

### PROGRAM MODIFICATION PROPOSAL FORM

Name of Institution: Medical University of South Carolina

Briefly state the nature of the proposed modification (e.g., adding a new concentration, extending the program to a new site, curriculum change, etc.):

We propose a dual degree program that will allow students to **concurrently earn a PharmD and a Master of Science in Health Informatics**. Both of these degree programs already exist at MUSC. The proposed plan will allow students to concurrently pursue both degrees.

No students will be admitted directly into this degree program as first time MUSC students. Rather, all will enter as PharmD students, and with satisfactory performance in their first two semesters, they will be permitted to apply for "transfer" into the PharmD/MSHI dual degree program, to begin following their third semester in the PharmD. Thus, they'll exhaust their LIFE scholarship eligibility before beginning the PharmD/MSHI, and the PharmD/MSHI program is not officially a LIFE eligible program.

Current Name of Program (include degree designation and all concentrations, options, and tracks):

1. Master of Science in Health Informatics
2. Doctor of Pharmacy Degree

Proposed Name of Program (include degree designation and all concentrations, options, and tracks): PharmD/MSHI Dual Degree

Program Designation:

- |  |  |
|--|--|
| <input type="checkbox"/> Associate's Degree  | <input type="checkbox"/> Master's Degree   |
| <input type="checkbox"/> Bachelor's Degree: 4 Year   | <input type="checkbox"/> Specialist  |
| <input type="checkbox"/> Bachelor's Degree: 5 Year   | <input type="checkbox"/> Doctoral Degree: Research/Scholarship (e.g., Ph.D. and DMA) |
| <input checked="" type="checkbox"/> Doctoral Degree: Professional Practice (e.g., Ed.D., D.N.P., J.D., Pharm.D., and M.D.) |  |

Does the program currently qualify for supplemental Palmetto Fellows and LIFE Scholarship awards?

- Yes  
 No

If No, should the program be considered for supplemental Palmetto Fellows and LIFE Scholarship awards?

- Yes  
 No

Proposed Date of Implementation: Fall 2019

CIP Code: PharmD is 51.2001

CIP Code: Master of Science in Health Informatics is 51.2706

Current delivery site(s) and modes: Blended format. PharmD has a traditional delivery; the MSHI has a blended (online plus traditional) delivery.

Proposed delivery site(s) and modes: Medical University of South Carolina. The PharmD portion will remain in the traditional didactic format with required clinical rotations. Students will concurrently complete the MSHI degree in the executive style format with 4 days each semester on campus, and the rest of the content will be delivered online.

Program Contact Information (name, title, telephone number, and email address):

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Institutional Approvals and Dates of Approval:

PharmD Curriculum Committee – Approved 12/19/18  
COP Dean – Approved 12/19/18  
MSHI Advisory Council - Approved 12/20/18  
CHP Leadership Council – Approved 12/20/18  
Education Advisory Committee – Approved by poll 1/8/19  
Provosts Council – 1/14/19  
BOT

## Background Information

Provide a detailed description of the proposed modification, including target audience, centrality to institutional mission, and relation to strategic plan.

The proposed modification is to create a dual degree from two existing degree programs at MUSC—the PharmD program (which prepares graduates to be licensed pharmacists) and the Master of Science of Health Informatics program (which is the science of information). Individuals trained in health informatics study the collection, organization, and use of data in healthcare and medical research. They are frequently involved in theoretical research and in the conceptual design and building of health information systems used in decision support applications and e-prescribing. Health informatics is an applied field and individuals with training in this field generally work in health care provider organizations and settings or pharmaceutical or biotech industries and are skilled in the application and use of health information and data analytics. They are generally involved in applied research that examines issues such as the impact of health information technology on equality of care, patient safety, and efficiency. They often focus on patient-level and population health data and comparative effectiveness research. These skills are synergistic when combined with expertise in the pharmaceutical sciences, which the PharmD program provides.

Faculty from both programs have collaborated to develop the curriculum for the dual PharmD/MSHI degree. Two other dual degrees are offered at MUSC (MD/PhD and DMD/PhD), so MUSC has experience offering dual degrees that combine to produce competencies from separate degree programs to optimize the marketability of graduates.

