

Executive Summary

The 2017-2018 academic year was another very successful one for the School of Sciences and Mathematics (SSM). Our faculty continued their stellar record of publication and securing extramural funding, several important curriculum changes were completed, including the roll-out of a new graduate degree program in Data Science and Analytics – the first of its kind in South Carolina! A new school fee was also approved and instituted for the Fall 2017 semester. This new revenue source led to numerous undergraduate research projects being funded in Summer 2018. SSM faculty and colleagues from other institutions and agencies also continued to provide research experiences for a significant number of our students. This year was also a good faculty recruitment year, resulting in nine, new roster faculty members will join the SSM rosters.

The number of majors in SSM remained relatively constant with ongoing growth in computer science, geology, and physics majors being offset by enrollment declines in chemistry, math, and biology. Several new initiatives have been planned for 2018-2019 to hopefully help improve enrollment growth across all majors in the School.

During the 2017-2018 academic year, Science and Math faculty members obtained \$6.67M in newly awarded research grants and continued work on \$20.52M in ongoing grants. Grants received were from federal, state and private sources. SSM was also successful in securing philanthropic gifts during this past academic year, with over \$275,000 in new gifts. SSM faculty publish approximately 200 articles in peer reviewed journals each year. They presented their research at both national and international conferences. Multiple undergraduate students were published as co-authors who traveled to regional and national conferences to present posters.

The renovation of the Rita Hollings Science Center continued throughout the entire academic year, missing its substantial completion date by a year. A certification of occupancy was received in June 2018. Physics and Biology faculty and staff has been moving operations and equipment into the building over the Summer 2018 semester. Although the building is being occupied and classes will be taught this Fall, numerous punch list items remain unsolved. Some of these items will have a direct and negative impact on teaching and research efforts. The associate dean and department chairs continue to work diligently and tirelessly on these many issues. The Department of Computer Science expanded its presence at Harbor Walk by 2500 additional square feet on the second floor of the East building. The new space houses a Student Innovation Center and industry partner collaborative work space called The COMPASS.

We continue to see strong interest in STEM programs and SSM remained a major producer of STEM graduates in South Carolina. A prominent feature of SSM is the extent to which our students obtain real-world, hands-on experience in research laboratories, internships, and field experiences. These experiences are critical to preparing students for graduate and professional study, as well as for entering the work force. STEM fields continue to dominate lists of the most lucrative employment fields. A recent article in Kiplinger Magazine lists the Top Majors in terms of salary and open positions for 2017-2018 (see table below). Not surprisingly, STEM fields dominate the list.

Kiplinger's 10 Best College Majors for Your Career 2017-2018

| | | Starting Salary | Mid-Career Salary | Annual Online Job Postings | Projected 10-Year Growth |
|---|---------|-----------------|-------------------|----------------------------|--------------------------|
| 1 | Nursing | \$58,200 | \$76,300 | 1.9M | 17.2% |

| | | | | | |
|----|--------------------------------|----------|-----------|---------|-------|
| 2 | Biomedical Engineering | \$62,900 | \$103,500 | 51,070 | 23.2% |
| 3 | Civil Engineering | \$57,700 | \$98,500 | 201,886 | 10.5% |
| 4 | Mechanical Engineering | \$64,000 | \$106,800 | 241,345 | 9.4% |
| 5 | Computer Science | \$65,900 | \$110,100 | 2.0M | 21.6% |
| 6 | Management Information Systems | \$57,900 | \$101,300 | 2.6M | 17.9% |
| 7 | Business Administration | \$46,300 | \$76,800 | 3.7M | 11.2% |
| 8 | Physics | \$58,000 | \$108,000 | 115,056 | 11.0% |
| 9 | Actuarial Mathematics | \$56,400 | \$131,700 | 25,613 | 17.5% |
| 10 | Finance | \$53,300 | \$93,200 | 1.4M | 13.1% |

Median job growth in all occupations: 8.6%

Source: www.kiplinger.com

SCHOOL

Mission Statement and Goals

Our mission is to integrate discovery, innovation and education in order to serve our students, our state and our nation. The principal responsibility of the School of Sciences and Mathematics is to provide the science and mathematics courses for all students at the College, and, concomitantly, to equip students who major in sciences and/or mathematics with the knowledge and skills to pursue careers in a wide variety of fields, including, science, engineering, medicine and allied health, law, social services, and journalism. The school's graduate programs have been carefully selected both to complement the undergraduate programs in areas of significant national strength and to meet the intellectual, professional and economic needs of the region and the state.

