NEW PROGRAM PROPOSAL FORM

Name of Institution: University of South Carolina, Columbia

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

of Health Information Technology (MHIT)

Program Designation:

    ☐ Associate's Degree   ☒ Master's Degree

    ☐ Bachelor's Degree: 4 Year   ☐ Specialist

    ☐ Bachelor's Degree: 5 Year   ☐ Doctoral Degree: Research/Scholarship (e.g., Ph.D. and DMA)

    ☐ Doctoral Degree: Professional Practice (e.g., Ed.D., D.N.P., J.D., Pharm.D., and M.D.)

Consider the program for supplemental Palmetto Fellows and LIFE Scholarship awards?

    ☐ Yes No

    ☒

Proposed Date of Implementation: Fall 2019

CIP Code: Current: 51.0706; Proposed: **51.2706**

Delivery Site(s): University of South Carolina, Columbia campus
51102, 85500, 85750

Delivery Mode:
☒ Traditional/face-to-face   ☒ Distance Education
    *select if less than 25% online   ☒ 100% online

                                    ☐ Blended/hybrid (50% or more online)

                                    ☐ Blended/hybrid (25-49% online)

                                    ☐ Other distance education (explain if selected)

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

    Dr. Elizabeth A. Regan, Associate Professor and Department Chair (803)
    777-2286
    earegan@mailbox.sc.edu

Institutional Approvals and Dates of Approval (include department through Provost/Chief Academic Officer, President, and Board of Trustees approval):

MHIT Department Approval:
Dr. Hossein Haj-Hariri, Dean, College of Engineering and Computing:

Background Information

State the nature and purpose of the proposed program, including target audience, centrality to institutional mission, and relation to the strategic plan.

The Master of Health Information Technology (MHIT) is not a new program. It has been in existence since September 2012. However, due to the change in CIP Code from 51.0706 (Health Information/ Medical Records Administration) to 51.2706 (Medical Informatics) to be in alignment with accreditation requirements, the CHE staff has noted that a New Program Proposal must be submitted. The CIP Code change is not only necessary for accreditation purposes, but for clarity of the program itself and for SEVIS (Student and Exchange Visitor Information System) as well. This degree program is available to students in both on-campus and 100% online formats.

After the Master of Health Information Technology program was initially approved by CHE, it became apparent to us that we had selected the wrong CIP code for our application. This was confirmed to us shortly thereafter when we approached the Commission for Accreditation of Health Informatics and Information Management programs (CAHIIM). CAHIIM accredits in both health information/medical records administration/administrator   (CIP Code 51.0706) and medical informatics (51.2706). Our current accreditation is in health   informatics. (Current professional practice favors the terminology health informatics rather than medical informatics.)

As a new and rapidly evolving field of study, there is currently little consensus around terminologies, classifications, and content of biomedical and health informatics programs. This issue is continuing to be addressed by CAHIIM, the American Medical Informatics Association (AMIA), the International Medical Informatics Association (IMIA) and others; and it has been the subject of multiple research studies and journal articles. A 2011 study published in *the Journal of the American Medical Informatics Association* of 73 programs offering master's degrees related to the field concluded that, *"Substantial variations remain in understanding what biomedical and healthcare informatics comprise, and what the field should become. No consensus exits regarding required professional competencies in the domain, nor has key content of supporting educational curricula been established."* Terminologies examined in the study included health information technology, informatics, medical informatics, health informatics, clinical informatics, nursing informatics, bioinformatics, biomedical informatics, public health informatics, consumer health informatics, and cheminformatics. To the extent that commonality was identified across the programs, the MHIT program at USC is very consistent with the content coverage.
The National Center for Educational Statistics, in the IPEDS Classification of Educational Programs, defines CIP Code 51.2706 as

> **Definition:** A program that focuses on the application of computer science and software engineering to medical research and clinical information technology support, and the development of advanced imaging, database, and decision systems. Includes instruction in computer science, health information systems architecture, medical knowledge structures, medical language and image processing, quantitative medical decision modeling, imaging techniques, electronic medical records, medical research systems, clinical decision support, and informatics aspects of specific research and practice problems.
> (https://nces.ed.gov/ipeds/cipcode/cipdetail.aspx?y=55&cip=51.2706)

This definition accurately reflects the course content and research foci of the University of South Carolina Master of Health Information Technology program and faculty,

Nature and purpose: The purpose of the Master of Health Information Technology is to address the n e e d for highly skilled health IT professionals as the U.S. moves toward a more technologically advanced health care system. The program responds directly to regional, state, national, and international priorities   for transitioning to electronic health information and transforming the American healthcare system. A   master's level program is appropriate to prepare information technology

professionals in the application of IT to the health setting, and to prepare health professionals in appropriate information technologies.
These positions require understanding of the complex dynamics of the changing healthcare environment as well as knowledge of both healthcare and information technology.

