



Proposal to the Senate Educational Policy Committee

PROPOSAL TITLE: Establish a Non-Thesis Option in the Master of Science in Chemical Engineering in the Department of Chemical and Biomolecular Engineering, School of Chemical Sciences, College of Liberal Arts and Sciences

SPONSOR: Hong Yang, Professor of Chemical and Biomolecular Engineering, hy66@illinois.edu; 244-6730, 114 Roger Adam Laboratory, 600 South Mathews Avenue, Urbana IL 61801; MC-712

COLLEGE CONTACT: Karen Carney, Associate Dean, College of Liberal Arts and Sciences, 217-333-1350, kmcarney@illinois.edu; 2090 Lincoln Hall

BRIEF DESCRIPTION: The Department of Chemical and Biomolecular Engineering (ChBE) would like to establish a non-thesis option leading to the Master of Science degree in Chemical Engineering. This proposal requires no changes to the current curriculum other than the addition of this non-thesis option.

JUSTIFICATION: Students in the Department of Chemical and Biomolecular Engineering have been required to complete a thesis as part of their requirements for the Master's degree. The M.S. degree with thesis will continue to be offered. However, ChBE is interested in also establishing a non-thesis MS option based on our existing program course requirements. In recent years, ChBE has developed 3+2 combined Bachelor / Master's (3+2 BS/MS) degree programs with Tsinghua University and Zhejiang University, respectively, both in China. The non-thesis option might better serve students in these 3+2 programs as well as students in our PhD program who are interested in pursuing a non-thesis MS degree on their way to the PhD.

BUDGETARY AND STAFF IMPLICATIONS:

- a. Additional staff and dollars needed: none
- b. Internal reallocations (e.g., change in class size, teaching loads, student-faculty ratio, etc.): minimal to none
- c. Effect on course enrollment in other units and explanations of discussions with representatives of those departments: N/A
- d. Impact on the University Library: Letter from Thomas Teper is attached
- e. Impact on computer use, laboratory use, equipment, etc.: no additional impact

DESIRED EFFECTIVE DATE: Upon approval

STATEMENT FOR PROGRAMS OF STUDY CATALOG:

[Chemical and Biomolecular Engineering](#)

chbe.illinois.edu

Head of the Department: Paul J.A. Kenis

114 Roger Adams Laboratory

600 South Mathews Avenue

Urbana, IL 61801

(217) 244-9214

E-mail: kenis@illinois.edu

Major: Chemical Engineering

Degrees Offered: M.S., Ph.D.

Major: Bioinformatics

Degree Offered: M.S.

Graduate Concentration: Chemical and Biomolecular Engineering

Medical Scholars Program: Doctor of Philosophy (Ph.D.) in Chemical Engineering and Doctor of Medicine (M.D.) through the [Medical Scholars Program](#).

Graduate Degree Program

The Department of Chemical and Biomolecular Engineering offers graduate programs leading to the Master of Science and the Doctor of Philosophy degrees. The graduate curriculum in Chemical & Biomolecular Engineering is designed to educate students in general for careers in the area of chemical and biomolecular engineering sciences. Faculty pursue research programs in areas ranging from traditional areas, such as complex fluids, computation, and catalysis, to areas such as biomolecular engineering, biotechnology, and imaging.

Students generally apply to our PhD program, and complete a MS with a thesis, along the way. Alternatively, these students may complete the proposed non-thesis MS degree, on their way to the PhD, or when they decide to not finish the PhD program. The MS degree with thesis is especially meant for those students in the PhD program who decide to stop their pursuit of the PhD degree, but have met the MS degree course requirements and have completed sufficient research for a satisfactory MS thesis. The Department of Chemical and Biomolecular Engineering normally does not recruit students interested solely in its master's program except as part of dual-degree programs with other universities.

Admission

Applicants for admission to advanced degrees programs in chemical engineering should have a background in chemistry and chemical engineering comparable to the training

offered in the undergraduate chemical engineering curriculum at the University of Illinois at Urbana- Champaign. Students whose prior training is deficient in one or more basic areas of chemistry or chemical engineering will be admitted with the understanding that their deficiencies will be removed to the extent prescribed by their advisors. Graduate College admission requirements also apply. In addition, applicants must submit results from the Graduate Record Examination (GRE) general test.

International students whose native language is not English are required to have a minimum paper-based Test of English as a Foreign Language (TOEFL) score of 610 (257 on the computer-based test). In addition, teaching is a requirement in the chemical engineering graduate program and there are special requirements for applicants whose native language is not English. The University requires a minimum Test of Spoken English (TSE) score of 50 for a contact teaching assistant appointment. It is desirable for applicants whose native language is not English to provide TSE scores in order to receive full consideration for admission and financial aid.