Our vision and our mission are founded on our core values -- those principles that define and guide the way in which we achieve our mission. The School of Sciences and Mathematics reflects the values of a public liberal arts and sciences university. We value:

- Students as individuals
- Our colleagues and peers as teachers and scholars
- Commitment to responsible and ethical practices in research and pedagogy
- Inquiry and intellectual curiosity
- Meaningful engagement with the community, region and state
- Collaborative effort and lifelong learning
- Diversity and dialogue
- Assessment and accountability as key tools to drive continuous improvement

Our goals in science are to help assure that all graduates of the College of Charleston:

1. Can demonstrate understanding of some of the fundamental scientific concepts and theories about the natural world;
2. Acquire a knowledge of the evidence, ideas, and models that scientists use to make judgments about the natural world;

3. Acquire a knowledge about science and technology as they shape contemporary experience and values, and demonstrate an appreciation of the historical and contemporary impact of science on daily life;
4. Develop the skills of logical and critical thinking necessary to explore how the natural world works;
5. Can demonstrate an appreciation and understanding of the scientific method of inquiry;
6. Understand that scientific knowledge is based on the outcomes of testing of hypotheses and theories that are under constant scrutiny and subject to revision based on new observations, and such knowledge is not just a collection of facts;
7. Can demonstrate an ability to distinguish between science and technology and appreciate the capabilities and limitations of both;

Our goals in mathematics are to help assure that all graduates:

1. Develop an appreciation for the practical value of mathematics in the modern world;
2. Can interpret mathematical models such as formulas, graphs, tables, and schemata, draw inferences and make decisions from them, and communicate these conclusions verbally;
3. Can organize information, recognize patterns and relationships, and represent them mathematically;
4. Can use mathematical, analytical, and statistical methods to solve problems and recognize limits of the methods;
5. Can estimate and check answers to mathematical problems in order to determine whether an answer is reasonable, and critically appraise numerical information;
6. Can apply mathematical methods in the context of other disciplines, and reason logically and recognize where conclusions can be drawn from a set of hypotheses.

For Sciences and Mathematics majors, the School has the responsibility to lead students toward acquiring a depth of knowledge and competence in their respective disciplines. In particular, science and mathematics graduates should have:

1. The ability to recount and explain the basic facts and postulates of the discipline and to use these in the solution of problems with which the discipline concerns itself;
2. Proficiency in the use of the techniques and tools of the discipline;
3. An awareness of the resources of the discipline and the ability to seek out and assimilate knowledge that has not been a part of the classroom experience;
4. The ability to relate knowledge in the discipline to other disciplines.

A key element of our mission is accountability, which includes regular assessments of the effectiveness of School of Sciences and Math programs. Departments must be alert to opportunities to measure their programs against objective indicators of programmatic quality, such as accreditation reviews and external program evaluations.

The School of Sciences and Mathematics recognizes that a college education is not merely an independent activity that follows high school but is part of a greater educational experience that begins in kindergarten. Academic departments are sensitive to their obligation to promote education at all levels. Consequently, faculty engagement in pre-college activities with students and teachers is regarded as an important part of the mission of the school.

A central element of the mission of the School of Sciences and Mathematics is to sustain the involvement of its faculty in research and scholarship. Scholarly activities of the faculty not only are essential for maintaining the intellectual environment that characterizes an excellent institution of higher learning, but they support the mission of the College by providing students a community in which to engage in original inquiry and creative expression. Faculty members are urged to guide students in research activities whenever possible. All undergraduate programs in the School of Sciences and Mathematics use independent study and student-faculty research as important methods for developing intellectual independence and creativity as well as for teaching appreciation and understanding of sciences and mathematics. Research is central to the goal of leading students to connect their coursework with the techniques and applications of their disciplines.

Strategies and tactics in the College's strategic plan your department would place as highest priorities

Strategy 1: Enhance the Undergraduate Academic Core

1.1 Provide each student a personalized experience that integrates classroom learning with at least two of the following: research and creative activities, civic engagement, study away, internships, and peer education.

The School of Sciences and Mathematics believes that experiential learning is essential to education. Undergraduate majors receive a highly personalized experience when mentored by our faculty in current, relevant, private, state and federally funded research. This work aids a student's comprehension of their field and better prepares them for graduate programs and industry work. Research grant funds provide students with stipends necessary to forgo jobs in unrelated areas so they can stay focused on their field and often travel to conferences where they present their findings.

