the class work requires visit to garden/field and other labs/institutions of interest.

## **Course Objectives**

Students will explore the principles and mechanisms of integrated management across a diverse array of pests including insects, weeds, plant pathogens, and nematodes. Specifically, students will explore how knowledge of the agro-ecosystem, population dynamics, and biological, chemical, cultural, and mechanical approaches to pest management can be integrated into sustainable pest management systems. Throughout the course, case studies will be used to generate discussion and aid in the students' ability to formulate an integrated management program.

## **Student Learning Outcomes**

Students successfully completing this course will be able to:

- 1) Define the IPM concept and its components
- 2) Recognize the importance of ecological and evolutionary knowledge in IPM success
- 3) Integrate the principles of pest management into the environmentally sound management of cropping systems and other ecosystems.
- 4) Utilize critical thinking principles for pest management decision-making.
- 5) Apply current pest management principles to crop production and situations where pest management is critical.

## **Justification**

Currently, social and environmental considerations are at the forefront, citizens are concerned about pesticide and nutrient pollution of surface water and groundwater sources, effects on human health and impacts on non-target organisms and food safety. A unilateral approach using pesticides has limitations; thus a socially acceptable and economically practical approach to crop protection is needed. IPM strives to safeguard these resources, and this approach will have definite benefits to society in general.

## **Course Prerequisites:**

Biology BSC-1010 and ENY 4060

## **Suggested Text:**

**Concepts in Integrated Pest Management** by Robert F. Norris, Edward P. Caswell-Chen, and Marcos Kogan. 2003. Prentice Hall, Upper Saddle River, New Jersey. ISBN 0-13-087016-1

**Radcliffe's IPM World Textbook** - <http://ipmworld.umn.edu/>

Course-selected readings will be posted on class Blackboard webpage.

**Other Additional Sources:**

IPM Florida

[http://ipm.ifas.ufl.edu/Agricultural\\_IPM/Agricultural.shtml](http://ipm.ifas.ufl.edu/Agricultural_IPM/Agricultural.shtml)

Biological Control: A Guide to Natural Enemies in North America

<http://www.biocontrol.entomology.cornell.edu/index.php>

Crop Data Management Systems (CDMS) online: agrochemical database, manufactures, MSDS and crop use information

<http://www.cdms.net/LabelsMsds/LMDefault.aspx>

Insecticide Resistance Action Committee (IRAC) online:

[www.irac-online.org](http://www.irac-online.org)

Herbicide Resistance Action Committee (HRAC) online:

[www.hracglobal.com](http://www.hracglobal.com)

Fungicide Resistance Action Committee (FRAC) online:

[www.frac.info/frac/index.ht](http://www.frac.info/frac/index.ht)

**Internet Resources:**

This is a web assisted course. A course webpage will be maintained with Blackboard Learning. There will be syllabus, course materials, assignments, articles, videos, rubric, and announcements posted on Blackboard.

To access this resource, go to <https://ecampus.fiu.edu/> and click on Blackboard under the Login menu. In the Blackboard Login window, enter your FIU MyAccounts User Name and Password. Select IPM 4020 - Section U01 – fall 2017. For help with Blackboard, click the Student menu on the ecampus website call the UTS Help Center at (305) 348-2284.

**Course Syllabus**

The Instructor reserves the right to change the outline, topics, exam dates, and project assignments.

**Week**

**Topic**

**Week 1**

General definitions and concepts; A brief history of pest control; The perils of pesticides; The evolution of IPM

<b>Week 2</b>	Pests and their impacts; Comparative biology of pests
<b>Week 3</b>	Biology of pests; Ecological concepts; Ecological applications to IPM
<b>Week 4</b>	Strategies and tactics in IPM; Cultural management of pests
<b>Week 5</b>	Pesticides; Resistance, resurgence, and replacement; Resistance Management
<b>Week 6</b>	Environmental fate of pesticides; pesticide use
<b>Week 7</b>	Biological Control of pests
<b>Week 8</b>	Host plant resistance in IPM
<b>Week 9</b>	Biotechnology; Pest invasions and legislative prevention
<b>Week 10</b>	Decision-Making in Pest Management;
<b>Week 11</b>	Principles of weed management; selected IPM case history study
<b>Week 12</b>	Principles of insect management; selected IPM case history study
<b>Week 13</b>	Principles of plant disease and nematode management; selected IPM case history study
<b>Week 14</b>	Student presentations

**Course Evaluation:**

Final grades are based upon a percentage of total points out of 100.  
All items are subject to change.

