Division of **Information Technology**
University of South Carolina

ANNUAL REPORT
FY 19-20

U*of*SC™ | **Information Technology**
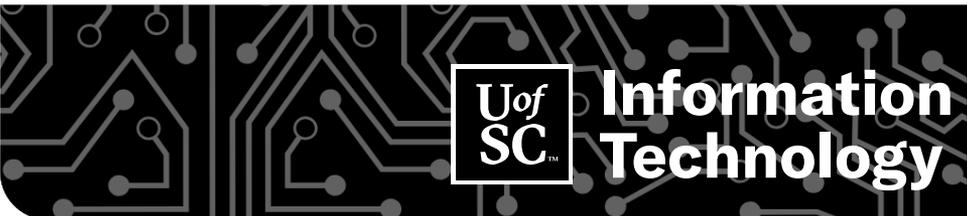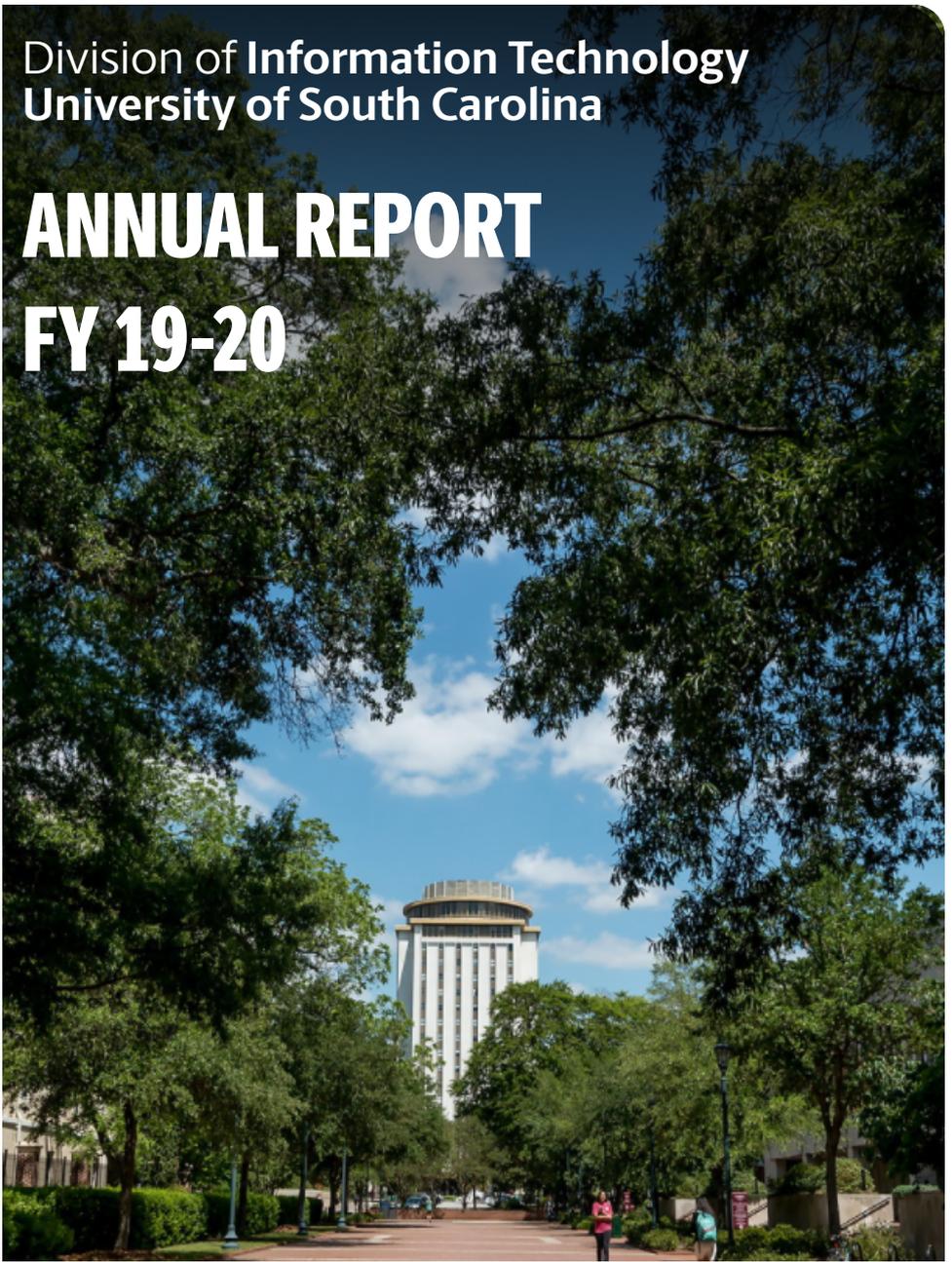
DEMOGRAPHICS

The Division of Information Technology values equity, fairness and diversity among employees and constituents. The following information represents the demographical make-up of the division.

