

CGE-approved items

- Amend the accelerated BS-MS, BA-MS, BArch-MS, BArch-MArch, BS-MBA, BA-MBA, BArch-MBA program option
“Students are encouraged to pursue graduate study immediately following the completion of the bachelor's degree. ~~However, courses approved for a BS/MS option can be applied to a graduate degree up to two (2) years after completing the bachelor's degree.~~ Students who may wish to start pursuing a graduate degree later should keep in mind that courses expire after seven (7) years. The graduate advisor will determine the graduate-level courses taken for the NJIT undergraduate degree that will also count toward the graduate degree.”
- Amend the accelerated MS-MS and MS-MBA dual degree program options
“The MS-MS and MS-MBA dual degree program options allow students to pursue a second NJIT graduate degree upon completion of the first and to count two courses (6 credits) or four courses (12 credits), respectively, from the first degree toward the second. ~~The option must be exercised within two (2) years of completion of the first degree.~~ Most students continue their studies for the second graduate degree as soon as they finish with the first. Students who may wish to start pursuing their second graduate degree later should keep in mind that courses expire after seven (7) years. The second program’s academic advisor will determine the graduate-level courses taken for the first NJIT degree that will also count toward the second degree.”
- Awarding graduate certificates to MS students
“Students within nine credits of completing a master’s degree may be awarded the appropriate certificate upon completion of the courses required for the certificate.”
- New program: MS in Medical Science (proposal is attached)
The course proposals for this program are shared on Google drive [MSMS CGE New Course Proposal Forms \(COMPLETED\)](https://drive.google.com/drive/folders/18OKRN82sj9Ju83U5rccFFTj-oJrXQYKF) - <https://drive.google.com/drive/folders/18OKRN82sj9Ju83U5rccFFTj-oJrXQYKF>
- Program revision: PSM Biotechnology option in MS Pharmaceutical Chemistry
- Program revision: Geotechnical Engineering concentration in MS Civil Engineering
- Application for graduation
“To return the requirement of a Graduate Application for Graduation submission by students and certify the degrees of the applicants once, after the completion of the semester for which they applied.”
- Health insurance dependent coverage for PhD students
“As dissertation supervisors, departmental chairs, faculty members, research supervisors, current and future colleagues, fellow union members, and as human beings, we wish to make clear our deep concern and distress with recent changes in NJIT's student insurance program which have eliminated dependent coverage for new doctoral students, effective Fall 2018. In addition to the above concerns, we must also note that doctoral students are typically making a very long term commitment, and many of these students already have, or are on the verge of beginning, their own families. Given the comparatively scant stipends paid to our doctoral students, it is not realistic to believe that they can afford to secure such coverage as individuals in the open market, and over and above the concerns noted above, we must note that this will leave us at a distinct disadvantage relative to other programs these students may be considering for post-graduate study, and is very likely to reduce our future ability to attract either

the number or quality of doctoral students necessary to maintain viable doctoral programs and external research agendas at NJIT.”



University Heights
Newark, NJ 07102-1982

Date: January 14, 2020

To: Dr. Raj Dave

From: Dr. Linda Cummings, Chair, Committee on Sabbatical Leaves

cc: M. Kam, L. Axe

Re: Post-Sabbatical Report, AY 2018-2019

As chair of the Committee on Sabbatical Leaves I am happy to report that the committee has accepted your post-sabbatical report. The committee extends its best wishes for your continued success.



University Heights
Newark, NJ 07102-1982

Date: January 14, 2020

To: Professor Zeynep Celik

From: Dr. Linda Cummings, Chair, Committee on Sabbatical Leaves

cc: B. Kolarevic

Re: Post-Sabbatical Report, Fall 2018

As chair of the Committee on Sabbatical Leaves I am happy to report that the committee has accepted your post-sabbatical report. The committee extends its best wishes for your continued success.



University Heights
Newark, NJ 07102-1982

Date: January 14, 2020

To: Dr. Alice Lee

From: Dr. Linda Cummings, Chair, Committee on Sabbatical Leaves

cc: M. Kam, B. Pfister

Re: Post-Sabbatical Report, AY 2018-2019

As chair of the Committee on Sabbatical Leaves I am happy to report that the committee has accepted your post-sabbatical report. The committee extends its best wishes for your continued success.

Geotechnical Engineering

Administered by: John A. Reif, Jr. Department of Civil and Environmental Engineering
Faculty: Meegoda, Goncalves da Silva
Graduate Advisor: Hsin-Neng Hsieh, (973) 596-5859, hsieh@njit.edu
Degrees Offered: Master of Science in Civil Engineering

Master of Science in Civil Engineering

Focus area: Geotechnical Engineering. Intended for students who want broad technical competence in geotechnical engineering.

