

MISSISSIPPI VALLEY STATE UNIVERSITY
Department of Natural Sciences & Environmental Health

Course Number: EH 370
Office Location: STB/2219
Instructor: Dr. H. Spencer
Office Phone 662-254-3391
Time: 9:00-9:50am

Course Name: Vector Control
Office Hours: MW 1-3 pm; T 9am-12pm; R 9am-12pm
Email: hspencer@mvsu.edu
Class Days: MWF/Rm. 2202

Prerequisites: EH 200

Credit hours: 3

Required Textbook: H.F. Van Emden and M.W. Service Pest and Vector Control. Pest and Vector Control, Cambridge University Press, 2004.

COURSE DESCRIPTION

This course is an introduction to the concern and rapidly increasing number of environmental problems in the United States as well as throughout the world. The course will focus on current methods used to identify and control arthropod and rodent vectors of disease. Pesticide application and biological control techniques are discussed.

PURPOSE

Insect and vector control is a course required by all Environmental Health majors. The purpose of this course is to provide students with a comprehensive overview of method used to identify and control arthropod and rodent vectors of disease. The course will also focus on pesticide application, biological control techniques and information on the rapidly increasing number of pest problems in the United States as well as throughout the world. Students will be introduced student to various methods of prevention and control of pest and vectors that cause diseases.

COURSE OBJECTIVES:

When student complete this course, they should be able to:

1. Understand the impact of insect on man and Agricultural practices
2. Understand the causes of pest and vectored disease outbreaks
3. Describe categories of pests and vectors
4. Explain the industrial development of new insecticides and their formulation
5. Explain the advantages and disadvantages of biological control
6. Describe the types of pathogens used in pest control

| Course Learning Outcome | EH Competency Addressed (EHAC Accreditation Council) |
|---|--|
| 1. Understand the impact of insect on man and agricultural practices | A1 |
| 2. Understand the causes of pest and vectored disease outbreaks | A1 |
| 3. Describe categories of pests and vectors | A1 |
| 4. Explain the industrial development of new insecticides and their formulation | A1 |
| 5. Explain the advantages and disadvantages of biological control | A1 |
| 6. Describe the types of pathogens used in pest control | A1 |

LECTURE OUTLINE (Tentative)

| Topics & Subtopics (<i>Italics</i>) | Week of: | Chapter | Exam & Quizzes |
|--|--------------------------|---------|---------------------------------|
| Syllabus Review | August 20th | | |
| I. Man and Insects | August 22, 24, 27 | 1 | |
| - <i>Impact on man</i> - <i>Pest and vectors</i> - <i>Categories of pests and vectors</i> - <i>Agricultural practices and disease</i> - <i>Beneficial impacts of insects</i> | | | Quiz 1 (1) |
| II. The causes of pest and vectored disease outbreaks | August 27, 29, 31st | 2 | |
| - <i>Introduction</i> - <i>The pest problem</i> - <i>Factors affecting the abundance of insect</i> - <i>Epidemic situations</i> | | | Exam 1: Chapters 1 and 2 |
| September 3rd (Labor Day) | No Class | | |
| III. Insecticides and their formulation | September 5, 7, 10th | 3 | |
| - <i>Introduction</i> - <i>The industrial development of new insecticides</i> - <i>The main groups of insecticides</i> - <i>Formulations</i> | Article I Due | | Quiz 2 (3) |
| IV. Problems with Insecticides | September 12, 14, & 17th | 4 | |

