

**PROPOSED MODEL VETERINARY PUBLIC HEALTH/PREVENTIVE MEDICINE CURRICULUM**

<b>I. FOOD SAFETY</b>		
<b><u>TOPIC</u></b>	<b><u>Lecture/Lab Hrs</u></b>	<b><u>Req/Opt</u></b>
A. Role of the veterinarian in ensuring a safe food supply	1	R
B. Pre-Harvest Requirements to ensure a safe food supply - Sanitation on the Farm - Use of Antibiotics/Feed additives in Food Producing Animals - Non-Commercial Slaughter of Domestic/Wild Animals - Milk Hygiene	2	R
C. Food Safety in the Processing Plant - Humane Slaughter of Animals - Antemortem and Postmortem Inspection - Sanitary Requirements in Food Processing Facilities (discuss, beef, poultry, eggs, milk, other dairy products, etc.) -Regulatory requirements for food processing facilities	3/8*	R
D. Control of Food Pathogens During Food Preparation, Serving, and Storage	1	R
E. Biologic Agents of Foodborne Disease (include at a minimum salmonella, staph, E.coli, listeria, campylobacter, yersinia, trichina, TB, brucellosis, tularemia, botulism, parasitic diseases, Cryptosporidiosis, BSE, other emerging pathogens)	3	R
F. Food Science/Chemistry - Critical Factors in Controlling Food Pathogens - Principles of Pasteurization and other Pathogen Kill Techniques - Fundamentals/Types of Food Preservation and Processing	2	R

<b><u>TOPIC</u></b>	<b><u>Lecture/Lab Hrs</u></b>	<b><u>Req/Opt</u></b>
G. Application of HACCP Principles to Food Safety	2	R
H. Regulatory Requirements Related to Food Products of Animal Origin - Agencies Involved in Regulation of Food Products - Sanitary Requirements - Import/Export Requirements - Residue Avoidance - Labeling of Food Products - Requirements for Food Animal/Pet Food Production	2	R
I. Principles of Food Safety During Disaster Situations	1	R
J. Foodborne Disease Surveillance and Outbreak Investigation	2**	O
* Indicates lab-visit to slaughter/processing operation ** Could be included during epidemiology instruction	<b><u>TOTAL</u></b>  25 Required 2 Optional	

<b>II. <u>ZOONOSES</u></b>		
<b><u>TOPIC</u></b>	<b><u>Lecture/Lab Hours</u></b>	<b><u>Req/Opt</u></b>
A. Definition and Classification of Zoonoses	.5	R
B. Animal Bites and Bite Infections	1	R
C. Animal Control and Responsible Pet Ownership	1	R
D. Anthrax	.5	R
E. Arthropod-borne Encephalitidies	1	R
F. Borreliosis (Lyme Disease)	1	R
G. Brucellosis	.5	R
H. Campylobacteriosis	.5	R
I. Cat Scratch Disease	1	R
J. E. coli 0157:H7 Infection	1	R
K. Leptospirosis	.5	R
L. Listeriosis	.5	R
M. Mycoses Histoplasmosis, Blastomycosis, Coccidiomycosis, skin mycoses, Cryptococcosis	1	R
N. Parasites Protozoa Toxoploamosis, Giardiasis, Cryptosporidiosis, Babesiosis Nematodes Ancylostomiasis, Toxocariasis, Ascariasis, Baylisascariasis, Anisakiasis Cestodes Taeniasis, Cysticercosis, Echinococcosis, Diphylobothriosis	1.5     1.5  1	R     R  R
O. Pharmaceuticals, Residues and Antibiotic Resistance	1	R
P. Plague	.5	R
Q. Psittacosis/Chlamydiosis	1	R
R. Q Fever	.5	R
S. Rabies Legal/regulatory aspects and rabies exposure management (humans and animals)	2  1	R  R
T. Rickettsial Diseases Rocky Mt. Spotted Fever, Erlichiosis, other typhuses	1	R
U. Salmonellosis	1	R
V. Tuberculosis	.5	R
W. Tularemia	1	R

