

## VETERINARY PUBLIC HEALTH

### Course Structure- at a Glance

CODE	COURSE TITLE	CREDITS
VPH 601	ELEMENTS OF VETERINARY PUBLIC HEALTH	1+1
VPH 602	BACTERIAL AND RICKETTSIAL AGENTS OF PUBLIC HEALTH SIGNIFICANCE	2+1
VPH 603	VIRAL, FUNGAL AND PARASITIC AGENTS OF PUBLIC HEALTH SIGNIFICANCE	2+1
VPH 604	ZOONOSES AND PUBLIC HEALTH	2+1
VPH 605	PRINCIPLES OF FOOD HYGIENE AND SAFETY	2+1
VPH 606	FOOD-BORNE INFECTIONS AND INTOXICATIONS	2+1
VPH 607	MEAT AND MILK HYGIENE	2+1
VPH 608	ENVIRONMENTAL POLLUTION AND SAFETY	3+1
VPH 609	FISH, FISH PRODUCTS AND SEAFOOD HYGIENE	1+1
VPH 610	BIOTERRORISM AND DISASTER MANAGEMENT	1+1
VPH 691	MASTER'S SEMINAR	1+0
VPH 699	MASTER'S RESEARCH	20
VPH 701	CURRENT TOPICS IN VETERINARY PUBLIC HEALTH	2+1
VPH 702	EMERGING AND REEMERGING ZOONOSES	2+1
VPH 703	QUALITY CONTROL OF ANIMAL FOOD PRODUCTS	2+1
VPH 704	OCCUPATIONAL HEALTH HAZARDS	2+1
VPH 705	DISPOSAL AND RECYCLING OF WASTE	2+1
VPH 706	BIOHAZARDS, BIOSECURITY AND DISASTER MANAGEMENT	2+0
VPH 707	FOOD PLANT SANITATION	2+1
VPH 708	ADVANCES IN ENVIRONMENTAL POLLUTION CONTROL	2+1
VPH 790	SPECIAL PROBLEM	0+2
VPH 791	DOCTORAL SEMINAR I	1+0
VPH 792	DOCTORAL SEMINAR II	1+0
VPH 799	DOCTORAL RESEARCH	45

## **VETERINARY PUBLIC HEALTH**

### **Course Contents**

#### **VPH 601                      ELEMENTS OF VETERINARY PUBLIC HEALTH      1+1**

##### **Objective**

To acquaint students with basics of veterinary public health.

##### **Theory**

###### UNIT I

The purposes and scope of veterinary public health; veterinary interests in public health, principal functions and fields of activity of public health veterinarians.

###### UNIT II

Definition of veterinary public health administration; organisation, administration and implementation of veterinary public health services and programmes.

###### UNIT III

Public health team, administration and functions; place of veterinarian in the public health team; veterinary public health agencies and institutions in India and abroad.

##### **Practical**

Collection of information about set up of veterinary public health in different countries.

##### **Suggested Readings**

Schwabe CW. 1969. *Veterinary Medicine and Human Health*. Williams & Wilkins.  
Sherikar AT, Bachchil VN & Thapliyal DC. 2004. *Textbook of Elements of Veterinary Public Health*. ICAR.

#### **VPH 602                      BACTERIAL AND RICKETTSIAL AGENTS OF                      2+1** **PUBLIC HEALTH SIGNIFICANCE**

##### **Objective**

To impart knowledge about importance and characteristic features of bacterial and rickettsial pathogens of public health significance.

##### **Theory**

###### UNIT I

Importance of microbes in relation to veterinary public health; cultural, biochemical and other identification characters; ecology, transmission and survivability of bacteria in nature.

###### UNIT II

Description of *Bacillus*, *Listeria*, *Mycobacterium*, *Clostridium*, *Staphylococcus*, *Enterococcus*, *Brucella* and *Leptospira*

###### UNIT III

Description of *Vibrio*, *Salmonella*, *Escherichia*, *Campylobacter*, *Yersinia*, *Lactobacillus*, *Pseudomonas* and *Micrococcus*.

###### UNIT IV

Description of *Coxiella*, *Rickettsia* and *Chlamydia*.

##### **Practical**

Isolation and identification methods for important bacterial and rickettsial agents of public health significance from host, vehicle and environment.

