### MENU A – PUBLIC HEALTH FOCUS AREA COMPETENCIES

#### MPH Competencies

1. Maternal and Child Health
   1. Describe the major domestic and international causes of mortality and morbidity within MCH populations including differences between the United States and other developed and less developed countries.
   2. Explain the normal patterns of individual and family growth and development from an intergenerational and lifespan perspective.
   3. Analyze the determinants of health and illness, and concomitant theories including biological, behavioral and socio-cultural influences such as racism, sexism, and economic disparity, as well as protective factors.
   4. Critically review the characteristics of health care systems, including dimensions of, use of, and access to health care related to MCH.
   5. Describe the principles and theories of population-based health promotion at the individual, family and community levels.
   6. Describe MCH problems in terms of time, magnitude/severity, scope, dispersion/location, and co-occurrence/comorbidity.
   7. Identify the scientific underpinnings and determine the validity of evidence for interventions addressing MCH problems.
   8. Apply knowledge of demographic, health, familial, socio-cultural, environmental and community factors to the design of MCH programs and services.
   9. Critically analyze inequities in health status based on race/ethnicity, socioeconomic position, and gender.
   10. Recognize different strengths, needs, values, and practices of diverse cultural, racial, ethnic, and socioeconomic groups and determine how these factors affect health status, health behaviors, and program design.
   11. Match basic research design, sampling, descriptive and inferential statistics, and validity/reliability assessment of measures to MCH problems.
   12. Apply epidemiological concepts and descriptive epidemiology to MCH problems.
   13. Describe principles and key features of community assessment, program design,

#### Course Examples

**Required**
- PH 5301 MCH Core Training Seminar I
- PH 5311 MCH Core Training Seminar II

**Electives**
- PH 2615 Field Research Methods
- PH 2998 Perinatal Epidemiology
- PH 2998 Nutritional Epidemiology
- PH 2998 Vaccines & Immunization Programs
- PH 2998 Current Child Health Issues
- PH 2998 Ethnicity & Health Care
- PH 2998 Child & Adolescent Health Care
- PH 1113 Advanced Methods for Planning and Implementing Health Promotion Programs
- PH 1120 Introduction to Program Evaluation
- PH 1239 Theories of Child and Adolescent Development
- PH 1240 Mental Health of Children & Adolescents
- PH 1418 Practice in Health Behavior Change
- PH 1423 Society and Health
- PH 1498 Current Topics in Obesity
14. Prepare and interpret data from vital statistics, censuses, surveys, service utilization, and other relevant reports on the health of MCH populations, and have the ability to detect meaningful inferences from data and the translation of data into information.
15. Apply appropriate qualitative methods to understand maternal and child health status.
16. Identify essential gaps in existing MCH programs and implement appropriate policy and advocacy measures to assure optimal care.
17. Identify public health laws, regulations, and policies related to specific programs.
18. Place a maternal and child health program within the historical and current context of related programs.
19. Collect and summarize data relevant to a particular policy/problem; articulate the health, fiscal, administrative, legal, social, and political implications of each policy option.
20. State the feasibility and expected outcomes of and barriers to achieving each policy option and decide on the appropriate course of action.
21. Write a clear and concise policy statement, position paper, and/or testimony appropriate for a specific audience.

### Health Disparities

1. Describe health problems that demonstrate differences in incidence, prevalence, severity or burden between population groups.
2. Describe the possible social, environmental and other causes of disparities.
3. Apply behavioral and social sciences theory in understanding health disparities and causation.
4. Describe empirical findings that suggest causes for selected health disparities.
5. Use a variety of methods that have been shown to be effective tools for studying health disparities.
6. Engage community participants in the conduct of health disparities research.
7. Apply an understanding of health disparities to the development and testing of health promotion and policy interventions.
8. Engage community participants in the development of interventions.

### Nutrition & Physical Activity
- PH 1498 Seminar in Child and Adolescent Health
- PH 3640 Community-Based Health Assessment
- PH 3730 Health Program Planning, Implementation & Evaluation
- PH 3922 Economic & Social Determinants of Health
- PH 3998 Obesity & Public Health

### Required

* must complete at least two courses among following three courses plus one semester of the Health Disparities Core Seminar.

