

## **RESOLUTION TO APPROVE BACHELOR OF SCIENCE DEGREE IN PUBLIC HEALTH**

Documents included:

1. Resolution to Establish Bachelor of Science Degree in Public Health
2. Supporting Documentation- Bachelor of Science Degree in Public Health

## **RESOLUTION TO APPROVE BACHELOR OF SCIENCE DEGREE IN PUBLIC HEALTH**

**WHEREAS**, individual and community health problems can be ameliorated through implementation of public health core responsibilities and essential services; and

**WHEREAS**, the Institute of Medicine (now the Health and Medicine Division of the National Academies of Sciences, Engineering, and Medicine) sees a public health trained workforce as an important component in helping the United States close gaps in health outcomes; and

**WHEREAS**, the Centers for Disease Control and Prevention reports that serious public health workforce shortages exist; and

**WHEREAS**, there is currently no accredited Bachelor of Science in Public Health degree offered at other higher education institutions in Virginia; and

**WHEREAS**, Virginia Tech is advancing health sciences curricula, research, and majors; and

**WHEREAS**, the undergraduate demand for a Bachelor of Science in Public Health degree is sizable; and

**WHEREAS**, a Master of Public Health degree, accredited by the Council on Education for Public Health (CEPH), is currently offered by the Department of Population Health Sciences in the Virginia-Maryland College of Veterinary Medicine; and

**WHEREAS**, the Bachelor of Science in Public Health, to be offered in the Department of Population Health Science in the Virginia-Maryland College of Veterinary Medicine, would be added to the CEPH accreditation of the Public Health Program;

**THEREFORE BE IT RESOLVED** that the Bachelor of Science in Public Health be approved effective fall 2018 and the proposal forwarded to the President, the Board of Visitors, and the State Council of Higher Education for Virginia (SCHEV) for approval, and to the Southern Association of Colleges and Schools (SACS) for notification.

### **RECOMMENDATION:**

That the above resolution recommending the establishment of the Bachelor of Science in Public Health be approved, pending the approval by the State Council of Higher Education for Virginia and notification to the Southern Association of Colleges and Schools (SACS) for notification.

November 6, 2017

## Virginia Tech Degree Proposal

### Bachelor of Science in Public Health (BSPH)

CIP: 51.2201

Type of degree action: New

#### Program Background

Health is defined as “a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity” (<http://www.who.int/aboutwho/en/definition.html>). Public health is “the science and art of promoting health, preventing disease, and prolonging life through the organized efforts of society” ([http://whqlibdoc.who.int/hq/1998/WHO\\_HPR\\_HEP\\_98.1.pdf](http://whqlibdoc.who.int/hq/1998/WHO_HPR_HEP_98.1.pdf)). The United States spends more than any developed country on health care and yet U.S. health outcomes are inferior to countries which spend much less. In fact, the U.S. health care system is ranked 37<sup>th</sup> internationally (<http://thepatientfactor.com/canadian-health-care-information/world-health-organizations-ranking-of-the-worlds-health-systems/>). Within the U.S., public health outcomes vary widely (<http://www.americashealthrankings.org/explore/2015-annual-report>) with Virginia ranked as 21, while other nearby states rank even lower (N. Carolina, 31; Tennessee, 43; Kentucky, 44; W. Virginia, 47). In response to concerns about public health, the U.S. Office of the Assistant Secretary for Health, Health and Human Services (HHS) recently released ‘Public Health 3.0’, A Call to Action to Create a 21<sup>st</sup> Century Public Health Infrastructure (<https://www.healthypeople.gov/sites/default/files/Public-Health-3.0-White-Paper.pdf>). This report concludes that “the public health workforce must acquire and strengthen its knowledge base, skills, and tools in order to meet the evolving challenges to population health, to be skilled at building strategic partnerships to bring about collective impact, to harness the power of new types of data, and to think and act in systems perspective. This will require a strong pipeline into the public health workforce, as well as access to ongoing training and mid-career professional development resources”. The Centers for Disease Control and Prevention (CDC) also notes that “serious public health workforce shortages exist in disciplines that perform surveillance functions and these shortages limit the nation’s capacity and plans for enhancement” (Drehobl, 2012). The Institute of Medicine, a strong supporter of public health, sees a public health trained workforce as an important component in helping the United States close gaps in health outcomes. In their 2012 report, *For the Public’s Health* ([https://www.nationalacademies.org/hmd/~media/Files/Report%20Files/2012/For-the-Publics-Health/phfunding\\_rb.pdf](https://www.nationalacademies.org/hmd/~media/Files/Report%20Files/2012/For-the-Publics-Health/phfunding_rb.pdf)), the IOM highlights the types of skills that will be needed for this effort: “Public health departments can play several crucial roles in helping the nation reach these goals. In the past, public health has leveraged many partners to control — and even vanquish — infectious diseases through effective prevention strategies, sharply diminish environmental lead exposures, and nearly halve tobacco use. Today, public health departments can continue to bring together partners to assess community needs, and to plan and implement activities intended to meet key challenges in the areas of chronic disease, injury, emerging infectious diseases, mental health, and environmental health.”