Target audience: Healthcare professionals needing to expand their understanding of information technology in their profession; information technology professionals wanting to learn about the specialized technologies in healthcare; students from other backgrounds looking to enter the healthcare technology field.

Centrality to institutional mission: In a January 2017 editorial in *The State* newspaper, USC President Harris Pastides wrote, "USC has the most comprehensive health-sciences research and education in South Carolina, with more than 10 of our programs ranked among the best in the nation. In the past five years, the University has graduated more than 5,000 health care professionals. That positions USC to meet the demands of both patients and employers while helping to combat health disparities." (https://sc.edu/about/our_leadership/president/speeches/2017_pastides_jan30oped.php) Health information technology is a critical member of this educational effort.

Assessment of Need

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

In the 2018 Health Information Management Systems Society (HIMSS) survey of health information technology leaders, 61% of healthcare technology vendors and consultants reported having vacancies to fill, and 32% of hospitals reported having health IT vacancies. In the past year, 67% of the vendors and consultants reported an increase in their workforce, as did 37% of hospitals. 75% of vendors predicted an increase in their health IT workforce in the coming year, as did 40% of hospitals. (https://www.himss.org/2018-himss-leadership-and-workforce-survey)

The Bureau of Labor Statistics 2018 *Occupational Outlook Handbook* predicts employment in computer and information technology occupations will grow 13% from 2016 to 2026, faster than all occupations, and with median incomes of $84,580 as of May 2017 (https://www.bls.gov/ooh/computer-and-information-technology/home.htm)   Concurrently, health care jobs are projected to grow by 18 percent during the same period, adding about 2.4 million new jobs. (https://www.bls.gov/ooh/healthcare/home.htm) The following new occupational designations is included in the *Occupational Outlook Handbook* in 2018: Health Information Technologists and Medical Registrars (29–9021). This is defined as workers who:

> Apply knowledge of healthcare and information systems to assist in the design, development, and continued modification and analysis of computerized healthcare systems. Abstract, collect, and analyze treatment and follow-up information of patients. May educate staff and assist in problem solving to promote the implementation of the healthcare information system. May design, develop, test, and implement databases with complete history, diagnosis, treatment, and health status to help monitor diseases. Excludes "Medical Records Specialists" (29-2072).
> Illustrative examples: *Cancer Registrar, Health Informatics Specialist, Health Information Analyst* (https://www.bls.gov/soc/2018/major_groups.htm#29-0000)

Health information specialists and health information analysts are among the occupations graduates of our program are currently holding.

The combined requirement for rapid computerization of health care information and the growth in demand for both health care and IT workers will tremendously increase the need for health information technology professionals. Hospitals, insurance companies, physicians' practices, state and local governments, and the information technology firms that provide health IT services will require specialists who understand the technologies associated with patient record systems, insurance claims processing, health care finance and operations systems, and the newly developing health care information exchange systems. A degree program dedicated to educating the next generation of health information technology managers is required. The Master of Health Information Technology degree program, now in the College of Engineering and Computing, was established to meet this challenge.

As President Pastides noted in his 2017 State of the University address, health care is predicted to be one of the largest employers in South Carolina. In his remarks, Dr. Pastides said, "The need for more and well-prepared graduates in the health majors is becoming increasingly evident. In fact, we know that by 2030, just 13 years from now, 70,000 new baccalaureate degree holders will be needed in our state— and health care and social assistance sectors are projected to be the largest employers in our state." (https://sc.edu/about/our_leadership/president/speeches/2017_state_of_the_university.php)

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

None.

