

The University Senate of Michigan Technological University

Proposal 21-20

Proposal for Minor in Public Health

(Voting Units: Academic)

1. Date

29 January 2020

2. Proposer Contact Information

Kelly Kamm, Assistant Professor, Department of Kinesiology and Integrative Physiology

Email: kbkamm@mtu.edu

3. Introduction

The proposed minor in public health will be offered through the Department of Kinesiology and Integrative Physiology (KIP). A minor in public health will introduce students to public and population health principles and research methodologies. This will help students preparing for careers in allied and professional health, graduate programs in biology and physiology, as well as students in law, social sciences, policy, and engineering integrate public health perspectives into their field.

4. Rationale

Human health is impacted by our individual biology as well as the natural, built, and social environments in which we live, work, and play. Thus, the ability to be health literate and able to integrate a health perspective is important in disciplines beyond traditional health-related and clinical fields. In the past 15 years there has been a growing recognition of the importance academia plays in teaching these skills. In 2002, an Institute of Medicine report recognized the need to better educate the public health workforce and partners that play key roles in the health of our communities who are not in traditional public health positions.¹ A subsequent report expanded that call for public health education, recommending that “all undergraduates should have access to education in public health”.² This widespread need to understand population health and health impacts was further highlighted when, in 2011, the U.S. federal government adopted a “Health in All Policies (HiAP)” strategy. A HiAP approach recognizes the importance of considering health across all fields in both the public and private sectors. The proposed public health minor will introduce students to the growing field of public health and the need to include a population health perspective in many of the university’s existing degrees. Furthermore, the proposed minor is in line with other recent health education initiatives implemented on campus (e.g. CMU-MTU Physical Therapy Partnership) to help address the shortage of healthcare workers in medically underserved areas of the U.P.

Access to undergraduate training in public health is growing nationwide. In 1992, less than 800 students graduated with a baccalaureate in a public health field and by 2012 that number increased to nearly 6,500 students.³ The number of schools awarding these degrees has also seen immense growth, increasing nearly 4-fold in the last 20 years.³ Data showing the growth in minors in public health are not published, but it is likely similar and may be more impressive, given that a minor generally requires fewer institutional investments. The growing interest in health-related fields among Michigan Tech students,

¹ The Future of the Public’s Health in the 21st Century. IOM (2002).

² Who will keep the public healthy? Educating public health professionals for the 21st century. IOM (US). Gebbie K, Rosenstock L, Hernandez LM, Ed. Washington DC: National academies press (2003)

³ Leider JP, et al. Characterizing the growth of the undergraduate public health major: U.S., 1992-2012. (2015). Public Health Reports, 130:104-113.

existing student populations in fields that are inherently health-related (such as engineering fields designing and building healthy and safe communities), and the University objective to advance our nation's health all support development of a minor in public health at Michigan Tech.

KIP is particularly well suited to support public health education at Michigan Tech. As the science of human movement, kinesiology includes the science of exercise and physical activity, a critical component to improve and maintain health and well-being.^{4,5} The American Kinesiology Association states it is imperative to include “content that explores in detail the relationship between physical activity participation, health and well-being” in undergraduate kinesiology curricula.⁶ A minor in public health supports this trend and exposes students to professional and graduate opportunities for applied kinesiology in the context of community and population health.

The curriculum proposed for this minor are based on guidance from the Association of American Colleges and Universities and the Association for Prevention Teaching and Research.⁷ These guidelines for implementing undergraduate majors and minors recommend specific learning outcomes and encourages universities to offer interdisciplinary programs that focus on their strengths and existing resources.

5. Details

I. Title of Minor

Minor in Public Health

II. Catalog Description and Learning Objectives

Students completing a minor in public health will strengthen their understanding of how individual, social, political, and environmental issues influence the health and well-being of local, national, and global populations. This minor will introduce students to the systematic public health approach to define and address health needs at a population level and reduce health disparities within and between communities. Students will learn how to address complex health problems and promote healthy behaviors by integrating different disciplines into a public health system, reflecting the US public health strategy of “Health in all Policies”.

This minor is expected to draw students from a variety of pre-health professional and health-related disciplines across the university. Additionally, many other disciplines not traditionally viewed as ‘health-related’ impact the health and well-being of our communities in their applications (e.g. water and sanitation systems in underserved communities; marketing healthy choices), thus these majors could be complemented by a public health minor.

Learning Objectives. Upon successful completion of the Public Health minor, students will be able to:

1. Apply a public health approach to identify and address complex health needs in populations.
2. Assess the biologic, social, behavioral, cultural, political, and environmental factors that promote or inhibit health equity in populations.