A few years ago the Department of Mathematics furthered the personalization of education with the implementation of ALEKS. This intuitive math placement exam, mandatory for all incoming undergraduates, ensures that math skills are properly assessed so students can properly design their course of study and increase their chances of success in their major and at the College. There are many features of this program that the Department of Mathematics can control such as the amount of time a student has to spend learning the modules before attempting placement. They have also set placement scores to expire after two semesters forcing students to recertify through ALEKS for any subsequent math courses needed. These settings encourage students to satisfy math general education requirements or math requirements for their intended major early.

The Department of Chemistry continued its use of LearnSmartPrep to prepare students for Chem 111 and 112. In recent years, they expanded the program to include Chem 232 Organic Chemistry. LearnSmartPrep is designed to get students ready for a forthcoming class by quickly addressing prerequisite knowledge gaps. By distinguishing what a student knows from what they don't, and honing in on concepts they are most likely to forget, LearnSmartPrep maintains a continuously adapting learning path individualized for each student and tailors content to focus on what the student needs to master in order to have a successful start in the class. This expansion was so successful, LearnSmartPrep is now required for Organic Chemistry.

The School of Sciences and Mathematics continued to play a strong role in the College's study abroad programs. Faculty led students to Indonesia, Bahamas, British Virgin Islands, Costa Rica, Spain, and China.

Faculty and students of the Department of Geology and Environmental Geosciences routinely travel for field research. This year geology students completed their annual Maymester field studies trip comprised of three weeks of mapping geological sites in Arizona, Colorado, New Mexico and Utah. Students studied dinosaur paleontology in Wyoming, while others traveled as far as South Africa and India.

The Department of Chemistry took a group of students on an inaugural trip to the University of Georgia Costa Rica (UGACR) located on the Tilarán Mountain Range, adjacent to the famous Monteverde Cloud Forest Preserve which protects one of the most biodiverse and endangered ecosystems on the planet. Chemistry hopes to continue this program in the coming years.

To further the mission of providing undergraduate research opportunities, the School continued hosting its annual research “match making” session. The event provides a casual setting for students interested in pursuing research to approach faculty mentors in order to learn about their labs and studies. Thirty-five faculty members and post docs from both the College and the Medical University of South Carolina participated in November 2017. The event was attended by over 125 students. This was the fifth year the School has held this session which successfully placed around 50-75 students in labs.

This year, School fees took affect and were charged to all 300 level courses or higher. The revenue returned to SSM was earmarked, in part, for summer research stipends. Forty summer research stipends were awarded to undergraduates who wished to pursue full time research between May 15 – August 15. An additional seventeen students were supported by the South Carolina IDeA Networks of Biomedical Research Excellence (INBRE) a grant of which Associate Dean Jim Deavor, is principal investigator. Many of these students will present their findings at the Celebration of Scholars on August 20, 2018.

1.2 Enhance undergraduate academic programs that are strongly linked to the history, traditions, culture, and environment of Charleston and the Lowcountry, such as a new undergraduate majors in African-American Studies and sustainability.

Many of our programs take full advantage of our regional setting. The College of Charleston was listed among the Top 10 Marine Biology programs in the United States. The Grice Marine Laboratory on James Island offers the unique opportunity to collaborate and work with a large, diverse group of dedicated scientists at the Fort Johnson Marine Science Center. Our coastal South Carolina location provides an excellent setting in which to study and explore a variety of marine ecosystems. Students in graduate and undergraduate programs in Environmental Studies, Biology, and Geology also take advantage of our coastal location and partners at Fort Johnson.

Locations such as Dixie Plantation, Folly and Edisto Beach, and Frances Marion National Forest provide outdoor classrooms for natural science labs. Students can study marine and terrestrial habitats, fresh-water systems, and associated fauna and flora in natural settings. Our climate allows for extended access to these areas. This year faculty began using the Field Stations, located at Dixie Plantation for lab sections of ornithology and plant physiology. Field stations were also used by the Lowcountry Hall of Science and Math as well as the School of Education, Health and Human Performance for outreach activities with students and teachers from the Charleston County School District.

This year, our astronomy department took full advantage of Charleston’s prime location on the path of totality for the solar eclipse which took place on August 21, 2017. Astronomy faculty offered their services at viewing locations across the city and host NASA on campus College-wide viewing party. The

Departments of Physics & Astronomy and the Mace Brown Natural History Museum distributed solar eclipse glasses to the thousands of people who traveled to Charleston for the event.