Virginia Tech currently offers an accredited Master of Public Health (MPH) degree as well as a number of undergraduate courses with public health relevance. However, there is no undergraduate program at Virginia Tech that addresses all the Council on Education for Public Health (CEPH) Bachelor of Science in Public Health (BSPH) accreditation criteria. CEPH accreditation criteria is focused on

providing students with the skills and expertise necessary to join the public health workforce or to prepare for graduate programs in public health and allied fields.

The Department of Population Health Sciences in the Virginia Maryland College of Veterinary Medicine is requesting approval to offer a Bachelor of Science in Public Health (BSPH) degree beginning Fall, 2018. No other Commonwealth university offers the BSPH degree.

The overall undergraduate curriculum introduces students to foundations of scientific knowledge including the biological and life sciences and the concepts of health and disease; foundations of social and behavioral sciences; public health data analytics; biostatistics; epidemiology; environmental health; health behavior; and health policy and administration. More specifically, the following content will be covered:

- *The history and philosophy of public health as well as the core values, concepts, and functions across the globe and in society;*
- *The basic concepts, methods, and tools of public health data collection, use and analysis and why evidence-based approaches are an essential part of public health practice;*
- *The concepts of population health, and the basic processes, approaches and interventions that identify and address the major health-related needs and concerns of populations;*
- *The underlying science of human health and disease, including opportunities for promoting and protecting health across the life course;*
- *The socioeconomic, behavioral, biological, environmental and other factors that impact human health and contribute to health disparities;*
- *The fundamental concepts and features of project implementation, including planning, assessment and evaluation;*
- *The fundamental characteristics and organizational structures of the US health system as well as the differences between systems in other countries;*
- *Basic concepts of legal, ethical, economic, and regulatory dimensions of health care and public health policy and the roles, influences, and responsibilities of the different agencies and branches of government;*
- *Basic concepts of public health-specific communication, including technical and professional writing and the use of mass media and electronic technology.*
- *Ability to communicate public health information, in both oral and written forms, through a variety of media and to diverse populations;*
- *The ability to locate, use, evaluate and synthesize public health information.*

### Mission

The mission of the BSPH program is to prepare graduates for placement directly into the public health workforce or into graduate programs in public health and allied fields. The BSPH program will be grounded in a One Health model which involves the human-animal-environmental health interface and provides experiential learning and professional preparation in the core and concentration competencies, functions and responsibilities of public health.

Faculty and students will serve community needs through development of mutually beneficial partnerships with communities, local health departments, medical and veterinary organizations, community-based organizations, other public health and private institutions to improve local, state, regional, national and global public health, contribute to workforce development and advance One Health.

### Online Delivery

Currently two of the core courses are available online and while some general education and elective courses may be online the intent is to offer this program face-to-face.

### Accreditation

The Department of Population Health Sciences in the Virginia Maryland College of Veterinary Medicine has a CEPH accredited Public Health Program which currently operates the Master of Public Health (MPH) degree. The BSPH program will stand for accreditation under the current Public Health Program accreditation.

### Advisory Board

The current Public Health External Advisory Board includes representatives from public health-affiliated agencies, institutions, associations and corporations. This Board will oversee both the BSPH and MPH programs.

Charge -- The External Advisory Board offers an external perspective on all aspects of the program. Specifically, the Advisory Board:

- Represents important health stakeholders in the region and beyond;
- Advises program leaders on issues related to program accreditation;
- Lends advice on sound financial practices the program should follow to be self-supporting;
- Helps identify relevant funding opportunities; and
- Assists in networking and student field placement; and
- Assists in promoting the program.

### Advisory Board Members

- John Dreyzehner, MD, MPH; Chair Commissioner of Health, Tennessee Former Director, Cumberland Plateau Health District Virginia Department of Health
- Nathaniel L. (N.L.) Bishop, M.S.Ed, D.Min. President, Jefferson College of Health Sciences Chair of Department of Interprofessionalism VTCSOM
- Ben Davenport, Jr.; Chairman, Davenport Energy & First Piedmont Corporation
- Katherine Feldman, DVM, MPH, DACVPM State Public Health Veterinarian Maryland Department of Health and Mental Hygiene
- Bill Gruchow, PhD; Professor, Department of Public Health Education University of North Carolina at Greensboro
- Andy Morikawa Executive Director Emeritus (retired 2011) Community Foundation of The New River Valley
- Molly O'Dell, MD, MFA, Director, New River Health District Virginia Department of Health

- Tracy Wilkins, PhD President, Techlab

### Admission Criteria

Undergraduates will have the opportunity to be admitted directly into the BSPH program as a part of their Virginia Tech application. Virginia Tech requires all entering freshmen to have completed:

- 18 units of high-school course work;
- 4 units of English;
- 3 units of math that includes a minimum of algebra I and II and geometry;
- 2 units of laboratory science;
- 2 units of social science one of which must be history;
- 3 additional academic units (foreign language is recommended);
- 4 elective units.

In addition, undergraduates may internally transfer into the BSPH program. There are no special admission requirements.

### Goals of the Bachelor of Science in Public Health

Prepare students who:

- (1) Demonstrate proficiency in implementing the public health core responsibilities and essential services;
- (2) Apply public health analytics to identifying and addressing public health problems;
- (3) Demonstrate public health workforce readiness.

### Target Population

Seniors in Virginia high schools and in the Central Appalachian Region who are interested in attending Virginia Tech and majoring in public health is the target population for the BSPH.

