## **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
Science in Information Technology (MSIT)

Program Designation:	
🗌 Associate's Degree 🛛 🕅 Ma	aster's Degree
Bachelor's Degree: 4 Year	ecialist
Bachelor's Degree: 5 Year	ctoral 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 Palmet	to Fellows and LIFE Scholarship awards?
Yes	
🖂 No	
Proposed Date of Implementation: Fall 2023	
CIP Code: 11.0103	
Delivery Site(s): 51102 and 85750	
Delivery Mode: Traditional/face-to-face *select if less than 25% online	Distance Education
	Blended/hybrid (50% or more online)
	Blended/hybrid (25-49% online)
	Other distance education (explain if selected)
Program Contact Information (name, title, telep	phone number, and email address):
Institutional Approvals and Dates of Approval (i Officer, President, and Board of Trustees appro	nclude department through Provost/Chief Academic val):
Program Contact Information (name, title, telep Dr. Elizabeth A. Regan, Department Chair, Integ Assoc. Professor Health Information Technolog <u>earegan@mailbox.sc.edu</u> 803-777-2286 Trena Houp, Director of Academic Programs an	phone number, and email address): grated Information Technology y d eLearning, 803-777-0460 or thoup@sc.edu

Institutional Approvals and Dates of Approval (include department through Provost/Chief Academic Officer, President, and Board of Trustees approval): Department: 5/19/22 Dean College of Engineering and Computing: 10/26/21 Provost Pre-authorization: 11/1/2021 Graduate Council Committee on Science, Math and Related Professional Programs: 12/9/2022 Graduate Council: 12/12/2022 Provost: 1/25/2023 Board of Trustees Academic Excellence and Student Experience Committee: 2/24/2023 Board of Trustees: 2/24/2023

#### **Background Information**

## Nature and Purpose:

The Master of Science in Information Technology (MSIT) enables students to advance their technical expertise and their ability to integrate technologies into organizations. The degree addresses workforce demand in South Carolina and beyond for expertise in information technology and digital transformation needed to work effectively in today's data and technology centric environments.

The digital revolution is impacting all aspects of our lives, reshaping both personal and work lives everywhere. Students in the master's program can advance their knowledge in areas such as cyberinfrastructure, networking, data analytics, artificial intelligence, user experience and interface design, Students can work with faculty in a wide range of research endeavors, depending on their interests and career goals. Opportunities for research expands students' opportunities to pursue their own research interests and to publish papers at national conferences.

## IEEE / ACM Guidelines for Information Technology (IT):

The IEEE / ACM Task Group on Information Technology Curricula indicates that IT programs emphasize the application, deployment, integration and performance of information technology to achieve organizational objectives. IT professionals are central to the planning, development, implementation, and operation of IT technology across the enterprise. This requires a diverse knowledge and training to handle the array of issues that can arise.

The IEEE/ ACM IT Computing Curricula guidelines discuss the differences between the various computing disciplines. Figure 1 illustrates the difference in focus for CS and IT curriculum. The shaded area represents the coverage of that curriculum. For CS, the coverage is on the left side indicating a more theoretical approach, with the greatest emphasis on software development. In contrast, the IT curriculum extends down most of the right edge indicating a more applied focus. IT's focus is on integrating and adapting existing applications to address operational and business problems. As such, the IT professional tends to be a generalist, with knowledge in a broad array of technologies. The IT curriculum emphasizes user experience and usability and includes project management. Innovation in IT is focused more on the integration of technologies and on digital business transformation than on theoretical aspects of the technology.



Figure 1: The coverage of the CS and IT disciplines. Compared to CS, the IT discipline is more applied, and addresses Organizational System Issues. <sup>1</sup>

Aligned with the above guidelines, the proposed MSIT includes both a thesis and non-thesis option. The thesis option will accommodate students considering a career in research and would be appropriate for those considering the pursuit of a doctorate degree. Potential areas of research include cyberinfrastructure, artificial intelligence (AI), user experience design and interaction, and data analytics, covering fundamental aspects of integration and performance of modern technology infrastructures.

# **Target Audience:**

The MSIT prepares graduates with advanced technology skills that are in demand in industry and government agencies. It would also serve as a bridge program between the IIT undergraduate program and the PhD in Informatics. The target audience includes both undergraduate students and professionals with a background in computing technologies or business, who desire to advance their careers or move into leadership in digital transformation.

Since there is currently no other Masters of IT program offered within South Carolina, we believe there will be a strong demand for this degree from professionals across the state, especially if it could be earned online. The MSIT degree provides an applied focus, which complements the more theoretical focus of the USC Master of Computer Science. Given the interdisciplinary nature of IT, this program would provide an alternative for students from other computing-related disciplines, such as Computer Information Systems, Management Information Systems, and Information Science.

The MSIT degree would also be attractive to those interested in teaching IT in a Technical College. Accreditation rules require instructors to have a master's degree and have completed 18 credit hours in the discipline. This degree will satisfy this requirement for individuals teaching Information Technology classes.

## **Centrality to Institutional Mission:**

The MSIT fits the University of South Carolina's primary mission - "the education [of] the state's citizens through teaching, research, creative activity, and community engagement." This program provides graduates the advanced information technology skills required by companies, organizations, and government throughout the state. It provides a pathway from our BS in Integrated Information Technology into graduate work, including the option for accelerated BS and Masters. It also can serve as a feeder to the PhD in Informatics program should a master's student decide they want to pursue

<sup>&</sup>lt;sup>1</sup> ACM Computing Curricula 2020, Paradigms for Global Computing Education, <u>https://www.acm.org/binaries/content/assets/education/curricula-recommendations/cc2020.pdf</u>

research in their career. Conversely, it will provide doctoral students an avenue to earn a master's degree should they decide not to complete their PhD dissertation research. Additionally, it provides a pathway to those working in information technology positions to update their skills and earn a degree through distributed education.

It directly addresses four priorities outlined in the strategic plan<sup>2</sup>: (1) to "attract, inspire, challenge and enable our students to become innovative thinkers and transformative leaders", directly mapping to the information technology area; (2) it enhances "access, success and affordability for every eligible S.C. student" by creating a graduate program currently not available within the state; (3) it spurs innovation through graduate research; and (4) to helps to achieve recognized institutional excellence by creating a degree that is currently being offered by two of our peer (Auburn and University of Massachusetts) as well as two of our peer aspirants (University of Maryland and University of North Carolina), but is not offered anywhere else in South Carolina.

