

# **The University Senate of Michigan Technological University**

## **Proposal 12-20** (Voting Units: Academic)

### **“Proposal for an Undergraduate Minor in Pre-Health Professions”**

#### **1. Date:**

November 8, 2019

#### **2. Contact Information:**

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#### **3. Introduction:**

The proposed minor in Pre-Health Professions offered through the Department of Biological Sciences in the College of Sciences and Arts will be intended for Michigan Tech students who are interested in one day applying for admission into a graduate health program. These programs might include medical, physician assistant, dental, veterinary, pharmacy, physical therapy, occupational therapy, podiatry, and chiropractic schools. Due to the fact that graduate health programs do not require one specific major, students are able to choose any major offered at the university. Therefore, this minor is designed to complement any major a student chooses in order to better prepare them for applying to their desired graduate health program.

#### **4. Rationale**

Currently, there are approximately 200 students at Michigan Technological University who are interested in applying to graduate health programs. These students come from a variety of majors throughout the University. Because of this, it is currently difficult to easily identify and track all of the pre-health students. Offering this minor will provide us with an opportunity to fill this gap and establish an underlying Pre-Health Program that connects all of our students. By having a more efficient tracking process, we can better support our students who are applying to these programs.

The primary goal of this minor is to help increase the overall competitiveness of our students' applications. Students who declare this minor will be required to meet with the health professions coordinator, who will serve as the minor advisor. The structure of this minor is meant to be flexible, interdisciplinary, and will not add a large number of additional credits. This minor is also designed to offer a variety of courses from our primary pre-health departments. This includes courses from Biological Sciences, Biomedical Engineering, Chemistry, Humanities, Kinesiology and Integrative Physiology, Social Sciences, and Psychology. We are requesting that the proposed minor be housed in the Biological

Sciences department because the largest number of pre-health students choose this degree path. Additionally, this will help with visibility for the minor and will ensure that administrative tasks can run smoothly and efficiently.

Students who choose this minor will take two, one-credit professional development courses that will focus on health career exploration as well as guide them through the application process for their desired programs. After taking these courses, students will obtain the knowledge and resources that they need in order to build a strong application. Also, the additional courses in this minor will help students satisfy some of the prerequisite courses required for graduate health programs. This is important because while students can choose any academic major to apply, they must still meet course requirements set by the individual graduate health programs. Students will work with the Health Professions Coordinator in order to obtain any additional requirements needed for their respective programs.

A major focus of this minor is to also help students gain proficiency in pre-professional competencies as informed by the Association of American Medical Colleges (AAMC). Competencies such as cultural competency, ethical reasoning, and knowledge of human systems are highly desired in pre-health applicants for all programs (Appendix 1). Ultimately, this minor serves to help our students enhance both their science and interpersonal skills to become more well-rounded individuals who are ready to enter professional healthcare training.

## **5. Details**

### **I. Title of Minor**

Pre-Health Professions Minor

### **II. Catalog Description**

The minor in Pre-Health Professions will provide students a structured pathway to prepare for graduate health programs. This minor is designed for any student who is interested in one day applying to a graduate health program. Students who declare this minor can come from any major offered at Michigan Technological University.

Upon successful completion of a minor in Pre-Health Professions, students will be able to:

- a. Identify health profession career options and understand the educational and experiential requirements for these desired careers.
- b. Apply knowledge and skills in natural sciences to solve problems related to living systems at the molecular, cellular and organ level.
- c. Apply knowledge and skills in social sciences to solve problems related to psychological and socio-cultural factors that influence health and well-being.
- d. Demonstrate the ability to communicate effectively and work collaboratively with diverse groups.

### **III. List of Courses**

The Pre-Health Professions minor requires a total of at least 18 credits, including 12 credits of required courses and 6 credits of electives.

Six courses are required as shown in Table 1. All students are required to take the following 6 courses: BL 1590, BL 3006, BL 2010, BL 2011, BL 3020 and PSY 2000 or SS 2700.

Students must select at least 1 elective course (3 credits or more) in the Biomedical Science Elective category. This list is shown in Table 2.

Students must select at least 1 elective course (3 credits or more) in the Ethics, Culture, and Communication Elective category. This list is shown in Table 3.