### Suggested Readings

Holt JG, Krieg NR, Sneath PHA, Staley JT & Williams ST. 1994. *Bergey's Manual of Determinative Bacteriology*. Williams & Wilkins.

## VPH 603                      **VIRAL, FUNGAL AND PARASITIC AGENTS OF PUBLIC HEALTH SIGNIFICANCE**                      2+1

### Objective

To impart knowledge about importance and characteristic features of viral, fungal and parasitic pathogens of public health significance.

### Theory

#### UNIT I

Systematic study of viral agents of Japanese encephalitis, encephalomyelitis, rabies, influenza, KFD, Rift valley fever, and enteroviruses; their morphological and other characters, ecology, transmission and survivability in nature.

#### UNIT II

Description of fungal agents of public health importance belonging to genera: *Aspergillus*, *Penicillium*, *Fusarium*, *Mucor*, *Histoplasma*, *Microsporium*, *Trichophyton* and *Sporotrichum*.

#### UNIT III

Description of parasites of public health importance: *Taenia*, *Echinococcus*, *Trichinella*, *Toxoplasma*, *Diphyllobothrium*, *Fasciola*, and *Cryptosporidium*.

### Practical

Isolation and identification methods for important fungal, viral and parasitic agents of public health significance from host, vehicle and environment.

### Suggested Readings

Ananthanarayan R & Panikar J. 1997. *Textbook of Microbiology*. Orient Longman.  
Pathak KML. 1991. *Fundamentals of Parasitic Zoonoses*. Kalyani.

## VPH 604                      **ZOONOSES AND PUBLIC HEALTH**                      2+1

### Objective

To impart knowledge of epidemiology, prevention and control of important zoonotic diseases.

### Theory

#### UNIT I

Concept and classification of zoonoses; comprehensive description of etiology, host range, epidemiology, diagnosis and management of zoonotic diseases.

#### UNIT II

Bacterial diseases: anthrax, brucellosis, tuberculosis, salmonellosis, yersiniosis, leptospirosis, listeriosis, plague, tularaemia, glanders, malidiosis, staphylococcosis, streptococcosis, tetanus, botulism, infections due to *Clostridium perfringens*, *E. coli*, *Aeromonas hydrophilla*, *Bacillus cereus*, *Vibrio parahaemolyticus*, cat scratch disease, chlamydiosis, Lyme disease, borreliosis (relapsing fever).

#### UNIT III

Detailed description of viral zoonoses: food-borne viruses viz. rota, tick-borne encephalitis, FMD, hepatitis A & E, Norwalk, entero, parvo, adeno,



## **Theory**

### UNIT I

Food-borne bacterial infection and intoxications due to *Salmonella*, *Campylobacter*, *Clostridium*, *Staphylococcus*, *Listeria*, *Vibrio*, *E. coli*, *Bacillus cereus*, bacterial toxins.

### UNIT II

Food-borne viral infections: infectious hepatitis, poliomyelitis, gastroenteritis etc, natural toxic substances in foods.

### UNIT III

Health problems due to food additives, biocides, bacterial toxins.

### UNIT IV

Heavy metals, antibiotics, hormones etc. in food.

## **Practical**

Detection and quantitation of food-borne pathogens, toxins, antibiotics, pesticides and additives in foods.

## **Suggested Readings**

Jay JM. 1996. *Modern Food Microbiology*. CBS.

## **VPH 607                      MEAT AND MILK HYGIENE                      2+1**

### **Objective**

To educate regarding general methods of food hygiene.

### **Theory**

#### UNIT I

Principles of food hygiene with special reference to foods of animal origin, human health and economics, nature and problem of food supply in India.

#### UNIT II

Meat hygiene and public health, abattoir hygiene.

#### UNIT III

Milk hygiene and public health, in place cleaning.

#### UNIT IV

Egg, food legislation, meat and milk adulteration.

### **Practical**

Milk and meat inspection, quality control tests of meat, milk and fish.

### **Suggested Readings**

Gracey JF, Collins DS & Huey RJ. 1999. *Meat Hygiene*. WB Saunders.

WHO. 1962. *Milk Hygiene*. WHO.

Jay JM. 1996. *Modern Food Microbiology*. CBS.

## **VPH 608                      ENVIRONMENTAL POLLUTION AND SAFETY                      3+1**

### **Objective**

To impart education about pollutants in the environment and control.