The proposed Master of Science in Information Technology also directly supports the South Carolina VISION 2025 for Advancing South Carolina's Capacity and Expertise in Science and Technology<sup>3</sup>. Specifically, it contributes to the Health, Science, and Technology Workforce goal of "expanding the human resource infrastructure (e.g. PhD, MS, and BA/BS degrees) in STEM by 25% at South Carolina research universities and other educational units."

## Assessment of Need

The field of information technology has found itself at the epicenter of digital revolution. The demand for the application of data and technology to the solution of health, business, and social problems is exploding as the amount of data and the ubiquity of technology escalates. Information Technology professionals with advanced skills are needed to address these new challenges in all sectors – academia, industry, military, and government. We believe there is a significant need for a graduate program within South Carolina to provide these skills. While there are computer science master degree programs within the state, there is no existing Master of Science in information technology. Individuals must go out-of-state to pursue such a degree. We need to educate and train both new graduates and working professionals here in South Carolina to better address the technology challenges that lie ahead.

There are four markets that can benefit from such a degree.

- Individuals interested in teaching IT classes in a South Carolina Technical College. Accreditation requirements typically requires an instructor to hold a degree in a related field and have at least 18 credits of graduate course work within the discipline.
- HBCU students. The USC Office of Research has committed funds to support the Support for Minority Advancement in Research Training (SMART)<sup>4</sup> program. This program strives to enhance the training of under-represented minority undergraduate students and their recruitment into graduate programs at USC.
- Students interested in obtaining an advanced degree in Information Technology. Students currently enrolled in the Integrated Information Technology degree, or in other computing related degrees would be potential candidates. The MSIT degree addresses a wide range of information technologies with the ability to customize the degree to the career goals of the student.

<sup>&</sup>lt;sup>2</sup> https://sc.edu/about/our\_leadership/president/strategic\_plan/index.php

<sup>&</sup>lt;sup>3</sup> https://sc.edu/about/offices\_and\_divisions/research/docs/vision2025plan.pdf

<sup>&</sup>lt;sup>4</sup> https://sc.edu/about/offices\_and\_divisions/research/internal\_funding\_awards/faculty/smart.php

• Working professionals who want to further their education and earn a master's in IT degree. Some employers support their employees enrolling and earning a master's degree with tuition reimbursement plans.

It is important to note that a Master of Science in Information Technology (MSIT) is different from a Master of Science in Computer Science (MSCS) in significant ways. The MSIT is focused on advancing technical capabilities and innovation in designing and integrating information technologies across a wide range of enterprises and work environments, which requires interdisciplinary skills as well as product, service, and process management. It is concerned with evidence-based, human-centered, secure information technology practice and the societal impact of information technology. In contrast, a Master of Science in computer science is intended for students that seek both breadth and depth in advanced computing topics. The MSCS degree provides in-depth knowledge on the core topics of computer software, compilers, and algorithms. The proposed MSIT program intends for graduates to use a broad range of information technology processes, tools, and techniques, of which computer programming is but one aspect, to address significant societal challenges. The computing disciplines in the College of Engineering and Computing have been the fastest growing area of study with a combined enrollment of over 1100 students.

Table 1 details Master of Science in Information Technology programs offered in the eleven southeastern states (AL, FL, GA, KY, MD, MS, NC, SC, TN, VA, and WV) as identified by U.S. News and World Report. Note that Mississippi and South Carolina are the only states that do not offer a Master of IT program. Furthermore, over half of the states (AL, FL, GA, MD, NC, and VA) each have three or more programs within their state. Also included in the table are the program ranking among the top online MSIT programs, enrollment in the program, number of 2020 graduates, and whether the program is on campus, on-line, or both.

Top Master o	of Online IT Programs in the Southeast U.S.	Credits Req.	Online Program Rank	Enroll.*	Graduates	Delivery Mode
Alabama	Auburn – MS in Information Systems Online	30 cr.	#21	94	3	Online <sup>2</sup>
Alabama	University of Alabama – Birmingham – <u>MS in Management Information Systems</u>	30 cr.	#12	118	61	Campus/Online <sup>2</sup>
Alabama	University of Alabama – Huntsville – <u>MS in IS</u>	30 cr.	#26	42	16	Campus/Online <sup>2</sup>
Florida	Florida Institute of Technology – <u>MS in Information Assurance and</u> <u>Cybersecurity</u> plus 3 MBA concentrations	Unk.	#34	299	79	Campus/Online <sup>2</sup>
Florida	Florida State University - <u>MS in IT</u>	32 cr.	#5	150	36	Campus/Online <sup>2</sup>
Florida	University of South Florida – <u>MS in IT</u>	30 cr. No Thesis	#12	35	12	Online <sup>2</sup>
Florida	University of West Florida Hal Marcus College of Science and Engineering - <u>MS in IT</u>	30 cr.	#31	133	25	Campus/Online <sup>2</sup>