### BSPH Curriculum

The BSPH is a 120-hour degree program that includes 42 Pathways credits, 39 Public Health Core Requirements, and 39 Credits that are open for options such as an additional approved major or minors. This structure provides the student with the flexibility to complete coursework that is centrally related to their academic/career interests. Examples of what this structure would look like in practice could be a double majoring in Public Health and Computational Modeling and Data Analytics (or vice versa); Public Health and Biological Sciences (or vice versa); Public Health and Human Development (or vice versa); Public Health and Human, Nutrition, Foods and Exercise (or vice versa); and Public Health and Engineering (or vice versa). Instead of a double major students could complete approved university minors or pathways minors as a part of the 39 credits. The structure of this degree program is congruent to both the direction of Virginia Tech in terms of a university without borders and the emphasis SCHEV has placed on degree programs that are less prescriptive and maximize student choice.

The requirements of the BSPH and a semester by semester checklist follows. Letters of support for Pathways courses, BSPH Core Courses, and the BSPH Degree can be found in Appendices A, B, and C respectively.

Bachelor of Science in Public Health (BSPH) Curriculum  
(Note: Course Support Letters can be found at the end of the proposal)

**Pathways General Education Courses (Total: 42 Credits)**

Discourse (9 credits)

- ENGL 1105 First-Year Writing (3 credits)
- ENGL 1106 First-Year Writing (3 credits)
- Chose Advanced Course (2000+) (3 credits)

Critical Thinking in the Humanities (6 credits)

- Choose Humanities Course (3credits)
- Choose Humanities Course (3 credits)

Reasoning in the Social Sciences (6 credits)

- PSYC 1004 Introductory Psychology (3 credits)
- SOC 1004 Introductory Sociology (3 credits)

Reasoning in the Natural Sciences (6 credits)

- BIOL 1105 Principles of Biology (3 credits)
- BIOL 1106 Principles of Biology (3 credits)

Quantitative and Computational Thinking (9 credits)

- MATH 1014 Precalculus with Transcendental Functions(3 credits)
- STAT 3615 Biological Statistics (3 credits)
- Choose Advanced Course (2000+) (3 credits)

Critique and Practice in Design and the Arts (6 credits)

- Choose Art Course or Integrated Art/Design Course (3 credits)
- Choose Design Course or Integrated Art/Design Course (3 credits)

**Public Health Core Requirements (Total 39 Credits)**

- HNFE 1004: Human Nutrition, Foods, and Exercise (3 credits)
- PHS 1514 Personal Health (3 credits)
- PHS 2004 Introduction to Public Health (3 credits)
- HNFE 2664 Behavioral Nutrition and Physical Activity (3 credits)
- PHS 3014 Introduction to Environmental Health (3 credits)
- PHS 3534 Drug Education (3 credits)
- HNFE 3634 Epidemiological Concepts of Health and Disease (3 credits)
- PHS 4044 Public Health Policy and Administration (3 credits, Junior Standing)
- PHS 4054 Concepts in One Health (3 credits, Junior Standing)
- PHS 4064 Modeling Infectious Diseases (3 credits, Junior Standing)
- PHS 4074 Practicum in Public Health (3 credits, Senior Standing)
- COMM 4324 Issues in Health Communication (3 credits, Junior Standing)
- SOC 4704 Medical Sociology (3 credits, Junior Standing)

**Additional Major/Minor/Free Electives 39 credits**

**Total: 120 Credits**

Virginia-Maryland Regional College of Veterinary Medicine  
 Department of Population Health Sciences  
 Bachelor of Science in Public Health  
 Major in Public Health  
 For Students Graduating in Calendar Year 2022

<b>Fall Semester Freshman 2018</b>	<b>Credits</b>		<b>Spring Semester Freshman 2019</b>	<b>Credits</b>
ENGL 1105 First-Year Writing (Discourse)	3		ENGL 1106 First-Year Writing (Discourse)	3
PSYC 1004 Introductory Psychology (Reasoning Social Sciences)	3		SOC 1004 Introductory Sociology (Reasoning Social Sciences)	3
BIOL 1105 Principles of Biology (Reasoning Natural Sciences)	3		BIOL 1106 Principles of Biology (Reasoning Natural Sciences)	3
MATH 1014 Precalculus with Transcendental Functions (Quantitative and Computational Thinking)	3		Free Elective Course	3
Free Elective Course	3		PHS 1514 Personal Health <sup>1</sup>	3
<b>TOTAL</b>	<b>15</b>		<b>TOTAL</b>	<b>15</b>
<b>Fall Semester Sophomore 2019</b>	<b>Credits</b>		<b>Spring Semester Sophomore 2020</b>	<b>Credits</b>
Critical Thinking in the Humanities Course (Choose Humanities Course)	3		Critical Thinking in the Humanities Course (Choose Humanities Course)	3
Critical and Practice in Design and the Arts Course (Choose Art or Design Course or Art/Design Course)	3		Advanced Quantitative and Computational Thinking Course	3
Advanced Discourse Class Choose Advanced Course (2000+)	3		PHS 2004 Introduction to Public Health <sup>1</sup>	3
HNFE 1004 Human Nutrition, Foods and Exercise <sup>1</sup>	3		Free Elective Course	3
HNFE 2664 Behavioral Nutrition and Physical Activity <sup>1</sup>	3		Critical and Practice in Design and the Arts Course (Choose Art or Design Course or Art/Design Course)	3
<b>TOTAL</b>	<b>15</b>		<b>TOTAL</b>	<b>15</b>
<b>Fall Semester Junior 2020</b>	<b>Credits</b>		<b>Spring Semester Junior 2021</b>	<b>Credits</b>
PHS 3534 Drug Education <sup>1</sup>	3		STAT 3615 Biological Statistics (Quantitative and Computational Thinking)	3
Free Elective Course	3		PHS 3014 Introduction to Environmental Health <sup>1</sup>	3
Free Elective Course	3		PHS 4044 Public Health Policy and Administration <sup>1</sup> (Junior Standing)	3
Free Elective Course	3		Free Elective Course	3
HNFE 3634 Epidemiological Concepts of Health and Disease <sup>1</sup>	3		Free Elective Course	3
<b>TOTAL</b>	<b>15</b>		<b>TOTAL</b>	<b>15</b>