The target audience is students in the PharmD program (or applicants to the PharmD program). That is, all students who enroll in the dual program must be accepted in the PharmD and successfully complete the first 2 semesters, at which time they are eligible to apply to transfer into the proposed dual degree program (to begin in the Fall semester of the second year). The MSHI Program Classes are offered in a format conducive for the working student, including using weekend offerings and distance education technologies. This will allow the dual degree students to take the MSHI courses concurrently with PharmD courses.

Biomedical informatics, including health informatics, is of critical interest to the state and to MUSC. As South Carolina's only Clinical and Translational Science Award (CTSA) center and one of only 60 centers nationally, the CTSA goals are to accelerate the translation of basic sciences into treatments for patients, to engage communities in clinical research efforts, and to train a new generation of clinical and translational researchers. At the same time, MUSC has consistently been named one of the most wired hospitals in health care and has been a national leader in data mining and telemedicine. The proposed dual degree program is vital to MUSC's overall strategic plan in bolstering its biomedical informatics activities, especially in the area of pharmacy. It can also ensure that South Carolina is competitive nationally in biomedical sciences and a knowledge-driven economy.

## Assessment of Need

Provide an assessment of the need for the program modification for the institution, the state, the region, and beyond, if applicable.

The United States is in the midst of its largest health IT investment ever as the majority of health care organizations are in the throes of implementing or upgrading their Electronic Health Record (EHR) systems, which are viewed as a large piece of the expected quality improvements related to **safer and more responsible use of pharmacy services**.

Driven largely by the influx of federal incentive dollars available through the Health Information Technology for Economic and Clinical Health Information (HITECH) Act of 2009<sup>1</sup>, eligible hospitals and physician practices seek not only to adopt Electronic Health Records (EHR) systems, but to demonstrate “meaningful use,” indicating that providers have achieved certain thresholds and quality indicators, many of which relate to pharmacy services<sup>2</sup>. Furthermore, with impending changes in reimbursement, a shift from fee-for-service to fees determined by outcomes/quality, health care providers must have the tools to easily capture, analyze, and act on patient and population level health information. Individuals trained in health informatics and pharmacy, with strong leadership and data analytical skills, will be critical to the organization’s success and ultimately, to the state and nation, in improving quality of care and containing health care costs.

**Graduates of the program will be prepared to assume positions as data analytics officers, clinical systems analysts, health IT project managers, and chief medical/pharmacy officers in hospitals, physician practices, and other health care settings.** National reports indicate a high demand for health information professionals at all levels. A recent national survey found that 70% of health insurers, 48% of hospitals, and 39% of pharmaceutical/life sciences plan to increase hiring of health informatics professionals over the next several years<sup>3</sup>. The U.S. Bureau of Labor and Statistics projects faster than average growth for Medical Records and Health Information Technicians from 2016-2026, with a positive change of more than 27,000 new positions in the field nationwide<sup>4</sup>. The growth in positions in health informatics is also projected for South Carolina.

Other sources highlight the need specifically for pharmacy informatics indicating that the promise of quality improvement based on the use of information technology has made tech-savvy pharmacists in demand. <sup>5</sup> Others project greater opportunities for pharmacists in the use of informatics.<sup>6</sup>

<sup>1</sup>Centers for Medicare and Medicaid Services (CMS), EHR Incentives Programs; Accessed online at: <https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentivePrograms/index.html?redirect=/EHRIncentivePrograms/>

<sup>2</sup>CMS EHR Meaningful Use Criteria, Accessed online at [https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentiveProgram/Meaningful\\_Use.html](https://www.cms.gov/Regulations-and-Guidance/Legislation/EHRIncentiveProgram/Meaningful_Use.html)

<sup>3</sup>Bureau of Labor Statistics, Accessed online [http://www.bls.gov/news.release/archives/ecopro\\_12102009.pdf](http://www.bls.gov/news.release/archives/ecopro_12102009.pdf)

<sup>4</sup>Bureau of Labor Statistics, U.S. Department of Labor, *Occupational Outlook Handbook*, Medical Records and Health Information Technicians, on the Internet at <https://www.bls.gov/ooh/healthcare/medical-records-and-health-information-technicians.htm> (visited December 4, 2018).

<sup>5</sup>Pharmacy Informatics: Tech-savvy pharmacists in demand Accessed online: <https://pharmacyforme.org/2018/02/27/pharmacy-informatics-tech-savvy-pharmacists-in-demand/>

<sup>6</sup>Pharmacy informatics: New role for pharmacists Accessed online: <http://www.drugtopics.com/technology/pharmacy-informatics-new-role-pharmacists>

### **Transfer and Articulation**

Identify any special articulation agreements for the modified proposed program. Provide the articulation agreement or Memorandum of Agreement/Understanding.