| | | | |
|---|-----------------------------------|----|--------------------------------|
| <ul style="list-style-type: none"> -Introduction Case history for lessons in failure: malaria eradication -Toxicity to humans -Effects on wildlife -Nature fights back -The resistance race -The other road | | | |
| V. Biological Control | September 19,21, & 24th | 7 | Exam 2 (3, 4) |
| <ul style="list-style-type: none"> -Introduction -History of biological control -Advantages of biological control -Disadvantages of biological control -The range of animal biological control agents -The techniques of biological control -Some examples of successful biological control -Principal reasons for the failure of biological control -Is biological control natural? | Article II Due | | |
| | During the week of Mid-Term | | |
| Mid-Term Exams | October 1-5 October 3rd | | Chapters 1,2,3 4, and 7 |
| VI. Insect Pathogens | October 8,10, & 12 | 8 | |
| <ul style="list-style-type: none"> -Introduction -Advantages of pathogens -Disadvantages of pathogens -Types of pathogens used in pest control -Conclusions | | | |
| VII. Genetic Control | October 15, 17 & 19th, | 9 | |
| <ul style="list-style-type: none"> -Introduction -Sterile-insect release technique -Chromosomal translocations -Hybrid sterility -Competitive displacement -Cytoplasmic incompatibility -Chemosterilization -Genetic manipulation of insects | Article IV Due | | Quiz 3 (8) |
| | | | |
| VIII. Plant and host resistance | October 22,24 & 26th | 11 | |
| <ul style="list-style-type: none"> -Introduction -Sources of variation -Location of sources for resistance\ -The classification of resistance -Mechanisms of plant resistance -The problems of using plant resistance -Vertebrate host resistance | Submit Paper draft | | Exam 3 (8,9) |
| | | | |

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|---|---|--|---------------------------|
| IX. Pheromones | October 29, 31st, November 2nd | | |
| X. Pest and Vector Management | November 5-7,9th | | |
| XI. Other Control Measures and Related Topics | November 12, 14, 16th | | |
| Fall Break & Thanksgiving Holidays | November 19-23rd | | |
| Week of Review | November 26-28th | | Research Paper Due |
| Final Exams | December 3-7th | | Comprehensive |

Methods of Instruction: Lecture and class discussion and demonstrations

Classroom Technology

Computer and LCD projector/Wireless Connection

Videos on Plants

Use of Internet searches for up-to-date information on plants and their use

| Criteria for Grading: | <u>% Final Grade</u> | <u>Grading Scale</u> |
|------------------------------|-----------------------------|-----------------------------|
| Periodic Exams | 50% | 90-100% A |
| Final Exam (Comprehensive) | 30% | 80-89% B |
| Quizzes/Assignment | 20% | 70-79% C |
| | | 60-69% D |
| | | Below 60% F |

PRESENTATION METHODS

Presentation on plant species will be oral. Each student will have 5-7 minutes to present his/her chosen topic.

| Criteria for Grading: | <u>% Final Grade</u> | <u>Grading Scale</u> |
|-------------------------------------|-----------------------------|-----------------------------|
| Periodic Exams (4) | 40% | 90-100% A |
| Final Exam (Comprehensive) | 20% | 80-89% B |
| Quizzes & Assignments | 10% | 70-79% C |
| Articles I-IV (4) | 10% | 60-69% D |
| Research Paper and Presentation (1) | 20% | Below 60% F |

All students should take advantage of the Instructor's office hours for conference (s) and when extra help is needed. When a student fails a quiz or exam (s), this should be an immediate office visit. Student should make appointments for visit (s) other than office hours. Grades reflect time and efforts a student place toward his/her education.

MAKE-UP POLICY: No make-up tests will be given except in cases of an immediate family member's death or grave personal illness. A valid excuse slip should be submitted upon return to class. Make-up tests and quizzes must be taken no later than the second-class meeting after the test date. If tests are not made up within the allotted time frame, the grade will become a zero. NO EXCEPTION.

CLASS ATTENDANCE: (SEE CLASS ATTENDANCE POLICY from the Mississippi Valley State Catalog) study. One hundred per cent (100%) punctual class attendance is expected of all students in all scheduled classes and activities. Instructor will keep attendance records and any absence for which a student does not provide written official excuse is counted as an unexcused absence.

ACADEMIC INTEGRITY

Academic Dishonesty is defined to include, but is not limited to, any of the following:

1. Plagiarism: Plagiarism is defined in terms of proscribed acts. Students are expected to understand that such practices constitute academic dishonesty, regardless of motive. Those who deny deceitful intent, claim not to have known that the act constituted plagiarism, or maintain that what they did was inadvertent are nevertheless subject to penalties when plagiarism has been confirmed. Plagiarism includes, but is not limited to, the following:

Submitting as one's own work the product of someone else's research, writing, artistic conception, invention, or design; that is, submitting as one's own work any report, notebook, speech, outline, theme, thesis, dissertation, commercially prepared paper that has been copied in whole or in part from the work of others, whether such source is published or unpublished.

b. Cheating and dishonest practices in connection with examinations, papers, and projects including, but not limited to: Obtaining help from another student during examinations; knowingly giving help to another student during examinations; the unauthorized use of notes, books, or other sources of information during examinations; Obtaining without authorization an examination or any part thereof.