Admission Requirements

Students are expected to have an undergraduate degree in engineering or its equivalent.

Bridge Program – Students who lack an appropriate background are asked to make up deficiencies by taking a program of courses that is designed in consultation with the graduate advisor. These courses are taken in addition to the degree requirements. Please note that the prerequisites for bridge courses must also be met.

CE 320	Fluid Mechanics
CE 332	Structural Analysis
CE 333	Reinforced Concrete Design
CE 341	Soil Mechanics
CE 341A	Soil Mechanics Lab
CE 443	Foundation Design
CS 101	Computer Programming
Math 322	Differential Equations

Degree Requirements

A minimum of 30 degree credits, not including any bridge courses, is required. Candidates must consult with the graduate advisor (not thesis advisor) in designing appropriate programs of study.

Students must attain a minimum GPA of 3.0 in the core courses listed below, and a minimum overall GPA of 3.0

Core Courses:

9 credits as follows:

CE 641	Engineering Properties of Soils
CE 643	Advanced Foundation Engineering
CE 648	Flow Through Soils

Advanced Geotechnical Design Courses:

Select 6-9 credits from the following:

CE 642	Foundation Design
CE 647	Geotechnical Aspects of Solid Waste
CE 742	Geotechnology of Earthquake Engineering
CE 646	Geosynthetics

Geology/Rock Mechanics Courses:

Select 3-6 credits from the following:

CE 644	Engineering Geology
CE 614	Underground Construction
CE 602 or MIP 652	Geographic Information System
CE TBD	Extraction and Storage of Energy Resources

General Electives:

Select 0-12 credits from the following:

Pavements

CE 553	Design and Construction of Asphalt Pavements
CE 649	Design and Construction of Concrete Pavements
CE 659	Flexible and Rigid Pavements
CE 702	Concrete Durability
TBD	Management of Infrastructure Assets

Structural

CE 615	Infrastructure and Facilities Remediation
CE 631	Advanced Reinforced Concrete Design
CE 638	Nondestructive Testing Methods in Civil Engineering

Numerical Methods

ME 622	Finite Element Methods in Mechanical Engineering
Math 614	Numerical Methods I

Management/Leadership Electives:

Select 3-6 credits from the following:

CE 610	Construction Management
CE 611	Project Planning and Control
CE 616	Construction Cost Estimating
CE 711	Methods Improvement in Construction
EM 632	Legal Aspects in Construction
HRM 601	Organizational Behavior

Students pursuing a thesis option or receiving financial aid at any point in their studies must complete a minimum of 6 credits of CE 701 Master's Thesis in place of 3 credits reduction from the Advanced Geotechnical Design Courses Requirements and 3 Credits reduction from the Management/Leadership

EVALUATION & LEARNING OUTCOMES ASSESSMENT PLAN

All NJIT courses and degree programs are assessed regularly and systematically. The proposed Master of Science in Medical Science (MSMS) will be assessed in accordance with the institution's existing assessment standards and practices to ensure continual program improvement. Courses required in order to earn the MSMS will be evaluated in accordance with all applicable institutional and department-level academic assessment plan(s) and practices.

Both direct and indirect assessment methods will be used, including systematic analysis of coursework, course evaluations, admission to health professions statistics, student opinion reports, student surveys, and alumni surveys. At the institutional level, the Office of Institutional Effectiveness (OIE) is responsible for assessment oversight at NJIT. The OIE works with individual academic divisions and units in order to assess academic programs on an annual basis in an effective and reliable manner.

The mission of the MSMS is to develop students' skills and knowledge so that they are equipped to pursue admission to medical and other health professions schools. Guided by this mission, the program goals (PGs) are to:

1. Provide instruction in the foundational and evolving medical sciences, including anatomy, biochemistry, histology, microbiology, neuroscience, community medicine, ethics, and physiology, as well as the application of this knowledge to research. (PG1)
2. Enhance interpersonal and communication skills that result in the effective exchange of information. (PG2)
3. Provide pre-health professional training, including an expectation to demonstrate honesty, integrity, and a commitment to abide by the principles of medical ethics. (PG3)

Students earning a MSMS will also demonstrate proficiency in the proposed program's student learning outcomes (SLOs), comprised of the following:

1. Demonstrate medical science knowledge and competencies comparable to first year medical school curriculum. (SLO1)
2. Develop competencies with statistics, data analysis, and interpretation. (SLO2)
3. Read and critically analyze scientific literature, and articulate its impact on medicine, public health, and society. (SLO3)
4. Effectively communicate and present ideas to a variety of audiences. (SLO4)
5. Demonstrate professionalism and technical expertise in the broad areas of observation, function, and social skills as related to effective medical practitioners. (SLO5)

Table 1 demonstrates the relationship between the program goals and the student learning outcomes. Table 2 presents the curriculum map and assessment plan for the program's student learning outcomes.