164 full time employees

46 female employees, 29%
116 male employees, 71%

Black/African American employees, 14%
White employees, 79%
Other ethnicities, 7%

Ages 20-29, 8%
Ages 30-39, 18%
Ages 40-49, 36%
Ages 50-59, 22%
Ages 60+, 19%

FROM THE VICE PRESIDENT FOR INFORMATION TECHNOLOGY AND CHIEF INFORMATION OFFICER

This annual report summarizes and highlights the work of the Division of Information Technology to support the technology needs of the university. Over the past year, our division made progress toward meeting our Strategic Priorities, which are highlighted in this report. Perhaps our most significant accomplishment was our response to the COVID-19 pandemic. In less than six weeks, our division worked with other teams across the university to ensure teaching, learning and working could be done efficiently from remote locations. Our team provided more than 90 training sessions on the use of Blackboard Collaborate, which offers a secure platform for group gatherings and class sessions. In that timeframe, we also created more than 350 classroom sessions in Microsoft Teams and began offering 24/7 IT support for students, faculty and staff who needed assistance with our learning management system. None of these things would have been possible without the hard work of IT employees. Our employees worked countless hours to make necessary changes and improvements to help individuals have the resources they needed to maintain university operations. They are committed and passionate and I am so thankful they are such an integral part of this university.

Thank you for your continued support.

Doug Foster

ADVANCE THE ACADEMIC AND RESEARCH MISSIONS OF THE UNIVERSITY

The preeminent priority of the Division of Information Technology will be to make substantive contributions to the teaching and research missions of the university.

HIGH PERFORMANCE COMPUTING CLUSTER EXPANSION

The Hyperion cluster is the flagship High Performace Computing resource at the university. In January of 2020, the cluster was expanded from 7,316 compute cores to 15,524. The expansion also included an additional 88 graphic processing unit (GPU) accelerators, giving the cluster 106 GPUs total. This new capability provides an incredible resource to computational research at UofSC. The GPU technology also addresses the explosion of Artificial Intelligence and Machine Learning research being conducted across disciplines.

GRANT AWARDED FOR ARTIFICAL INTELLIGENCE AND MACHINE LEARNING PROJECTS

The Research Computing team was awarded an ASPIRE II grant in the amount of $99,456 for their supporting work with collaborative Science Gateway and Artificial Intelligence (AI) projects. The grant, worked on by AI Scientist Jun Zhou, was for the project titled "*Image Analysis Algorithms for Digital Surrogates of Historical Motion Picture Film.*" The project focused on developing new algorithms to identify text information appearing in the digital surrogates. Work was performed to determine the feasibility of facial recognition applied to historic motion picture films as well as building and deploying a project website that includes secure streaming protocols that prevent unauthorized downloading of video files. Integrated data from AI and Machine Learning algorithms provide a portal for researchers collaborating with the team ito access high-resolution imagery for their work.

IMAGE PROCESSING TOOL UTILIZED BY RESEARCHERS

The Research Computing team worked with the SC Department of Natural Resources, the College of Engineering and Computing and the UofSC Center for Digital Humanities on the SnowVision project, which earned UofSC a $320,000 grant. The SnowVision project is a learning-based image processing science gateway tool that allows users to study cultural heritage collections. It allows researchers, specifically archaeologists, to access a database of cultural artifacts. Artificial Intelligence technology helps to identify cultural artifacts and displays pictures and 3D scans for researchers. Researchers can follow migration patterns, see the reach across the region, view pottery, other artifacts and more. The cutting-edge computer vision technology helps researchers unlock the mystery of how people interacted and traveled more than 1,500 years ago.