1:3 Develop academic programs at the College of Charleston North Campus to offer lifelong learning courses and programs to serve the needs of returning adult learners or non-degree students.

The School continues to explore strategies to expand course offerings on the North Campus in both degree offerings and continuing education. Certificate programs in Cybersecurity, Software Engineering, and Information Systems are also offered for those nontraditional students looking for opportunities to continue their educations.

1:4 Strengthen the Honors College through dedicated faculty for innovative curriculum

Faculty members in all six departments of the School contribute to Honors curriculum. The departments of Biology, Chemistry, Geology, Mathematics, and Physics have dedicated Honors Intro Sections. Elizabeth Meyer-Bernstein, Associate Professor of Biology, serves as Associate Dean of the Honors College.

The School of Science and Math also partners with the Honors College in providing scholarship funds to desirable, prospective students. The Department of Computer Science earmarks funding for “Elite Edge” Scholarships meant specifically for incoming Honors students.

1:9 Increase significantly the numbers of and enrollments in interdisciplinary courses and programs

Our faculty continues to contribute heavily to the First-Year Learning Communities to foster interdisciplinary relationships between departments for unique learning experiences. SSM faculty members contributed 12 First Year Seminars and Learning Communities in the Technology, Science and Health category.

The School houses several interdisciplinary programs that bridge the School of Sciences and Mathematics with the School of Humanities and Social Sciences. Both the undergraduate minors environmental and sustainability studies and the neuroscience minor continue to see steady enrollments. This year, M. Scott Harris, Associate Professor of Geology, assumed the role of Director of the Archaeology major and minor programs.

There number of declared minors in NSCI held steady at 53 this year. The program has a strong relationship with the Neuroscience Department and Neuroscience Institute at MUSC which attracts students interested in pursuing research opportunities with MUSC faculty. MUSC recently presented the NSCI Steering Committee with a potential 4+1 program that would allow minors to obtain a M.S. in Biomedical Science – Physiology and Neuroscience, with an additional year of graduate work at MUSC after obtaining the Bachelor’s at the College. A final draft of the 4+1 Masters proposal was submitted to Deans Auerbach and Hale who forwarded the proposal to Provost Brian McGee. After vetting concerns the Provost provided a Memo of Support of the program and program director Jeff Triplehorn, Associate Professor of Biology, was asked to obtain information from other similar programs. Requested information was obtained and returned to the Provost.

Jeff Triplehorn stepped down as Director of the Neuroscience Program on June 30, 2018. The role will be assumed by Professor Sorinel Oprisan of the Department of Physics & Astronomy. Sorinel has been a strong supporter of the program and as assisted with computational curriculum. He previously served as interim director while Jeff Triplehorn was on a recent sabbatical.

Faculty seek to establish a new undergraduate major in Environmental and Sustainability Studies. The number of students declaring and graduating with an ENSS minor continues to grow, in line with national and international trends. This year the program reported 146 declared minors.

Computing in the Arts is an interdisciplinary major supported by SSM and the School of the Arts. This program is directed by Bill Manaris, Department of Computer Science and continues in its popularity. There are currently 104 declared CITA majors, a 14% increase from last year.

Strategy 2: Develop nationally recognized graduate programs

2:1 Emphasize the acquisition of research and teaching grants to develop interdisciplinary, international and innovative programs that capitalize on our unique location and capabilities.

Faculty in the marine biology program continued their success in securing extramural research and teaching grants. Their unique location on the Charleston Harbor and proximity to several federal and state partners offers them unique opportunities to conduct research in the marine sciences. Faculty at Grice Marine Lab are in receipt of just over \$4.9M in funding for newly awarded and ongoing research grants. Sponsors include the National Science Foundation, University of Tennessee-Knoxville, NASA, Slocum-Lunz Foundation, Harry Hampton Wildlife Fund, and Oceana

2:2 Enhance graduate programs in marine biology, environmental studies, historic preservation, and arts management to achieve national recognition.

Our Graduate Program in Marine Biology continues to be highly competitive and nationally ranked. The program attracts applicants from all over the country. Grice Marine Lab hosts a research experience for undergraduates (REU) program each summer which attracts undergraduates from other institutions who explore our facilities and the offerings of our GPMB.