Table 1. Program Goals & Student Learning Outcomes Matrix

Student Learning Outcome (SLO)	Program Goal (PG)		
	<i>PG1 Knowledge</i>	<i>PG2 Communication</i>	<i>PG3 Professionalism</i>
<i>SLO1 Demonstrate medical science knowledge and competencies comparable to first year medical school curriculum.</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>SLO2 Develop competencies with statistics, data analysis, and interpretation.</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<i>SLO3 Read and critically analyze scientific literature, and articulate its impact on medicine, public health, and society.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
<i>SLO4 Effectively communicate and present ideas to a variety of audiences.</i>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<i>SLO5 Demonstrate professionalism and technical expertise in the broad areas of observation, function, and social skills as related to effective medical practitioners.</i>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Table 2. Curriculum Map & Assessment of Student Learning Outcomes

Student Learning Outcome (SLO)	Courses	Assessment
<p><i>SLO1 Demonstrate medical science knowledge and competencies comparable to first year medical school curriculum.</i></p>	MDSC 601	Gross Anatomy, Embryology & Imaging
	MDSC 602	Neuroscience
	MDSC 605	Histology and Cell Biology
	MDSC 612	Medical Biochemistry I
	MDSC 614	Medical Biochemistry II
	MDSC 635	Medical Ethics
	MDSC 642	Microbiology I
	MDSC 692	Physiology I
	MDSC 694	Physiology II
	MDSC 600	Interprofessional Perspectives in Health Disparities
<p><i>SLO2 Develop competencies with statistics, data analysis, and interpretation.</i></p>	MDSC 602	Neuroscience
	MDSC 692	Physiology I
	MDSC 694	Physiology I
	MDSC 600	Interprofessional Perspectives in Health Disparities
	MDSC 612	Medical Biochemistry I
<p><i>SLO3 Read and critically analyze scientific literature, and articulate its impact on medicine, public health, and society.</i></p>	MDSC 614	Medical Biochemistry II
	MDSC 635	Medical Ethics
	MDSC 600	Interprofessional Perspectives in Health Disparities
<p><i>SLO4 Effectively communicate and present ideas to a variety of audiences.</i></p>	MDSC 601	Gross Anatomy, Embryology & Imaging
	MDSC 602	Neuroscience
	MDSC 692	Physiology I
	MDSC 694	Physiology II
	MDSC 600	Interprofessional Perspectives in Health Disparities
<p><i>SLO5 Demonstrate professionalism and technical expertise in the broad areas of observation, function, and social skills as related to effective medical practitioners.</i></p>	MDSC 601	Gross Anatomy, Embryology & Imaging
	MDSC 605	Histology and Cell Biology
	MDSC 635	Medical Ethics
	MDSC 692	Physiology I
	MDSC 694	Physiology II
	MDSC 600	Interprofessional Perspectives in Health Disparities
	MDSC 601	Gross Anatomy, Embryology & Imaging
	MDSC 605	Histology and Cell Biology
	MDSC 635	Medical Ethics
	MDSC 692	Physiology I
MDSC 694	Physiology II	

Notes: USMLE is the United States Medical Licensing Examination, the three-step examination for medical licensure in the United States
 NBME is the National Board of Medical Examiners, one of the groups that oversees the USMLE

In compliance with the accreditation standards and guidelines of the Middle States Commission on Higher Education, NJIT maintains adherence to the following five Institutional Learning Goals (ILG):

1. Research-Based Inquiry: Students employ methods appropriate to their discipline. (ILG1)
2. Collaboration: Students work effectively in teams, applying multidisciplinary and global perspectives. (ILG2)
3. Ethical Conduct: Students demonstrate professional and civic responsibility, including respect for all individuals. (ILG3)
4. Creativity: Students use heuristics to evaluate, analyze, and synthesize innovative solutions to existing and emerging problems. (ILG4)
5. Professional Readiness: Students exhibit knowledge and skills, and engage in experiences, necessary for professional and personal growth. (ILG5)

Beyond NJIT's institutional accreditation by the Middle States Commission on Higher Education, there is no external accreditation applicable to the proposed degree program.