UofSC won a second ASPIRE II grant in the amount of $99,774 for this project. The Research Computing team submitted a paper on this project to the Practice and Experience in Advanced Research Computing conference and won the award for best paper in the machine learning track.

From left to right: Andrew Sherman, PEARC 2019 Technical Program Chair, Senior Research Scientist, Director of Arts & Sciences Computational Research Support, Yale University; Jun Zhou, Research Scientist, UofSC Research Computing; Paul Sagona, Executive Director of Research Computing, UofSC Research Computing; Tom Furlani, PEARC 2019 General Chair, Professor of Oncology, Chief Information Officer, Roswell Park Comprehensive Cancer Center.

CENTER OF DIGITAL HUMANITIES COLLABORATION

The Research Computing team and the Center of Digital Humanities formed a partnership to address the computational needs of researchers in the humanities. The teams focused on building a robust and cloud-centric platform for new and ongoing projects. Research Computing helped convert projects in the Google Cloud Platform to better supported services in Amazon Web Services. Both teams co-hired student employees to assist with this process. The Research Computing team guided the Center for Digital Humanities through best practices and transitioning applications for assisting researchers in the future.

NATIONAL SCIENCE FOUNDATION AWARDS RESEARCH COMPUTING TEAM $500,000

Research Computing and Integrated Information Technology were awarded the National Science Foundation Cyberinfrastructure Grant. This $500,000 grant was awarded for work on the project titled, "Building a Science DMZ for Data-intensive Research and Computation at the University of South Carolina."

A Science DMZ is a specialized network for scientific research and discoveries. Every researcher gathers vast amounts of data. Moving the data from one source to the next can be difficult. The Science DMZ enables a high speed transfer of data across the globe, university, cloud, and even locally, allowing researchers to send Terabytes of data across the globe quickly. This grant has brought many researchers to our campus to utilize this special network.

TOTAL GRANT MONEY EARNED BY THE RESEARCH COMPUTING TEAM IN FY 19-20: $1,019,230

ENHANCE THE STUDENT DIGITAL EXPERIENCE

The Division of Information Technology will equip students with the technology necessary to achieve academic success.

BLACKBOARD ULTRA BASE NAVIGATION INTRODUCED

Thousands of students and instructors rely on the Blackboard learning management system to keep them connected each day. In an effort to enhance the student digital experience, Blackboard was updated to Ultra Base Navigation. Ultra Base Navigation is reliable, accessible and extensible with a sleek, modern look and feel. It has simpler workflows and easier access to relevant information, meaning students and faculty will save time navigating pages. Ultra Base Navigation has maximum availability, which greatly reduced downtime and outages.

With the implementation of Ultra Base Navigation, several new features were introduced including an Activity Stream, Calendar and Messages that provide quick access to the most critical information consolidated from courses. Students can learn from anywhere due to Ultra Base Navigation being widely accessible and can now be used on different devices such as phones, tablets and computers.

EXECUTIVE DIRECTOR FEATURED IN BLOG SERIES

Dr. Mike Kelly, executive director of teaching and learning technologies and chief data officer, was featured in a blog series entitled, "Charting the Path to SaaS and Learn Ultra." UofSC was one of three institutions selected for this series. Kelly spoke about the "Blackboard experience" and adapting to the Ultra Base Navigation, while enhancing the student digital experience at UofSC. When describing the Blackboard experience, Kelly stated "it's all about the students."

UOFSC PRESENTED AT BLACKBOARD WORLD CONFERENCE

Several members of the Center for Teaching Excellence (CTE) and the Division of Information Technology presented "*Creating More Inclusive Instructional Content to Reach all Students with Blackboard Ally*" at the Blackboard World 2019 conference in Austin, TX. The event reaches thousands of educators around the world every year. The presentation touched on how UofSC adopted Blackboard Ally and how instructors can create a more inclusive learning environment by making small changes to their documents and offering instructional content in a variety of formats.

Blackboard Ally supports broad accessibility of course content for persons with disabilities. The DoIT and CTE worked together to describe the collaborative process they went through to obtain faculty and administrator support, share lessons learned and provide status updates. They also described the different functions of Blackboard Ally and the variety of Alternative Formats available such as HTML files for improved reading on mobile phones, ePub files for accessing course materials on an e-reader, electronic Braille files, and audio files for listening to the material on the go. The overall feedback from particpants was positive and many said the information was extremely effective.