<b>TOPIC</b>	<b>Lecture/Lab Hrs</b>	<b>Req/Opt</b>
X. Vector Ecology Examples: mosquitos, fleas, ticks	1	R
Y. Yersinosis	.5	R
Z. Zoonoses and Immunocompromised Populations Pet selection, veterinary care and husbandry for pets of immunecompromised clients have become a new responsibility and important need. Examples of diseases with atypical/severe manifestations in immunecompromised people: toxoplasmosis, <i>M. avium</i> and <i>M. marinum</i> , cryptosporidiosis, cryptococcosis, listeriosis, salmonellosis, cat scratch disease, giardiasis, campylobacteriosis, microsporidiosis, and <i>Rhodococcus equi</i>	1	R
AA. Emerging Zoonoses Examples: Hantavirus and other hemorrhagic fevers, equine morbillivirus	1	R
BB. Rarely Occurring Zoonoses Examples: lymphocytic choriomeningitis, contagious ecthyma, glanders, leishmaniasis, rat-bite fever, monkey B virus, trichinosis, <i>Capnocytophaga Canimoris</i> , erysipiloid, dirofilariasis, sporotrichosis	1	O
CC. Diseases Shared by Humans and Animals The zoonotic potential of certain disease shared by humans and animals are often the focus of client questions. For some diseases there is little or no documentation of transmission to humans from other species, or the zoonotic risk is poorly understood. However, misconceptions and inaccurate information can create concern and fear on the part of clients. Examples: strep, influenza, leprosy, Helibacteriosis, tetanus, and the transmissible spongiform encephalopathies.	1	O
DD. Animals as Sentinels of Human Disease	.5	O
	<b><u>TOTAL</u></b> 26.5 Required 3 Optional	

<b><u>III. FOREIGN ANIMAL DISEASES</u></b>		
<b><u>TOPIC</u></b>	<b><u>Lecture/Lab Hrs</u></b>	<b><u>Req/Opt</u></b>
A. Definition and importance of FADS	1	R
B. USDA Response to FADS The Regional Emergency Animal Disease Eradication Organization (READEO)	.5	R
C. Vesicular Diseases Foot and Mouth Disease Swine Vesicular Disease Vesicular Exanthema of Swine Vesicular Stomatitis (although not a FAD, VS is very Important differential diagnosis)	1	R
D. Swine Diseases (non-vesicular) African Swine Fever Hog Cholera	1	R
E. Heartwater	.5	R
F. Horse Diseases African Horse Sickness Venezuelan Equine Encephalitis Contagious Equine Metritis	1	R
G. Poultry Diseases Velogenic Viscerotropic Newcastle Highly Pathogenic Avian Influenza	1	R
H. African Trypanosomiasis	1	R
I. Malignant Catarrhal Fever	.5	R
J. Rinderpest	.5	R
K. Contagious Bovine Pleuropneumonia	.5	O
L. Glanders	.5	O
M. Lumpy Skin Disease	.5	O
N. Meliodiosis	.5	O
O. Rift Valley Fever	.5	O
P. Screwworm and Foreign Ectoparasites	.5	O
Q. Sheep and Goat Pox	.5	O
R. Emerging FADS Examples: viral hemorrhagic disease of rabbits, transmissible spongiform encephalopathies	.5	O
	<b><u>TOTALS</u></b> 8 Required 4 Optional	