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COLLEGE OF SCIENCE & LIBERAL ARTS

Office of the Dean

MASTER OF SCIENCE IN MEDICAL SCIENCE

Graduate Degree Program Proposal

November 8, 2018

NJIT Committee on Graduate Education



I. OBJECTIVES

College graduates who are interested in pursuing a career in healthcare often matriculate directly to a professional degree program in the health sciences. In order to support their career goals, however, students are increasingly choosing to pursue additional premedical educational opportunities in the form of post-baccalaureate premedical programs, which are designed to provide graduate-level health sciences training and further cultivate students' intellectual development. New Jersey Institute of Technology (NJIT) proposes a Master of Science in Medical Science, a post-baccalaureate premedical program intended to support students' transition to professional school. The proposed program will be offered in partnership with Ponce Health Sciences University (PHSU) School of Medicine, Puerto Rico, an institution is accredited by the Middle States Commission on Higher Education (MS-CHE with its Medicine Doctoral (MD) program accredited by the Liaison Committee on Medical Education (LCME). The students and faculty at PHSU are mainly Puerto Ricans and Hispanics, and serve the medical community and society by providing qualified bilingual medical professionals that often practice in under-served and minority communities. The partnership between PHSU and NJIT will enhance these efforts and serve our students.

The classification "post-baccalaureate premedical program" refers to a broad range of graduate certificates and degree programs in the health sciences that serve a growing and increasingly diverse student population seeking careers in healthcare (Andriole & Jeffe, 2011; Andriole et al., 2015; McDougle et al., 2015). The designation "post-baccalaureate" refers to an academic program in which students with a bachelor's degree complete coursework at the graduate level, although some undergraduate coursework may also be included (e.g., in order to satisfy medical school admission criteria).

Post-baccalaureate premedical programs enable applicants to medical and other health professions schools (e.g., dentistry, physical therapy, physician assistant, podiatry, etc.) to complete additional coursework in the foundational sciences, demonstrate the ability to succeed in graduate-level studies, and prepare for national admissions examinations (Andolsek, Buckley, Jackson, Lee, & White, 2014). Locally, this program will help to meet the growing demand for medical education amid scarce supply (AAMC, 2018d), and, more broadly, it will help to address the nation's increasing physician shortage, which is projected to surpass 120,000 by 2030 (AAMC, 2018e).

Furthermore, post-baccalaureate premedical programs play a key role in helping to increase the number of medical school matriculants from underrepresented minority groups or who are economically or educationally disadvantaged (Andriole & Jeffe, 2011), one of the Association of American Medical College's four primary mission areas (AAMC, 2018c).

I.A. Program Goals & Learning Outcomes

The mission of the Master of Science in Medical Sciences is to develop students' skills and knowledge so that they are equipped to pursue admission to medical and other health professions schools. Guided by this mission, the program goals (PGs) are to:

1. Provide instruction in the foundational and evolving medical sciences, including anatomy, biochemistry, histology, microbiology, neuroscience, community medicine, ethics, and physiology, as well as the application of this knowledge to research. (PG1)
2. Enhance interpersonal and communication skills that result in the effective exchange of information. (PG2)
3. Provide pre-health professional training, including an expectation to demonstrate honesty, integrity, and a commitment to abide by the principles of medical ethics. (PG3)

Students earning a Master of Science in Medical Sciences will also demonstrate proficiency in the proposed program's student learning outcomes (SLO's), comprised of the following:

1. Demonstrate medical sciences knowledge and competencies comparable to first year medical school curriculum. (SLO1)
2. Develop competencies with statistics, data analysis, and interpretation. (SLO2)
3. Read and critically analyze scientific literature, and articulate its impact on medicine, public health, and society. (SLO3)
4. Effectively communicate and present ideas to a variety of audiences. (SLO4)
5. Demonstrate professionalism and technical expertise in the broad areas of observation, function, and social skills as related to effective medical practitioners. (SLO5)

II. NEED

Graduate medical education is a key factor affecting today's doctor shortage (AAMC, 2018a). According to a 2018 report from the Association of American Medical Colleges, "[p]hysician demand continues to grow faster than supply, leading to a projected shortfall of between 42,600 and 121,300 physicians by 2030" (AAMC, 2018e, p. 3). A multifaceted solution to the physician shortage includes increasing the total number of medical school matriculants each year. Since 2002, the number of medical school matriculants has grown by approximately 30%, and 22 new domestic medical schools have opened since 2007; during the same period (i.e., since 2002), the overall number of medical school applicants has increased more than 50% (AAMC, 2017b). The demand for graduate medical education, thus, continues to grow, and post-baccalaureate premedical programs are a key resource in helping to meet this demand while simultaneously diversifying its workforce (Andriole et al., 2015; Goode & Talbot, 2016). The NJIT MS in Medical Science in partnership with PHSU represents a n unique opportunity to help facilitate the preparation under-represented minority students to continue in professional studies in the field of medicine.