ANALYTICS COMMUNITY OF PRACTICE EXPANDED

Students, faculty and staff with an interest in analytics were given the opportunity to network and engage through the Analytics Community of Practice (ACP). The group was chartered this year to provide a place where UofSC community members can share knowledge and build competencies with data analysis and visualization tools and services. The ACP meets at various scheduled working events, networking events and organized learning sessions. The community looks to increase awareness of technology tools and resources available to data users throughout the UofSC system.

CLASSROOM PILOT INCREASES COLLABORATION

In many areas of the Columbia campus, DoIT provides support for AV technology in classrooms, while academic units provide support for the computers in classrooms. To eliminate confusion regarding who students and faculty should call regarding support to classrooms, a pilot program was completed with the College of Arts and Sciences. In the pilot, DoIT provided support to desktop computers in 38 classrooms. The pilot was successful. As a result, a support model was developed, along with key performance indicators, support execution plans and a classification of necessary resources to to consider large-scale deployment of the program.

BLACKBOARD GLOBAL INITIATIVE

This year, UofSC was one of five institutions to participate in the fact-finding stage of an early project put together by the Blackboard Development team to investigate integration between Blackboard and Microsoft Office 365. The initiative was designed to provide seamless use of Office 365 tools for students and faculty when working in Blackboard courses. Research for setting the project looked at things like specific Office 365 applications currently being used by students and faculty, a"wish list" of items institutions think would be positive additions to integrating the systems, and expanded discussions on best practices for teaching with Blackboard and Office 365 tools.

COVID-19 RESPONSE

The world was faced with unprecedented challenges when the COVID-19 pandemic hit. Three of the biggest challenges for universities were online learning, teaching and remote working. The DoIT worked quickly and efficiently to ensure students, faculty and staff had realiable resources to continue their learning, working and teaching from home.

24/7 BLACKBOARD SUPPORT

The DoIT provided 24/7 support for Blackboard users across the UofSC system. Technicians were able to assist with a wide range of Blackboard-related issues, including basic use, how to post and complete assignments, how to improve content accessibility through Ally and how to create quizzes/tests/exams.

INFRASTRUCTURE IMPROVEMENTS

Ring Central was purchased to provide basic call center functionalities for several groups on campus working remotely. This helped employees stay on track by giving them the ability to answer phone calls and complete their work from home. The DoIT also increased the VPN throughput capacity from 1 GB to 20 GB, resulting the daily utilization to increase from 250 to 1,500.

STUDENT SUPPORT

More than 130 students with technology needs such as internet connectivity, laptops and software were assisted. Students and faculty were provided access to important software such as Adobe Creative Cloud and SPSS. The DoIT also assisted the Student Disability Resource Center in obtaining closed captioning and transcription services quickly.

SUPPORTING RESEARCH

The Research Computing team worked directly with researchers by providing dedicated equipment to those on campus researching COVID-19. In addition to providing resources and support to researchers, the team also applied for Globus, a service for secure, reliable research data management. With Globus, researchers can move, share, and discover data via a single interface.

IMPROVE ADMINISTRATIVE EFFICIENCIES

We will work to streamline administrative systems and processes to minimize overhead and duplicated work.

MAINFRAME RETIRED AFTER 40 YEARS OF SERVICE

After 40 years of service to the university, the mainframe computer was retired in the Spring of 2020. The mainframe computer was used for academic, administrative, research and personal computing before it was retired. With more secure ways of storing data available, the mainframe was no longer cost-efficient to operate, and the hardware and storage media were outdated and difficult to support.

Moving programs and data from the mainframe was a multi-year project. The OneCarolina project started in 2013 when student data was moved from the mainframe. Last year, human resources and payroll information was converted to PeopleSoft. Retiring the mainframe was a huge step forward for the university. University data and systems were moved to a more secure and reliable environment. Since antiquated equipment is no longer supported, the university will see a cost-savings.
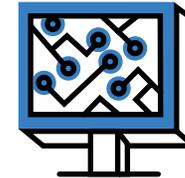
VIP.SC.EDU RETIRED

In conjunction with the mainframe computer retirement, vip.sc.edu was also retired. Vip.sc.edu was used for 30 years as the payroll system at UofSC. It was replaced by PeopleSoft in 2019, which is a modern, integrated system to manage human resources and payroll functions. Retiring vip.sc.edu was one of the last phases of the OneCarolina project.