<b>IV. ENVIRONMENTAL HEALTH</b>		
<b><u>TOPIC</u></b>	<b><u>Lecture/Lab Hrs</u></b>	<b><u>Req/Opt</u></b>
<p>A. Fundamentals of Ecology</p> <p>The scope of ecology</p> <p>The ecosystem</p> <ol style="list-style-type: none"> <li>1. Energy flow and nature's metabolism</li> <li>2. Biogeochemical cycles</li> <li>3. Ecologic regulation</li> <li>4. Ecosystems of the world</li> </ol>	3	R
<p>B. Habitat (Animals and Man)</p> <p>Describe adequate shelter for the health and productivity of animals under the following headings: ventilation, temperature, lighting, humidity, density</p>	.5	R
<p>C. Air Quality</p> <ol style="list-style-type: none"> <li>1. Normal: EPA Standards</li> <li>2. Health hazards: man and animals</li> <li>3. Monitoring methods</li> <li>4. Climactic effects</li> <li>5. Noise</li> <li>6. Ventilation principles, systems</li> </ol>	3	R
<p>D. Water Quality</p> <ol style="list-style-type: none"> <li>1. EPA standards (potable and non-potable)</li> <li>2. Pollutants, contaminants, and sources: microbiologic, chemical, radioactive</li> <li>3. Health hazards <ul style="list-style-type: none"> <li>- List the major diseases that have been found to be associated with waterborne transmission of infectious agents.</li> </ul> </li> <li>4. Eutrophication</li> <li>5. Monitoring <ul style="list-style-type: none"> <li>- Explain how water is checked for potability</li> </ul> </li> </ol>	1.5	R
<p>E. Land Quality</p> <ol style="list-style-type: none"> <li>1. Classification (biomes)</li> <li>2. Pollutants and contaminants</li> <li>3. Land use: monoculture</li> <li>4. Monitoring</li> <li>5. Health hazards <ul style="list-style-type: none"> <li>- Name the infectious diseases of man and animals which are ecologically related to soil characteristics</li> </ul> </li> <li>6. Land use planning and urban sprawl</li> <li>7. Identify the role of the veterinarian as a community health professional in land use planning</li> </ol>	1.5	R

<b>TOPIC</b>	<b>Lecture/Lab Hrs</b>	<b>Req/Opt</b>
<p>F. Wastes</p> <ol style="list-style-type: none"> <li>1. Classification</li> <li>2. Sources <ul style="list-style-type: none"> <li>- Types of waste generated by an animal hospital</li> <li>- Sources of agricultural waste</li> </ul> </li> <li>3. Health hazards <ul style="list-style-type: none"> <li>- Given a disease outbreak associated with agricultural wastes on a farm, describe the preventive measures you would recommend to control it</li> <li>- List the health hazards arising from the wastes of an animal hospital</li> </ul> </li> </ol>	3	R
<p>G. Population</p> <ol style="list-style-type: none"> <li>1. Social Order <ul style="list-style-type: none"> <li>- The role of social ordering as a determinant of disease distribution</li> </ul> </li> <li>2. Population Dynamics <ul style="list-style-type: none"> <li>- The major population changes that have bearing on herd health</li> </ul> </li> <li>3. Management <ul style="list-style-type: none"> <li>- The effects of population management on the distribution of disease in man, cattle, horses, sheep and swine</li> <li>- Define the term <i>endangered species</i> and explain the procedure by which an animal is so designated and the implication of this designation</li> </ul> </li> </ol>	1	O
<p>H. Agents of Disease</p> <ol style="list-style-type: none"> <li>1. Classification <ul style="list-style-type: none"> <li>- What are the major groups into which disease agents are classified? What is the practical use of this classification?</li> </ul> </li> <li>2. Biological agents (commensalism, symbiosis, parasitism)</li> <li>3. Chemical agents</li> <li>4. Radioactive agents</li> <li>5. Physical agents</li> </ol>	3	R
<p>I. Effects of Climate</p> <p>Disease distribution with respect to climate (disease climatology)</p> <p>-Zoonotic diseases whose distribution is climate-dependent</p>	1.5	R
<p>J. Niche (Vocation-Avocation)</p> <ul style="list-style-type: none"> <li>- Recreational: zoonotic diseases associated with outdoor recreational activities</li> <li>- Occupational: zoonotic diseases associated with specific occupations</li> </ul>	1.5	R