Virginia-Maryland Regional College of Veterinary Medicine  
 Department of Population Health Sciences  
 Bachelor of Science in Public Health  
 Major in Public Health  
 For Students Graduating in Calendar Year 2022

<b>Fall Semester Senior 2021</b>	<b>Credits</b>		<b>Spring Semester Senior 2022</b>	<b>Credits</b>
PHS 4054 Concepts in One Health <sup>1</sup> (Junior Standing)	3		PHS 4064 Modeling Infectious Diseases <sup>1</sup> (Junior Standing)	3
COMM 4324 Issues in Health Communication <sup>1</sup> (Junior Standing)	3		PHS 4074 Practicum <sup>1</sup> (Senior Standing)	3
SOC 4704 Medical Sociology <sup>1</sup> (Junior Standing)	3		Free Elective Course	3
Free Elective Course	3		Free Elective Course	3
Free Elective Course	3		Free Elective Course	3
<b>TOTAL</b>	15		<b>TOTAL</b>	15

<sup>1</sup> Course satisfies a Public Health Core requirement (Total 39 Credits)

Note: Students who did not successfully complete at least two years of a single foreign, classical, or sign language during high school must successfully complete six semester hours of a single foreign, classical, or sign language at the college level. Courses taken to meet this requirement do not count toward the hours required for graduation. Please consult the Undergraduate Catalog for details.

Note: Some courses listed on this checksheet have prerequisites. Please consult the University or check with your advisor.

Satisfactory Progress Toward Degree

- (1) After having attempted 36 semester credits (including transfer, advanced placement, and advanced standing) students must have passed at least 12 semester credits of Pathways to General Education..
- (2) After having attempted 72 semester credits (including transfer, advanced placement, and advanced standing) students must have passed at least 24 semester credits of the Pathways to General Education.

After having attempted 96 semester credits (including transfer, advanced placement and advanced standing) students must have an in-major grade point average of 2.0 or higher and should have completed PHS 1514, 3004, 3014,3534, 4044, 4054, 4064; HNFE 1004, 2664; SOC 4704; COMM 4324; STAT 3615

Courses used to calculate in-major GPA

Students must maintain a minimum of 2.0 GPA and earn a grade of C- or better in each of the following courses:

PHS 1514, 3004, 3014,3534, 4044, 4054, 4064; HNFE 1004, 2664; SOC 4704; COMM 4324  
 STAT 3615

Student Retention and Continuation Plan

Each student in the program will have an advisor who will make every effort to make sure students are retained and that the student will graduate in a reasonable time period. In addition, the Program and Policy Committee in the Population Health Sciences will examine progress toward degree for each student and assist those who are not adequately progressing. For those students who transfer to a different major an exit interview will be held to ascertain why a student is transferring from the program. In general, as with the MPH degree, faculty will be highly involved to maximize the opportunity for student success.

Faculty

All faculty in the MPH program in the Department of Population Health Sciences will teach and advise in the proposed BSPH program. The faculty are all content experts and accomplished research and/or public health practitioners. The list of core faculty can be found in Appendix A.

Course		Instructor
HNFE 1004	Human Nutrition, Foods, and Exercise	TBA
PHS 1514	Personal Health	Redican
PHS 2004	Introduction to Public Health	Marmagas
HNFE 2664	Behavioral Nutrition and Physical Activity	TBA
PHS 3014	Introduction to Environmental Health	Gohlke
PHS 3534	Drug Education	Redican
HNFE 3634	Epidemiologic Concepts of Health and Disease	Hungerford
PHS 4044	Public Health Policy and Administration	Redican
PHS 4054	Concepts in One Health	Pierson
PHS 4044	Public Health Policy and Administration	Redican
PHS 4064	Modeling Infectious Diseases	Abbas
PHS 4074	Practicum	Advisor
COMM 4324	Issues in Health Communication	Ivory
SOC 4704	Medical Sociology	TBA

Public Health Core Course Descriptions

**HNFE 1004: HUMAN NUTRITION, FOODS AND EXERCISE**

Scientific information applied to current concerns in foods, nutrition and exercise as it affects the nutritional health well-being of humans. (3H, 3C)

**PHS 1514: PERSONAL HEALTH**

Fundamental health content and theory to provide students with constructive health information necessary to meet current and future personal health needs. Special emphasis on wellness and health promotion. (3H,3C)