Admission for students participating in joint BS/MS 3+2 degree programs with international universities will be based on several admission criteria outlined in the Cooperative Education Program agreements, which include the student's overall academic performance and communication skills in English, a strong background in chemical and/or biomolecular engineering (or closely related field, e.g., bioengineering), strong Graduate Record Examination (GRE) scores, and letters of recommendation from College professors. In addition, the most promising applicants will be interviewed by a team of Illinois faculty to determine final admission.

Degree Requirements

For additional details and requirements, refer to the [department's degree programs information](#) and the [Graduate College Handbook](#).

Master of Science, Chemical Engineering

Required Courses	Thesis Option Required Hours	Non Thesis Option Required Hours
Thesis Hours Required – CHBE 599 (min/max applied toward degree):	min 12	0
Total Hours	32	32
Minimum Hours Overall Required Within the Unit:	8	12
Minimum 500-level Hours Required Overall:	12	16
Other Requirements:*		

CHBE 565 (CHBE Seminar) must be taken every semester that the student is in residence. For the non-thesis option, a maximum of 2 hours of CHBE 565 may be counted as part of the 32 hours toward the degree.		
Minimum GPA:	2.75	2.75

Master of Science, Bioinformatics

Required Courses	Thesis Option-Required Hours	Non-thesis Option-Required Hours
One course in Bioinformatics from approved list, one course in Biology from approved list, and CS 411 or CS 473	12 min	12 min
CHBE 572 and 580	6	6
Thesis Hours Required – CHBE 599 (min/max applied toward degree):	4	
Total Hours	32	36
Minimum 500-level Hours Required Overall:	12	12
Other Requirements:* A concentration not required.		
Minimum GPA:	2.75	2.75

Doctor of Philosophy

Required Courses	Required Hours
Minimum of four graduate-level (ChBE 5XX) courses in chemical engineering	16
A coherent program of four additional graduate level courses	16
Thesis Hours Required – CHBE 599 (min/max applied toward degree):	0 min
Total Hours	96
Minimum Hours Overall Required Within the Unit:	16
Minimum 500-level Hours Required Overall:	20
Other Requirements:*	
Teaching experience is required	
Minimum GPA:	2.75
Master's Degree Required for Admission to PhD?	No

Qualifying Exam Required	Yes
Preliminary Exam Required	Yes
Final Exam/Dissertation Defense Required	Yes
Dissertation Deposit Required	Yes

Requirements include satisfactory performance on qualifying examinations, preliminary exam, and a thesis. The qualifying examinations are a combination of written and oral tests usually taken during the first year of study. The preliminary examination is an individual oral examination taken after the student has satisfied the course requirements. It focuses on the student's proposed thesis research.

Multi-institutional Ph.D. Degree with National University of Singapore

Students in this program will spend approximately equal proportions of their study at the Urban-Champaign campus and at the National University of Singapore (NUS), taking courses and/or working on their research. The project comprising the research component of the Ph.D. will be cooperatively overseen by faculty at Illinois and NUS. Students pursuing the multi-institutional degree must meet all of the requirements of the existing Ph.D. programs at each of the two institutions. Courses taken at each university must be approved by the other university before they are taken in order to be credited toward degree requirements. *The multi-institutional program is unaffected by the proposed non-thesis MS degree.*

Medical Scholars Program

The Medical Scholars Program permits highly qualified students to integrate the study of medicine with study for a graduate degree in a second discipline, including Chemical Engineering. Students may apply to the Medical Scholars Program prior to beginning graduate school or while in the graduate program. Applicants to the Medical Scholars Program must meet the admissions standards for and be accepted into both the doctoral graduate program and the College of Medicine. Students in the dual degree program must meet the specific requirements for both the medical and graduate degrees. On average, students take eight years to complete both degrees. Further information on this program is available by contacting the Medical Scholars Program, 125 Medical Sciences Building, (217) 333-8146 or at www.med.illinois.edu/msp. *The medical scholars program is unaffected by the proposed non-thesis MS degree.*

3+2 BS/MS program

Students in this program will be limited to those enrolled at the partner universities (*e.g.*: Tsinghua University and Zhejiang University) as undergraduate students who will complete six semesters of the eight-semester Bachelor of Science program. If accepted, the students can complete their final two semesters of study towards the B.S. degree at University of Illinois in the Department of Chemical and Biomolecular Engineering and continue in subsequent semesters to earn credits at Illinois toward a Master of Science degree from Illinois. The M.S. degree will be awarded according to the program policies and practices of the Chemical and Biomolecular Engineering Department at the University of Illinois.