III. RELATIONSHIP TO INSTITUTIONAL STRATEGIC PLAN & INSTITUTIONAL IMPACT

Currently there is no program at NJIT that parallels the proposed Master of Science in Medical Science program. While the university offers a Master of Science in Biology and a Master of Science in Biomedical Engineering, neither of these programs specifically targets students seeking graduate-level premedical coursework and preparation. Given its unique focus and target student population, it is expected that the proposed program will have little to no impact on enrollment in the university's existing graduate programs.

The proposed Master of Science in Medical Science is strongly aligned with NJIT's strategic priorities, as identified in *2020 Vision: A Strategic Plan for NJIT* (2015):

1. Students: Increase enrollment and retention (pp. 9-11)
2. Learning: Focus on professional outcomes of degree programs (p. 15)
3. Community: Foster a global, inclusive, and diverse student community (pp. 21-23)

The number of post-baccalaureate premedical programs has grown considerably in recent years. As of August 2018, the Association of American Medical Colleges (AAMC) lists 249 programs in their online index of post-baccalaureate premedical programs (AAMC, 2018b), which is more than double the number of programs listed in 2006 (Ceccati & Hunter, 2006). Such growth has occurred alongside the continued increase in demand for graduate medical education (AAMC, 2018d). Taken together, thus, it stands to reason that the proposed Master of Science in Medical Sciences will be an asset in helping the university to realize its enrollment goals.

Post-baccalaureate premedical programs are pre-professional by design; thus, graduates of these programs are well prepared to pursue degrees from numerous graduate-level health professions programs, including dentistry, medical, occupational therapy, optometry, pharmacy, physical therapy, and physician assistant schools.

Finally, the proposed Master of Science in Medical Science stands to contribute significantly to helping the university achieve its mission to foster a global, inclusive, and diverse student community. Students enrolled in post-baccalaureate premedical programs are more likely to be a member of an underrepresented minority race/ethnicity and are also more likely to come from an economically or educationally disadvantaged background (Andriole & Jeffe, 2011). Furthermore, multiple studies have shown that graduates of post-baccalaureate premedical programs are more likely to indicate an intention to practice medicine in underserved areas upon graduation from medical school (Andriole & Jeffe, 2011; Andriole et al., 2015; Griffin, Porfeli, & Hu, 2017; McDougle et al., 2015; Vick et al., 2018).

IV. RELATED PROGRAMS IN THE STATE & REGION

The Association of American Medical Colleges (AAMC) broadly categorizes post-baccalaureate premedical programs into one of two types (Andriole et al., 2015, p. 2):

1. Career-changer post-baccalaureate premedical programs: These programs provide opportunities for college graduates to complete pre-medical coursework required for medical-school admission.
2. Academic record-enhancer post-baccalaureate premedical programs: These programs provide college graduates who have completed required coursework the opportunity to strengthen their academic credentials.

Although generally distinct, certain programs may be considered both career-changer and academic record-enhancer. Of the 249 post-baccalaureate premedical programs listed on the AAMC's web site, 59.0% are career-changer and 71.5% are academic record-enhancer (AAMC, 2018b). Within the State of New Jersey, 66.7% are career-changer and 44.4% are academic record-enhancer (AAMC, 2018b).

The AAMC index of post-baccalaureate premedical programs also allows users to filter programs based on those that are targeted specifically towards underrepresented minority students as well as those that are designed for economically or educationally disadvantaged students. Of the 249 post-baccalaureate premedical programs listed on the AAMC's web site, 39.0% are geared towards underrepresented minority students and 28.5% are geared towards economically or educationally disadvantaged students. Within the State of New Jersey, 55.6% are targeted towards underrepresented minority students and 22.2% are geared towards economically or educationally disadvantaged students.

Table 1 presents a comprehensive list of state and regional programs related to the proposed Master of Science in Medical Science, and Table 2 presents a sampling of distinguished programs nationally.