N/A

**Description of the Program**

Projected Enrollment						
Year	Fall Headcount		Spring Headcount		Summer Headcount	
	New	Total	New	Total	New	Total
2019	2	2	0	2	0	2
2020	2	4	0	4	0	4
2021	2	4	0	4	0	4
2022	2	4	0	4	0	4

Explain how the enrollment projections were calculated.

We have estimated the number of PharmD students who are in their second year of study and would wish to enter the program based on informal inquiry and discussion with students about the program. Good standing students in the PharmD program following Spring semester Year 1 may apply to the PharmD/MSHI degree program. They will still take four credit hours as a PharmD student in Summer semester, but then in the Fall become PharmD/MSHI students.

**Curriculum**

Attach a curriculum sheet identifying the courses required for the program.

The program will not add any additional time to the PharmD students' plan of study, but while enrolled in the program, they will be paying both tuition for the full time PharmD program and the part-time tuition for the MSHI during the semesters when they take courses in the MSHI. Based on the required 30 credit hours for the PharmD students to earn an MSHI, the additional cost ranges from \$25,950-\$28,620 depending on whether they are in-state or out-of-state. In addition, there will be 8 credit hours of electives in the PharmD program that will be waived for students in the PharmD/MSHI program.

**Curriculum Changes**

Courses Eliminated from Program	Courses Added to Program	Core Courses Modified

**New Courses**

List and provide course descriptions for new courses.

- a. No new courses are required for this dual degree program.
- b. The curriculum map is provided identifying the sequence of courses required for the proposed dual program.

Year	Semester	Course No	Description	Credits	Course Coordinator 18FA
1	Fall	COP 627	Medical Terminology	1	Shirley
1	Fall	COP 630	Compounding & Applied Pharmaceutics Lab	1	Shirley
1	Fall	COP 620	Intro to Drug Information	1	Wisniewski
1	Fall	COP 625	Pharmacy Calculations	1	Shirley
1	Fall	COP 605	Introduction to Pharmacy Practice	2	Brittain
1	Fall	COP 615	Pharmaceutical Biochemistry	3	Woster
1	Fall	COP 609	Foundations of Pharmaceutical Chemistry & Pharmacogenomics I	3	Patrick
1	Fall	COP 601	Foundations of Pathophysiology & Pharmacology I	2	Soltis
1	Fall	COP 607	Dosage Forms and Drug Delivery Systems	4	Peterson
1	Spring	COP 640	Clinical Applications I	1	Garner
1	Spring	COP 632	Intro to Community Pharmacy Lab I	1	Sterrett
1	Spring	COP 618	Self-Care & Complementary Medicines	4	Brittain
1	Spring	COP 616	Pharmaceutical Biotechnology	2	Chou
1	Spring	COP 603	Foundations of Pathophysiology & Pharmacology II	4	Soltis
1	Spring	COP 611	Foundations of Pharmaceutical Chemistry & Pharmacogenomics II	3	Patrick
1	Summer	COP 650	Pharmacy Practice Experience (IPPE) Community or	4	
1	Summer	COP 651	Advanced IPPE I - Community	4	
2	Fall	COP 731	Intro. to Health Systems Lab	1	J Wisniewski
2	Fall	COP 722	Biopharmaceutics and Pharmacokinetics	2	Townsend
2	Fall	COP 702	Pathophysiology/Pharmacologic Basis of Therapeutics I	3	Zhong/Chessman
2	Fall	COP 717	Clinical Microbiology	2	Bosso
2	Fall	COP 712	Pharmacotherapy I	4	Zhong/Chessman
2	Fall	COP 742	Clinical Applications II	1	Fermo
2	Fall	HIN-702	Intro. To Health Care Information Systems	3	CHP Faculty
2	Fall	HIN-700	Database Management	3	CHP Faculty
2	Spring	COP 720	Clinical Pharmacokinetics	3	White
2	Spring	COP 714	Pharmacotherapy II	4	Bohm
2	Spring	COP 733	Applied Health Systems Lab	1	Wisniewski
2	Spring	COP 744	Clinical Applications III	1	Bragg
2	Spring	COP 704	Pathophysiology/Pharmacologic Basis of Therapeutics II	3	Soltis
2	Spring	COP 725	Outcomes Design and Assessment	3	Weeda/Pilch
2	Spring	HIN-704	Health Care Data - Content, Standards, and Knowledge Discovery	3	CHP Faculty
2	Summer	COP 750	Intro Pharm Prac Exp Hospital or	4	
2	Summer	COP 753	Advanced Hospital IPPE	4	
2	Summer	HIN-710	Data Mining and Analytics	3	CHP Faculty
2	Summer	HAP-737	Organizational Behavior	3	CHP Faculty
3	Fall	COP 834	Applied Community Pharmacy Lab	1	Sterrett
3	Fall	COP 846	Clinical Applications IV	1	LaPointe
3	Fall	COP 821	Advanced Drug Information	2	Wisniewski
3	Fall	COP 804	Health Care Systems and Management	3	Hebbard
3	Fall	COP 816	Pharmacotherapy III	4	LaPointe
3	Fall	COP 806	Pathophysiology/Pharmacologic Basis of Therapeutics III	3	Soltis
3	Fall	HIN-714	Advanced Health Information Technology	3	CHP Faculty
3	Fall	HIN-716	Ethical, Legal, and Regulatory Issues in Health Informatics	3	CHP Faculty
3	Spring	COP 836	Clinical Assessment	3	Ragucci
3	Spring	COP 805	Pharmacy Law and Ethics	3	Shirley/Sterrett
3	Spring	COP 818	Pharmacotherapy IV	5	Garner
3	Spring	COP 808	Pathophysiology/Pharmacologic Basis of Therapeutics IV	2	Niemenen
3	Spring	COP 848	Clinical Applications V	1	Drayton
3	Spring	HIN-706	Systems Analysis and Design	3	CHP Faculty