- PH 3922 Economic and Social Determinants of Health
- PH 1498 Disparities in America
- PH 5101 Disparities in Health in America: Working Toward Social Change
- PH 5102 Health Disparities Core Seminar (1 semester)

### Electives

- PH 1350 Ethnicity, Race, Class & Gender: A Multicultural Public Health Perspective
- PH 1423 Society and Health

July 7, 2013
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<thead>
<tr>
<th>Course Code</th>
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<td>PH 1424</td>
<td>Social Epidemiology / Social Justice</td>
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<td>PH 2998</td>
<td>Global Cancer Epidemiology</td>
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<tr>
<td>PH 3640</td>
<td>Community-based Health Assessment</td>
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<td>PH 3998</td>
<td>Demographic Methods for Public Health Practitioners</td>
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<td>PH 1260</td>
<td>Chicano/Mexican American Health: Exploring Its Social Dimensions</td>
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<td>PH 3998</td>
<td>Federal Healthcare Programs</td>
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<td>PH 1237</td>
<td>Obesity, Nutrition, and Physical Activity Practice</td>
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<td>PH 2740</td>
<td>Cardiovascular Disease Epidemiology and Prevention</td>
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<td>PH 3810</td>
<td>Health Policy in the United States</td>
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<td>PH 3998</td>
<td>Healthcare Payment Systems and Policy</td>
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<td>PH 3818</td>
<td>Texas Health Policy: Emerging Issues and New Approaches</td>
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<td>PH 2998</td>
<td>Injury Epidemiology</td>
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<tr>
<td>PH 3920</td>
<td>Health Services Delivery and Performance</td>
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<tr>
<td>PH 1230</td>
<td>Public Health Nutrition Practice</td>
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<tr>
<td>PH 2498</td>
<td>Contemporary Issues in Environmental and Occupational Health</td>
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<td>PH 2190</td>
<td>Environmental and Occupational Health Policy</td>
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<tr>
<td>PH 3998</td>
<td>US-Mexico Border Health</td>
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3. Leadership

1. Demonstrate the attributes of leadership in public health.
2. Describe alternative strategies for collaboration and partnership among organizations focused on public health goals.
3. Articulate an achievable mission set of core values and vision;
4. Engage in dialogue and learning from others to advance public health goals;
5. Demonstrate team building, negotiation and conflict management skills;
6. Demonstrate transparency, integrity and honesty in all actions;
7. Use collaborative methods for achieving organizational and community health goals;
8. Apply social justice and human rights principles when addressing community needs;
9. Develop strategies to motivate others for collaborative problem solving, decision-making and evaluation.

Issues
PH 3998 Demographic Data for Public Health Professionals
PH 1498 Behavioral Journalism: Theory, History, and Application
PH 1498 Disability and Public Health
PH 1113 Advanced Methods for Planning and Implementing Health Promotion Programs
PH 1225 Contemporary Social and Cultural Theory
PHW 2998 Epidemiology of Race and Health Disparities

Required
PH 5200 Foundations of Leadership in Public Health
PH 5210 Selected Readings in Leadership Studies

Electives
PHD 3950 Advanced Leadership Studies in Public Health
PH 5298 Special Topics in Leadership Studies
PH 5298 Practical Skills for the Public Health Professional
PHD 1320 Ethics and Health Care
PH 1325 Research Ethics for Public Health
PH 1426 Social Epidemiology and Social Justice
PH 1423 Society and Health
PH 1350 Ethnicity, Race, Class & Gender: A Multicultural Public Health Perspective
4. Global Health

1. Evaluate the integrity and comparability of different data sources, identify information gaps, and determine the appropriate uses and limitations of available information.
2. Integrate, explain and present complex health conditions, including emerging diseases, in relation to their global context.
3. Analyze health and development policy processes and outcomes at national and international levels and recognize the role of national and international bodies in shaping those processes.
4. Appraise and contrast the impact of context and culture in identifying, preventing and treating different health conditions.
5. Apply ethical principles to the collection of data, the use of information, and to the development of partnerships, programs and policies for culturally diverse communities and minority populations.
6. Analyze health systems, recognize the contributions of the different interest groups in their design and evolution, appraise how they have been affected by shifts in the domestic and global context, and recognize how all those factors may influence their future.
7. Apply development theories and public health concepts to policy development and analysis.
## 5. Infectious Disease

1. Describe the epidemiologic aspects of infectious diseases including incidence, distribution, and pattern of disease occurrence as well as different modes of transmission and associated risk factors.

2. Analyze the importance of surveillance systems in detecting epidemics.

3. Apply epidemiological methods to determine the risk and associated factors, and the significance of prevention and control programs for infectious diseases.

4. Describe the pathophysiology of infectious diseases from various organisms including viruses, bacteria, and parasites.

5. Describe select infectious diseases including routes of exposure, relationships between environmental factors and disease vectors, and methods of prevention.

6. Analyze the effect of globalization and environmental changes on disease distribution including newly emerging and reemerging diseases in Texas, the USA, and worldwide.