Table 1. Relevant Regional Graduate Programs in Medical Sciences & Related Fields

State	Institution	Program(s)
CT	Quinnipiac University University of Connecticut	MHS, Medical Laboratory Sciences Medicine & Dental Medicine PBPP
NJ	Cooper Medical School of Rowan University Drew University Fairleigh Dickinson University Rider University Rowan University Rutgers University-New Brunswick Rutgers Grad. School of Biomedical Sciences Rutgers R.W.J. Medical School William Paterson University	Advanced Premedical Studies PBPP PBPP (<i>ndp</i>) MHS, Gateway to Professional Studies Post-Baccalaureate Premedical Studies Pre-Health Studies Post-Baccalaureate PBPP (<i>ndp</i>) MS, Biomedical Sciences MBS MBS PBPP (<i>ndp</i>)
NY	Columbia University Medical Center Icahn School of Medicine at Mount Sinai New York Medical College Tuoro College of Osteopathic Medicine	Certificate, Premedical Sciences MS, Biomedical Science MS, Clinical Research Certificate, Clinical Research Training Program MS, Basic Medical Sciences MS, Biological & Physical Sciences
PA	Chatham University Drexel University College of Medicine Geisinger Commonwealth School of Medicine Lehigh University Philadelphia College of Osteopathic Medicine Temple University College of Science & Tech. Temple University School of Medicine	MS, Biology (<i>non-thesis option</i>) Interdepartmental Medical Science Program Drexel Pathway to Medical School Program Interdisciplinary Health Sciences Program MBS MS, Medical Science MBS MEng, Healthcare Systems Engineering MS, Biomedical Sciences PBPP (<i>ndp</i>) Advanced Core in Medical Science PBPP

Notes: *MHS: Master of Health Sciences*
PBPP: Post-Baccalaureate Premedical Program
ndp: Non-degree program
MBS: Master of Biomedical Sciences
MS: Master of Science
MEng: Master of Engineering

Table 2. Distinguished Programs Nationally

Institution	Location	Program
Bryn Mawr College	Bryn Mawr, PA	PBPP (<i>ndp</i>)
Georgetown University	Washington, DC	MS, Physiology & Biophysics MS, Physiology SMP MS, Physiology Certificate, PBPP Summer Medical Institute Program (<i>ndp</i>)
Goucher College	Baltimore, MD	PBPP (<i>ndp</i>)
Johns Hopkins University	Baltimore, MD	MHS, Environmental Health & Engineering MHS, Biochemistry & Molecular Biology PBPP (<i>ndp</i>)
Scripps College	Claremont, CA	PBPP (<i>ndp</i>)

Notes: *PBPP: Post-Baccalaureate Premedical Program*

MS: Master of Science

SMP: Special Master's Program

ndp: Non-degree program

MHS: Master of Health Sciences

V. STUDENTS

Graduates of post-baccalaureate premedical programs comprise approximately 15% of matriculating medical school students annually (Capuzzi Simon, 2012). According to results from the 2017 Matriculating Student Questionnaire, a survey administered annually by the AAMC in order to collect information about first-year medical school matriculants, 8.9% of incoming medical students participated in a career-changer post-baccalaureate premedical program and 7.1% of incoming medical students participated in an academic record-enhancer post-baccalaureate premedical program. Taken together, 16.0% of first-year medical students participated in a post-baccalaureate premedical program in 2017, which is consistent with previous years (e.g., Capuzzi Simon, 2012).

Student enrollment projections for the proposed Master of Science in Medical Science are thusly based on anticipated demand. PHSU commits to offering a significant number of students in the proposed Master of Science in Medical Science program at NJIT an interview for the PHSU MD program. We estimate that the program will enroll a cohort of 60 students by its fifth year. Table 3 exhibits the full five-year enrollment projections for the proposed program.

Table 3. Master of Science in Medical Science Enrollment Projections, AYs 2019-2024

Academic Year	Projected Enrollment
2019 – 2020	15
2020 – 2021	25
2021 – 2022	50
2022 – 2023	55
2023 – 2024	60

VI. PROGRAM RESOURCES

VI.A. Course Development

All proposed Master of Science in Medical Science (MSMS) course materials, including content, lectures, course material, curriculum, text, artwork, documents, syllabi, grading criteria, assessment methodology, etc., will be provided by Ponce Health Sciences University (PHSU). PSHU will also provide pre-recorded video lectures and synchronous, live feed of PHSU faculty teaching the MSMS courses for exclusive use in the proposed MSMS program. The proposed MSMS courses are set forth in Table 4.

VI.B. Faculty

The individual MSMS courses are prepared and transmitted by PHSU faculty on NJIT's behalf, and will be delivered in English. All proposed MSMS courses shall be delivered by PHSU faculty via internet to a university classroom or through other such technology-based delivery methods.