The ability of the Masters of Environmental Studies program to provide students with a comprehensive background in both policy and science remains an attractive feature for prospective students. However, resources committed to this program are low. The program employs one full-time Program Coordinator who oversees administrative duties, logistics, and advising. Annette Watson, Associate Professor of Political Science, continues to serve as director of this program.

The MES Program has a prominent position in the revised strategic and master plans for the College of Charleston. The MES program and the Dual-Degree Public Administration/Environmental Studies program have a solid reputation and strong interest from prospective students, thus producing greater interest in University of Charleston graduate studies.

Strategy 4: Recruit, enroll, and retain an academically distinguished, well-prepared and diverse student body.

4:4 Increase the amount of merit-based and need-based scholarship funding largely funded through private resources.

In the academic year 2017-2018, the School of Sciences and Mathematics awarded approximately \$175,000 in scholarships. These funds came from both private donors and public sources.

Eight incoming freshman intending to major in computer science were awarded recurring scholarships in amounts varying from \$2500 - \$5000 per year. These funds were made possible by a special

appropriation from the State of South Carolina. The appropriation was provided to support the College's dedication to helping grow the Charleston area into a recognized digital hub by attracting the brightest and best students to the area. These appropriations are now in their fifth year. The first students to receive scholarships from these appropriations graduated in May 2018.

The Boineau Family Endowed Scholarship specifies criteria which will award South Carolina students who exhibit financial need. This endowment was pledged through an estate plan and will be awarded once the required interest is accrued.

The Dean continues to enthusiastically support the South Carolina Alliance for Minority Participation (SCAMP) program through research stipends and travel awards. SCAMP program funding will be supported by School Fees revenue.

Strategy 7: Provide up-to-date facilities and infrastructure to enhance academic, co-curricular, and extracurricular programs.

7:1 Build, renovate, and maintain classrooms, laboratories, and studios that allow for a variety of class sizes and teaching and learning styles.

The renovation of the Rita Hollings Science Center was completed in June 2018 and faculty moved back into the building this summer. There is still a considerable number of punch list items that need to be addressed before the project can be considered complete.

The Department of Computer Science expanded its presence at Harbor Walk by 2500 additional square feet on the second floor of the East building. The new space houses a Student Innovation Center and industry partner collaborative work space called The COMPASS. The department now has space on all three floors of the Harbor Walk East building and is well posed to continue its program growth.

Faculty from the departments of Biology, Geology and Physics & Astronomy continue to use of the Field stations and Dixie Planation in Hollywood, SC. Several faculty members have instruments in place throughout the property used for continuous research. The property also continues to regularly serve field trips for classes in botany, plant taxonomy, ornithology, and herpetology. Stations are also often used for outreach activities and continuing education programs offered through the Lowcountry Hall of Science and Math and the Department of Teacher Education. Weekly labs are held in the field stations as well.

FACULTY WORKLOAD

Enrollments 2017-2018

| | | Fall | | Spring | |
|-----------------------------------|--------------|-------------|-------------|---------------|-------------|
| | | 2017 | | 2018 | |
| Department | | G | U | G | U |
| Biology | BIOL | 132 | 4305 | 110 | 3919 |
| | TOTAL | 132 | 4305 | 110 | 3919 |
| Chemistry and Biochemistry | CHEM | | 2051 | | 1879 |
| | TOTAL | | 2051 | | |
| Computer Science | CSIS | 29 | | 57 | |
| | CSCI | | 907 | | 916 |

| | | | | | |
|--|--------------|------------|---------------|------------|---------------|
| | CITA | | 79 | | 61 |
| | DATA | | 51 | | 92 |
| | TOTAL | 29 | 1037 | 57 | 1069 |
| Geology and Environmental Geosciences | GEOL | | 2117 | | 2134 |
| | TOTAL | | 2117 | | 2134 |
| Mathematics | MATH | 58 | 3402 | X | 2730 |
| | TOTAL | 58 | 3402 | X | 2730 |
| Physics and Astronomy | ASTR | | 577 | | 491 |
| | PHYS | | 808 | | 837 |
| | TOTAL | | 1385 | | 1328 |
| SCHOOL TOTAL | | 238 | 14,980 | 213 | 13,494 |