<b>TOPIC</b>	<b>Lecture/Lab Hrs</b>	<b>Req/Opt</b>
<p><b>K. Disasters and Disaster Response</b></p> <ol style="list-style-type: none"> <li>1. Major types of disasters</li> <li>2. Agents that can cause disasters (include host/agent/environment interaction)</li> <li>3. Health hazards (to humans and animals) associated with disasters</li> <li>4. Principles of disaster preparedness</li> <li>5. Principles of disaster intervention</li> <li>6. Principles and organization of disaster aid</li> <li>7. Role of the veterinarian in disaster response</li> <li>8. Veterinary hospital as a community resource</li> </ol>	3	R
<p><b>L. Energy Resources</b></p> <ol style="list-style-type: none"> <li>1. Sources -- the major sources of energy</li> <li>2. Utilization <ul style="list-style-type: none"> <li>- Usage patterns for various sources of energy</li> <li>- Describe the uses of the various types of energy as related to animal health in urban areas (predominantly companion animals) as opposed to rural areas (predominantly food producing animals)</li> </ul> </li> <li>3. Health hazards <ul style="list-style-type: none"> <li>- The health hazards involved in each type of energy source</li> </ul> </li> </ol>	1	O
<p><b>M. Food Resources</b></p> <ol style="list-style-type: none"> <li>1. Food chain <ul style="list-style-type: none"> <li>- Analyze the chain and pinpoint the location(s) of potential production problems</li> </ul> </li> <li>2. Limitations <ul style="list-style-type: none"> <li>- The limitations of animal food production systems</li> </ul> </li> <li>3. Health hazards <ul style="list-style-type: none"> <li>- Using DES as an example, design a study to determine whether its use in bee cattle creates a health hazard</li> </ul> </li> <li>4. Production systems <ul style="list-style-type: none"> <li>- The major systems of animal production and indicate their economic limitations</li> </ul> </li> <li>5. Distribution and utilization <ul style="list-style-type: none"> <li>- Major systems for the distribution of food resources</li> </ul> </li> </ol>	7	R Note: May need to be offered with a special course emphasis

<u>TOPIC</u>	<u>Lecture/Lab Hrs</u>	<u>Req/Opt</u>
<p>N. Natural Resource Management</p> <ol style="list-style-type: none"> <li>1. Population <ul style="list-style-type: none"> <li>- At its present growth rate the world population will double in the next 35 years. Discuss problems of natural resource management associated with this trend</li> </ul> </li> <li>2. Energy: animal wastes -- How might animal wastes be used to relieve pressures on non-renewable energy sources?</li> <li>3. Land Use: Should governments legislate land use?</li> <li>4. Water Use <ul style="list-style-type: none"> <li>- The environmental constraints associated with the reuse of water?</li> </ul> </li> </ol>	1	O
<p>O. Health Management Strategy (community health)</p> <ol style="list-style-type: none"> <li>1. Problem Definition <ul style="list-style-type: none"> <li>- For a given community, list the health resources that must be considered in the development of strategy for responsible management of an environmental health issue</li> </ul> </li> <li>2. Issue analysis: needs and resources</li> <li>3. Program design (objectives, alternatives, priorities, methods)Decision Implementation: plan of action</li> <li>4. Evaluation, including cost effectiveness: economics</li> <li>5. Legislation</li> </ol>	2	O
<p>P. Occupational Health</p> <ol style="list-style-type: none"> <li>1. Occupational hazards of a veterinary mixed practice, pathology practice, lab animal practice, etc.</li> <li>2. Occupational health standards applicable to veterinarians</li> </ol>	1.5	R
<p>Q. Recreational Health</p> <p>Prevention and control program for zoonotic and non-zoonotic diseases associated with recreational activities in region X during season Y</p>	.5	R
<p>R. Non-infectious Consequences of Animal and Human Interactions</p> <ol style="list-style-type: none"> <li>1. Allergies and hypersensitivities</li> <li>2. Infestations</li> <li>3. Venomous arthropods (land and aquatic animals)</li> <li>4. Anxieties and psychoses</li> <li>5. Transmissible intoxications</li> <li>6. Traumas</li> <li>7. Animal bites</li> </ol>	2	O