Employment Opportunities

Occupation	State		National		Data Type and Source
	Expected Number of Jobs	Projected Annual Openings*	Expected Number of Jobs	Employment Projection	
Medical records and health information technicians	2,470	215	234,100	+13%	*https://jobs.scworks.org BLS Occupational Outlook Handbook (OOH)
Health technologists and technicians, all other	560	76	125,900	+23%	*https://jobs.scworks.org; www.projectionscentral.com
Computer and information research scientists	n/a	n/a	33,200	+19%	*https://jobs.scworks.org; BLS OOH
Computer systems analysts	6,400	500	654,900	+9%	*https://jobs.scworks.org BLS OOH
Computer user support specialists	6,420	653	923,800	+11%	*https://jobs.scworks.org BLS OOH
Database Administrators	890	90	133,200	+11%	*https://jobs.scworks.org BLS OOH
Network and Computer System Administrators	5,810	401	415,300	+6%	BLS Occupational Outlook Handbook
Information Security Analysts	1,200	136	128,500	+28%	BLS Occupational Outlook Handbook

Supporting Evidence of Anticipated Employment Opportunities

HIMSS surveyed U.S. health IT leaders in 2018. The findings of the survey show that 83% of health IT vendors and consultants expect their workforce to grow in the next year and 40% of hospitals expect their health IT workforce to grow. Of the top five priorities for hospitals, three are in the health IT area: privacy and cybersecurity (#2), data analytics (#4) and clinical informatics (#5). (https://www.himss.org/2018-himss-leadership-and-workforce-survey)

For the Record magazine, a health IT industry publication, notes: "…projected demand for health informatics professionals would grow at twice the rate of overall employment. Additionally, the US Bureau of Labor Statistics projected the number of health informaticists to grow 15% by 2024, which is faster than the projected job growth of all other US professions…" (http://www.fortherecordmag.com/archives/0616p22.shtml)

Description of the Program

Projected Enrollment			
Year	Fall Headcount	Spring Headcount	Summer Headcount
2016-17[1]	69	66	38
2017-18[1]	53	48	37
2018-19	54[2]	57[3]	38[3]
2019-20	55[3]	58[3]	39[3]
2020-21	56	59	40
2021-22	57	60	41
2022-23	58	61	42

The current and previous enrollment is strong. The College of Engineering and Computing is diligent in its market of the program and supports the current enrollment well. The College has determined through the data that 55-61 students is attainable and supported by the current trend in enrollment.

[1] Actual enrollments during these terms
[2] Students eligible to register
[3] Projected based on 2% increase year over year

Besides the general institutional admission requirements, are there any separate or additional admission requirements for the proposed program? If yes, explain.

☐Yes
☒No

Curriculum

New Courses
No new courses are proposed. Since the program was first approved, we have changed the curriculum to make the following existing changes: ITEC 770 Health Database Systems is now a required course rather than an elective, and, in collaboration with the College of Nursing, NURS 717 Application of Basic Statistics for Nursing Practice, NURS 734 Conceptual Basis of Health Systems, and NURS 738 Financing of Health Care were added as health electives.

Total Credit Hours Required:

Curriculum by Year					
Course Name	**Credit Hours**	**Course Name**	**Credit Hours**	**Course Name**	**Credit Hours**
Year 1					
Fall		**Spring**		**Summer**	
ITEC 747 Management of Health Information Systems	3	ITEC 752 Health Systems Analysis and Design	3	ITEC 770 Health Database Systems	3
HSPM 700 Approaches and Concepts for Health Administration	3	HSPM 768 Health Services Administration II	3		
Total Semester Hours	6	Total Semester Hours	6	Total Semester Hours	3
Year 2					
Fall		**Spring**		**Summer**	
ITEC 764 Project Management for Health Information Systems	3	Health or IT elective	3	Health or IT elective	3
Health or IT elective	3	Health or IT elective	3	ITEC 748 Health Information Technology Practicum	6
Total Semester Hours	6	Total Semester Hours	6	Total Semester Hours	9
				Total Program Hours	36

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
Master of Science in Health Informatics	36	Medical University of South Carolina	• Classes offered online • Students may attend part-time • 36 credit hours	• USC program also offered on campus; MUSC program is online only • USC program Information technology courses taught by information technology faculty • USC program health courses taught by public health and/or nursing faculty • USC program is accredited by CAHIIM, the Commission on Accreditation for Health Informatics and Information Management Education
Master of Science in Informatics with a concentration in Health Information Management	30	University of South Carolina Upstate	• Classes offered both online and on campus • Both IT and health classes required	• USC program has 36 credit hours • USC program requires 3.0 undergraduate GPA; Upstate required 2.50 • USC program requires GRE score of 300; Upstate program requires GRE of 286 • USC program is technology and health informatics oriented; Upstate program is oriented toward health information management • USC program requires internship; Upstate program requires independent study or thesis