NOTE: Violation of academic integrity will be handled according to Mississippi Valley State University policy.

CELL PHONES

All cell phones and beepers must be turned off or in the vibration mode (preferably, cell phones should be left at home, if student will be tempted to use them during class). To prevent interrupting instructor and fellow students, please check cell phones and beepers before entering into the classroom. Student will be penalized for using cell phone in class. This includes calls and texting.

Analysis for Journal Articles (Critique)

1. Identify your article by title, author and source
2. Review the content of the article, summarize its main points. What is the problem/issue/argument of the article.

3. Identify how this article relates to the field of public health, what area of public health it deals with and tell why the article may be of importance in the field. Relate the article to the chapters covered in class.
4. Articulate the meaning and thought you have derived from the article. Does it have any special importance to you or to a particular segment of society? Why? You must show that you have thought about the article. Do you question the results or conclusions that the article draws? Do you feel the article or the research it reports on was lacking in some way?
5. Please follow instructions and watch grammar, spelling, etc. Please proofread before submission.

*Articles: Students assignments (articles and term paper) will not be accepted after the due date. Student must satisfactorily complete all course requirements in order to receive a passing grade for the course. Please submit all assignments typed and double-spaced, font 12 point and Time Roman. The articles should be two (2) pages in length (These pages should not include bibliography).

Note: In reviewing journal articles, it will demonstrate your ability to understand an article; to enhance your ability to critique an argument; to improve your ability to communicate your points in an academic fashion and to gain knowledge in the area of public health and administration.

References:

You should have a total of at least 4 references

Two of your references must be journal articles, one of your references must be a book and the other reference may be from an internet source. The critique must conform to APA 5th edition guidelines. Below are some guidelines regarding APA style. For more detail, you can go to the following URL: http://owl.english.purdue.edu/handouts/research/r_apa.html. Please remember, you must cite all work of the authors each time you make reference to them. If you have not properly referenced the author, it may be considered as plagiarism. Please review student handbook on this matter.

Guideline for Writing Research Paper

Undergraduate level work is expected for all assignments. Students are to perform an in-depth research into a topic approved by the instructor before advancing to the next step.

- Length of Paper: 10 pages, (not including bibliography)
- Structure of paper (in this order)
 - Title page
 - Table of contents
 - Introduction
 - Literature Review
 - Methodology
 - Results (graphs and tables)
 - Discussion

Conclusion
Bibliography
Appendix (graphs, tables, etc.)

Style Guidelines

Minimum of 10 pages in length (not including bibliography)
Typed, double spaced
1 inch margins all around (top, bottom and both sides)
Font size: 12-point Time Roman
Proofread and spell check paper
Please use a folder rather than a binder
You are encouraged to use the services of the Writing Center at MVSU
Use APA Style: http://owl.english.purdue.edu/handouts/research/r_apa.html

No material from the internet will be allowed. All information must come from journals, books, periodicals, etc. You can, however, use the electronic library (MVSU EBSCOHOST) as a source.

****This document does not constitute a contract with the University. It contains guidelines. Please be advised that the contents of this course syllabus are subject to changes at the discretion of the Instructor.

Services for Students with Disabilities (SSD)

Mississippi Valley State University is committed to providing reasonable accommodations for students with a documented disability. If you feel you are eligible to receive accommodations for a covered disability (medical, physical, psychiatric, learning, vision, hearing, etc.) and would like to request it for this course, you must be registered with the Services for Students with Disabilities (SSD) program administered by University College. It is recommended that you visit the Disabilities Office located inside the EMAP Computer Lab in the Technical Education(IT) Building to register for the program at the beginning of each semester.

For more information or to schedule an appointment, please contact Mr. Billy Benson, Jr. via phone or email at 662-254-3005 or billy.benson@mvsu.edu.