<b><u>TOPIC</u></b>	<b><u>Lecture/Lab Hrs</u></b>	<b><u>Req/Opt</u></b>
S. Control of Biohazards <ol style="list-style-type: none"> <li>1. Types               <ul style="list-style-type: none"> <li>- Potential for the occurrence of adventitious agents in human vaccines made from monkey kidney</li> </ul> </li> <li>2. Regulations</li> <li>3. Shipping and handling</li> <li>4. Decontamination</li> </ol>	1	R
T. Drugs, Biologics, and Chemicals <ol style="list-style-type: none"> <li>1. FDA regulations, INDA and NADA</li> <li>2. Surveillance for residues</li> <li>3. Regulatory programs and acceptable levels</li> <li>4. Disposal of contaminated materials</li> <li>5. Use of human drugs by veterinarians</li> </ol>	3	R
U. Location and use of Human Resources, Agencies, and Laboratory Services	.5	R
	<b><u>TOTALS</u></b> 35 Required 7 Optional	

<b>V. COMMUNITY HEALTH</b>		
<b><u>TOPIC</u></b>	<b><u>Lecture/Lab Hrs</u></b>	<b><u>Req/Opt</u></b>
<p>A. Organization of Community Health Activities</p> <ol style="list-style-type: none"> <li>1. Definition of community health</li> <li>2. Impact of veterinary medicine on the historical evolution of public health</li> <li>3. Structure, function, and responsibilities of major federal, state, and local public health agencies</li> <li>4. Role of the veterinarian in safeguarding community health (private, public, and corporate practice roles)</li> <li>5. Community health positions which may be held by veterinarians</li> <li>6. Provide scenarios of community health problems which should include veterinarians and discuss possible roles/functions, reporting chains, etc. (e.g., natural disasters, animal disease epidemics, animal control)</li> </ol>	2	R
<p>B. Administrative aspects of Community Health</p> <ol style="list-style-type: none"> <li>1. Public health program/policy development, funding, and implementation (federal, state, local)</li> <li>2. Administrative policy and legislation</li> <li>3. Political/administrative issues at the practitioner level <ul style="list-style-type: none"> <li>- Veterinary participation in management of community health problems</li> <li>- Veterinary role in public health prevention and control programs (e.g., “farm to fork” food safety programs )</li> <li>- Working with federal/state/local health departments</li> </ul> </li> <li>4. Designing an effective public health prevention/control program</li> </ol>	2	R
<p>C. Legal Aspects of Community Health</p> <ol style="list-style-type: none"> <li>1. Major legislative and regulatory public health requirements impacting veterinarians <ul style="list-style-type: none"> <li>- Animal disease prevention and control (e.g., TB, brucellosis, rabies)</li> <li>- Disease reporting requirements</li> <li>- Import/export and interstate/international movement of animals/animal products</li> </ul> </li> <li>2. Medico-legal responsibilities/requirements pertaining to community health</li> </ol>	1	R



<u>TOPIC</u>	<u>Lecture/Lab Hrs</u>	<u>Req/Opt</u>
<p>F. Specific Community Health Issues Involving Animals (discuss at a minimum the issues listed below; include veterinary roles and responsibilities in each from both the private and public practice standpoint)</p> <ol style="list-style-type: none"> <li>1. Animal population control --(domestic and wild)</li> <li>2. Recreational health --(specific threats, role in evaluating sites, outbreak investigation and reporting, etc.)</li> <li>3. Animal bites --(epidemiology, targeted prevention/control efforts, vet's role)</li> <li>4. Exotic pets (special health considerations, vet's community health roles and responsibilities)</li> <li>5. Psychosocial aspects of human/animal interrelationships-- (human-animal bond, community health programs involving animals, veterinarian's roles/responsibilities in promoting community health using animals)</li> <li>6. Others as applicable (e.g, environmental health issues related to feedlots, poultry, swine, and cattle operations, community disaster response planning)</li> </ol>	3	R
<p>G. Specialty training and employment opportunities available for veterinarians in public health</p>	1	R
<p>* Student lab or exercise</p>	<p><b><u>TOTAL</u></b> 25 Required 0 Optional</p>	