### **Theory**

#### UNIT I

Introduction to environmental hygiene, environment and health, microbial aspects of pollution.

#### UNIT II

Soil pollution, air pollution, water pollution and health.

UNIT III.

Genetic risk from environmental agents, health problems from nuclear energy and radiation pollution, environmental estrogens and pesticides-pollution.

UNIT IV

Dissemination of excreted pathogens, animal-waste and human risk, principles of safe disposal of waste.

UNIT V

Heavy metals, pesticides, veterinary drug residues and human health.

**Practical**

Determination of potability of drinking water, estimation and detection of pathogenic microbes in water, air, soil, animal products, sewage, and animal waste, inspection of sewage and waste disposal plants/sites.

**Suggested Readings**

Trieff NM. 1980. *Environment and Health*. Ann Arbor Science Publ.

**VPH 609 FISH, FISH PRODUCTS AND SEAFOOD HYGIENE 1+1**

**Objective**

To impart knowledge regarding fish hygiene and fish borne diseases

**Theory**

UNIT I

Fisheries and resources, fish preservation, hygienic quality control

UNIT II

Hygienic disposal and utilization of byproducts of fish, hygienic handling, transportation and marketing of fish.

UNIT III

Fish borne diseases in relation to human health.

**Practical**

Study of physical and biological indicators of wholesome fish to determine hygienic status of raw and processed fish. Residue analysis in fish.

**Suggested Readings**

Nollet Leo ML (Ed.). 2007. *Handbook of Meat, Poultry and Seafood Quality*. Blackwell publishing, Oxford.

**VPH 610 BIOTERRORISM AND DISASTER MANAGEMENT 1+1**

**Objective**

To update knowledge of disaster, biological weapons, biological hazards and remedial measures bioterrorism and biomedical hazards and their prevention

**Theory**

UNIT I:

Natural and man made disaster, impact analysis and classification of disaster scale, essential preparations to manage disaster, role and sequence of emergency medical services by veterinarians.

UNIT II

Effect of natural disasters like floods, prolonged draughts, forest fires, earthquakes, sunami and tidal damages, storms etc. on animal population both domestic and wild, post-disaster disease susceptibility, emergency control and remedial measures.

### UNIT III

Biomedical hazards and biosafety, occupational health risk management. Major agents and their characteristics which have been used in the past and those which can be used in future as biological weapons.

### UNIT IV

Biological weapons, hazard analysis and combating bioterrorism. Bio-ethics and social ethics, advisory role of veterinarians.

#### **Practical**

Detection of biohazards during disaster, detection and characterization of various organisms used as biological agents, use of disinfectants for their destruction.

#### **Suggested Readings**

Singh SK. 1998. *Disaster Management*. Mittal Publications, New Delhi.

## **VPH 701 CURRENT TOPICS IN VETERINARY PUBLIC HEALTH 2+1**

#### **Objective**

To acquaint with contemporary issues concerning VPH.

#### **Theory**

##### UNIT I

Contemporary status of Veterinary Public Health administration, organisation and functions of veterinary public health agencies in India and abroad.

##### UNIT II

Advanced studies on principles, diagnostic methods of emerging public health problems, advances in zoonotic diseases.

##### UNIT III

Role of biotechnology in food hygiene, Hazard Analysis Critical Control Point System (HACCP).

#### **Practical**

Special problems related to field investigations of outbreaks of food poisoning and zoonotic diseases in a community.

#### **Suggested Readings**

Selected articles from journals.

## **VPH 702 EMERGING AND RE-EMERGING ZOOSES 2+1**

#### **Objective**

To acquaint with emerging and re-emerging zoonotic diseases.

#### **Theory**

##### UNIT I

Concept of emerging and re-emerging zoonotic infections, international interests in zoonoses, measurement and economics of zoonoses, latest diagnostic and management planning for zoonoses.

##### UNIT II

Current challenges and strategies, euzoonoses, xenozoonoses, nosocomial zoonoses, newer zoonotic agents viz. cat-scratch disease, rat bite fever, Creutzfeld-Jacob disease, Ebola, Marburg, Lassa, Nipah, Menangle, Herpes B, SARS.

##### UNIT III

Simian and human immunodeficiency, bovine spongiform encephalopathy, hepatitis A & E, toro, H5N1 influenza virus; re-emerging zoonoses with

new pathology viz. neurocysticercosis, campylobacteriosis, rabies, Guillan-Barre Syndrome, tuberculosis.