PHSU shall provide broadcasted live in-classroom sessions (ICS) to NJIT with qualified faculty from PHSU for all MSMS courses. PHSU faculty shall provide advisement to enrolled students on their MSMS Course progress. An ICS assistant will also be appointed at NJIT in order to monitor enrolled students in the MSMS courses during the ICS and coordinate with PHSU designated faculty during live broadcasts.

Professional advisement services will be provided by PSHU in liaison with and with input from NJIT's director of pre-health advising. NJIT will designate a separate university liaison who will be responsible for working and communicating with PHSU in all programmatic areas.

VI.C. Classrooms & Laboratories; Libraries & Computing Facilities

NJIT will provide a dedicated classroom for the MSMS program as well as the technology required for the students to view the live in synchronous virtual classroom sessions broadcast by PHSU and to take required examinations.

VII. DEGREE REQUIREMENTS

The Master of Science in Medical Science (MSMS) is a program in the basic medical sciences that is comprised of a one-year core curriculum followed by a comprehensive examination leading to the conferral of a master's degree.

Students participating in the MSMS Program are expected to complete a total of thirty (30) university course credits. The expected study period for each student is one (1) academic year consisting of two (2) semesters. Upon successful completion of the MSMS Program, students will receive the MSMS degree from NJIT.

Students must also register for and pass a comprehensive examination based on the required course work. The comprehensive exam is given after students have earned grades for all the program's required courses. In order to be eligible for the comprehensive exam a student must have achieved a minimum 3.0 grade point average on a 4.0 scale for 24 credits, with no more than 6 credits of C grades and no failing grades. Courses in which a student received a failing grade must be repeated and can only be satisfied by earning a grade of B or better.

The MSMS curriculum is analogous to the first year of medical school, with comprehensive coursework in the basic sciences. The full curriculum for the proposed program is presented in Table 4.

VII.A. Academic Calendar

Given that all courses offered in the proposed MSMS program will be taught by PHSU faculty, NJIT will observe alternative academic calendar for the purposes of administering the proposed program only. The calendar will align with PHSU's MSMS program, which, designed to replicate a first-year medical school curriculum, is comprised of two (2) twenty-week semesters.

Table 4. Master of Science in Medical Sciences Proposed Curriculum

Semester	Course	Title	Credits	Outcome
Semester I	MDSC 601	Gross Anatomy, Embryology & Imaging I	6	A, B, C, or F
	MDSC 605	Histology and Cell Biology	3	A, B, C, or F
	MDSC 612	Medical Biochemistry I	4	A, B, C, or F
	MDSC 600	Interprofessional Perspectives in Health Disparities	1	Pass/Fail
	MDSC 692	Physiology I	2	A, B, C, or F
Semester II	MDSC 614	Medical Biochemistry II	3	A, B, C, or F
	MDSC 635	Medical Ethics	1	Pass/Fail
	MDSC 642	Medical Microbiology I	3	A, B, C, or F
	MDSC 602	Neuroscience	4	A, B, C, or F
	MDSC 694	Physiology II	3	A, B, C, or F
	CQX --	Comprehensive Qualifying Exam	--	Pass/Fail
TOTAL			30	

VIII. REFERENCES

- Andriole, D. A., & Jeffe, D. B. (2011). Characteristics of medical-school matriculants who participated in postbaccalaureate-premedical programs. *Academic Medicine : Journal of the Association of American Medical Colleges*, 86(2), 201–210.
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COLLEGE OF SCIENCE & LIBERAL ARTS

Office of the Dean

TO: Sotirios Ziafras, Vice Provost for Graduate Studies & Dean of the Graduate Faculty

FROM: Kevin D. Belfield, Dean of the College of Science & Liberal Arts

DATE: November 5, 2018

RE: Revision to PSM Biotechnology Option of the MS Pharmaceutical Chemistry Program

In order to provide greater opportunity for students, we request the changes outlined below to the Required Professional Courses in the program:

Remove MGMT 641 Global Project Management as this course is restricted to MBA students.

Add the following courses to the list of Required Professional Courses from which students can select:

- EM 631 Legal Aspects in Environmental Engineering
- EM 633 Legal Aspects of Health and Safety
- EM 636 Project Management
- EVSC 613 Environmental Problem Solving
- EVSC 614 Quantitative Environmental Risk Assessment
- EVSC 623 Environmental Health
- IE 615 Industrial Hygiene and Occupational Health
- MGMT 620 Management of Technology
- PTC 620 Proposal Writing
- PTC 725 Writing for Publication

Attached to this memo, please find an updated curriculum grid for your reference.