## Table 1: Master of Information Technology programs within the U.S. Southeast

Georgia	Kennesaw State University – <u>MS in IT</u>	30 cr.	#59-74	426	117	Campus/Online <sup>2</sup>
Georgia	Middle Georgia State University – <u>MS in IT</u>	30 cr.	#49	209	87	Campus/Online <sup>2</sup>
Georgia	University of West Georgia College of Culture, Arts, and Scientific Inquiry – <u>MS in Applied Computer Science</u>	36 cr.	#59-74	78	14	Campus/Online <sup>2</sup>
Kentucky	University of Louisville – MS in Computer Information Systems	30 cr.	#44	68	8	Campus/Online <sup>2</sup>
Maryland	Johns Hopkins University (Whiting) - <u>Computer Information Technology</u> <u>Administration and Management</u>	30 cr.	#2	1,101	266	Campus/Online <sup>2</sup>
Maryland	Towson University – <u>MS in Applied IT</u>	33 cr.	#54	260	73	Campus/Online <sup>2</sup>
Maryland	University of Maryland, Baltimore County – <u>MS in Information Systems</u>	30 cr.	#37	186	51	Campus/Online <sup>2</sup>
N. Carolina	North Carolina A&T State University, Greensboro – <u>MS in IT</u>	30 cr.	#27	76	29	Campus/Online <sup>2</sup>
N. Carolina	North Carolina State University – Raleigh - <u>Masters of Computer Science</u>	31 cr.	#16	49	13	Campus/Online <sup>2</sup>
N. Carolina	University of North Carolina, Greensboro – <u>MS in IT and Management</u>	30 cr.	#34	110	34	Campus/Online <sup>2</sup>
Tennessee	Vanderbilt – <u>MS in Computer Information Systems</u>	30 cr.	unrank ed	14	0	Campus <sup>1</sup>
Virginia	George Mason University – MS in Applied Information Technology	30 cr.	#37	54	12	Campus/Online <sup>2</sup>
Virginia	James Madison University – <u>MS in Computer Science: Information Security</u> <u>Concentration</u>	33 cr. Thesis option	#39	62	6	Online <sup>2</sup>
Virginia	Old Dominion University – Masters of Computer Science	34 cr. Thesis Option	#27	44	3	Campus/Online <sup>2</sup>
Virginia	Virginia Tech - <u>Online Master of IT</u> Brochure - <u>https://vtmit.vt.edu/content/dam/vtmit_vt_e</u> <u>du/Online%20Master%20of%20Information%</u> <u>20Technology_Digital%20Brochure%202021-</u> <u>22.pdf</u>	33 cr.	#4	701	145	Online <sup>2</sup>
W. Virginia	West Virginia University – <u>MS in Software Engineering</u>	33 cr. Thesis	#39	47	14	Campus/Online <sup>2</sup>

<sup>2</sup> - Top 74 online Masters of IT programs according to US News & World Report (<u>https://www.usnews.com/education/online-education/computer-information-technology/rankings</u>)

To estimate the number of students to expect in the new program, we draw on Georgia's experience with its graduate programs. Table 2 looks at the number of undergraduate and graduate degrees awarded in Georgia from 2018 to 2020. It is interesting to note that for Computer and Information Sciences in 2019, the number of graduate degrees awarded exceeded the number of undergraduate degrees. This would suggest that professionals are seeking advanced degrees to further their careers. Focusing on the Information Technology degree, the number of graduate degrees ranges from 31 to 44% of the number of undergraduate degrees. If this trend is repeated with the proposed MSIT program, we could expect to see 60 to 80 degrees awarded annually based on the enrollment of the UofSC IIT undergraduate program.

GA System Total Degrees Awarded	2018		20:	19	2020	
	UG	Grad	UG	Grad	UG	Grad
Computer and Information Sciences, General (CIP = 11.0101)	1,267	1,255	1,338	1,742	1,181	1,140
Computer and Information Systems Security/Auditing/Info (CIP = 11.1003)	58	63	84	90	50	36
Computer Science (CIP = 11.0701)	716	315	814	335	668	279
Information Technology (CIP = 11.0103)	400	154	411	181	351	110
Information Science/Studies (CIP = 11.0401)	269	19	285	21	254	17

Table 2: Number of Undergraduate and Graduate degrees awarded in Georgia for computing related degrees for 2018 – 2020.

**Transfer and Articulation:** There are no special articulation agreements, however, USC Columbia allows up to 12 credit hours of graduate credit to be transferred into a master's program that requires 30-36 hours. We will also advertise the program to students who possess a bachelor's degree, including our B.S. in Integrated Information Technology students. For students enrolled at an SC Technical College, a guide to transferring to the undergraduate program in Integrated Information Technology, which is also offered online, in preparation for the proposed master's program is available at:

https://sc.edu/about/offices\_and\_divisions/undergraduate\_admissions/requirements/for\_transfers/cre dits\_from\_sc\_technical\_colleges/course\_equivalents\_by\_major/engineering\_and\_computing/index.php

## **Employment Opportunities**

The Table 3 provides occupation categories identified by the Bureau of Labor (BLS) statistics that are related to Computer and Information Technology. The statistics indicate a continued high growth rate in information technology across all related categories. Note that the projected job growth rate in South Carolina exceeds that for the U.S. for all but one occupation. These seven occupations are projected to add 1,750 jobs in South Carolina each year for the next decade.

Table 3: Employment Opportunities for IT related occupations in both South Carolina and U.S.

Occupation South Carolina	National
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	Number of Jobs 2018 <sup>3</sup>	Job Outlook 2018 – 2028 <sup>3</sup>	Projected annual Job Openings (2018- 2028) <sup>3</sup>	Median Pay 2020 <sup>3</sup>	Number of Jobs 2019 <sup>3</sup>	Job Outlook 2019 – 2029 <sup>3</sup>	Projected annual Job Openings (2019- 2029) <sup>3</sup>	Median Pay 2020 <sup>3</sup>
Computer and information research scientists	410	5%	30	\$106,680	32,700	+15%	3,000	\$126,830
Information security analyst	1,330	32%	150	\$84,860	131,000	+31%	13,000	\$103,500
Computer network architects	1,150	12%	100	\$96,290	160,100	+5%	10,000	\$116,780
Computer systems analysts	7,620	18%	740	\$78,570	632,400	+7%	46,200	\$93,700
Database administrators	880	13%	80	\$83,550	132,500	+10%	9,900	\$98,860
Information technology project managers	1,670	10%	140	\$95,380	431,100	6%	32,300	\$92,870
Network and computer system administrators	6,020	11%	510	\$75,770	373,900	+4%	23,800	\$84,810

<sup>3</sup> – Source: <u>https://www.onetonline.org/</u> (original data from U.S. Bureau of Labor Statistics)

## **Supporting Evidence of Anticipated Employment Opportunities**

Demand for computer and information technology workers stems from greater emphasis on cloud computing, the collection and storage of big data, and information security. BLS points out that many of these positions require additional knowledge in the industry in which individuals are working. According to BLS data, the overall job outlook for the category of computer and information technology is predicted to grow in the U.S. by 12.8% over the next ten years, much faster than average rate of 4%. The predicted growth rate across other southeast states (AL, FL, GA, KY, MD, NC, TN, VA, and WV) is 9.0%. South Carolina's predicted growth rate of 15.8% is greater than both the southeast region and the U.S. as a whole. The average U.S. salary for the category in May 2020 was \$91,250, compared to the median annual wage of \$41,950 for all computer and information technology occupations.