DATA VISUALIZATION TOOL ADOPTED

The services of HelioCampus, a fast-growing data company, were secured to establish a UofSC Tableau Server with two sites. The idea is to accelerate enterprise-wide data, informed decision making, business intelligence and reporting capabilities across three primary data domains: student, financials, and human resources. There are three objectives to this project. The first is to build a data foundation support by involving governance groups that will approve, deny, table or prioritize data centered decisions. The second is advancing analytics using an efficient and effective platform that leads to the discovery of unknowns. The final objective is to inspire a data informed culture that fosters expectation of inquiry and curiosity as well as daily situational awareness. This project is expected to launch in 2021.

Helio
C A M P U S
Better Data. Brilliant Insights.

COLLABORATION WITH DISTRIBUTED IT

In Spring 2019, a unITe working group was established as a collaborate effort of colleges and departments across the system. The purpose of unITe is to collectively define and implement a portfolio of IT projects that are designed to enhance the efficiency and effectiveness of the collective IT function across the system.

The first project the group chose to investigate was an integrated IT Service Desk for students, faculty, and staff Currently, several departments have their own IT Service Desks, in addition to the one offered by the DoIT. A successful pilot program with the College of Social Work began this year. Beginning next fiscal year, many colleges and departments will begin using the Service Desk offered by DoIT, which will provide students, faculty and staff with a better level of service.

ESTABLISH A BEST-IN-CLASS SERVICE DELIVERY MODEL

The services offered by the Division of Information Technology should be easily accessible, competitively priced, and repeatable.

CUSTOMER SERVICE: A YEAR IN NUMBERS

38,896 Calls to the DoIT Service Desk

40,490 Tickets created by the Service Desk

76% First call resolution rate

6,327 Students served at the Carolina Tech Zone by student employees

3.8/4 Customer satisfaction rate

300+ Computers updated from Windows 7 to Windows 10

40 Computers deployed in various DoIT managed classrooms throughout campus for faculty use

155 iPad Pro's to the PowerUp Academy (SC Voc Rehab) Summer Camp for kids with disabilities. Held three one-hour instructional sessions with the campers on how to operate the iPad's

SERVICE PORTAL OFFERS NEW CHAT FEATURE

In an effort to improve how students, faculty and staff interact with the DoIT Service Desk, updates were made to the Chat feature in the Service Portal. The new chat feature is an effective way to get technology assistance for students, faculty and staff who would rather seek help online. Users now see the chat feature at the bottom of the home page.

The purple icon immediately comes to life when clicked on, asking users how they need assistance. While chatting with a Service Desk representative, users are able to navigate pages and still keep their chat going. Service Desk representatives are also able to send Knowledge Base articles or open a service ticket for the user. These changes have saved users time as predefined topics are built into the chat feature to help resolve issues and concerns faster.

NIGHT SHIFT IMPROVES RESPONSE TIME

Due to consistent classroom utilization, the DoIT classroom support staff was having difficulty finding time during normal university business hours to address complex technology issues in teaching and learning spaces throughout the Columbia campus. In March 2019, Collaborative Technology and Academic Support made several changes to the classroom support group that included the addition of an evening shift. The classroom support evening shift staff work from 7 p.m. – 4 a.m. and have made a drastic impact on classroom incident resolution times. Students and professors see more reliable and consistent response times moving forward.

BUSINESS INTELLIGENCE COUNCIL FORMED

The Business Intelligence Council was established this year to provide strategic, cross-functional expertise, leadership and collaboration across the UofSC system. The council guides improvements to access, quality, and understanding of university data by coordinating stakeholders among the three Core Data Domains: financials, human resources, and student. The council will ensure university decision makers have the data and information they need in a timely manner while making sure the data is available in a usable format with approved data sources and data definitions.

EXPANDED TRAINING FOR SERVICE DESK

Improvements were made to the Service Desk start-of-semester practices. This year, each member of the Service Desk team was given a training plan that focused on core values, customer service and technical skills. Throughout the year, additional training was available to support employees' Career Development Plans. This year alone, Service Desk employees participated in four different professional development programs and two Service Desk employees completed the LEAD 1 certification, a program required for all supervisors at UofSC. As a result of the training, agents are more prepared than ever to assist customers and provide IT support to the UofSC community.

