

College of Micronesia – FSM

**COURSE OUTLINE COVER PAGE**

**Title:** Environmental Prevention and Control of Disease

**Department No.** PH 121

**Course Description:** This course equips students with knowledge and skills in the preparation of information on communicable diseases for the use in the communities, with the support of public health workers. The course will enable students to identify diseases, particularly infectious diseases; identify and apply environmental methods for disease prevention; and control transmission to humans and/or animal reservoirs.

**Course Prepared By:** Dr Hien Do Cuboni

**Campus Site:** National

	Hours per Week		No. of Week	=	Total Hours	=	Semester Credits
<b>Lecture</b>	3	x	16	=	48	=	3
<b>Total Semester Credits</b>							<b>3</b>

**Purpose of Course:**

Degree Requirement	
Degree Elective	
Certificate	X
Other	

**Prerequisite:** None

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**Signature, Chairperson, Curriculum Committee**

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**Date Approved by Committee**

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**Signature, President, COM-FSM**

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**Date Approved by President**

## College of Micronesia – FSM

**COURSE OUTLINE****I. LEARNING OUTCOMES****A. Program Learning Outcomes:**

1. Recognize, describe and discuss the basic public health science facts and principles;
2. List and discuss the essential public health functions and their interrelationships at community and district level;
3. Describe and discuss adult, children and family health issues;
4. Discuss and demonstrate an understanding and practice of some generic public health competencies;
5. Demonstrate proper public health skills for public health practice in the community as a state or local public health officer;
6. Discuss and demonstrate community and cultural sensitivity in the health care environment;
7. Describe and discuss the health determinants and problems of adults, children and families;
8. Demonstrate proper cardio-pulmonary resuscitation (CPR) and first aid techniques;
9. Demonstrate the ability and discuss how to make a community diagnosis based on the determinants of health;
10. Identify and demonstrate good public health practice; and
11. Have had work experience at a public health facility at community and district levels.

**B. Course Learning Outcomes:**

Upon completion of the course students will be able to:

1. Demonstrate an understanding of the basic concepts of Public Health and Epidemiology, including those of demographic data, morbidity, mortality, and basic microbiology
  - 1.1 Define *public health*
  - 1.2 Discuss major achievements in the evolution of public health in time
  - 1.3 Distinguish between the “old” public health and the “new” public health
  - 1.4 Describe, with examples, the major uses of epidemiology
  - 1.5 List and describe the main demographic measures, i.e. birth and death registrations, birth and death rates, etc.
  - 1.6 Calculate morbidity rates (incidence, prevalence); mortality rates (infant mortality rate - IMR, neonatal mortality rate - NMR, disease-specific mortality rates, etc.)
  - 1.7 Describe a disease notification system: its categories; reporting requirements and operational mechanisms
  - 1.8 Identify observational patterns of some common infectious diseases in the local context
  - 1.9 Discuss how these disease patterns might be affected by environmental factors

- 1.10 Outline the classification of causative agents, i.e. bacteria, viruses, fungi, protozoa, etc.
  - 1.11 Discuss the ecology and classification of organisms, the interaction between organisms: independence, mutualism, commensalisms, parasitism
  - 1.12 Identify sites of colonization by indigenous microbes; reservoirs of infection; live and inanimate reservoirs
2. Recognize the important classes of infectious diseases: occupational, zoonotic, STIs, helminthes and vector-borne diseases, and the manner through which these infections are transmitted to man
    - 2.1 Describe and discuss these topics:
      - Etiology
      - Mode of transmission
      - Occurrence pattern and epidemic potential of the following infections:
        - a) Bacterial infections: Tetanus, Diphtheria, Tuberculosis, Anthrax, Leprosy, Plague, Typhoid Fever, Cholera, Shigella, Leptospirosis
        - b) Viral infections: Measles, Mumps, Poliomyelitis, Dengue Fever, Herpes Simplex, Herpes Foster, Influenza, SARS, Rabies, Yellow Fever, Hepatitis
        - c) Parasite infections: Malaria, Filariasis, Rickettsial disease, Helminthiasis, Round worms, Hook worms, Pin worms, Tape worms, Angiostroyloides, Dog worm
        - d) Sexually Transmitted Infections (STIs): Syphilis, Gonorrhea, Chlamydia, Genital Herpes, HIV/AIDS, Trichomoniasis, Lice, Mites.
    - 2.2 Identify and discuss the environmental impacts on the above mentioned infections
    - 2.3 Propose possible environmental preventive and control measures for the above mentioned infectious diseases
  3. Understand the interactions between *host*, *infectious agent* and the *environment* in the development of infectious disease
    - 3.1 Define and describe the “*chain of infection*” – the interaction between “*infectious agent – host – environment*”
    - 3.2 Distinguish the following terms: *endemic*, *sporadic*, *epidemic*, *pandemic*, etc.
    - 3.3 Explain how an infectious disease outbreak might be recognized
    - 3.4 Discuss how the environment may play its part in the occurrence of a disease outbreak
    - 3.5 Conduct a focused discussion on the disease transmission via vectors, such as mosquitoes, flies, fleas, lice, bedbugs, cockroaches, rats and mice; and propose relevant control measures
  4. Identify appropriate measures to combat infections during natural disasters and to contain transmission during epidemics.
    - 4.1 Describe how environmental aspects might be used during outbreak investigation, i.e. hypothesis generation, testing and confirmation; initiation of further environmental measures and studies to contain the outbreak

