

# The University Senate of Michigan Technological University

## Proposal 24-08

### “Minor in Pharmaceutical Chemistry”

(Department of Chemistry)

Voting Units: Academic

February 13, 2008 (Contact: Marshall Logue, Pushpa Murthy)

#### *1. Introduction*

The Department of Chemistry introduced a new major in Pharmaceutical Chemistry in 2005. As part of this program, two new courses were introduced, CH4110 Pharmaceutical Chemistry I and CH4120 Pharmaceutical Chemistry II. These courses and the subject of pharmaceutical chemistry are of interest to a diverse group of students on campus. To address the interdisciplinary interest in this topic, we now propose to institute a minor in pharmaceutical chemistry. Because the major and courses already exist, this is a no-cost addition to our programs.

#### *2. Rationale*

Pharmaceutical Chemistry is the study of the molecular and mechanistic aspects of pharmaceuticals. The discipline emphasizes the chemistry of drug design and development, drug action, drug transport, and drug delivery, and targeting. Progress in the field now depends on the design and synthesis of new molecules using tools such as structure activity relationships, combinatorial chemistry, and computer-aided drug design. Chemists are at the core of these activities, but working with pharmaceutical chemists are biologists, chemical engineers and others for whom some knowledge of pharmaceutical chemistry would be advantageous. A minor in Pharmaceutical Chemistry will be an attractive credential for chemists, chemical engineers, biomedical engineers, pre-meds, and others who wish to be prepared for careers in the pharmaceutical industry or in the health sciences.

#### *3. Details of Catalog copy*

##### *I. Title of Minor: Minor in Pharmaceutical Chemistry*

##### *II. Catalog Description*

This Chemistry minor prepares students for careers in the field of pharmaceutical manufacturing as well as for many careers in the health sciences. Knowledge of pharmaceutical chemistry would be a valuable asset for graduates interested in working in the pharmaceutical and health care industries. This minor is most suitable for students in chemistry, chemical engineering, biological sciences, and biomedical engineering.

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

###### *Proposed Pharmaceutical Chemistry Minor (22-28 credits)*

###### *Required Courses (19-24 credits)*

(5) CH4222 Intro Quant and Instrumental Anal OR

(10) (CH2212 Quant Anal AND CH4212 Instrumental Analysis)

(3) CH3510 Physical Chemistry I

(2) CH3511 Physical Chemistry Lab I

- (3) CH4710 Biomolecular Chemistry I
- (3) CH4110 Pharmaceutical Chemistry I
- (3) CH4120 Pharmaceutical Chemistry II

*Elective Course Choose 1 of the following (3-4credits)*

- (3) CH4720 Biomolecular Chemistry II
- (3) FW4089 Bioinformatics
- (4) MA2710 Intro Statistical Analysis OR  
(3) MA3710 Engineering Statistics
- (3) CH 4990 Undergraduate Research in Chemistry\*

\*Undergraduate research experiences will be permitted in the minor as long as the topics are in the area of pharmaceutical chemistry.

#### *IV. Prerequisites not listed in the Minor*

Courses listed in this minor have the following prerequisites (shown in parenthesis).  
Concurrency is illustrated by the letter C:

- CH4222 (CH 1120 and CH 3510(C) and CH 3511(C))
- CH2212 (CH 1120)
- CH4212 (CH 2212 and CH 3510(C) and CH 3511(C))
- CH3510 (CH 1120 and PH 2200(C) and MA 2160)
- CH3511 (CH 3510(C))
- CH4710 (CH 2420)
- CH4110 (CH 4710 or BL 4010)
- CH4120 (CH 4110)
- CH4720 (CH 4710 or BL 4010)
- FW4089 (none)
- MA2710 (MA 1140 or MA 1160 or MA 1161)
- MA3710 (MA 2160)
- CH4990 (Permission of department required)

Courses are offered the following semesters:

- CH4222 - Spring
- CH2212 - Spring
- CH4212 - Fall
- CH3510 - Fall, Spring
- CH3511 - Fall, Spring
- CH4710 - Fall
- CH4110 - Spring
- CH4120 - Fall
- CH4720 - Spring
- FW4089 - alternate Springs beginning 2008
- MA2710 - Spring
- MA3710 - Fall, Spring, Summer
- CH4990 - Fall, Spring, Summer

4. *New Course Descriptions - None*

5. *Estimated Costs - None*

6. *Planned implementation date – Fall 2008*

**Introduced to Senate: 19 March 2008**

**Adopted by Senate: 2 April 2008**

**Approved by Administration: 7 April 2008**