Graduate Teaching Experience


Experience in teaching is considered a vital part of the graduate program and is required as part of the academic work of all Ph.D. candidates in the ChBE program. This teaching experience is optional (at the discretion of the department, based on need) for terminal MS or 3+2 BS/MS degree students.

Faculty Research Interests

Please see chbe.illinois.edu/research.

CLEARANCES: (Clearances should include signatures and dates of approval. These signatures must appear on a separate sheet. If multiple departments or colleges are sponsoring the proposal, please add the appropriate signature lines below.)

Jonathon V. Sweedler,
Director, School of Chemical Sciences

Signatures: 

10/7/14
Date

Hong Yang,
Professor + Director of Graduate Studies



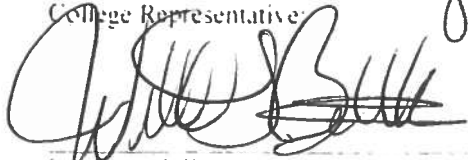
12/19/2012
Date

Unit Representative
Paul Kenis, Paul
CIBE 

10/27/2012
Date

Karen McCannery
College Representative

4-22-13
Date


Graduate College Representative

11-21-13
Date

Appendix A:
(Budgetary and Staff Implications)
(Replace the following material with your appendix, if any.)

New Degree Programs – Required Budgetary Implication Questions

- 1) How does the unit intend to financially support this program?

The new non-thesis MS degree will involve only small numbers of students: Fewer than 10 students per year will be part of the 3+2 BS/MS programs with foreign partner institutions. In addition, some of the students who are already in our PhD program may pursue this non-thesis MS degree on the way to their PhD degree, or will take this degree after deciding to stop in our PhD program.

All these students will take existing courses. No additional courses or sections will be needed.

- 2) Will the unit need to seek campus or other external resources?

No need for campus or external resources.

- 3) If no new resources are required, how will the unit create capacity or surplus to appropriately resource this program? (What functions or programs will the unit no longer support?)

The number of *additional* students in this program will be 10 or fewer per year per institution, a small number compared to our total of more than 750 graduate and undergraduate students. As such, these additional students will be easily accommodated in existing courses and sections. (The other students taking this non-thesis MS degree will be a small fraction of the students in our PhD program, so these are not additional students.)

- 4) Please provide a market analysis: What market indicators are driving this proposal? What type of employment outlook should these graduates expect? What resources will be required to assist students with job placement?

The proposed non-thesis MS degree is primarily meant to help us strengthening our ties with strong international universities abroad, specifically through 3+2 BS/MS programs. Currently job prospects for MS graduates from ChBE are excellent. Based on our past experience, most international students in the MS program will return to their respective home countries where they will easily find employment. Through this degree program, we can partner with some of the top foreign universities, such as Tsinghua and Zhejiang in China.

Substantial resources are already in place to assist in job placement. The Career Counseling and Placement Services in the School of Chemical Sciences provide extensive job placement and career development services for all our students including MS and Ph.D. students. Details of these services can be found at:
http://careers.scs.illinois.edu/alumni_services.

5) If this is a proposed graduate program, please discuss the programs intended use of waivers. If the program is dependent on waivers, how will the unit compensate for lost tuition revenue?

Students who apply to the non-thesis MS program will not be eligible for tuition waivers; they will be charged full tuition. For students in our PhD program, there will be no change in compensation and other financial options.

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

University Library
Office of Dean of Libraries
and University Librarian
230 Main Library, MC 522
1408 West Gregory Drive
Urbana, IL 61801



October 18, 2012

Hong Yang
Professor of Chemical and Biomolecular Engineering
114 Roger Adam Laboratory
MC-712

Dear Dr. Yang:

Thank you for giving the University Library the opportunity to review the Department of Chemical and Biomolecular Engineering's proposal to the Senate Committee on Educational Policy to establish a Non-Thesis Master of Science in Chemical and Biomolecular Engineering. Based upon the draft proposal that we received, it is our understanding that this degree will provide a mechanism for ChBE participation in a 3+2 cooperative bachelor/master degree program between the University of Illinois and several Chinese universities. It will also offer a degree option for those students who are interested in course-based graduate studies. Based on the proposal reviewed, there appear to be no changes to the curriculum currently offered in ChBE. That being the case, the proposal materials that you provided to the University Library do not lead us to believe that there will be an appreciable impact on our operations or collections.

If additional services or materials are required as the program develops—particularly in its graduate offerings, we will be happy to discuss securing the requisite resources with the program sponsors.