Note, the highest paid occupation listed in Table 3 is the Computer and Information Research Scientist category, which the Bureau of Labor Statistics (BLS) indicates requires a master's degree at minimum for entry level positions. According to Indeed Prime Data, Data scientist job postings have increased 256% since December 2013, and median base salaries have reached \$130,000 (https://techrepublic.com/article/why-data-scientist-is-the-most-promising -job-of-2019).

## Supporting Evidence of Richland County Economic Development Office

Evidence of demand for the MSIT degree is also available from 2020 study completed by the Richland County Economic Development office. They initiated a strategic study to determine how best to promote growth within the county. They focused on three sectors, namely Information Technology, Industry/Supply Chain 4.0, and Entrepreneurial Ecosystem. Within the Information Technology sector, the key goal is to address the "talent gap" and increase the supply of information technology related workforce to meet the corporate demand. They see a need for more advanced skillsets. Specifically, their conclusion was there was a need for additional/expanded programs at Universities and Colleges in the areas of:

- Applied Data Science and Data Analytics
- Data Analytics, Business Communications, and "Soft Skills" for Existing Tech Workers
- Cybersecurity-related Certifications for Existing Workers (not entry level)
- The Management of Digital Transformation
- Software Engineering
- Process/Workflow
- Numerous Platform-specific Training Programs

## Supporting Evidence from Industry Collaborators

The IIT Department has agreements with leading cyberinfrastructure technology companies, including Cisco Systems, VMware, Palo Alto Networks, Red Hat, Juniper Networks, and Barefoot Networks. These companies make up a substantial share of the networking, virtualization, cybersecurity, and operating systems markets and have already committed resources currently used by the undergraduate and graduate IIT programs:

- Cisco Systems: donated network operating systems and curricular material for applied networks and cybersecurity research.
- Palo Alto Networks: donated licenses for Next-Generation Firewalls, for teaching and research in cybersecurity analytics and firewall migrations and deployments.
- VMware: donated licenses for developing and deploying a distributed cloud system across North and South Carolina.
- Red Hat: donated access to instructor and student training materials for Linux system installation, tuning, and management.
- Juniper Networks: donated virtual routers for applied research on network telemetry.
- Barefoot Networks: donated software development kits for applied research in programmable switches, in-band network telemetry, and custom protocol design.
- XPODA Data Analytics Software donation (\$1.3m) for faculty and student research

Currently, IIT faculty and graduate students are conducting research using several technologies from industry collaborators. Research in cyberinfrastructure has resulted in tens of journal and conference papers and a best-paper award in applied research.

## **Supporting Evidence from National Laboratories**

IIT's faculty members actively collaborate with several national laboratories, including Berkeley National Laboratory, Los Alamos National Laboratory, Savannah River National Laboratory, and the Energy Science Network (ESnet). ESnet is the national backbone network that carries traffic for the U.S. Department of Energy. It connects all national laboratories, research institutions, and the U.S. and Europe. For high-throughput high-latency networks, ESnet now refers to the research work by IIT's faculty (see <a href="http://fasterdata.es.net/science-dmz/">http://fasterdata.es.net/science-dmz/</a>). Additionally, since the Summer of 2019, Savannah River National Laboratory opened internship positions for IIT students with skills in the operation and configuration of networks and security appliances.

## Supporting Evidence from the National Science Foundation

In the last 15 months, the IIT Department has received approximately \$2M from the National Science Foundation for teaching, training, research, and development of cyberinfrastructure technologies. IIT is currently funding multiple PhD students in computing-related areas. The NSF offices and programs the IIT department received funding from are:

• Advanced Cyberinfrastructure. Project: Building a Science DMZ for Data-intensive Research and Computation at the University of South Carolina (integration and applied network innovation).

• Division of Graduate Studies. Project: Building a Cybersecurity Pipeline through Experiential Virtual Labs and Workforce Alliances (virtual laboratories and implementation of a private cloud).

• Cyber training. Project: Cyberinfrastructure Expertise on High-throughput Networks for Big Science Data Transfers (training and research in operational aspects of high-throughput high-latency networks).

• Advanced Technological Educational. Project: Multi-state Community College, University and Industry Collaboration to Prepare Learners for 21st Century Information Technology Jobs (curricular implementation of operational and managerial IT concepts in networks, cybersecurity, virtualization, and operating systems).

• Core Advanced Cyberinfrastructure. Project: Devising Data-driven Methodologies by Employing Large-scale Empirical Data to Fingerprint, Attribute, Remediate and Analyze Internet-scale IoT Maliciousness (operational cyber security, development of a large-scale cyberinfrastructure for IoT-relevant threat sharing)

• NSF Engineering Research Planning Grant. To support development of a collaborative proposal for a national Engineering Research Center for Healthcare Transformation (major partners are Clemson University, U. of Kentucky Medical School, Johns Hopkins University, Claflin, Prisma Health System).

Note that the above programs, such as Cyberinfrastructure and Cyber-training, specifically target *applied* research and infrastructure (e.g., "data-driven infrastructure," "network integration and applied innovation," etc.). IIT's faculty members have such expertise and partnership with leading technology vendors, which enable the department to secure funds for applied research. NSF has also recognized IIT's capability as a national leader to train the country in cyberinfrastructure technologies. NSF has provided funds to develop advanced curricular material and run nationwide training workshops using this material. Since 2018, IIT has organized workshops in Arizona, New Mexico, and South Carolina. The training material has been used by institutions in more than 25 states (see

http://ce.sc.edu/cyberinfra/workshop.html). NSF has provided funding for additional training until 2022, for organizing workshops nationwide.

Projected Enrollments							
Year	Fall Headcount	Spring Headcount	Summer Headcount				
1	16	15	15				
2	20	27	27				
3	24	34	34				
4	30	42	42				
5	31	50	45				

# **Description of the Program**

Enrollment projections are based on estimates derived from the Georgia State System, where the number of graduate degrees awarded equals 38% of the number of undergraduate IT degrees awarded. Using the three-year average enrollment for our IIT program as the base, we anticipate we will have an enrollment of 50 students in the program by the 5<sup>th</sup> year. We assumed 80% of the students would be part time and would take two years to complete the degree. The other 20% are assumed to be full time and take one year to complete the degree. The figures also assumed a 10% attrition each semester.

These calculations use a conservative estimate for the IIT graduate enrollment based on USC IIT undergraduate graduates only, and do not include graduates from computing related programs throughout the state. We assume the enrollment will grow over time and reach the target enrollment in five years.