M.S. in Pharmaceutical Chemistry PSM (Professional Science Master's) Biotechnology Option
Current Curriculum

Required Core Courses		
<u>BIOL 605</u>	Principles of Bioscience Processing	3
<u>BIOL 606</u>	Applied Bioprocessing & Immunological Based Therapies	3
<u>CHEM 605</u>	Advanced Organic Chemistry I: Structure	3
<u>CHEM 673</u>	Biochemistry	3
<u>CHEM 777</u>	Principles Pharm Chemistry	3
Required Professional Courses		
Select three of the following:		9
<u>EM 634</u>	Legal, Ethical and Intellectual Property Issues for Engineering Managers	
<u>HRM 601</u>	Organizational Behavior	
<u>MGMT 641</u>	Global Project Management	
<u>PTC 601</u>	Advanced Professional and Technical Communication	
Required Experiential Capstone		
<u>CHEM 590</u>	Graduate Co-Op Work Experience I	3
Elective Courses		
Select one of the following:		3
<u>CHEM 658</u>	Advanced Physical Chemistry	
<u>CHEM 661</u>	Instrumental Analysis Laboratory	
<u>CHEM 700B</u>	Masters Project	
<u>CHEM 714</u>	Pharmaceutical Analysis	
<u>CHEM 716</u>	Integrated Drug Dev & Discover	
<u>CHEM 719</u>	Drug Delivery Systems	
<u>CHEM 737</u>	Applications of Computational Chemistry and Molecular Modeling	
<u>CHEM 748</u>	Nanomaterials	
<u>EVSC 616</u>	Toxicology	
<u>MATH 663</u>	Introduction to Biostatistics	
<u>PHB 610</u>	Biotechnology-Biopharmaceutical, Processes and Products	
<u>PHB 615</u>	Bioseparation Processes	
<u>PHEN 500</u>	Pharmaceutical Engineering Fundamentals I	
<u>PHEN 604</u>	Validation and Regulatory Issues in the Pharmaceutical Industry	
<u>PHEN 618</u>	Principles of Pharmacokinetics and Drug Delivery	
<u>R120 572</u>	Concepts in Pharm Drug Dev	
<u>R160 515</u>	Chem Struct Determin	
RBHS course - PATH N5209 Business of Science: Drug Dev from Molecules to Medicines		
RBHS course - PHPY N5021 Fundamentals of Pharmacology		
Total Credits		30

M.S. in Pharmaceutical Chemistry PSM (Professional Science Master's) Biotechnology Option
Revised Curriculum (*changes highlighted in yellow*)

Required Core Courses		
<u>BIOL 605</u>	Principles of Bioscience Processing	3
<u>BIOL 606</u>	Applied Bioprocessing & Immunological Based Therapies	3
<u>CHEM 605</u>	Advanced Organic Chemistry I: Structure	3
<u>CHEM 673</u>	Biochemistry	3
<u>CHEM 777</u>	Principles Pharm Chemistry	3
Required Professional Courses		
Select three of the following:		9
<u>EM 631</u>	Legal Aspects in Environmental Engineering	
<u>EM 633</u>	Legal Aspects of Health and Safety	
<u>EM 634</u>	Legal, Ethical and Intellectual Property Issues for Engineering Managers	
<u>EM 636</u>	Project Management	
<u>EVSC 613</u>	Environmental Problem Solving	
<u>EVSC 614</u>	Quantitative Environmental Risk Assessment	
<u>EVSC 623</u>	Environmental Health	
<u>IE 615</u>	Industrial Hygiene and Occupational Health	
<u>HRM 601</u>	Organizational Behavior	
<u>MGMT 620</u>	Global Project Management	
<u>PTC 601</u>	Advanced Professional and Technical Communication	
<u>PTC 620</u>	Proposal Writing	
<u>PTC 725</u>	Writing for Publication	
Required Experiential Capstone		
<u>CHEM 590</u>	Graduate Co-Op Work Experience I	3
Elective Courses		
Select one of the following:		3
<u>CHEM 658</u>	Advanced Physical Chemistry	
<u>CHEM 661</u>	Instrumental Analysis Laboratory	
<u>CHEM 700B</u>	Masters Project	
<u>CHEM 714</u>	Pharmaceutical Analysis	
<u>CHEM 716</u>	Integrated Drug Dev & Discover	
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<u>R160 515</u>	Chem Struct Determin	
RBHS course - PATH N5209 Business of Science: Drug Dev from Molecules to Medicines		