Declared Majors

| Major | U | G | |
|----------------------------------|----------|-------------|------------|
| Biology | 699 | | |
| Biology Secondary Ed | 14 | | |
| Marine Biology | 141 | 41 | |
| Biochemistry | 72 | | |
| Chemistry | 62 | | |
| Chemistry Secondary Ed | 4 | | |
| Computer & Info Sciences | | 30 | |
| Computer Info Systems | 94 | | |
| Computer Science | 255 | | |
| Computing in the Arts | 106 | | |
| Data Science | 41 | | |
| Environmental Studies | | 36 | |
| Environmental Studies Concurrent | | 1 | |
| Environmental/Dual Pro | | 22 | |
| Geology | 104 | | |
| Mathematics | 73 | 19 | |
| Mathematics Secondary Ed | 8 | | |
| Astronomy | 4 | | |
| Astrophysics | 37 | | |
| Meteorology | 23 | | |
| Physics | 52 | | |
| Physics Secondary Ed | 1 | | |
| SCHOOL TOTAL | | 1790 | 149 |

During the renovation of RHSC, we noticed a decrease in enrollments in BIOL and PHYS Intro courses and suspect the move to Harbor Walk may be responsible. Majors from other Schools completing science credits may have been avoiding the trip to Harbor Walk and were instead registering for Geology or Chemistry courses offered in SSMB at 202 Calhoun Street. This may also explain the decline in Biology majors. Residence in swing space may have been limiting faculty's ability to stimulate student interest. It will be interesting to follow trends now that Biology and Physics have moved back into their permanent homes in RITA.

Enrollments in Chemistry have also decreased. This may be due to increased enrollments in the Public Health major, which has become an alternate for students applying for medical school, and the diminishing math skills of incoming freshman unable to complete prerequisites for upper level courses.

Research-active faculty members in the School of Sciences and Mathematics teach a 3:3 course load, unless altered by special exception. This course load assumes a one-course release per semester to accommodate active research to result in peer reviewed publication. In addition to teaching regularly scheduled classes and advising declared majors, faculty mentor undergraduate research students, participate in external STEM outreach events, contribute to graduate and special programs such as Honors and First Year Seminar, as well as interdisciplinary majors and minors such as Neuroscience, Environmental Studies, Science and Math for Teachers, and serve on departmental and College-wide committees. Instructors teach a 4:4 course load as well as participate in many of the same additional duties listed above. Full professors, who no longer keep up an active research portfolio, are assigned a 4:4 teaching load.

Although over 50% of all 100 and 200 level courses are taught by roster faculty, The Department of Chemistry also reports a dependency on adjuncts with many of those adjuncts teaching a full course load. The number of adjunct faculty outnumbers the number of roster faculty. The department would welcome instructor lines to increase stability in the teaching workforce. The department's accreditor, The American Chemical Society, recently addressed adjunct dependency with the following statement:

"The ACS is concerned about the potential overreliance on temporary faculty. If the total number of temporary faculty is more than 1/3 of the total number of permanent faculty, describe the courses the temporary appointments teach and indicate whether they are required for the certification of the curriculum."

The Department of Biology reports strains of productivity including commitments to lab sections and graduate programs (SMFT, EVSS, GPMB.) They too wish to place more roster faculty in freshman intro classes. Currently only 32% of BIOL 111 & 112 courses are taught by roster faculty. When course load is shifted to put more roster faculty in lower division courses, upper division courses suffer because qualified experts are now unavailable to teach more sections and juniors and seniors are unable to enroll in courses needed for graduation. They too would welcome instructor lines. This would be particularly helpful in courses like Anatomy &

Physiology that are heavily enrolled by majors outside of the School of Science & Math, such as Public Health and Exercise Science.

Faculty in the Department of Geology shoulder responsibilities for the Mace Brown Natural History Museum due to a lack of support from the College. The Department supports one, part-time, temporary employee to manage the Museum. Faculty must cover shortages and additional tasks to keep this resource running. Each year, the Museum hosts well over 5000 guests which include tri-county school students, special interest groups, tourists and local visitors.

The Department of Physics & Astronomy reports that roster faculty teach general education lecture sections, but limit class size to 48. Adjunct faculty and MES graduate students are limited teaching general education labs. Their biggest strain on workload is due to individual instruction. This year roster faculty member mentored 62 students enrolled in independent study and senior research courses.

Since the Department of Mathematics services enrollments for all students and manages the College math placement, they are at 94% of their peer average for teaching workload, measured as student credit hours per tenure track faculty.