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

□Yes

⊠No

## Curriculum

# Professional Track Total Credit Hours Required: 30

Curriculum by Year							
Course Name	Credit	Course Name	Credit	Course Name	Credit		
	Hours		Hours		Hours		
Year 1							
Fall		Spring		Summer			
ITEC 749 – Principles of		ITEC 766 - IT Project		Elective	3		
Informatics	3	Management	3				
ITEC 754 – Analysis and Design of				Elective	3		
Information Systems and							
Technology	3	Elective	3				
ITEC 772 – Database Systems	3	Elective	3				
ITEC 785 – Enterprise Data							
Analytics	3	Elective	3				
Total Semester Hours	12	Total Semester Hours	12	Total Semester Hours	6		

# Research Track Total Credit Hours Required: 33

Curriculum by Year						
Course Name	Credit Hours	Course Name	Credit Hours	Course Name	Credit Hours	
Year 1						
Fall		Spring		Summer		
ITEC 749 – Principles of	3	Research Methods Course	3	Elective	3	
Informatics						
ITEC 754 – Analysis and Design of	3	Elective	3	Thesis Preparation	3	
Information Systems and						
Technology						
ITEC 772 – Database Systems	3	Elective	3			
ITEC 785 – Enterprise Data	3	Elective	3			
Analytics						
Total Semester Hours	12	Total Semester Hours	12	Total Semester Hours	6	

Curriculum by Year							
Course Name	Credit Hours	Course Name	Credit Hours	Course Name	Credit Hours		
Year 2							
Thesis Preparation	3						
Total Semester Hours	3	Total Semester Hours		Total Semester Hours			

# **New Courses**

All the courses in the program already exist. No new courses are required

# 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.

UofSC Master of Science in Information Technology CIP 11.0103 Similar Programs Analysis (Note: There are no existing programs with the same CIP code within South Carolina)								
Program Name and Designation	Total Credit Hours	Institution	Similarities	Differences				
MS in Computer Science) (CIP = 11.0101)	33	Charleston Southern University	<ul> <li>Offers both Non-Thesis and Thesis options.</li> <li>Offer an online degree as well as blended classes</li> </ul>	<ul> <li>Designed to build on CS degree.</li> <li>Purpose - provide an advanced understanding of the technical fundamentals of computer science architecture, database, networking and software engineering</li> <li>Requires 24 Prerequisite Courses beyond credit hours for the degree</li> <li>Offers 2 optional tracks (Security &amp; Software Engineering)</li> <li>Thesis Option Requires 6 hours of Research Classes</li> </ul>				
MS in Computer Science (CIP = 11.0101)	30	Clemson University	• Offers both Non-Thesis and Thesis options.	<ul> <li>Designed to build on CS degree.</li> <li>No online option</li> <li>No comprehensive exam for non-thesis option</li> <li>Thesis Option Requires 6 hours of Research Classes</li> <li>Offers 6 concentrations requiring 3 courses (Data Science and Informatics, Foundations and Theory, Human Centered Computing, Networks, Systems, and Security, Software Engineering, Visual Computing)</li> </ul>				

	UofSC Master of Science in Information Technology CIP 11.0103 Similar Programs Analysis							
	(Note: There are no existing programs with the same CIP code within South Carolina)							
Program Name and Designation	Total Credit Hours	Institution	Similarities	Differences				
MS in Computers and Information Science (CIP = 11.0701)	33	Joint Degree with College of Charleston & Citadel	<ul> <li>Designed to build on CS / IS degree</li> <li>Offers both Thesis and Non-thesis options</li> </ul>	<ul> <li>Does not offer an online degree option</li> <li>Students must complete one of four specializations/ emphasis (Computer Science, Cybersecurity, Information Systems, and Software Engineering), each requiring 3 courses</li> <li>Computer Science Specialization targets students interested in research.</li> <li>No comprehensive exam for non-thesis option</li> <li>No required Research Methods for Thesis option</li> </ul>				
MS Computer Science (CIP = 11.0701)	30	USC Columbia	<ul> <li>Offers both Thesis and Non- thesis options</li> <li>No Capstone project required for the Non-Thesis Option</li> </ul>	<ul> <li>Designed to build on CS degree.</li> <li>Not offered as a 100% online degree</li> <li>No required Research Methods for Thesis option</li> </ul>				
MS in Information Systems Technology (CIP = 11.1003)	33	Coastal Carolina University	Similar flexibility in course selection	<ul> <li>Not offered as a 100% online degree</li> <li>No required Research Methods for Thesis option</li> </ul>				

	-	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, Full Time, Graduate Program Director	ITEC 552 - Linux Programming and Administration	PhD from Emory Univ. M.Ed, Georgia State Univ. A.B. University of Georgia	Director of the Master of Health Information Technology program. Taught at New York University, North Texas State University, the University of Virginia, and James Madison University.
Professor, Full Time	ITEC 742 – Enterprise Network Management ITEC 792 – Management of Cyber Operations ITEC 793 – Cybersecurity Risk Management	<ul> <li>Ph.D., Computer Engineering, University of New Mexico</li> <li>M.Sc., Electrical and Computer Engineering, University of New Mexico</li> <li>B.Sc., Electrical Engineering, Catholic University, Asuncion</li> </ul>	Faculty member in the College of Engineering and Technology at Northern New Mexico College. Served as a research associate at the Electrical Engineering Department at University of South Florida and at the Florida Center for Cybersecurity since 2016. Research has been funded by the National Science Foundation (NSF) and other agencies. Principal Investigator of the NSF-funded project "Building a Cybersecurity Pipeline through Experiential Virtual Labs and Workforce Alliances."
Professor, Full Time	ITEC 510 – Emerging Information Technology ITEC 745 – Telecommunications for Health Information Technology ITEC 775 - Large-Scale Health and Information Systems	<ul> <li>Ph.D., Management Science and Information Systems, University of Rhode Island</li> <li>M.B.A., Business Administration, University of Rhode Island</li> <li>B.S., Civil Engineering, Middle East Technical University</li> </ul>	Currently Director, Applied Sciences Center for Applied Innovation and Advanced Analytics. Heavily involved in research and health sector related activities. Recipient of the IBM Shared University Research Award for establishing a "Center for Business Analytics and Performance Management" followed by the IBM Academic Initiative Award for launching a "Research Lab for Health-e Analytics with SPSS Modeler." Over 80 peer-reviewed scientific papers published in leading scientific journals