<b>VI. EPIDEMIOLOGY AND BIOSTATICS</b>		
<b>TOPIC</b>	<b>Lecture/Lab Hrs</b>	<b>Req/Opt</b>
<p>A. Epidemiological Concepts</p> <ol style="list-style-type: none"> <li>1. Definition of epidemiology</li> <li>2. The epidemiologic approach <ul style="list-style-type: none"> <li>- Case definition</li> <li>- Counts and rates</li> <li>- Descriptive and analytic epi</li> </ul> </li> <li>3. The epidemiologic triad</li> <li>4. Natural hx and the spectrum of disease</li> <li>5. Chain of infection</li> <li>6. Epidemic Disease Occurrence and disease patterns</li> <li>7. Causation</li> <li>8. Use of epidemiology in veterinary medicine (e.g., surveillance, outbreak investigation, epi studies, evaluation)</li> </ol>	2	R
<p>B. Measuring Disease Occurrence</p> <ol style="list-style-type: none"> <li>1. Measures of Frequency <ul style="list-style-type: none"> <li>- What is a frequency distribution</li> <li>- Rates, ratios, proportions</li> <li>- Numerator and denominator issues</li> <li>- Specific rates—incidence, prevalence, morbidity, mortality, person-time</li> <li>- Rate adjustment</li> <li>- Ratios—risk ratio, rate ratio, odds ratio</li> <li>- Attributable proportion</li> </ul> </li> <li>2. Measures of Central Location and Spread <ul style="list-style-type: none"> <li>- Normal distribution</li> <li>- Mean, median, mode</li> <li>- Ranges, percentiles, variance, std deviation</li> </ul> </li> <li>3. Confidence limits</li> </ol>	6	R
<p>C. Data Organization and Presentation</p> <ol style="list-style-type: none"> <li>1. Tables, charts, graphs</li> <li>2. Using the computer for data presentation</li> </ol>	4*	R
<p>D. Patterns of Disease in Populations</p> <ol style="list-style-type: none"> <li>1. Host/agent/environment interaction and determinants of each</li> <li>2. Space and time factors</li> </ol>	2	R
<p>E. Epidemiologic Studies</p> <ol style="list-style-type: none"> <li>1. Major types of studies and their characteristics</li> <li>2. Which type of study is best for different scenarios?</li> <li>3. Sampling methods</li> </ol>	2	R
<p>F. Assessment of Risk</p> <ol style="list-style-type: none"> <li>1. Association between exposure and disease (discuss appropriate uses of relative risk, odds ratio, etc)</li> <li>2. Estimating potential for prevention (discussion of attributable risk)</li> </ol>	3*	R

<b><u>TOPIC</u></b>	<b><u>Lecture/Lab Hrs</u></b>	<b><u>Req/Opt</u></b>
G. Hypothesis Testing 1. Simple parametric tests: Chi-square, Z and T tests 2. Type I and type II error 3. Application of statistical tests	3*	R
H. Correlation and Regression and their Application	1	O
I. Association vs. Causation 1. Types of Associations and Causal Relationships 2. Determining if an Association is Causal 3. Bias, Confounding, and Interaction	2	R
J. Evaluation and Use of Diagnostic Tests 1. Sensitivity and Specificity 2. Predictive Value 4. Reliability 5. Evaluating laboratory screening programs 4. Lab problem using diagnostic testing	3*	R
K. Questionnaire Design and Appropriate Applications	2*	R
L. Interpreting Medical Literature	2*	R
M. Epidemiologic Surveillance 1. Purposes/uses of surveillance 2. Data Sources 3. Establishing a surveillance system (components and steps) 4. Surveillance system evaluation	2	R
N. Outbreak Investigation 1. Steps in investigating an outbreak 2. Using a computer to assist in outbreak investigation 3. Sample outbreak problem	8*	R
O. Other Applications of Epidemiology in Veterinary Medicine 1. Assessing production/performance of group(s) of animals 2. Animal health economics—economic principles related to selection and evaluation of health programs 3. Sample problem	3*	R
P. Individual Student Project (design a descriptive or small analytic study related to a disease problem, design a surveillance program, or design a plan for evaluating a health service or screening program for a veterinary related issue)	32	O
* Lab or exercise should be included	<b><u>TOTALS</u></b> 44 Required 33 Optional	
<b><u>GRAND TOTALS</u></b>	<b>163.5 Required</b> <b>49 Optional</b>	