Computer Science lost a tenure track assistant professor in 2017-2018, but was able to hire a new one. A VAP was converted to a tenure track position (after a nationwide search), and a new VAP was added. With the new Data Science and Analytics degree now in the catalog, at least one additional hire will be needed by next year to keep up with the program growth. All students in the computer science department are required to meet with an advisor before they can register for classes. (A hold is placed on their account). With 540 majors and only 14 roster faculty, this is putting a hardship on the faculty. Fortunately, new adjuncts have been hired in the last few years who have very much helped the department maintain its course offering pattern.

Departments also consider the growing assessment requirement to be a strain on faculty productivity. The time spent on assessment reporting is detracting efforts in grant writing, publications, course development and availability for campus service.

Recent Major Curriculum Revisions

| | | |
|------|--------------------------------|---|
| BIOL | Changes to non-major sequences | Changes to BIOL 101/102 to mirror credits for major sequence BIOL 111/112. |
| CHEM | New courses | Establish 2 new course: CHEM 230 Preparation for Organic Chemistry and CHEM 432 Industrial Chemistry. Both courses were offered as special topics in years past and will be added to regular offerings. |
| CHEM | New course | CHEM 181L Research Rotation has been offered as an FYE and will be added to regular offerings. |

| | | |
|------|-----------------------------|---|
| CSCI | MS Data Science | New Masters in Science was approved. |
| CSCI | ABET change in requirements | Reduces 14 hours of required science to 8 hours, added CSCI 310, 332, 345 to the curriculum, and removed CSCI 360. |
| CSCI | Changes to CITA curriculum | Added a new Concentration in Game Development and Interaction in the Computing in the Arts program. |
| CSCI | New Course | CSCI 370: Intro to Mobil App Development has been offered as a special topics and will be added to regular offerings. |
| GEOL | Capstone options | Expanded GEOL 360 Field Studies requirement generally satisfied with a Maymester trip out West to include study abroad options. |
| MATH | Changes to Math track | Modify Pure Track and rename to Traditional Math Track. Reduce credits. Pure and Applied Tracks replaced by on modified track Modify Stats Track, reduce to 39 credits. Terminate Applied Track. |

Research and Professional Development

During the 2017-2018 academic year, Science and Math faculty members obtained \$6.67M in newly awarded research grants and continued work on \$20.52M in ongoing grants. Grants received were from federal, state and private sources such as: National Science Foundation; US Fish and Wildlife Service; Howard Hughes Medical Institute; Simons foundation; NASA and NASA EPSCoR; National Park Service; Brown University; University of Central Florida; SC State University; US Geological Survey; University of South Carolina; American Chemical Society; Camille & Henry Dreyfus Foundation; Department of Energy; US Forest Service/US Geological Services; National Center for Science and Civic Engagement; Slocum-Lunz Foundation; Amec Foster Wheeler; National Oceanic and Atmospheric Administration; University Corporation for Atmospheric Research; SC Sea Grant Consortium; Gettysburg Foundation; Chandra-Smithsonian Astrophysical Observatory (Harvard); National Radio Astronomy Observatory; RPM Healthcare; Gulf of Mexico Research Initiative; Oceana; University of Tennessee-Knoxville; Space Telescope Science Institute; Georgia Institute of Technology; Curtin University; American Astronomical Society; SC INBRE; Central US Earthquake Consortium; Ceterus Inc.; Corporate Climate Alliance; Colonial Academic Association; Kiawah Island Conservancy; GoMRI; BoomTown; and Clemson University;

SSM faculty publish approximately 200 articles in peer reviewed journals each year. They presented their research at both national and international conferences. Multiple undergraduate students were published as co-authors who traveled to regional and national conferences to present posters. A full list of activity can be found in the Faculty Activity System.

Grants obtained for professional research can be found in [Appendix A](#). Publications are reported to the Faculty Activity System. Special publications, conference proceedings, and patents can be found in individual department reports.

Service

In addition to department programs and standing committees (such as curriculum, scholarship, assessment, long range planning, and safety) many SSM faculty members provide service to College-wide committees and external professional organizations. Many tenured faculty also hold national and regional offices within their discipline. Examples can be found in departmental reports. PULL OUT EXAMPLES

Outreach

School of Sciences and Mathematics faculty, staff, and students participate regularly in STEM outreach activities throughout the Lowcountry and Tri-County area. Faculty host school groups on campus, organize public events, and visit local elementary and high schools to give presentations that inspire interest in higher learning in the STEM fields. Thanks to their efforts thousands of students in the Charleston County School District and beyond are exposed to natural and physical sciences, mathematics, and computer science each year.