**Practical**

Special problems related to emerging/re-emerging prevalent zoonotic diseases in India.

**Suggested Readings**

Selected articles from journals.

**VPH 703                                QUALITY CONTROL OF ANIMAL FOOD PRODUCTS        2+1**

**Objective**

To provide expertise to student in food quality control.

**Theory**

UNIT I

Microorganisms influencing food quality and food safety, principles of microbiological quality control of foods.

UNIT II

Major food-borne pathogens and spoilage organisms; their significance in consumer safety.

UNIT III

Detection of microorganisms in foods of animal origin.

**Practical**

Special problems on microbiological quality of foods of animal origin; detection, enumeration and identification of important food-borne pathogens.

**Suggested Readings**

Selected articles from journals.

**VPH 704                                OCCUPATIONAL HEALTH HAZARDS    2+1**

**Objective**

To acquaint with occupational health hazards

**Theory**

UNIT I

Health/diseases associated with various occupations

UNIT II

Transportation, spread, maintenance and control of diseases affecting various occupational groups in contact with animals and their public health significance

**Practical**

Diagnosis of various occupational diseases of public health significance, identification and characterization of causative agents

**Suggested Readings**

Selected articles from journals.

**VPH 705                                DISPOSAL AND RECYCLING OF WASTE    2+1**

**Objective**

To educate about safe and economic disposal of waste.

**Theory**

UNIT I

Concept of ‘reduce, reuse and recycle’ in environmental management, role of holistic environmental biotechnology and microbial control of pollution.



UNIT II

Safe disposal of animal waste and food plant waste, utilization/recycling of livestock waste.

UNIT III

Pollutants due to sewage, sewage treatment systems, solid waste and its management.

**Practical**

To study the role of microorganisms and chemicals in degrading waste, to study the factors influencing biodegradation.

**Suggested Readings**

Selected articles from journals.

**VPH 706                      BIOHAZARDS, BIOSECURITY AND DISASTER                      2+0**  
**MANAGEMENT**

**Objective**

To update knowledge on biological hazards and their prevention.

**Theory**

UNIT I

Biohazards and bioterrorism: case studies.

UNIT II

Innovative biosecurity approaches.

UNIT III

Regulations for safety in laboratories, hospitals, biological plants.

UNIT IV

Case studies of natural and man made disasters. Approaches for management of disasters. Formation of teams/ groups. Equipments required for managing such disasters.

**Suggested Readings**

Goel SL. 2007. *Disaster Administration and Management: Text and Case Studies*. Deep & Deep Publ., New Delhi.

Pinnkowski J. (Ed.). 2008. *Disaster Management Handbook*. CRC Press, Boca Raton.

**VPH 707                      FOOD PLANT SANITATION                      2+1**

**Objective**

To impart basic knowledge of sanitation in food plants.

**Theory**

UNIT I

Importance and maintenance of abattoir and meat plant sanitation.

UNIT II

Dairy plant sanitation.

UNIT III

Food plant waste disposal.

**Practical**

Evaluation of sanitation and disinfection procedures in food plants, evaluation of efficacy of disinfectants.

**Suggested Readings**

Selected articles from journals.

**VPH 708**

**ADVANCES IN ENVIRONMENTAL POLLUTION CONTROL 2+1**

**Objective**

To update knowledge on modern environmental pollution problem and control.

**Theory**

UNIT I

Advanced studies on problems pertaining to environmental hygiene, air, soil and water pollution, disinfection procedures, impact of global environmental problems on human/animal health; ecophilosophy, environmental ethics and environmental economics, environmental conflicts and cooperation.

UNIT II

Environmental risks and management, environmental risk assessment and reporting, modern global information, surveillance and monitoring systems, decision making and public awareness.

UNIT III

International environmental management efforts, participatory international organizations and their selected programmes and selected legislations.

**Practical**

Detection and estimation of air, soil and water pollution; detection of pathogens in environmental sources.

**Suggested Readings**

Selected articles from journals.

**VPH 790**

**SPECIAL PROBLEM**

**0+2**

**Objective**

To provide expertise in handling practical research problem(s).

**Practical**

Short research problem(s) involving contemporary issues and research techniques.