7. Explain mechanisms of action and pathophysiology of infectious agents potentially useful in biological terrorism or warfare as well as strategies to prevent widespread exposures.

8. Describe the typical pathophysiology of hospital borne infections, incidence of specific infectious diseases by medical procedure, and infectious disease prevention strategies in a hospital setting.

9. Describe and analyze social and medical problems faced by patients and persons with HIV infections.

10. Develop a study design to conduct a study in infectious disease.

### Required
- PH 2285 Topics in Infectious Disease

### Electives
- PH 2280 Environmental Microbiology
- PH 2290 Immunology
- PHD 2712 Experimental Methods in Epidemiology
- PH 2730 Epidemiology and Control of Infectious Disease
- PH 2731 Genetics and Infectious Diseases
- PHD 2790 Biological Basis of Emerging Disease
- PH 2800 Tropical Infectious Diseases
- PH 2805 Medical Microbiology
- PH 2807 Molecular Principles of Virology
- PH 2998 Special Topics - Vaccines and Immunization
11. Critically read and evaluate scientific reports on infectious diseases

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<tr>
<th>PH 2998 Special Topics - Infectious Disease Journal Club</th>
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### 6. Cancer

1. Describe both basis and emerging concepts in cancer epidemiology.
2. Define and critically evaluate basic methodologies and study designs for cancer epidemiology.
3. Interpret results of data analyses in epidemiologic studies of cancer.
4. Evaluate study biases in epidemiologic studies of cancer.
5. Describe different cancer types including incidence, prevalence, treatment and survival trends.
6. Define genetic factors that alter biochemical and cellular pathways leading to human disease including cancer.
7. Integrate genetic processes at multiple levels (chromosomes, genes, nucleotides) for understanding of human genetic disease.
8. Describe various approaches to cancer prevention and control including screening.
9. Explain the rationale for current screening recommendations, lack of recommendations and changes in recommendations.
10. Describe the nature of interrelationships among risk assessment, risk management, and risk communication including cancer related risks.
11. Know the current methods used to analyze risk, and understand the complexities and challenges of analyzing health risks.

| Required |
| PHM 2135 Risk Analysis - Principles and Practice |
| PH 2745 Cancer Epidemiology |

**Electives**

- PHD 2820 Molecular and Cellular Approaches to Human Genetics
- PH 2998 Special Topics – Cancer Screening
- PH 2998 Special Topics – Global Cancer Epidemiology

### 7. Obesity Prevention/Physical Activity and Health

1. Synthesize published reports to explain how individual, cultural, environmental and socioeconomic factors interact to affect the food intake and nutritional status of individuals and populations.
2. Identify the major theories for behavioral approaches to nutrition-related health promotion, disease prevention and disease control.
3. Discuss the national, state, and local public health laws, regulations, and policies related to community nutrition health problems.
4. Communicate public health nutrition concepts clearly in oral and written form.

| Required |
| PH 5400 Physical Activity Assessment and Surveillance |
| PH 5401 Physical Activity and Public Health Practice |

**Electives**

- PH 1235 Social and Behavioral Aspects of Physical Activity and Public Health
5. Present the relationships between physical activity and health.
7. Discuss factors that influence levels of physical activity.
8. Compare the theory-based approaches of physical activity research.
10. Summarize, analyze and critique current research in physical activity and public health practice.
11. Clearly articulate concepts of development, implementation and evaluation of physical activity and public health programming.

| PH 2735 Physical Activity and Health: Epidemiology and Mechanisms |
| PH 1498 Disability and Public Health |
| PH 1237 Physical Activity, Nutrition and Obesity Seminar (1 semester) |
| PH 2998 Physical Activity and Public Health Seminar (1 semester) |
| PHD 2770 NIH Proposal Development |
| PH 2615 Epidemiology II |
| PHM 1113 Intervention Mapping |
| PH 9999 Independent Study |
| PH 5301 and PH 5311 Maternal and Child Health Core Training Seminar 1 and 2 |

### 8. Translational Sciences

1. Analyze barriers to translation relevant to one’s area of research.
2. Design research with considerations of translation and dissemination.
3. Identify translational research questions at T1, T2 and T3 that can be answered by methods from the public health disciplines.
4. Engage relevant stakeholders in the research process generation of new innovation-expect community of public and practitioners.
5. Design and write protocol for a research study in one’s area of research that includes plans for translational steps and external validity.
6. Design and write protocol for clinical/translational research study

### Electives

- PHM 2101 Contemporary Issues in Environmental and Occupational Health
- PHD 2101 Contemporary Issues in Environmental and Occupational Health