**PHS 2004: INTRODUCTION TO PUBLIC HEALTH**

An examination of the how the public health core disciplines of biostatistics, epidemiology, health policy and administration, health behavior, and environmental health work together in addressing public health problems. Special emphasis on the public health infrastructure and role of health informatics in public health. (3H, 3C)

**HNFE 2664: BEHAVIORAL NUTRITION AND PHYSICAL ACTIVITY**

Introduction to behavioral theories used to design, implement and evaluate health promotion programs, and theories underlying health behavior change. Interactions between individuals, physical and social environments, interpersonal, and intrapersonal determinants of health behavior. Epidemiological evidence of benefits of health eating and physical activity. (3H, 3C)

**PHS 3014: INTRODUCTION TO ENVIRONMENTAL HEALTH**

This course will provide an overview of environmental health, examining local, national, and international frameworks. The course will cover environmental factors that affect human health, including major classes of chemical, biological, and physical exposures from different environmental media (air, water, food, and soil). The class will emphasize toxicology and epidemiology methodologies used at the individual (mechanistic) level and at the population level to determine environmental causes of disease and find the most appropriate prevention or control measure to minimize adverse health outcomes. (3H, 3C).

**PHS 3534: DRUG EDUCATION**

Interpretation of multidimensional (social, psychological and physiological) scientific data regarding drugs. The major drug categories will be covered with special emphasis on substance misuse and abuse. (3H,3C)

**HNFE 3634: EPIDEMIOLOGIC CONCEPTS OF HEALTH AND DISEASE**

Designed to give students in the health sciences a basic understanding of the modern concepts regarding health and disease as well as skills in organizing epidemiological data, disease investigation and surveillance. Includes a survey of terms, concepts, and principles pertinent to epidemiology. Lifestyles of populations and the relationships between lifestyles and health status are studied. II. (3H,3C)

**PHS 4044: PUBLIC HEALTH POLICY AND ADMINISTRATION**

This course will focus on the evolution of public health policy in United States. Public health and health care systems will be examined. Administrative concepts central to public health such as strategic planning, controlling, directing, leadership and health law will be covered in the course. (3H, 3C).

**PHS 4054: CONCEPTS IN ONE HEALTH**

One Health refers to the dynamic interdependence of human, animal and environmental health and provides an important perspective in examining health problems. This course focuses on the theoretical foundations of One Health, methods for assessing animal-human linkages, policies and practices related to One Health, and capacity building and public engagement. (3H, 3C).

**PHS 4064: MODELING INFECTIOUS DISEASES**

Mathematical modeling of infectious diseases in humans and animals. Deterministic susceptibles-infectious-recovered (SIR) and related models, estimation of reproductive number, host heterogeneities, multi-pathogen/multi-host models, spatio-temporal models, stochastic dynamics, and modeling for public health policy. (3H, 3C)

**PHS 4074: PRACTICUM IN PUBLIC HEALTH**

Public health theories and concepts in a work setting; comprehensive, structured experience requires student to demonstrate professional competencies while working closely with a supervisor in a public health practice setting. Pre-requisite: Senior standing and completion of 21 hours of public health core courses. (3C).

**COMM 4324: ISSUES IN HEALTH COMMUNICATION**

Study of issues related to the theory and practice of health communication, including interpersonal, public, organizational, political, and cultural. Senior standing required. (3H,3C).

**SOC 4704: MEDICAL SOCIOLOGY**

Social and cultural response to illness and infirmity. Emphasis on the sick role, patient role, practitioner role, organization and politics of health care delivery, stratification, professionalism, and socialization of health practitioners. Taught alternate years. Junior Standing. Pre: 1004.

**Program Administration**

An undergraduate BSPH program director will be identified internally or if need be recruited. The BSPH program director will oversee all aspects of the BSPH program, from admissions to assignment of advisor to tracking student success. The program director will be the face of the program and as such will oversee all the moving parts.

**Student Assessment**

Having completed the program, students are expected to demonstrate the ability to:

- Describe the role of public health professionals in protecting, improving and promoting health in communities;
- Demonstrate understanding of the use of biostatistics and epidemiology in infectious and chronic disease etiology, occurrence and prevention;
- Design a public health program that utilizes core public health concepts (biostatistics, environmental health, epidemiology, health services administration, and social and behavioral sciences) in solving community problems;
- Define the role of public health in meeting community health needs;
- Prepare a public health program that reduces incidence and prevalence of diseases and / or high risk health behaviors in selected communities;
- Describe the core principles and theories used in primary, secondary and tertiary prevention;
- Define the role of the health promotion specialist as a member of the public health team;
- Prepare a comprehensive prevention program designed to address a real a public health problem;
- Describe the infectious disease process;
- Demonstrate the skill to apply public health concepts to infectious disease;
- Design a clinical and public health approach to prevention and control of infectious disease;
- Define the role of infectious disease public health specialists in recognizing, evaluating and mitigating infectious disease impacts in populations;
- Prepare a comprehensive plan to prevent and control communicable disease outbreaks.

### Student Assessment

Student learning will be assessed by:

- Evaluation of student performance in courses by the advisor and program director;
- Evaluation of student progress towards completion of degree by the advisor and program director;
- Review of student competencies and skills in practicum development and practicum performance by the advisor and program director;
- Assessment of student competencies and skills in culminating experience, with evaluation of student abilities to design, execute, analyze and evaluate a public health problem and student abilities to propose (a) solution(s) to protect, maintain and / or enhance public health.