- 4.2 Identify disease implications, particularly the environmental implications of disease outbreaks and/or natural disasters
- 4.3 List the steps in the implementation of preventive measures, particularly those of environmental application
- 4.4 Describe the steps to control patients, contacts and the immediate environment in the context of a disease outbreak and/or a natural disaster
5. Understand the specimen collection procedures for mosquito larvae, water, food, sputum, etc. and interpret the relevant test results; and develop communication skills in sharing medical evidence
  - 5.1 Identify relevant specimens and describe the relevant sampling procedures/ techniques, i.e. food, water, soil, plant, etc.
  - 5.2 Demonstrate communication skills in sharing medical facts and disease information with other public health workers and the community at large.

## II. COURSE CONTENTS

### A. History of public health and epidemiology – An overview

1. Definitions of *public health* and *epidemiology*
2. Major achievements of public health
3. Public health and globalization
4. Major uses of epidemiology
5. The role of epidemiology in the broad arena of public health

### B. Demographic data, morbidity and mortality

1. Demographic measures
  - 1.1 Birth/ death registration
  - 1.2 Birth rates
  - 1.3 Death rates, etc.
2. Calculation of morbidity and mortality frequencies
  - 2.1 Morbidity rates: incidence, prevalence
  - 2.2 Mortality rates: IMR; NMR; disease-specific mortality rates, etc.
3. Disease notification system
4. Common infectious diseases
5. Impact of environmental factors on the disease patterns

### C. Microbiology

1. Classification of causative agents
2. Ecology and classification of organisms
3. Mechanism of infections

### D. Common Communicable Diseases

1. Disease etiology
2. Mode of transmission
3. Occurrence patterns and epidemic potential
4. Environmental impact and environmental preventive and control measures of:

- ✓ Bacterial infections
- ✓ Viral infections
- ✓ Parasite infections
- ✓ STIs and HIV/AIDS

#### **E. Disease outbreaks**

1. Chain of infection
2. Disease pattern-related terms:
  - ✓ Endemic
  - ✓ Sporadic
  - ✓ Epidemic/ outbreak
  - ✓ Pandemic
3. Environment and its impact on disease outbreak
4. Transmission of vector-borne diseases
5. Environmental control measures
6. Disease outbreak investigation - environmental aspects

#### **F. Disaster management – actions in emergencies**

1. Environmental implications of disease outbreaks and natural disasters
2. Implementation of environmental preventive measures
3. Control of patients, contacts and the immediate environment in disease outbreaks and natural disasters
4. Sampling specimens, techniques and procedures
5. Sharing and communicating medical evidence and disease information

### **III. TEXTBOOK**

Haymann DL. (2004) Control of Communicable Diseases Manual, 18<sup>th</sup> Edition or most recent edition. American Public Health Association (APHA). (ISBN-13: 978-0875530345)

### **IV. REFERENCE MATERIALS**

1. Bres B. (1986) Public Health Action in Emergencies Caused by Epidemics – A Practical Guide. World Health Organization (WHO), Geneva.
2. Lucas AO., Giles HM. (1984) A Short Textbook of Preventive Medicine for the Tropics, 2<sup>nd</sup> Edition or most recent edition. Hodder Arnold, London. (ISBN-13: 978-0340338186)
3. WHO. (1986) Early Detection of Occupational Diseases. WHO, Geneva.

### **V. REQUIRED COURSE MATERIALS**

Prescribed textbook. Furthermore, perusal of reference materials is encouraged.

### **VI. INSTRUCTIONAL MATERIALS/ EQUIPMENT AND COST FOR THE COLLEGE**

There is no special instructional material/ equipment required for this course.

## VII. METHODS OF INSTRUCTION

1. Lectures: in-class lectures, followed by group discussions and activities relevant to the topics presented.
2. Group presentations: students' presentations on selected readings and group discussion/activities.

## VIII. EVALUATION

A. Grading scheme: there are two components: Formative and Summative Assessment.

☞ **Formative Assessment:** This type of assessment evaluates how students progress in class. With feedback from the Instructor, the student would be able to answer these questions: *Am I doing well in class? What have I missed? What should I concentrate more on?* This assessment will take the form of tests and quizzes, with or without prior notice.

☞ **Summative Assessment:** This type of assessment implies that the marks a student gets contribute towards the final grade. For this course, this assessment consists of the following:

1. **Continuous Assessment (60%):** comprises 1 *written Test*; a *Role-play* session; and a *Learning Portfolio*. Each of these contributes 20% to the total course assessment.