				• USC program has 5 required courses and 5 electives; Upstate program has 3 required courses and 4 electives • USC program health courses taught by public health and/or nursing faculty
MS in Biomedical Data Science and Informatics	32-34	Clemson University	• Trains professionals for some similar job roles	• USC program is accredited by CAHIIM, the Commission on Accreditation for Health Informatics and Information Management Education • Clemson program requires computer programming experience • Clemson program can be completed without any health classes • Clemson program is a stop-out master's degree for students not completing the Ph.D. program. • Clemson program does not contain health care management courses • MHIT is 36 credit hours • MHIT has required practicum experience
MSN in Nursing Informatics	33	University of South Carolina	• Classes offered online • Students may attend part time • Some courses are shared between the two programs	• MHIT is 36 credit hours • MHIT does not require RN licensure • MHIT is also available on campus • MHIT is accredited by CAHIIM

Faculty

Rank and Full- or Part-time	Courses Taught for the Program	Academic Degrees and Coursework Relevant to Courses Taught, Including Institution and Major	Other Qualifications and Relevant Professional Experience (e.g., licensures, certifications, years in industry, etc.)
Professor	ITEC 590 Special Topics in Integrated Information Technology	Ph.D., Political Science, Emory University	AACSB Information Systems Faculty Development Institute, University of Minnesota; eight years of experience as information systems manager; administers MHIT program
Associate Professor	ITEC 747 Management of Health Information Systems, ITEC 776 Health IT and Clinical Transformation	Ph.D., Information Systems, University of Connecticut	Chair of Department of Integrated Information Technology
Professor	ITEC 775 Large Scale Health Information Systems; ITEC 770 Health Database Systems	Ph.D., Information Systems and Management Science, University of Rhode Island	Formerly owned health IT company
Associate Professor	ITEC 752 Health Systems Analysis and Design, ITEC 763 Health Information Systems Usability and Interface Design	Ph.D., Information Systems, Claremont Graduate School	
Associate Professor	ITEC 770 Health Database Systems	Ph.D., Computer Science, Yale University	
Associate Professor	ITEC 764 Project Management for Health Information Systems	Ph.D., Information Systems, New Jersey Institute of Technology	Project Management Professional certification, Project Management Institute
Assistant Professor	HSPM 700 Approaches and Concepts for Health Administration	Ph.D., Health Promotion and Education, University of South Carolina	Directs Master of Public Health Program
Associate Professor	HSPM 768 Health Services Administration II	Ph.D., Information Systems, Georgia State University	
Instructor	ITEC 748 Health Information Technology Practicum	M.Ed., Business Education, Bowling Green State University	Internship director for Integrated Information Technology Department

Total FTE needed to support the proposed program:
Faculty: 4
Staff: .25
Administration: 1

Faculty, Staff, and Administrative Personnel
Discuss the Faculty, Staff, and Administrative Personnel needs of the program.

No changes from current assignments are anticipated, because the program is currently being offered and is fully staffed.

Resources

Library and Learning Resources
Explain how current library/learning collections, databases, resources, and services specific to the discipline, including those provided by PASCAL, can support the proposed program. Identify additional library resources needed.

Current resources include PASCAL for general research resources and database subscriptions such as the ACM Digital Library, IEEE Explore, and Gartner for Information Technology; and PubMed-Medline, Web of Science Core Collection, and Science Direct for health care administration. Library liaison services for the Arnold School of Public Health and the College of Engineering and computing provide both department-level and individual level research assistance. No additional resources are anticipated, as current library resources are adequate to support the program.

Student Support Services
Explain how current academic support services will support the proposed program. Identify new services needed and provide any estimated costs associated with these services.

Existing services include administrative support from a liaison in the Graduate School and advising support from the College of Engineering and Computing. No new services are anticipated as academic support services are adequate for the program

Physical Resources/Facilities
Identify the physical facilities needed to support the program and the institution's plan for meeting the requirements.

No new facilities are needed

Equipment
Identify new instructional equipment needed for the proposed program.

No new instructional equipment is needed

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

The Master of Health IT program is offered in conjunction with the Arnold School of Public Health at the University of South Carolina. Students in the MHIT program take required and elective courses from public health faculty. Students in the recently approved Nursing Informatics program will take courses

from MHIT faculty members, and MHIT students will take electives in nursing.