**Table 1: Required Courses (12 Credits)**

Course	Credit	Title	Term	Prerequisites
BL 1590	1	First-Year Experience in Health Professions	Fall	Permission of Instructor Required
BL 2010	3	Anatomy & Physiology I	Fall	CH 1000 or (CH1150 and CH 1151)
BL 2011	1	Anatomy & Physiology I Lab	Fall	BL 2010 (C)
BL 3020	3	Biochemistry I*	Fall	(BL 1020 or BL 1040 or BE 2400) and CH 2410
BL 3006	1	Graduate Health Program Application Preparation	Spring	Permission of Instructor Required
PSY 2000	3	Introduction to Psychology <b>or</b> Introduction to Sociology	Fall, Spring, Summer	None
SS 2700	3		Fall, Spring	None

**Table 2: Biomedical Science Electives (3+ Credits)**

Course	Credit	Title	Term	Prerequisites
BL 3012	3	Essential Cell Biology	Spring	BL 1020 or BL 1040
BL 3044	3	Advanced Human Physiology	Spring - Alternate Years	BL 2020

BL 3210	4	General Microbiology	Fall, Summer	(BL 1020 or BL 1040)
BL 3640	3	General Immunology	Fall, Summer	BL 1020 or BL 1040 or BL 2020 or BE 2400
BL 4020	3	Biochemistry II	Spring, Summer	BL 3020
BL 4044	3	Human Pathophysiology	Spring-Alternate Years	BL 2010 and BL 2020
BL 4380	3	Cardiopulmonary Physiology	Fall	BL 2020
KIP 3600	3	Motor Development	Spring	(EH 1500 or KIP 1500) and BL 2020
KIP 4100	3	Exercise Physiology <b>and</b>	Spring	BL 2020 and BL 2021
KIP 4110	1	Exercise Physiology Lab	Spring	KIP 4100 (C)
KIP 4200	3	Biomechanics of Human Movement <b>and</b>	Fall	BL 2020 and (EH 1500 or KIP 1500) and PH 1110 and PH 1111
KIP 4210	1	Biomechanics of Human Movement Lab	Fall	BL 2020 and (EH 1500 or KIP 1500) and PH 1110 and PH 1111
CH 3540	3	Biophysical Chemistry	Spring	(BL 1020 or BL 1040) and CH 1122 or (CH 1160 and CH 1161) and MA 2160 and PH 2200
CH 4110	3	Pharmaceutical Chemistry: Drug Action	Spring	BL 3020* or CH 4710
CH 4710	3	Biomolecular Chemistry I	Fall, Summer	CH 2420
BE 4200	3	Cellular and Molecular Biology II	Spring	BE 2400
BE 4230	3	Stem Cell and Tissue Engineering	Spring	BE 2400 and BE 3350 and BE 3800
BE 4330	3	Biomimetic Materials	Fall	BE 3350 and BE 3800
BE 4510	3	Cardiovascular Engineering	Fall	BL 2020 and BE 2400

**Table 3: Ethics, Culture, and Communication Electives (3+ Credits)**

<b>Course</b>	<b>Credit</b>	<b>Title</b>	<b>Term</b>	<b>Prerequisites</b>
BL 3970	3	Current Health Issues	Spring, Summer	UN 1015 and (UN 1025 or Modern Language-3000 level or higher)
HU 3015	3	Advanced Composition	Fall, Spring, Summer	UN 1015 and (UN 1025 or Modern Language-3000 level or higher)
HU 3261	3	Topics in Communicating Across Cultures	On Demand	UN 1015 and (UN 1025 or Modern Language-3000 level or higher)
HU 3400	3	Topics in Diversity Studies	Spring	UN 1015 and (UN 1025 or Modern Language-3000 level or higher)
HU 3410	3	Introduction to Diversity Studies in the United States	Fall, Summer-Alternate Years	UN 1015 and (UN 1025 or Modern Language-3000 level or higher)
HU 3711	3	Biomedical Ethics	Spring	UN 1015 and (UN 1025 or Modern Language-3000 level or higher)
HU 3820	3	Interpersonal Communication	Fall	UN 1015 and (UN 1025 or Modern Language-3000 level or higher)
HU 3850	3	Cultural Studies	Fall-Alternate Years	UN 1015 and (UN 1025 or Modern Language-3000 level or higher)
HU 4710	3	Sports Medicine and Ethics	On Demand	None
PSY 3070	3	Cross-Cultural Psychology	Fall-Alternate Years	UN 1015 and (UN 1025 or Modern Language-3000 level or higher)

\*BL 3020 is a proposed course pending the current binder process for the 2020-2021 academic year.

**6. New Course Descriptions**

No new courses are proposed for the Pre-Health Professions minor.

**7. Estimated Costs**

There will be no additional costs associated with this minor.

**8. Planned Implementation Date**

This proposed minor will be offered starting in Fall 2020.

**9. Appendix**

[Association of American Medical Colleges Core Competency List](#)