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Associate Professor, Full	ITEC 747 – Management of Health	Ph.D., University of Connecticut	Served as chair of the Department of Information
Time, Department Chair	Information Systems	M.A., B.S., A.S., University of	Systems, College of Business, at Morehead State
	ITEC 776 – Health Information	Connecticut	University, Kentucky, for 11 years, and as the Elmer and
	Technology and Clinical		Donna Smith Endowed Chair in Health Systems
	Transformation		Management for two years. Sfive years on the
			Coordinating Council for the Kentucky State Health
			Information Exchange and on the faculty of the
			University of Kentucky Medical School Rural Physician
			Leadership program. Recently appointed to the
			national HIMSS Innovation Committee.
			Duings to the closer on 10 years of IT monocompart
			Brings to the classroom 16 years of 11 management
			experience in industry. Projects have been supported
			by major grants from HRSA, The Office of the National
			Coordinator for Health Information Technology, the
			Center for Medicaid and Medicare Innovation Grant,
			and the U.S. Department of Education.
Associate Professor, Full	ITEC 562 – Advanced Web	PhD from Vanderbilt Univ.	Prior to reentering Academia, worked for 15 years in
Time	ITEC 564 – Capstone Project for	MS Comp. Sc. from Vanderbilt Univ.	industry as both a burner development engineer, and
		MBA from Lehigh Univ. Meng in Mech. Eng. from Cornell	software manager. Teaches software development,
	mormation recimology		web site development, database management, and
	ITEC 570 – Database Management	BS from Cornell in Mech. Eng.	project management. Taught at Ohio State University,
	and Administration		University of California Riverside, and Jia Tong
	ITEC 749 – Principles of Informatics		University, Shanghai, China. Articles have appeared in
	ITEC 791 – Introduction to		Systems, Transactions of the UE, and other journals
	Management of Information		Authored two LLS. Detents, one design to measure
	Security		Authored two 0.5. Patents, one design to measure
			cove temperature as it emerges from cove ovens, and
			in support of user privacy. Currently on associate editor
			for Electronic Commerce Descerbland
			Tolessemmunisations Sustants
			relecommunications systems.

Associate Professor, Full Time	<ul> <li>ITEC 752 – Systems Analysis &amp; Design for Health Applications</li> <li>ITEC 754 – Analysis and Design of Information Systems and Technology</li> <li>ITEC 762 – Health Information Technology Usability and Interface Design</li> <li>ITEC 765 – Human Computer Interaction, Usability and Interface Design</li> </ul>	<ul> <li>Ph.D., Management of Information Systems and Technology, Claremont Graduate University</li> <li>M.B.A., Peter F. Drucker Graduate School of Management, Claremont Graduate University</li> <li>B.A., Brigham Young University</li> </ul>	Work on mobile and web-based technologies for inter- organizational emergency medical services (EMS) has gained National attention and has been funded by the National Science Foundation and Federal Highway Administration. Work on designing and using IT to improve work and health outcomes for vulnerable populations has been funded by the Centers for Medicare and Medicaid Services, U.S. Department of Labor, The Duke Endowment, and the California Wellness Foundation. Work in user experience design and field testing extends across several domains and user populations including emergency response, inpatient and ambulatory healthcare settings, people with disabilities, aging individuals with musculoskeletal conditions, and others. Published and presented work in more than 75 scientific journals, National and International conference proceedings, and technical reports on these topics.
Associate Professor, Full Time	ITEC 770 – Health IT Database Systems ITEC 785 – Enterprise Data Analytics ITEC 786 – Advanced Enterprise Data Analytics	<ul> <li>Ph.D. Computer Science, Yale University</li> <li>Ph.D. Computer Science and Technology, Zhejiang University</li> <li>M.Phil., Computer Science, Yale University</li> <li>M.S., Computer Science, Yale University</li> <li>M.Eng., Computer Science &amp; Technology, Zhejiang University</li> <li>MBA, Business Administration, Rutgers</li> <li>University</li> <li>B.Eng., Computer Science &amp; Technology, Zhejiang University</li> </ul>	Research interests are in areas of health information technology, including medical, health and cancer informatics; artificial intelligence, including personalization, information retrieval, knowledge management, recommender systems and text and image mining; patent informatics and intelligent software for practitioners in intellectual property law; computer graphics and interactive techniques for multimedia; visualization and visual analytics; intelligent user interfaces.

Associate Professor, Full Time	ITEC 534 – Advanced Human Computer Interface ITEC 764 - Project Management for Health Information ITEC 781 - Artificial Intelligence and Informatics I ITEC 782 - Artificial Intelligence and Informatics II	Ph. D. in Information Systems with a concentration on Human-Computer Interaction (HCI) from the New Jersey Institute of Technology.	Obtained "Human Factors" Certificate from the University of Michigan and is . a certified Project Management Professional (PMP). Former President for the Association of Information Systems (AIS) Special Interest Group on HCI (SIGHCI) and is now serving as the SIGHCI's Advisory Board Member. Academic work explores how users interact with computer systems, AI- driven technologies, robotics, and IoT smart devices to accomplish their goals.
	Tools and Techniques ITEC 766 – IT Project Management		Al/robot interactions, explainable Al (XAI), conversational UI design, health informatics, social media analytics, and mobile security notification (MSN) systems.
Instructor, Full Time	ITEC 760 – Cyberinfrastructure and Information Technology	M.S., Information Systems, George Washington University B.A., George Washington University	Over 30 years experience as a developer, analyst, and educator in Information Technology. Cisco Academy Instructor in Cyber Security Operations and Routing and Switching CCNA-1 through CCNA-3, version 7. Developer using various tools including SQL Developer for Oracle and Visual Studio. Palo Alto Networks Authorized Cybersecurity Academy Instructor.
Instructor, Full Time		<ul> <li>M.Sc., Information Systems , UNC Greensboro, NC</li> <li>M.B.A., Western Carolina University, NC</li> <li>B.S.B.A., Western Carolina University, NC</li> </ul>	
Instructor, Full Time	ITEC 560 – Project Management Methods	B.B.A, James Madison University, Harrisonburg, VA M.B.A, Duke University, Durham, NC	Information Systems Technology Department Chair for 10 year at Midlands Tech Community College. VP of Operations at VC3, a South Carolina Consulting company. VP Business Solutions and Chief Information Officer for Edens.
Internship Director & Instructor, Full Time	ITEC 748 – Internship in Information Technology		