4 PROFESSIONAL DEVELOPMENT OPPORTUNITIES FOR SERVICE DESK EMPLOYEES:

HDI Support Center Analyst training and certification

UofSC Professional Development Courses in Time Management, Blackboard, Carolina Intercultural training

ITIL Foundations training and certification

Pink Elephant 2020 IT Service Management Conference

EXPANSION OF TECHNICAL REVIEW BOARD

The Technical Review Board (TRB), which consists of technology leaders in the eight-campus system, was expanded this year to better meet the growing IT demands of the university. The TRB reviews and evaluates requests and proposals for new IT services and determines if an existing solution can meet the needs expressed within a given proposal to avoid duplication of service offerings. The group then approves a purchase or makes recommendations on the use of existing solutions. Since October 2019, the TRB reviewed 27 proposed projects with a cost of more than $50,000 each.

EMPLOYEE PRESENTS AT KNOWLEDGE 2020

Trevor Jerue, Knowledge Manager, presented at the Knowledge 2020 Digital Experience this year. The honor of presenting at this nationwide conference is given to few people each year. Trevor presented, "10x growth in 18 months – a Knowledge Management journey in higher-ed." The presentation detailed the vast expansion of the UofSC Knowledge Base over the past few years, and was made available to over 100,000 registered attendees, the largest conference in ServiceNow history.

PROVIDE A RELIABLE AND FLEXIBLE TECHNOLOGY INFRASTRUCTURE

The Division of Information Technology will plan for future growth and innovation by providing a technology infrastructure that can be expanded, upgraded, and replaced to meet growing needs.

DUO IMPLEMENTED FOR OFFICE 365 APPLICATIONS

According to ProofPoint, nearly 90 percent of organizations experienced targeted phishing attacks in 2019. Phishing is the fraudulent practice of sending emails from reputable companies in an attempt to obtain personal information. As a way to prevent phishing attacks and fradulent emails, the DoIT implemented Duo Security for Office 365 applications such as Outlook, Teams, OneDrive and SharePoint. In the new process, students, faculty and staff use the two-step authentication process to verify that it is in fact them signing into their UofSC accounts, specifically email.

There have been big improvements since Duo was turned on for Office 365 applications. At the beginning of the year, the University Information Security Office (UISO) received nearly 60 alerts a day regarding suspicious account alerts from Microsoft. After Duo was implemented in February, those numbers dropped to zero.

NEW SECURITY MONITORING SYSTEM PUT IN PLACE

One of the core responsibilities of the UISO is to monitor all university networks. This year, a new scalable and flexible security monitoring system was implemented. "Security Onion" replaced an older monitoring system that was no longer supported. The new system is widely used in environments our size and allows the UISO to track and respond to suspicious and malicious activity quickly. The system provides the Security team with the infrastructure for adding changes over time, such as a new software, without having to go back to the vendor, making it more efficient and less time consuming.

IMPROVED FIREWALL THROUGHPUT

The university's secondary firewall and 100 gigabyte network core was moved to the Segra Data Center in the spring of 2020. This move was part of the Network Core and Firewall Upgrade project. Moving the firewall required the physical relocation of the redundant core through a group effort with vendors. The move has expanded the firewall's throughput capabilities, which helps moves data around campus to collaborators quickly.

DEFINITIONS

Information Technology refers to the use of computers, networking devices and other infrastructure used to create, process, store, secure and exchange electronic data.. Here are some IT terms that are frequently used in educational environments, especially during the COVID-19 pandemic

Accessibility - the quality of being easy to obtain or use

Asynchronous Learning - course that is taught 100 percent online; students complete assignments at their own pace

Availability - the ability of a user to access information or resources in a specified location and in the correct format

Blended/Hybrid Learning - instruction is provided in a combination of traditional face-to-face and online delivery

e-Learning - course delivery occurs over a network

Redundancy - the inclusion of extra components are not strictly necessary to functioning, in case of failure in other components

Reliability - an attribute of any computer-related component that consistently performs according to its specifications

Synchronous Learning - course that is taught 100 percent online; students are required to participate in online meetings at specific days and times

UNIVERSITY OF
South Carolina

Division of Information Technology

sc.edu/it