### Program Assessment Strategy

The Assessment Committee for the MPH/BSPH program will monitor consistency of recruitment, program delivery, course offerings, graduation, and fulfilling the needs of Southwest Virginia and the Commonwealth.

The Assessment Committee will continuously collect data to facilitate program assessment on whether goals are being met. This is necessary to allow the steering committee to make modifications that will improve outcomes. In addition to collecting numerical data to track Benchmarks of Success (below), several groups of stakeholders will be asked for feedback.

1. Current Students. In addition to normal course evaluations, feedback from current students will be collected once a year about their experience with the program including course quality and relevance, and program administration through an anonymous survey and town hall meetings.
2. Alumni. Six months or more after graduation, alumni will be surveyed to determine their employment outcomes and to collect data on how appropriate their training was for the job they now hold.
3. Faculty. Faculty teaching in the program will be contacted yearly to provide program feedback and suggestions for improvement.
4. Community Contacts. Employers of program alumni will be contacted at least six months after hiring new graduates for data on whether the skills of our graduates are appropriate to their needs.

### Benchmarks of Success

Criteria for success of the BSPH program includes:

- Enrollment of 400 majors by the 4<sup>th</sup> year after the first class is admitted;
- 75% or more of majors graduate in 4 years or less;
- Program retention rate is at least 80%;
- 75% of graduates obtain employment in public health or pursue graduate studies within two years of graduation;
- 75% of alumni are satisfied or very satisfied with the academic experience;

- 75% of employers are satisfied with graduate’s job performance after 3 years of employment.

Expansion of an Existing Program

This program is not an expansion of an existing program

Relationship to Existing Degree Programs

The proposed BSPH program has no relationship with other undergraduate degrees at Virginia Tech.

Collaboration or Stand Alone

A stand-alone degree program is being proposed. As with all degrees, curricular requirements include courses from other departments. The BSPH will be managed by the Department of Population Health Sciences.

Response to Current Needs

Reports from a range of governmental and other agencies have described the serious shortage of public health workers and the need for additional training, particularly in areas that align with the model for the VT-shaped student (“...building strategic partnerships to bring about collective impact, to harness the power of new types of data, and to think and act in systems perspective”, <https://www.healthypeople.gov/sites/default/files/Public-Health-3.0-White-Paper.pdf>). According to the U.S. Department of Labor, the health sciences field represents the largest single industry in the U.S., accounting for 14.3 million jobs across 200 different fields. In addition, seven of the 20 fastest growing occupations are health-related, generating 3.25 million new jobs between 2008 and 2018, a 22 percent increase, or double the growth of all other industries combined. In the future, it is anticipated there will be a growing need for health promotion professionals as a result of rising incidence of chronic disease, rising health care costs driving intervention strategies, increased need for research in the area of disease prevention, the aging work force, technological advances, and increased demand for consultants.

Employment Demand

The Association of Schools and Programs of Public Health (ASPPH) currently estimates 250,000 more public health workers will be needed in the U.S. by 2020. The public health workforce in the U.S. is diminishing, with 23% of the current workforce (almost 110,000 workers) eligible for retirement by 2012. Nationally, existing schools of public health would have to train nearly three times the number of current graduates to meet this projected demand.

**Employment projections data for health educators and community health workers, 2014-24**

Occupational Title	SOC CODE	Employment, 2014	Projected, Employment, 2024	Change, 2014-24		Employment by Industry
				Percent	Numeric	
Health educators & community health workers	--	115,700	131,300	13	15,600	--

<b>Health educators</b>	21-1091	61,400	68,900	12	7,500	[XLSX]
<b>Community health workers</b>	21-1094	54,300	62,400	15	8,100	[XLSX]
SOURCE: U.S. Bureau of Labor Statistics, Employment Projections program						

May 2015, median annual wage for health educators in top industries:	
<b>Hospitals; state, local, and private</b>	\$61,610
<b>Government</b>	54,050
<b>Ambulatory health care service</b>	50,300
<b>Religious, grantmaking, civic, professional, and similar organizations</b>	47,360
<b>Social assistance</b>	39,390

SOURCE: U.S. Bureau of Labor Statistics, Employment Projections program

May 2015, Median annual wage for community health in top industries:	
<b>Hospitals; state, local, and private</b>	\$43,530
<b>State and local government, excluding education and hospitals</b>	39,240
<b>Religious, grantmaking, civic, professional, and similar organizations</b>	38,190
<b>Ambulatory health care service</b>	34,740
<b>Individual and family services</b>	33,740

SOURCE: U.S. Bureau of Labor Statistics, Employment Projections program

<b>Health Educators and community Health Workers</b> Median annual wages, May 2015	
<b>Health educators</b>	\$51,960
<b>Health educators and community health workers</b>	\$43,840
<b>Counselors, social workers, and other community service specialists</b>	\$42,030
<b>Community Health workers</b>	\$36,300
<b>Total, all occupations</b>	\$36,200

SOURCE: U.S. Bureau of Labor Statistics, Employment Projections program

Student Demand

The Department of Population Health Sciences routinely receives requests from undergraduate students to be allowed to enroll in one or more of the MPH courses. If space was available in the class and the student was a senior with a 3.0 GPA or above they were generally allowed to take the course. During Spring, 2014, a special section of PHS 5004 Fundamentals of Public Health was offered as an undergraduate special study and 73 undergraduate students enrolled in the class. There was no solicitation for this course – 73 students found it listed in the timetable and enrolled.