⁴U.S. Department of Health and Human Services. Physical Activity Guidelines for Americans, 2nd Edition. Washington, DC: US Department of Health and Human Services; 2018.

⁵National Academy of Kinesiology, <http://nationalacademyofkinesiology.org/>

⁶American Kinesiology Association, The Undergraduate Core, <http://www.americankinesiology.org/>

⁷Riegelman R.K., Albertine S. Recommendations for Undergraduate Public Health Education. Association of American Colleges and Universities/Association for Prevention Teaching and Research; 2008.

3. Apply ethical principles of research and public health to the design or evaluation of existing or proposed public health programs, policies, or interventions.
4. Demonstrate the interdisciplinary nature of public health by examining the contributions of different disciplines (including the student's chosen major field) to protect and improve the health of global or domestic populations.

III. List of courses

Students must complete 18 credit hours as detailed below, with at least 9 credit hours at a level of 3000 or higher.

Required coursework. Students are required to take **both** courses listed in Table 1, and **two** of the courses listed in Table 2, for a total of 12-13 credit hours.

Elective coursework. Students select an additional 5-6 credit hours (total 18 credit hours) from Table 3 or additional courses from Table 2 (beyond the required selection). Courses listed are relevant to important domestic and global public health specialties such as health promotion and communication, health disparities, public health microbiology, environmental health, and health policy. Public health topic courses are organized to suggest relevance to specialties; students may take any combination of the courses listed. Other courses may be substituted for elective credits with the approval of the advisor for the minor. Substitution requests must be made in writing and clearly document the relevance of the proposed course to public health.

Table 1. Required Public Health Basics

Course ID	Title	Credits
KIP 2600	Introduction to Public Health	3
KIP 4740	Epidemiology	3

Table 2. Required Public Health Topics

Course ID	Title	Credits
<i>Epidemiology/Biostatistics</i>		
MA 3715	Biostatistics	3
MA 3740	Statistical Programming and Analysis	3
MA 4710	Regression Analysis	3
<i>Public Health Biology</i>		
BL 3230	Medical Bacteriology	4
KIP 3700	Lifetime Fitness	3
BL 4752	Cancer Biology	3
<i>Health Promotion and Communication</i>		
BL 3970	Current Health Issues	3
HU 4625	Risk Communication	3
MKT 3000	Principles of Marketing	3
<i>Environmental Health</i>		
FW 4010	Public Health and the Environment	3
CEE 3503	Environmental Engineering	3
<i>Health disparities</i>		
SS 3750	Social Inequality	3
KIP 4060/SS 4060	Life-course Health in Global Populations	3
<i>Health Policies and Administration</i>		
SAT 4424	Population Health Management and Monitoring	3

Table 3. Elective Public Health Topics

Course ID	Title	Credits
<i>Epidemiology/Biostatistics</i>		
BE 2110	Statistical Methods for Biomedical Engineering	3
PSY 2720	Statistics for the Behavioral Sciences	4
MA 2720	Statistics Methods	4
<i>Public Health Biology</i>		
BL 2940	Human Nutrition	3
BL 3220	Medical Mycology and Virology	3
BL 3780	Medical Parasitology Laboratory	1
BL 4038	Epigenetics	3
BL 4070	Environmental Toxicology	3
<i>Health Promotion and Communication</i>		
KIP 3000	Sports Psychology	3
PSY 2200	Behavior Modification	3
PSY 2400	Health Psychology	3
PSY 2800	Critical Thinking for Social and Behavioral Sciences	3
PSY 4750	Judgement and Decision Making	3
<i>Environmental Health</i>		
CEE 4503	Drinking Water Treatment Principles and Design	3
CEE 4993	Engineering with Developing Communities	2
CEE 4502	Wastewater Treatment Principles and Design	3
CEE 4504	Air Quality Engineering and Science	3
SS 3300	Environmental Problems	3
<i>Health Disparities</i>		
HU 3261	Topics in Communicating Across Cultures	3
PSY 3070	Cross-Cultural Psychology	3
SS 2050	Fundamentals of Geographic Information Systems and Technologies	3
SS 3105	Native American and Indigenous Communities	3
<i>Health Policies and Administration</i>		
HU 4711	Biomedical Research Ethics	3
SS 3621	Introduction to Public Policy and Public Management	3
SS 3315	Population and Environment	3