3	Summer	HIN-712	Applied Health Informatics	3	CHP Faculty
3	Summer		Advanced Pharmacy Practice Experience (APPE) x 1	4	
4	Fall		APPE x 4-5	16-20	
4	Fall	HIN-718	Capstone Project/APPE informatics rotation with project/Grand Rounds	3	CHP Faculty/COP preceptor
4	Spring		APPE x 4-5	16-20	
			<b>TOTAL CREDIT HOURS</b>	<b>169-177</b>	

Students enrolled in the MSHI program do not have to complete eight hours of electives in the PharmD program.

- Minimum 300 hours of Introductory Pharmacy Practice Experience (as required by ACPE) will be satisfied by two four-credit (four-week) externships in the summers of the P1 and P2 years
- Minimum 1440 hours of Advanced Pharmacy Practice Experience (as required by ACPE) will be satisfied by nine four-credit (one-month) externships in the P4 year. Courses include: two acute medicine, one ambulatory care, one community, one health-system, and four electives
- A one-credit Grand Rounds (COP 950) course will be required during the P4 year.
- Longitudinal IPPE Hospital I + II - P3 Fall & Spring (COP-751 + COP-752)

**Similar Programs in South Carolina offered by Public and Independent Institutions**

Identify the similar programs offered and describe the similarities and differences for each program.

Program Name and Designation	Total Credit Hours	Institution	Similarities	Differences
PharmD/MHIT	174	University of South Carolina	Executive style degree option; courses are conducted online or in traditional classroom setting	USC's MHIT does not focus on analytics. Requires a 250-hour internship instead of the capstone experience required in MUSC's MSHI program.



### Faculty

State whether new faculty, staff or administrative personnel are needed to implement the program modification; if so, discuss the plan and timeline for hiring the personnel. Provide a brief explanation of any personnel reassignment as a result of the proposed program modification.

No new faculty will be required for this dual degree program. The Program Directors of the PharmD and MSHI degrees will work together to coordinate the course of study for students enrolled in the dual program.

### Resources

Identify new library, instructional equipment and facilities needed to support the modified program.