In late Spring, 2016 a survey was sent to university studies students that summarized what a BSPH program would look like and if the student would be interested. One hundred and forty-four students

responded that they would be interested in pursuing a BSPH if it were offered. No email blasts were used to increase response rate.

It is clear that the interest in the BSPH is keen and enrollment projections are realistic. Further, the degree will complement the other health-related undergraduate majors currently offered.



Projected Enrollment

Year 1		Year 2		Year 3		Year 4 Target Year (2- year institutions)			Year 5 Target Year (4-year institutions)		
2018-2019		2019-2020		2020-2021		2021-2022			2022-2023		
HDCT	FTES	HDCT	FTES	HDCT	FTES	HDCT	FTES	GRAD	HDCT	FTES	GRAD
100		200		300		N/A	N/A	N/A	400		

Note: VCCS institutions should only complete Years 1 through 4. Graduation rates must be included in Year 4, Target year.

Definitions:

HDCT—Fall headcount enrollment

FTES—annual full-time equated student enrollment

GRADS—annual number of graduates of the proposed program

Assumptions

Faculty in the Department of Population Health Sciences are frequently asked by undergraduate students to enroll in MPH graduate courses. This is a good indication that public health courses albeit graduate are highly sought after by Virginia Tech students. Further, with the expansion of health science related initiatives at the university an undergraduate BSPH degree would interface very smoothly with the other health science initiatives.

Duplication

The proposed BSPH program does not duplicate any already existing program at Virginia Tech. There is no major that is framed around the public health core responsibilities and essential services and CEPH accreditation criteria.

Library

The library holdings currently serve the MPH program. These resources will be used by BSPH students as well.

Projected Resource Needs for the BSPH

Resource needs relating to instructional and advising personnel, space and funding will be met in part through expanded use of existing resources available in the College of Veterinary Medicine and the University. As described above, faculty currently assigned teaching and advising functions in the MPH program will provide instructional support for the public health core requirements of the BSPH program. In regard to instructional space, the CVM expects to complete a facilities remodeling project by the end of the spring semester in 2017 that involves construction of a scale-up teaching space accommodating 65 students. This facility, together with availability of the DVM classrooms in the late afternoon and evenings and anticipated creation of instructional spaces at the Health Sciences and Technology – 1 initiative in Roanoke, are expected to meet the space needs to deliver the public health core. The pathways general education enrollments will need to be accommodated in other colleges and through the use of general classroom spaces on campus.

It is clear, however, that while existing resources will contribute significantly to meeting the needs of the program, they will not be sufficient to support anticipated enrollment of approximately 400 students. Recognizing that accurate assessment of resource requirements will evolve in conjunction

with program development, the College at this time estimates that the following additional resources will need to be committed to the program to assure its success:

New faculty positions:

- 1 tenure-track epidemiology position in the Data Analytics and Decision Sciences (DADS) destination area has already been committed by the Provost
- Another tenure-track position in DADS committed by the Provost in the next round of position allocations will be committed to public health.
- Full implementation of the program is expected to need two faculty positions in addition to the two destination area positions indicated above. While these will have significant teaching assignments, assignment of at least 30% of each appointment to research and scholarship will meet the College standard for these being tenure-track appointments. It is anticipated that BSPH tuition revenue will support these appointments.

Graduate Teaching Assistantships:

- GTAs currently funded in the College will be assigned instructional duties in the BSPH program.

University staff:

- One staff position will be needed to provide administrative support and advising coordination. It is anticipated that BSPH tuition revenue will support this appointment.

REFERENCES

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Who Will Keep the Public Healthy? IOM report accessed at <http://iom.edu/~media/Files/Report%20Files/2003/Who-Will-Keep-the-Public-Healthy-Educating-Public-Health-Professionals-for-the-21st-Century/EducatingPHFINAL.ashx>

Appendix A  
BSPH Core Faculty

Kaja M. Abbas, PhD, Computer Science, 2006, University of North Texas, Assistant Professor of Infectious Diseases in Public Health

Andrea Bertke, PhD, 2007, Uniformed Services University of the Health Sciences, Assistant Professor of Infectious Diseases in Public Health

Julia M. Gohlke, PhD, Environmental Health, 1993, University of Washington, Seattle, WA, Assistant Professor of Public Health

Kathryn W. Hosig, PhD, Nutrition, 1992, Purdue University, Associate Professor of Public Health

Laura Hungerford, DVM, MPH, PhD, 1989, University of Illinois, Professor of Epidemiology.

Susan West Marmagas, MPH, 1995, University of California at Berkeley, Associate Professor of Practice

Frank William Pierson, DVM, 1984, Professor, Biosecurity and Infection Control / Clinical Specialist, Poultry Medicine.

Kerry J. Redican, PhD, 1976, University of Illinois at Champaign-Urbana, Professor of Public Health.

Sophie Wenzel, 1998, MPH, Emory University, Lecturer in Public Health

Appendix B

Course Support Letters

Kerry,

Biological Sciences supports inclusion of BIOL 1105, 1106 Principles of Biology in the proposed Bachelor of Science in Public Health (BSPH) curriculum. Please be aware that our ability to offer seats in these classes is dependent on continued enrollment support funding or any future funding mechanism that replaces enrollment support.