IV. Prerequisites not listed in the minor

Course ID	Prerequisite(s)
<i>Epidemiology/Biostatistics</i>	
BE 2110	MA 1135 <i>or</i> MA 1160 <i>or</i> MA 1161
PSY 2720	MA 1031 <i>or</i> MA1032 <i>or</i> MA 1160 <i>or</i> MA 1161 <i>or</i> MA 1135
MA 2720	MA 1020 <i>or</i> MA 1030 <i>or</i> ALEKS Math Placement (≥ 61) <i>or</i> CEEB Calculus BC (≥ 2) <i>or</i> CEEB Calculus AB Subscore (≥ 2) <i>or</i> ACT Mathematics (≥ 22) <i>or</i> SAT Math Section Score-M16 (≥ 540)
MA 3715	MA 1135 <i>or</i> MA 1160 <i>or</i> MA 1161
MA 3740	MA 2710 <i>or</i> MA 2720 <i>or</i> MA 3710 <i>or</i> MA 3715
MA 4710	MA 2710 <i>or</i> MA 2720 <i>or</i> MA 3710 <i>or</i> MA 3715
<i>Public Health Biology</i>	
BL 3220	BL 3210

BL3230	BL 3210
BL 4752	BL 3012 <i>or</i> BL 4370 <i>or</i> BE 2400
BL 3780	BL 1710 <i>and</i> BL 2410
BL 4038	BL 3300 <i>or</i> BL 4030
BL 4070	BL 1020 <i>or</i> BL 1040 <i>and</i> CH 1150 <i>and</i> CH 1160
<i>Health Promotion and Communication</i>	
BL 3970	UN 1015 <i>and</i> UN 1025 <i>or</i> Modern Language 3000 or higher
HU 4625	UN 1015 <i>and</i> UN 1025 <i>or</i> Modern Language 3000 or higher
KIP 3000	PSY 2000
PSY 2200	PSY 2000
PSY 2400	PSY 2000
PSY 2800	PSY 2000
PSY 4750	PSY 2000
<i>Environmental Health</i>	
CEE 3503	MA 2160 <i>and</i> CH 1112 <i>or</i> (CH 1150 <i>and</i> CH 1151)
CEE 4503	ENVE 3501 <i>or</i> CEE 3501 <i>or</i> ENVE 3503 <i>or</i> CEE 3503
CEE 4993	ENG 2120 <i>or</i> MEEM 2150 <i>and</i> CE 3620 <i>or</i> CEE 3620
CEE 4502	ENVE 3501 <i>or</i> CEE 3501 <i>or</i> ENVE 3503 <i>or</i> CEE 3503
CEE 4504	ENVE 3501 <i>or</i> ENVE 3503 <i>or</i> CEE 3501 <i>or</i> CEE 3503
SS 3300	UN 1015 <i>and</i> UN 1025 <i>or</i> Modern Language 3000 or higher
SS 3300	UN 1015 <i>and</i> UN 1025 <i>or</i> Modern Language 3000 or higher
<i>Health Disparities</i>	
SS 3750	UN 1015 <i>and</i> UN 1025 <i>or</i> Modern Language 3000 or higher
PSY 3070	PSY 2000 <i>and</i> UN 1025 <i>or</i> Modern Language 3000 or higher
SS 3105	UN 1015 <i>and</i> UN 1025 <i>or</i> Modern Language 3000 or higher
<i>Health Policies and Administration</i>	
SS 3621	UN 1015 <i>and</i> UN 1025 <i>or</i> Modern Language 3000 or higher
SAT 4424	SAT 4422 <i>or</i> BL 2010 <i>or</i> BL 3080 <i>or</i> EH 1500 <i>or</i> KIP 1500 <i>or</i> SAT 5121
HU 4711	UN 1015 <i>and</i> UN 1025
SS 3315	MA 1030 <i>and</i> MA 1031 <i>or</i> MA 1032 <i>and</i> UN 1015 <i>and</i> [UN 1025 <i>or</i> Modern Language 3000 or higher]

6. Advising

Kelly Kamm, Assistant Professor in Kinesiology and Integrative Physiology, will advise students who choose to enroll in this minor.

7. New Course Descriptions

Life-course Health in Global Populations (KIP 4060/SS 4060) is a proposed course included in this proposal. The specialty field of a new faculty hire (Kelly Kamm) and existing faculty allows for the development of this course. The course will be co-taught and co-listed between KIP and Social Sciences. The course will be submitted to the binder process in Fall 2020 and be offered beginning in 2021-2022 academic year. Life-course Health in Global Populations will combine theories and methods from epidemiology, public health, development, and geographic information science to understand spatial and temporal determinants of health and their impact on the health of populations in low- and middle- income countries.

8. Estimated Costs

No additional costs will be associated with the minor at this time. Except for the new course described above, all required and elective courses are currently taught on a regular basis and have existing capacity. If necessary, KIP will explore options to increase enrollment capacity for key courses.

9. Learning resources

The university library resources are adequate for the needs of the proposed minor. Current electronic journal subscriptions include key public health related journals. No additional equipment is needed for the proposed minor.

10. Planned Implementation Date

Fall 2020