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Course Description Winter Quarter 2009

*Last Updated
December 17, 2008*

Website: <http://courses.washington.edu/envh442/>

Course Description: This course examines zoonotic diseases and their control. Zoonotic diseases are diseases affecting human populations in which one or more animals play a significant role in their causation or transmission. Many diseases involve an intermediary living organism or vector which plays an important role in the transmission cycle between the pathogenic organism and the human victim. We will study the impact of rodent and arthropod vectors of disease — including those of historical importance as well as endemic and emerging diseases. Identification, surveillance and control methods will be examined with attention paid to pesticide use, regulation and safety measures.

Course Objectives: It is intended that at the completion of this course, each student should be able to:

1. describe, in general terms, the cause(s), signs, symptoms, and importance of the zoonotic or vectorborne diseases of public health significance -- regionally, nationally and internationally;
2. describe the life cycle, anatomy, role in disease transmission, and control measures for: mosquitoes and other flies, cockroaches, ticks, lice and fleas;
3. describe the typical habitats preferred by important arthropod disease vectors in the Pacific Northwest;
4. relate this information to arthropod identification and control;
5. conduct a survey of potential arthropod habitats;
6. identify the major species of rodents (rats and mice) that are important from a public health perspective and describe the distribution patterns for each;
7. describe the behavioral characteristics of rodents related to the identification and control of rodent problems;
8. identify rodent signs, indicating the species and extent of a rodent infestation;
9. describe the characteristics of a community rodent control program and the steps in planning and implementing a program and conducting a rat survey;
10. describe appropriate rodent control measures, including when and how they should be applied to eliminate rodent problems through both sanitation practices and rat killing -- poisons and traps;
11. identify the four major groups or classes of insecticides, the characteristics of each group, and give examples of insecticides from each group -- including their relative toxicity, antidote, and safety precautions to take when they are used;
12. describe the physical form, mode of entry, application, and the mode of action for major pesticides used in public health vector control;
13. describe the role of state and federal agencies regulating pesticides and the legislation regulating pesticides; and,
14. describe the safety measures to be followed in the use of pesticides -- protection of individuals and property.

Course Requirements:

1. **Examinations.** There will be a mid-term and final examination worth 100 points each.

2. **Class Project/Term Paper.** The class will be divided into several teams that will conduct an actual rodent survey of a Seattle neighborhoods identified by Public Health/Seattle & King County. Each group will prepare a final report in which you present the results of your survey, characterizing the nature and extent of the rodent problems found and presenting detailed recommendations for corrective action(s). Your recommendations need to be supported by appropriate literature documenting the appropriateness of your methods to the problems which you have identified.

Each paper should be typed with appropriate end notes, bibliography including all references used. Copies of your block record sheets and summary sheets should be appended to your report. The information you present and your bibliography should reflect your ability to search the library and obtain relevant information from many sources, including scientific/professional journals, trade journals, and government reports. Use of only one or two references (or only references from internet sites) is not considered adequate or acceptable. This is an exercise in report writing typical of the type of reports which an environmental health practitioner is expected to be able to routinely produce.

Format: You do not need to use a cover but must have a title page. Make sure all of your names, the class, the date and the title of your report are included on the title page and follow this with the text, bibliography, and appendices. Include page numbers after the first page. Staple the report in the upper left hand corner. You should **not** use type larger than 12 point (or smaller than 10), triple space, or wide

margins.

Evaluation of Papers: Your paper will be evaluated on the following points:

- a. Data collection, organization, analysis and synthesis;
- b. Appropriateness of your recommendation; and,
- c. Organization, general composition, spelling, and use of end notes.

3. Class participation. There will be a series of class exercises in which the class will work together in teams to examine a particular aspect of the course content, solve a problem or conduct an activity.

- a. Exterior housing survey
- b. Rodent block survey
- c. Mosquito breeding survey

Up to 25 points may be deducted from your total points accumulated because you were unable able to respond in class to questions covering the reading or study question assigned for the day, or for not participating in class discussions or attending class.

4. Grade. Your course grade will be based on the total number of point you accumulate during the quarter, less any points deducted based on your lack of class participation.

5. Disability. If you would like to request academic accommodations due to a disability, please contact Disabled Student Services, 448 Schmitz, 543-8924 (V/TDD). If you have a letter from Disabled Student Services indicating you have a disability that requires academic accommodations, please present the letter to me so we can discuss the accommodations you might need for class.

Course Materials:

1. Textbooks:

- a. Van Emden HF, Service MW. *Pest and Vector Control*, Cambridge University Press, Cambridge UK, 2004. (The text is available in the South Campus Branch of the University Bookstore.)
- b. Pratt H, et al. *Control of Commensal Rats & Mice*, US Centers for Disease Control and Prevention, Atlanta GA, 1976. (Handout)
- c. Pedigo LP, Rice ER. *Entomology and Pest Management* [5th Ed.], Pearson/Prentice Hall, Columbus OH, 2006. (Optional for students looking for more information on the entomology of arthropods.)
- d. Gratz NG. *Vector- and Rodent-borne Diseases of Europe and North America*, Cambridge University Press, Cambridge UK, 2006. (Optional for students looking for more information on the epidemiology of zoonotic and vectorborne disease.)

2. Handouts: In addition, selected handout materials will be made available on the course website or reproduced and handed out in class.

3. Reading Assignments: Most of the assignment for the course are listed on the Class Schedule. Additional assignments will be made in class. Assigned readings not handed out in class can be found in the Undergraduate Program Office (E-179) in the Health Sciences Center.

Other Reading Materials:

1. Books and Manuals

- a. Zinsser H. *Rats, Lice and History*, Little, Brown, and Company, 1935.
- b. Garrett L., *The Coming Plague: Newly Emerging Diseases in a World Out of Balance*. Penguin Books, New York, 1995.
- c. Burgess NRH. *Public Health Pests*, Chapman and Hall, London, 1990.
- d. Ware GW. *Complete Guide to Pest Control With and Without Chemicals*, 2nd Ed., Thompson Publications, Fresno CA, 1988.
- e. Ware GW. *The Pesticide Book*, 4th Ed., Thompson Publications, Fresno CA, 1994.
- f. Pedigo LP. *Entomology and Pest Management* (2d Ed.), Prentice-Hall, Upper saddle River NJ, 1996.
- g. Diamond J, *Guns, Germs and Steel*,

2. Journals and Other Publications:

- a. *Vector-borne and Zoonotic Diseases*

- b. Journal of Economic Entomology
- c. Pest Control (Available in EH Library)
- d. Journal of Environmental Health
- e. American Journal of Public Health
- f. World Health Organization Reports and Monographs

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