Rich

Richard A. Walker  
Associate Department Head and Associate Professor  
Biological Sciences  
2089 Derring Hall, 1405 Perry Street  
Virginia Tech, Blacksburg, VA 24061-0406  
540-231-3803 (phone) 540-231-9307 (fax) [rawalker@vt.edu](mailto:rawalker@vt.edu)

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Hi Kerry:

We are delighted that you will be requiring ENGL 1105 and 1106 on your checksheet.

Please know that we offer three courses that might be of interest to your students as electives: ENGL3154 Literature, Medicine, and Culture and ENGL4314 Narrative Medicine, and ENGL4824 Science Writing. Each will probably also go through as Pathways courses, in both discourse and humanities.

Cheers,

BH

Bernice L. Hausman  
Chair, Department of English, Virginia Tech  
Edward S. Diggs Professor in the Humanities  
Professor, Virginia Tech Carilion School of Medicine  
[540-231-8466](tel:540-231-8466)  
[bhausman@vt.edu](mailto:bhausman@vt.edu)

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Dear Kerry,

Thank you for writing to alert me to the anticipated proposal of a new Bachelor of Science in Public Health. The degree requirements include Math 1014, and you expect 100 students per year in your new program. As long as the new budget model provides resources associated with the additional student credit hours, the Math Department will be able to support this new requirement.

As far as your assumption that Math 1014 will satisfy Pathways quant/comp requirements, all I can say at this point is that I don't know. In spite of my efforts and the efforts of many colleagues in the Math Department and the College of Science, I have very little understanding of what changes are required to make a CLE Area 5 course a Pathways quant/comp course. Thank you for mentioning that you hope to use Math 1014 to satisfy Pathways requirements. Can you tell me what topics in Math 1014 are essential to your major and what topics are not? This information could help us as we try to figure out how to include Pathways learning objectives.

Finally I note that, under current university Advanced Standing policy, students who have certain admissions characteristics and who get a good enough grade in Math 1025 can get credit for Math 1014 without taking the Math 1014. This observation suggests a potentially efficient way for your students to collect Pathways quant/comp credit. The Math Department does not set or administer the university's Advanced Standing policy. Without knowing how Stat 3604 will fit in Pathways requirements, I cannot guarantee that this suggestion will actually help students.

Peter Haskell  
Professor and Chair  
Department of Mathematics (MC 0123)  
McBryde 460  
Virginia Tech  
225 Stanger Street  
Blacksburg, VA 24061  
[540-231-6536](tel:540-231-6536)  
fax: [540-231-5960](tel:540-231-5960)  
[phaskell@math.vt.edu](mailto:phaskell@math.vt.edu)

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Hi Kerry,

We support the inclusion of PSYC 1004 as a required course in the proposed BSPH degree.

Best,

Bob

Robert S. Stephens, Ph.D.  
Professor & Department Chair  
Department of Psychology  
Virginia Tech

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Good afternoon. Indeed, this is fine. We are pleased to have the course included in the Bachelor<sup>1</sup>s degree in Public Health. I anticipate we may well offer a couple more health classes in the future such as health communication campaigns, etc.

Have a great week.

All the best,

Bob

Robert E. Denton, Jr. Ph.D.  
W. Thomas Rice Chair  
Department of Marketing  
Pamplin College of Business  
Professor and Department Head  
Department of Communication  
College of Liberal Arts & Human Sciences  
115 Shanks Hall MC 0311  
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Virginia Tech  
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[540 231-7166](tel:5402317166) office  
[rdenton@vt.edu](mailto:rdenton@vt.edu)

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**Hulver, Matthew** <hulvermw@vt.edu>

Hi Kerry,

We approve BSPH students enrolling in HNF 1004, HNF 2664, and HNF 3634. I intended to follow up with you last week about HNF 2664 from the recent HNF curriculum committee meeting. They had one additional edit to the learning indicators so Renee will be making that change but then working to finish the general education proposal so it all goes through at one time. The committee is supportive of HNF 2664 being on the checksheet for the PHS undergraduate degree proposal and would like to revisit cross-listing once the degree is approved. They would like additional information on whether the course will be co-taught or if it will be taught by each department in different terms, and how content would be consistent if taught by departments in different terms. Perhaps we can meet in the next week or two to talk through those details? Thank you. Matt

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Dear Kerry,

The department of sociology is pleased to have SOC 1004 (Introductory Sociology) and SOC 4074 (Medical Sociology) included in your new degree program.

Best,

John

John Ryan  
Professor and Chair  
Dept. of Sociology  
Virginia Tech  
560 McBryde Hall  
Blacksburg, VA 24060  
[540-231-9396](tel:540-231-9396)  
<http://liberalarts.vt.edu/academics/majors-and-minors/sociology-major.html>

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Dear Kerry,

The Department of Statistics is pleased to support the inclusion of STAT 3615 in the proposed Bachelor of Science in Public Health degree (subject to the usual caveat on the availability of resources, of course). We believe this degree is an exciting addition to Virginia Tech's burgeoning health and medical educational and research capabilities.

Sincerely,

Ron

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Department of Statistics  
Hutcheson Hall, room 406A  
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Appendix C

BSPH Degree Support Letters