Adjunct, part time	ITEC 772 – Database System	<ul> <li>M.S. Computer Science, University of South Carolina</li> <li>M.S. Physics with Concentration in Medical Physics, East Carolina University</li> <li>B.S. Double Major in Physics and Math, University of North Carolina, Greensboro</li> </ul>	Brings to the classroom 12 years of experience in the fields of clinical research technology, decision support services and data warehousing. As a medical physicist, worked for several years as a co-investigator on NCI funded grant at the University of Texas, MD Anderson Cancer Center, Houston Texas. Worked as an Oracle DBA/systems engineer at a datacenter that warehoused government healthcare information technology. Responsible for the design and implementation of many data driven applications on the web, with primary focus on the backend including data modeling, analytics design, scientific computing, and database technology.
Adjunct, part time		<ul> <li>PhD Business Administration, Strategy and Innovation, Capella University.</li> <li>MS in Management (Project Management), New England College.</li> <li>BA Criminal Justice, Saint Leo University</li> <li>Associates, Criminal Justice, Community College of the Air Force</li> </ul>	Taught in the IIT program for over 8 years. DBA, PMP, LSSBB, R&D Strategic Program Manager at ClearCaptions LLC since 2021, Program Manager at E- novation FN America, LLC for 2 1. Years. Director of Project management – Implementation and Business Processes, Motorola Solutions for 7 years. Superintendent / Program Manager with the US Air Force Reserve, 8 years.

Total FTE needed to support the proposed program: Faculty: 2.5 Staff: .25 Administration: .33

## Faculty, Staff, and Administrative Personnel

Current faculty could handle an enrollment of 35 new graduate students. As the programs grows beyond this number, a new faculty position would be required to handle the required classes. The program is expected to reach this threshold by the start of year three, at which point one additional faculty member would be required. Should enrollment grow to exceed 100, a second faculty member would be required. Projections show this threshold would be reached in year four.

The current teaching load for graduate faculty in the IIT department is 4 courses per year, except for the chair who has a 2-course /year load. We are in the final stages of hiring a new faculty member with a PhD that will be on board in Fall 2023. He will have a 3-course / year load for the first two years, and 4-course load thereafter. Adding this faculty member will allow us to offer classes not currently being offered.

The table below shows the enrollment in both the 500 level classes and 700-level courses. The 500-level classes enroll both undergraduate and graduate students, whereas only graduate students take the 700-level classes. For both sets of classes, the average enrollment per class is below the target of 25. Adding the MSIT program will allow us to leverage these underfilled classes. Because the 500-level classes are also used in our online BS IIT program, we already offer each class in both a face-to-face and online modality during regular semesters. During the summer all 500-level classes are offered online. This will make it convenient for the MSIT program to take any of these classes. Also, with the addition of the MSIT students, we will have a larger potential enrollment pool which will allow us to offer more classes during the summer.

The 700- level classes are in both our existing MHIT and PhD graduate programs. The new MSIT program will allow us to leverage these under-filled courses. Our target enrollment is 25 per class.

Regarding thesis advising, we anticipate a limited number of students that will opt for the thesis option, given the primary target for the program is working professionals. We are planning on spreading this load out over the faculty, which is anticipated to be at most 1 student per faculty at a time.

	500	level – Both	Undergrad & (	Grad Course		700 level -	- Graduate Co	ourse
Term	Numb	er of	Total	Enrollment	Numbe	er of	Total	Enrollment
	Course	es	Enrollment	/Course	Course	es	Enrollment	/Course
	F2F	Online			F2F	Online		
Spring 2023	3	3	127	21.2	7	4	92	8.4
Fall 2022	3	2	89	17.8	3	6	62	6.9
Summer 2022	0	3	18	6.0	0	4	26	6.5
Spring 2022	4	2	103	17.1	5	3	68	8.5
Fall 2021	6	1	82	11.7	2	7	64	7.1
Summer 2021	0	3	32	10.6	1	1	7	3.5
Avg Spring	3.5	2.5		19.1	6	3.5		8.4

Recent Enrollment in Face-to-Face (F2F) and Online Courses Included in the Proposed MSIT Program

Avg Fall	4.5	1.5	14.2	2.5	6.5	7.0
Avg	3	3	8.3	.5	2.5	5.0
Summer						

#### Resources

#### Library and Learning Resources

Current library and learning resources are adequate to support the proposed program. A vast number of technical resources and research publications are available online, many of which are already included in our library holdings. 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. Therefore, no additional resources are anticipated.

#### **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.

No new services will be required. We recently hired a full-time student services coordinator position to support our graduate programs including the MSIT. The department's graduate program director will coordinate support services and faculty involvement as needed. The graduate program director, existing faculty, and student services coordinator will advise students enrolled in the proposed program, provide professional mentoring, counseling, and networking support, arrange thesis committees for students, maintain graduate student files, and assist with graduation paperwork and forms.

The department's internship director will assist students with getting connections with employers and career planning. This is in addition to the resources provided by the campus career services department.

Support services beyond the academic unit include the opportunities and support provided by the Graduate School and other offices on campus for both on-campus and online students. These resources provide assistance with student life and professional growth. All students at USC Columbia are encouraged to take advantage of all resources available to them as applicable.

#### **Graduate Student Resources Hub**

The Grad Hub provides graduate students with greater access to student services and resources through a collaboration with National Fellowships and the University Career Center.

#### Ombuds

The Graduate School Ombuds serves as a confidential, neutral, informal, and independent resource for graduate students.

#### **Opportunities Bulletin Board**

The bulletin board contains information about events, fellowships, job postings, announcements, and learning opportunities for graduate students.

#### **Professional Development**

Professional development support for graduate students includes a list of tools, resources, and professional development programs to help students discover their career potential.

## **Travel Grants**

Travel support is provided to help graduate scholars travel to conference where they will present their work on behalf of the university.

## **Division of Information Technology**

The Division of Information Technology can provide students with assistance in a variety of resources and platforms such as Blackboard, Carolina Tech Zone, Password Help, Self-Service Portal, and the Service Desk.

## **Career Center**

The Career Center provides students with a number of resources including career exploration, resume and cover letter consultations, assistance with job search strategies, and career coaching appointments.