### 9. Genetics

1. Define genetic factors that alter biochemical and cellular pathways leading to human disease.
2. Integrate genetic processes at multiple levels (chromosomes, genes, nucleotides) for understanding of human genetic disease.
3. Describe the extent of genetic variation and how such variation can be recognized and

### Required

- PHD 2820 Molecular and Cellular Approaches to Human Genetics
- PH 2950 Genetic Epidemiology of Chronic Disease
- PH 2830 – Clinical Genetics in Epidemiology

July 7, 2013
4. Describe how genetic variation can be used in the context of forensics.
5. Analyze the implications of interactions of environmental factors with genetic background including pharmaceutical by gene interactions in the context of public health.
6. Explain how genetic variation can contribute to susceptibility to cancer.
7. Explain how genetic variation can contribute to metabolic chronic disease including type 1 and type 2 diabetes and obesity.
8. Explain how genetic variation can contribute to cardiovascular-related traits including atherosclerosis, hypertension, and coronary artery disease.
9. Explain the contribution of genetic variation to behavioral/mental health traits.
10. Relate concepts and principals of biology to medical genetics including biological molecules; cells and chromosomes; Mendelian inheritance; DNA, RNA and proteins; and human evolution.
11. Describe the types and causes of human inherited diseases, including chromosomal abnormalities and single-gene mutations.
12. Describe congenital anomalies and their relation to inherit versus environmental causes.
13. Explain factors which complicate “simple” Mendelian diseases, such as imprinting and epigenetics.

### Electives
- PH 1982 Evolution of DNA and Protein Sequences
- PH 1984 Population Genetics
- PH 1986 Statistical Genetics
- PH 1998 Special Topics – Monte Carlo Approach in Statistics and Genetics
- PH 1998 Special Topics – Data Mining in Genetic Epidemiology
- PH 2731 Genetics and Infectious Diseases
- PHD 2815 Genetics and Human Disease
- PH 2850 Genetic Epidemiology: Association Studies
- PH 2960 Seminar in Genetics and Population Biology
- PH 2970 Foundations of Public Health Genetics

### Required
- PH 1980 Introduction to Genomics and Bioinformatics

### Electives
- HI 5310 Foundations of Health Information Sciences I
- HI 5380 Principles and Foundation of Public Health Informatics
### MENU B – DISCIPLINE AND MAJOR COMPETENCIES

#### 1. Biostatistics

1. Describe the roles biostatistics plays in the discipline of public health.
2. Apply basic statistical methods for summarizing public health data and for inference.
3. Interpret and present results from the application of basic statistical techniques.
4. Distinguish among the different measurement scales and, based on these distinctions, recognize the implications for selecting appropriate statistical methods.
5. Apply descriptive techniques commonly used to summarize public health data.
6. Recognize concepts of probability, random variation, and commonly used statistical probability distributions.
7. Apply common statistical methods for inference, including estimation, confidence intervals, and hypothesis testing.
8. Use appropriate statistical software and make proper interpretations based on the output.
9. Describe preferred methodological alternatives to commonly used statistical methods when assumptions are not met.
10. Develop written presentations based on statistical analyses for both public health professionals and educated lay audiences.
11. Apply basic informatics techniques with vital statistics and public health records to describe public health characteristics and public health research and evaluation.

#### 2. Epidemiology

1. Identify key sources of data for epidemiologic purposes.
2. Identify the principles and limitations of public health screening programs.
3. Describe a public health problem in terms of magnitude, person, time, and place.
4. Explain the importance of epidemiology to inform scientific, ethical, economic, and political discussion of health issues.
5. Comprehend basic ethical and legal principles pertaining to the collection, maintenance, use and dissemination of epidemiologic data.
6. Apply basic epidemiologic concepts, definitions and study design to public health practice and research.

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See Degree Planner for Major Courses

Students select from degree planner for year in which they matriculated.

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July 7, 2013
7. Calculate basic epidemiologic measures.
8. Communicate epidemiologic information to lay and professional audiences.
9. Draw appropriate inferences from epidemiologic data.
10. Evaluate the strengths and limitations of epidemiologic reports