- **Role-play session:**

*A list of selected common infectious diseases occurring in the community that have been discussed in class will be drawn up. On the day of this assessment, each student will be asked to randomly pick up one disease from the list. The student will be given 10 minutes to prepare and 5 minutes to role-play his/her talk on this particular infectious disease on the specific aspects that the course has focused on, notably those of environmental implications.*

- **Learning Portfolio:**

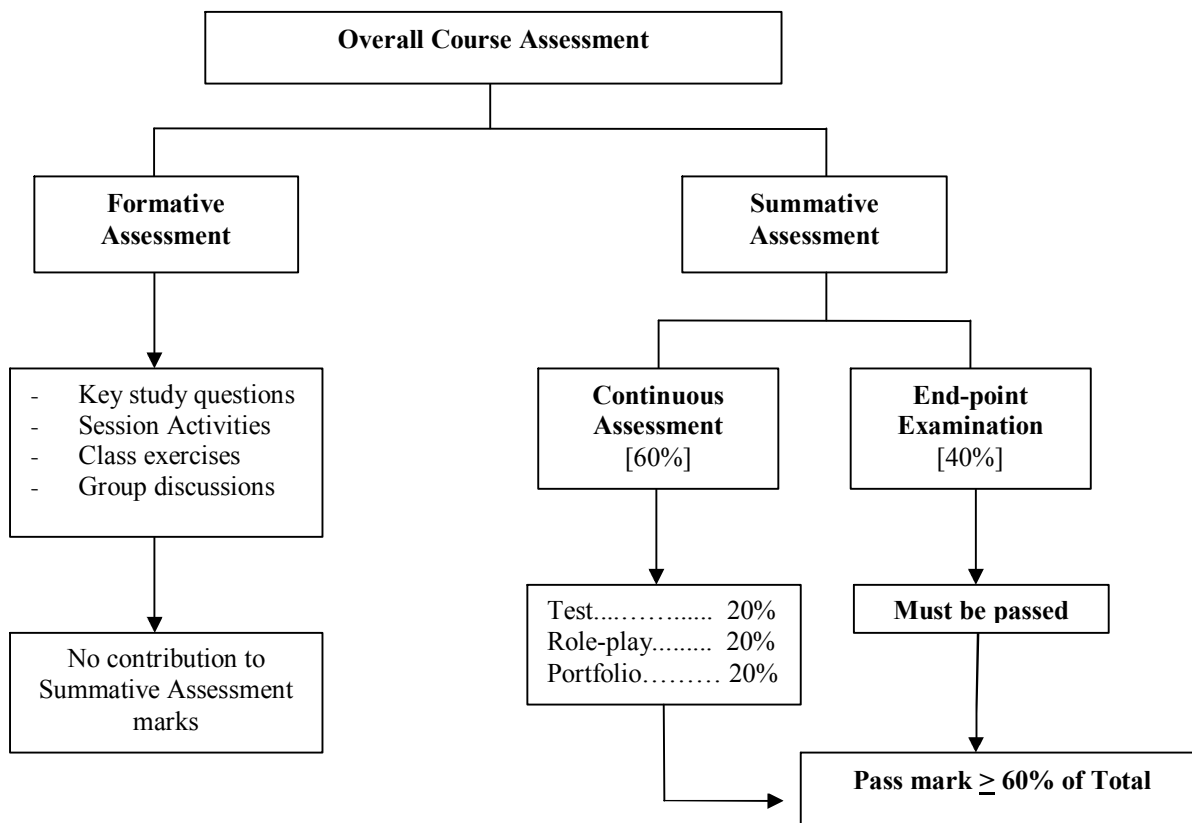
A series of infectious diseases with potential to cause an outbreak in the community has been discussed in this course. This assignment is assigned for students to observe, reflect and articulate what they have learned in class-room and what is happening in reality:

✓ *Identify one infectious disease or condition which you believe may have a potential of causing an outbreak. Describe this disease in terms of its etiology, mode of transmission, observed/ reported disease pattern, its linkage with the environment. Discuss how this disease/ condition could be prevented and controlled, with particular emphases on the environmental aspects.*

✓ *Imagine that the community where you live seems to be experiencing an outbreak of this disease. Supposing that you are an environmental health specialist working at the Department of Health. A team of public health experts has been tasked to investigate this possible disease outbreak. Outline the steps of actions you would take in the investigation and provide justifications for each step.*

2. **Final Exam (40%):** a 3-hour written paper, at the end of the course.

The Assessment is illustrated in the following diagram:



**B. Grading system**

Grade	Percentage	Outcome
A	90-100%	Superior
B	80-89%	Above Average
C	70-79%	Average
D	60-69%	Passing
F	Below 60%	Failure

**IX. CREDIT-BY-EXAMINATION**

None.

**X. ATTENDANCE POLICY**

As per college policy.

**XI. ACADEMIC HONESTY POLICY**

As per college policy.