Financial Support

Sources of Financing for the Program by Year												
	2019-20		**2020-21**		**2021-22**		**2022-23**		**2023-24**		**Grand Total**	
Category	New	Total	New	Total	New	Total	New	Total	New	Total	New	Total
Tuition Funding to University		$349,848		$356,040		$362,232		$368,424		$374,616		$1,811,160
Tuition Funding to College		$120,744		$123,840		$126,936		$130,032		$133,128		$634,680
Program-Specific Fees		$68,400		$69,750		$71,100		$72,450		$73,800		$355,500
Special State Appropriation												
Reallocation of Existing Funds												
Federal, Grant, or Other Funding												
Total		$538,992		$549,630		$560,268		$570,906		$581,544		**$2,801,340**
Estimated Costs Associated with Implementing the Program by Year												
	2019-20		**2020-2021**		**2021-22**		**2022-23**		**2023-24**		**Grand Total**	
Category	New	Total	New	Total	New	Total	New	Total	New	Total	New	Total
Program Administration and Faculty/Staff Salaries		$246,000		$246,000		$246,000		$246,000		$246,000		$1,230,000
Facilities, Equipment, Supplies, and Materials		$2,500		$2,500		$2,500		$2,500		$2,500		$12,500
Library Resources		$2,000		$2,000		$2,000		$2,000		$2,000		$10,000
Other (specify)												
Total		$250,500		$250,500		$250,500		$250,500		$250,500		**$1,252,500**
Net Total (Sources of Financing Minus Estimated Costs)		$288,492		$299,130		$309,768		$320,406		$331,044		$1,548,840

Note: New costs - costs incurred solely as a result of implementing this program. Total costs - new costs; program's share of costs of existing resources used to support the program; and any other costs redirected to the program.

Budget Justification

Provide an explanation for all costs and sources of financing identified in the Financial Support table. Include an analysis of cost-effectiveness and return on investment and address any impacts to tuition, other programs, services, facilities, and the institution overall.

Revenue projections are based on projected enrollment. Enrollment is calculated with an annual growth rate of 2% per year, using current enrollment as the baseline. Tuition revenue is calculated at $516 per credit hour and an average of 6 credit hours per student per semester. Fees are calculated at $75 per credit hour. This yields a conservative estimate of revenues assuming no tuition increases during the forecast period.

Cost estimates are based on percentage of effort given to the MHIT program by existing faculty members as a share of their current salaries. Costs for facilities and supplies are based on current expenditures from the IIT Department budget. Library costs are the current annual library acquisitions budget for the program.

Evaluation and Assessment

Program Objectives	Student Learning Outcomes Aligned to Program Objectives	Methods of Assessment
Use and apply current technical concepts and practices in the foundational health and information technology domains	• Students demonstrate very good or excellent technical preparation for their internship experience. • Students demonstrate very good or excellent knowledge of health IT concepts and practices.	Intern supervisors are surveyed for results of specific measures. Final internship portfolio is assessed by program faculty.
Identify and analyze user needs and take them into account in the selection, creation, evaluation and administration of health IT	• Students demonstrate very good or excellent performance in their ability to select, create, evaluate or administer health IT systems.	Intern supervisors are surveyed for results of specific measures. Final internship portfolio is assessed by program faculty.
Integrate health IT based solutions into the user environment effectively	• Students demonstrate very good or excellent performance in their ability to implement health IT solutions to achieve intended purposes. • Students demonstrate very good or excellent performance in understanding the health care context.	Intern supervisors are surveyed for results of specific measures. Final internship portfolio is assessed by program faculty.
Identify health IT best practices and standards and their application	• Students demonstrate very good or excellent performance in applying current technical practices.	Intern supervisors are surveyed for results of specific measures. Final internship portfolio is assessed by program faculty.

	• Students demonstrate very good or excellent performance in creating a health IT project plan.	Intern supervisors are surveyed for results of specific measures. Final internship portfolio is assessed by program faculty.
Assist in the creation of an effective health IT project plan		

Explain how the proposed program, including all program objectives, will be evaluated, along with plans to track employment. Describe how assessment data will be used.

The program is assessed through the standard University of South Carolina assessment software system, which reports results on all the program objectives. Student learning outcomes are assessed each year. The results of the assessment are discussed in a meeting of program faculty, with any necessary modifications proposed for the next assessment cycle. In addition, an annual assessment report is provided to CAHIIM, the accrediting body for the program. An alumni placement database tracks the employment of graduates. Finally, an industry advisory board provides assessment input to the faculty. Assessment data is used to make academic changes to the program.

Accreditation and Licensure/Certification

Will the institution seek program-specific accreditation (e.g., CAEP, ABET, NASM, etc.)? If yes, describe the institution's plans to seek accreditation, including the expected timeline.

☒Yes

☐No

The program is currently accredited in *Health Informatics* by CAHIIM, the Commission on Accreditation for Health Informatics and Information Management Education

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

☐Yes

☒No

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

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