Sincerely,

A handwritten signature in cursive script that reads "Paula Kaufman".

Paula Kaufman
Juanita J. and Robert E. Simpson
Dean of Libraries and University Librarian

c: Thomas Teper
Tina Chrzastowski

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

EP.14.18

Office of the Provost and Vice Chancellor
for Academic Affairs

Swanlund Administration Building
601 East John Street
Champaign, IL 61820



November 26, 2013

Gay Miller, Chair
Senate Committee on Educational Policy
Office of the Senate
228 English Building, MC-461

Dear Professor Miller:

Enclosed is a copy of a proposal from the College of Liberal Arts and Sciences and the Graduate College to establish a non-thesis option in the MS in Chemical Engineering. It now requires Senate review.

Sincerely,

A handwritten signature in cursive script that reads "Kristi A. Kuntz".

Kristi A. Kuntz
Assistant Provost

Enclosures

c: K. Carney
M. Lowry
H. Yang

UNIVERSITY OF ILLINOIS
AT URBANA-CHAMPAIGN

Graduate College

204 Coble Hall
801 South Wright Street
Champaign, IL 61820-6210



Executive Committee

November 21, 2013

2012-2013 Members

Debasish Dutta, *Chair*

Kristi Kuntz
Office of the Provost
207 Swanlund MC-304

Members

Barry Ackerson

Dear Kristi,

David Ceperley

Enclosed please find the proposal entitled "Establish a Non-Thesis Master of Science in Chemical Engineering in the Department of Chemical and Biomolecular Engineering, School of Chemical Sciences, College of Liberal Arts and Sciences."

Lin-Feng Chen

Kent Choquette

Jennifer Cole

The Graduate College Executive Committee has approved this proposal. I send it to you now for further review.

Brooke Elliott

Susan Garnsey

David Hays

Sincerely,

Christine Jenkins

A handwritten signature in black ink, appearing to read 'William G. Buttlar', written over a large, stylized circular flourish.

Ashleigh Jones

Tina Mattila

William G. Buttlar
Associate Dean, Graduate College

Ramona Oswald

Yoon Pak

Joseph Rosenblatt

c: A. Kopera
M. Lowry

Alex Winter-Nelson

Assata Zerai



Senate Educational Policy Committee Proposal Check Sheet

PROPOSAL TITLE (Same as on proposal): Establish A Non-Thesis Master of Science in Chemical Engineering in the Department of Chemical and Biomolecular Engineering, School of Chemical Sciences, College of Liberal Arts and Sciences

PROPOSAL TYPE (Please select all that apply below):

A. **Program and degree proposals**

1. This proposal is for a graduate program or degree

Yes No

2. **Degree** proposal (e.g. B.S., M.A. or Ph.D.)

New degree — please name the new degree: Non-Thesis MS Degree in Chemical Engineering

Revision of an existing degree — please name the existing degree to be revised:

3. **Major** proposal (disciplinary focus, e.g., Mathematics)

New major — please name the new major: _____

Revision of an existing major — please name the existing major to be revised: _____

4. **Concentration** proposal (e.g. Financial Planning)

New concentration — please name the new concentration: _____

Revision of an existing concentration — please name the existing concentration to be revised: _____

5. **Minor** proposal (e.g. Cinema Studies)

New minor — please name the new minor: _____

Revision of an existing minor — please name the existing minor to be revised: _____

6. Proposal for renaming an existing degree, major, concentration, or minor

degree major concentration minor

Please provide the current name: _____

Please provide the proposed new name: _____

7. Proposal for terminating an existing degree, major, concentration, or minor

Please name the existing degree, major, concentration, or minor: _____

8. Proposal for a multi-institutional degree between Illinois (UIUC) and a foreign institution

Please name the existing Illinois degree or program: _____

Please name the partnering institution: _____

B. **Proposal for renaming existing academic units** (college, school, department, or program)

Please provide the unit's current name: _____

Please provide the unit's proposed new name: _____

C. **Proposal for reorganizing existing units** (colleges, schools, departments, or programs)

Change in status of an existing and approved unit (e.g. change from a program to department) — please indicate current unit name including status: _____

Transfer an existing unit

Please provide the current unit's name and home: _____

Please provide the new home for the unit: _____

Merge two or more existing units (e.g., merge department A with department B)

Please provide the name and college of unit one to be merged: _____

Please provide the name and college of unit two to be merged: _____

Terminate an existing unit — please provide the current unit's name and status: _____

D. **Other educational policy proposals** (e.g., academic calendar, grading policies, etc.)

Please indicate the nature of the proposal: _____