## SPARC Graduate Research Grant Program

The SPARC Graduate Research Grant Program provides funding for meritorious scholarship and helps students gain experience that helps them prepare to seek national fellowship and grant awards throughout their academic careers.

## **Student Affairs and Academic Support**

The Office of Student Affairs and Academic Support provides students with a variety of programs and resources in the areas of academic success, career preparation, diversity equity, and inclusion, involvement and leadership, and well-being.

#### **Student Disability Resource Center**

The Student Disability Resource Center coordinates efforts to ensure that students with disabilities receive reasonable accommodations and serves as consultants to faculty, staff, and campus partners.

#### **Student Success Center**

The Student Success Center provides students with a one-stop shop for academic services on campus. Services include study and writing support, financial consultations, population specific support, academic engagement resources, and various workshops in the areas of support provided.

#### **Student Health Services**

Student Health Services provides students with a variety of resources to support their mental and emotional health and well-being in a variety of areas including COVID-19, emotional wellness, environmental wellness, financial wellness, intellectual wellness, occupational wellness, physical wellness, social wellness, and spiritual wellness. USC Columbia also provides many mental health resources including emergencies and after-hour counseling and psychiatry, information for the 24-hour National Suicide Prevention Hotline, the Crisis Text Line, the Trevor Lifeline, and online mental health services.

**Physical Resources/Facilities/Equipment:** We do not anticipate that significant additional equipment or facilities will be needed for this program. Our new User Experience and Networking/Cyber Security labs will provide lab space for the proposed program, and plans are already in place for expanding the User Experience Lab. In addition, our cyberinfrastructure cloud environment makes virtual hands-on experience available from anywhere to support course work and research.

## Equipment

Identify new instructional equipment needed for the proposed program. No new equipment required.

# **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

Yes, the College of Arts and Sciences, School of Public Health, and College of Education will need to offer required courses in an online format at least once a year. Letters of concurrence were received from these impacted units.

	Sources of Financing for the Program by Year											
	1	st	2	nd	3	rd	4	th	5	th	Gran	d Total
Category	New	Total	New	Total	New	Total	New	Total	New	Total	New	Total
Tuition Funding	\$188,843	\$188,843	\$205,920	\$321,032	\$244,816	\$398,286	\$298,584	\$489,274	\$300,025	\$530,476	\$1,238,188	\$1,927,910
Program-Specific Fees	\$24,750	\$24,750	\$17,325	\$42,075	\$10,125	\$52,200	\$11,925	\$64,125	\$5,400	\$69,525	\$69,525	\$252,675
Special State Appropriation	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Reallocation of Existing Funds	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Federal, Grant, or Other Funding	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Total	\$213,593	\$213,593	\$223,245	\$363,107	\$254,941	\$450,486	\$310,509	\$553 <i>,</i> 399	\$305,425	\$600,001	\$1,307,713	\$2,180,585
Estimated Costs Associated with Implementing the Program by Year												
	1	st	2	nd	3	rd	4	th	5	th	Gran	d Total
Category	New	Total	New	Total	New	Total	New	Total	New	Total	New	Total
Program Administration and Faculty/Staff Salaries	\$0	\$0	\$210,000	\$210,000	\$0	\$210,000	\$0	\$210,000	\$150,000	\$360,000	\$990,000	\$990,000
Facilities, Equipment, Supplies, and Materials	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Library Resources	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Other (specify)	\$32,103	\$32,103	\$35 <i>,</i> 006	\$54,575	\$41,619	\$67,709	\$50,759	\$83,177	\$51,004	\$90,181	\$210,492	\$327,745
Total	\$32,103	\$32,103	\$245,006	\$264,575	\$41,619	\$277,709	\$50,759	\$293,177	\$201,004	\$450,181	\$1,200,492	\$1,317,745
Net Total (Sources of Financing Minus Estimated Costs)	\$181,490	\$181,490	(\$21,761)	\$98,532	\$213,322	\$172,777	\$259,750	\$260,222	\$104,421	\$149,820	\$107,221	\$862,840

## **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.

No new faculty or new administrative positions are required to startup this new program. As the program grows, a new faculty member would be needed, which is projected to be in the third year of the program (funding allocated in second year). No new facilities or supplies and equipment are required for this new program. Revenue from tuition is expected to cover the new costs of the program.

## **Evaluation and Assessment**

Program Objectives	Student Learning Outcomes	Methods of Assessment
1. Graduates of the program will develop an advanced understanding of technical fundamentals of information	Demonstrate the ability to apply advanced information technology principles to solve complex problems.	In ITEC 749-Principle of Informatics: Working in teams of 3-5, students will address a complex business problem
technology, area(s) of specialization, and enterprise		requiring application of advanced IT principles.
technology integration.	Analyze client information technology needs and develop, integrate, and evaluate innovative solutions.	ITEC 754-Analysis and Design of Information Systems and Technology: Working in teams of 3-5, students will demonstrate the ability to analyze a business need, design a technology solution, and
<ol> <li>Within 5 years of graduation, MSIT students will advance</li> </ol>		integrate it into business processes or operations.
professionally in their careers.	Exhibit professional skills such as technical writing, oral communication, and working in trans-disciplinary teams.	ITEC 766 - IT Project Management: A sampling of team project presentations, reports, or case analyses will be used to assess the professionalism of student technical writing, oral communication, and ability to work in transdisciplinary teams.
	development project in a specific information technology area of interest. (Professional Track Only)	Assess the quality of the proposed solution developed by the team, including the thoroughness of analysis, feasibility of the solution, consideration of alternatives, and cost analysis.
	Execute a rigorous research project in a specific information	Assessment of the student's Master Thesis based on

technology area of interest	thoroughness of analysis,
(Research Track only).	feasibility of the solution,
	consideration of alternatives, and
	cost analysis.

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 course assessments and alumni surveys will be used to assess the perceived value of the program. The 3rd year alumni survey will seek assessment of the respondents on the long-term impact of the program and recommendations of how the program might be improved (What respondents found most helpful about the program and what else, in retrospect, might have increased the program's value for respondent's career advancement). Assessments will help guide continued program improvement. Assessment results will be shared and discussed with the IIT Industry Advisory Boards to seek their input for recommended program changes or improvements as well as feedback on performance from any Advisory Board Members employing graduates of the MSIT.

# 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

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
X	No