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<thead>
<tr>
<th>3. Environmental Sciences and Occupational Health</th>
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<tbody>
<tr>
<td>1. Describe environmental health hazards, propose strategies for their prevention and/or control, and describe gaps in knowledge and in the approaches to solving environmental health problems.</td>
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<td>2. Describe how gaps in knowledge impact approaches to solving environmental health problems.</td>
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<tr>
<td>3. Implement strategies for mitigating environmental health risks.</td>
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<td>4. Describe and evaluate approaches for assessing and mitigating environmental problems.</td>
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<td>5. Recognize the multiplicity of factors involved with solving environmental problems.</td>
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<td>6. In collaboration with or under the supervision of senior-level scientists or administrators, identify an important environmental health problem, carry out a study to address the problem, and draw conclusions from the results.</td>
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<td>7. Identify an important environmental health problem for further research.</td>
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<td>8. Participate in a study that addresses an environmental health problem.</td>
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<td>9. Prepare a summary of a research study.</td>
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<td>10. Recognize the processes by which policies are developed to regulate environmental hazards</td>
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<td>11. Describe regulatory programs and legislative authorities that deal with environmental health issues at the local, state, federal, and international levels.</td>
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<td>12. Point to the effectiveness of regulatory programs and policies.</td>
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<td>13. Communicate effectively about environmental health hazards and strategies for mitigating risks.</td>
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<td>14. Locate, organize and synthesize information in the peer-reviewed literature and from other sources related to environmental health sciences.</td>
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<td>15. Prepare reports and make oral presentations.</td>
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<td>16. Explain approaches to risk management and risk communication.</td>
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<td>17. Interact effectively with persons from diverse backgrounds.</td>
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4. Health Promotion

| See Degree Planner for Major Courses |

Students select from degree planner for year in which they matriculated
### Needs Assessment
1. Obtain data regarding health and quality of life and their determinants, including behavioral, psychological, social, cultural, and environmental factors.
2. Obtain data regarding community resources and strengths.
3. Apply results of both qualitative and quantitative research studies to needs assessment.
4. Apply theories commonly used in health promotion to understand health risks and to plan health promotion interventions.
5. Involve members of the community in community assessment, health promotion intervention planning, implementation, and evaluation activities.
6. Formulate appropriate and measurable program objectives including change in health, quality of life, behavior, environment, psychosocial and other determinants, and policy.

### Program Planning
7. Plan for adoption, implementation, maintenance and sustainability of health promotion programs.
8. Implement programs including facilitation of cooperation among levels of agency personnel and community-based organizations in service of health promotion programs.
9. Use theory and evidence to develop health promotion programs.
10. Develop programs that focus on both environmental and behavioral causes of health programs.

### Evaluation
11. Develop policy supportive of health promotion.
12. Describe the program to be evaluated.
13. Monitor and evaluate the program implementation process, adjusting objectives and activities as necessary. Perform impact/outcome/effectiveness evaluation.
14. Interpret the results of the program evaluation.
15. Interpret and respond to requests for health information from lay audiences.

### 5. Management and Policy Sciences/Health Services Organization
1. Evaluate the policy-making process to achieve health status improvement of populations.
2. Identify the main components of the organization and delivery of personal and public health services in the United States.
3. Use data for public and private health policy analysis.
4. Explain systems approach for addressing organizational problems as well as community and public health issues.
5. Apply analytical methods and processes of quality assessment and improvement for analysis of health policy and management issues.
7. Apply equity principles and methods for analysis of equity of private and public health services policy and management issues.
8. Apply alternative analytic frameworks to evaluate specific health policy proposals.

<table>
<thead>
<tr>
<th>6. Management and Policy Sciences/Community Health Practice</th>
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<tbody>
<tr>
<td>1. Identify and explain the determinants of individual and population health.</td>
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<td>2. Identify and explain the core functions and essential services of public health.</td>
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<td>3. Identify leadership aspects of public health research and practice programs.</td>
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<td>4. Explain the concept of the public health “system”, identify its components and describe their interactions.</td>
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<td>5. Assess health-related needs and assets/resources present in a community</td>
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<td>6. Demonstrate comprehension of the principles and methods of community health program design, implementation and evaluation</td>
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<td>7. Communicate public health concepts and proposals clearly.</td>
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<td>8. Demonstrate effective collaboration and leadership.</td>
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<td>9. Describe the significance of leadership in advancing public health policies and programs with community partners.</td>
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<thead>
<tr>
<th>7. Management and Policy Sciences/Management</th>
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<tr>
<td>1. Describe and analyze the public health industry, including the legal, regulatory, clinical, financial, quality, and economic domains.</td>
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<td>2. Integrate the multidisciplinary managerial (e.g., quality, marketing, operations) and public health (e.g., biostatistics, epidemiology) functions within the health delivery system.</td>
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<td>3. Maintain and develop relationships/processes with the different components in the health delivery system/value chain (e.g., physicians, vendors, payers/insurers).</td>
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<td>4. Develop a vision, or destination, for the organization and the community.</td>
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<td>5. Communicate and articulate an organization’s vision, internally and externally, to</td>
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<td>Stakeholders</td>
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