Three exams (15%, 20%, 25%)	65%
Participation, In-class activities and assignments	15%
Class project, report, presentation	20%

**Total Possible Points 100**

**Grade Evaluation Scale:**

93 - 100 = A

89 - 92 = A-

86 - 88 = B+

83 - 85 = B

79 - 82 = B-

76 - 78 = C+

70 - 75 = C

59 - 69 = D

<58 = F

**Attendance:**

Everyone is expected to attend class and prepare for class in advance. Attendance is mandatory, and will be taken every class. If you miss class due to a valid, documented extenuating circumstance, it will not count as an absence. Examples of valid absences (excused absences) include: (a) family member serious illness or other emergency; (b) official academic/athletic event (e.g. field trip); or (c) recommendation from an MD.

Missing more than THREE classes will result in 5% loss of your final grade and missing more than FOUR days will result in 10% loss of your final grade. Every additional absence will lower your class grade by 10 percentage points. EIGHT or more unexcused absences may result in an "F" for the semester.

If you arrive to the class more than 10 minutes late, you are required to sign in on the LATE ARRIVAL SIGN-IN SHEET. Please take instructors prior approval if you plan to leave early. If you leave the class early, you are required to sign in on the EARLY DEPARTURE SIGN-IN SHEET. There will be deduction in participation points for being repeatedly late to the class and for leaving the class early.

Participation points will be awarded for attentiveness and positive contribution to class discussions. Conversely, points will be lost for unexcused absences, being late to the class, leaving the class at will, class disruptions, etc.

Late assignments will not be accepted except when due to the above-cited circumstances.

**Course behavior:**

Students will arrive on time, ready to participate in the day's activities and remain until the end of class. Refrain from private conversations during the class. Although potential for beneficial use of technology in education is immense, based on my experience in the class during previous semesters, I found that laptop computer/tablet usage by students was mostly disrupting the class; *use of laptops and tablets is not allowed during the class. Students are not allowed to use their cellphones in class. They must be put away and set on vibrate mode. Students violating this*

*policy will be asked to leave the class.* Any violations of the university honor code (available at <http://www2.fiu.edu/~daiglerr/code.htm>) will result in charges of academic misconduct. This includes any form of cheating such as use of unauthorized materials or communication during exams, plagiarism and so on. Students will behave in a respectful manner toward one another even during heated debates, regardless of how strongly you disagree. Students showing a lack of courtesy and consideration for the Instructor and other students will be asked to leave the classroom and will be marked absent for that session.

### **Honor Code:**

Florida International University is a community dedicated to generating and imparting knowledge through excellent teaching and research, the rigorous and respectful exchange of ideas, and community service. All students should respect the right of others to have an equitable opportunity to learn and honestly to demonstrate the quality of their learning. Therefore, all students are expected to adhere to a standard of academic conduct, which demonstrates respect for themselves, their fellow students, and the educational mission of the University. All students are deemed by the University to understand that if they are found responsible for academic misconduct, they will be subject to the Academic Misconduct procedures and sanctions, as outlined in the Student Handbook.

**Cheating and plagiarism** are violations of the academic honesty section of the FIU student code of conduct and will be reported to Judicial Services. Plagiarism is a serious offence will not be taken lightly. Plagiarism can be intentional (copying another student's work, collaborating too closely with another student) or unintentional (not citing all references, collaborating too closely with another student.) The best ways to avoid unintentional plagiarism are to reference all outside information, and to do all work on your own. If you have any questions about what is plagiarism, please ask the instructor. Instructors may use plagiarism detection software (such as turnitin.com) to determine if plagiarism has taken place. Suspected acts of plagiarism may be investigated and taken to the FIU Grievance Committee. Plagiarism will result in you receiving a 0 grade for your assignment (no exceptions) and may also result in your suspension or expulsion from the University.

### **Sexual Harassment Policy:**

FIU's sexual harassment policy is available at:

[http://hr.fiu.edu/index.php?name=sexual\\_harassment](http://hr.fiu.edu/index.php?name=sexual_harassment)

### **Office of Disability Services for Students:**

If you have a disability and need assistance, please notify me and also contact the Office of Disability Services for Students (University Park - GC 190; Ph. 348-3532). Upon contact, the Office of Disability Services for Students will review your request and contact your professors or other appropriate personnel to make arrangements for appropriate modification and/or assistance.

Please ask questions in class as this will greatly add to the discussion and learning process and let me know at any time throughout the term how I can be of help.

***Note: This syllabus and course schedule may be updated, if needed. An announcement of changes will be made in class and in Blackboard Learning class webpage.***