**Library Resources: None**

**Equipment: No**

**Facilities: No**

### Impact on Existing Programs

Will the proposed program impact existing degree programs or services at the institution (e.g., course offerings or enrollment)? If yes, explain

Yes

No

**Financial Support**

<b>Estimated Sources of Financing for the New Costs</b>						
<b>Category</b>	<b>1<sup>st</sup></b>	<b>2<sup>nd</sup></b>	<b>3<sup>rd</sup></b>	<b>4<sup>th</sup></b>	<b>5<sup>th</sup></b>	<b>Total</b>
Tuition Funding						
Program-Specific Fees						
Special State Appropriation						
Reallocation of Existing Funds						
Federal, Grant, or Other Funding						
<b>Total</b>						
<b>Estimated New Costs by Year</b>						
<b>Category</b>	<b>1<sup>st</sup></b>	<b>2<sup>nd</sup></b>	<b>3<sup>rd</sup></b>	<b>4<sup>th</sup></b>	<b>5<sup>th</sup></b>	<b>Total</b>
Program Administration and Faculty and Staff Salaries						
Facilities, Equipment, Supplies, and Materials						
Library Resources						
Other (specify)						
<b>Total</b>						
<b>Net Total (i.e., Sources of Financing Minus Estimated New Costs)</b>						

There will be no new costs for this program.

**Budget Justification**

Provide a brief explanation for all new costs and sources of financing identified in the Financial Support table.

There will be no new costs for this program.

**Evaluation and Assessment**

<b>Program Objectives</b>	<b>Student Learning Outcomes Aligned to Program Objectives</b>	<b>Methods of Assessment</b>
<b>MSHI Outcomes</b>		
PO 1: The program performs well on dashboard indices of quality	Percentage of students who graduate on time. Target: 90% graduation at 150% program length)	Office of enrollment management
	Percentage of students who recommend or highly recommend the program Target: 80% of graduates will either agree or strongly agree on the exit survey that they would recommend the program	Exit interview
PO2: The program benefits the community by training valuable graduates	80% of graduates will be employed 3 months after graduation	Exit interview and program follow up
	Percentage of graduates who agree or strongly agree that the informatics knowledge that they developed in the program has been of benefit to their workplace	Alumni survey
	Capstone project mentors who agree/strongly agree that “the student was eager to learn/well engaged.”	Mentor evaluation of student
	Capstone project mentors who agree/strongly agree that “the student displayed a high level of professionalism.”	Mentor evaluation of student
	Capstone project mentors who agree/strongly agree that, “the student demonstrated informatics skills as I would have expected given his/her level of training.”	Mentor evaluation of student
Student Learning outcome 1: Students develop analytics knowledge and skills	Students who agree/strongly agree that their analytics knowledge and skills have greatly increased during the program	Mentee evaluation
	Graduates who have utilized their learnt analytics knowledge and skills in the workplace.	Alumni survey
	Capstone project mentors who agree or strongly agree that, “the student demonstrated informatics	Mentor evaluation of student

	skills as I would have expected given his/her level of training.”	
Student Learning Outcome 2: Students satisfactorily develop and can apply their informatics skills	Percentage of students who earn a B or higher on their capstone project	Project grade
	Percentage of capstone preceptors who rate the students’ performance as satisfactory or above	Mentor student evaluation.
<b>PharmD Outcomes</b>		
SLO1: Graduates will have essential foundational knowledge and essential skills for practice and care		
	Scaled mean score of NAPLEX area 1.	NABP
	Scaled mean score of NAPLEX area 2.	NABP
	First time pass rate on OSCE.	Clinical Assessment COP course
	Rate of agree/strongly agree to “Pharmacy practice experiences allowed collaboration with other health care professionals.”	AACP Graduating Student Survey
SLO2: Graduates will learn skills essential for personal and professional development		
	Number of students involved in student organizations.	COP Assessment
	Rate of agree/strongly agree to “My pharmacy practice experiences allowed me to have direct interaction with diverse patient populations.”	AACP Graduating Student Survey
	Percentage of students whose CV submission to their e-portfolio shows growth by meeting or exceeding expectations in P3 year.	COP Assessment

Will any the proposed modification impact the way the program is evaluated and assessed? If yes, explain.

- Yes  
 No

Will the proposed modification affect or result in program-specific accreditation? If yes, explain; and, if the modification will result in the program seeking program-specific accreditation, provide the institution’s plans to seek accreditation, including the expected timeline.

- Yes  
 No

Will the proposed modification affect or lead to licensure or certification? If yes, identify the licensure or certification.

- Yes —no additional licensure or certification above/beyond that for the PharmD program  
 No

Explain how the program will prepare students for this licensure or certification.

Students completing the PharmD degree program and deciding to enroll in this dual degree program will have no additional licensure or certifications above/beyond that for the PharmD program.

If the program is an Educator Preparation Program, does the proposed certification area require national recognition from a Specialized Professional Association (SPA)? If yes, describe the institution's plans to seek national recognition, including the expected timeline.

- Yes  
 No