The **Mace Brown Natural History Museum** continues to be a favorite field trip for hundreds of local school children, senior groups, clubs and organizations, homeschoolers, local citizens and fossil aficionados, and tourists. The museum displays more than 3,000 fossil specimens that demonstrate how the Earth and life on Earth has changed over the past 3.45 billion years. The museum was recently expanded to accommodate an exhibit that displays examples of whale evolution. The Museum hosts well over 5000 visitors each year alone. The majority of visitors are school groups from the tri-county area and special interest groups. Displays extend across the street to Addlestone Library where Bucky the *T. rex* is on display in the rotunda.

On February 23, 2018, the School of Sciences and Mathematics once again teamed up with Athletics to provide hands-on activities to almost 2000 local school children who attended the 6th annual **STEM Education Day at TD Arena**. Faculty representatives from all six department as well as staff and students were in attendance with bones, biological specimens, marine touch tanks, rock samples, chemistry experiments, robotics, and math puzzles designed to engage students one on one and excite their curiosity in the sciences and mathematics. Afterwards, students cheered on the Women's Basketball team as they played. The popularity of this event demonstrates the need for STEM education outreach. Planning has already begun for the 2019 event.

Cynthia Hall, Director of the Lowcountry Hall of Science and Math continued to facilitate **Girls Day Out**. The event, held on July 29-30, 2017, attracted over 100 young women ages 12-14 from the Tri-County area. The overnight experience, meant to educate and attract rising 8th and 9th grade girls to pursue careers in science, technology, engineering, and mathematics, is hosted by SPAWAR Systems Center (SSC) Atlantic and the College's Office of Admissions. The girls learned about various STEM career opportunities, degree programs, and admissions requirements.

The 2018 Darwin Week was held February 5-9, 2018 with a wrap up birthday bash on Monday, February 12. For the first time since its inception, Darwin Week was presented as a School-wide effort supported by the Dean's office. Jason Vance, Associate Professor of Biology, coordinated the week of lectures offered by faculty both in and outside of the College with backgrounds in physics, biology and geology. Talks were hosted by the College and The Citadel and were well attended by both the College community and the general public.

This year's **Annual Math Meet** was held on February 24, 2018 and attracted 419 students from schools located in South Carolina, North Carolina, and Georgia. The College's Math Meet started in 1978 and predates almost all other college sponsored high school mathematics competitions. It is designed to encourage students of all levels in their math studies. The Departments of Chemistry, Computer Science, and Physics also participate by offering games and demonstrations making the competition an all-day event that advertises the College and exposes students to the broader impacts of mathematics on the sciences. Demographic information supplied by teachers upon registration show the following diversity in registrants. A total of 177 female students (42.2%) and 222 male students (53.0%) attended with 20 students providing "no response." Caucasians made up 44.2% of participants; the second largest identified group was Asians at 14.6%, however 23.6% of participants preferred not to respond. Every roster faculty member in the Department of Mathematics participated in this event.

The **Lowcountry Hall of Science and Math (LHSM)** is the education/public engagement arm of the School of Sciences and Mathematics, serving as a critical bridge between science and math faculty and educators. The LHSM provides a mechanism for communication and collaboration between SSM, The School of Education, Health, and Human Performance (EHHP), regional educators, and the general public. The goals of the LHSM are to communicate science to community educators, collaborate with STEM faculty in outreach activities, provide assistance with grant writing, to develop of education programs, and to coordinate community wide outreach activities. LHSM director, Cyndi Hall, often serves as Co-PI on grants with educational components. In 17-18 LHSM partnered with faculty on 9 active grants and was awarded one independent grant from NASA "Developing the Next Generation Earth Scientists with Elementary Globe. The LHSM coordinates STEM outreach activities such as the College's STEM Education Day at TD Arena, The Charleston STEM Festival, and The Lowcountry Science Fair which hosted 99 students grades 5-12 who collaborated on 78 science projects. The first winner of Senior 2 Division represented the Lowcountry at International Science and Engineering Fair in Los Angeles, CA in May. On July 31, Cyndi Hall resigned as Director of the LHSM. A search is currently underway for her replacement.

CORAL (Community Outreach Research and Learning) program at Grice Marine Lab, led by Pete Meier, exposes students of all ages to the local marine environment through regular on and off campus programs. CORAL conducted 35 events this year. In addition, CORAL regularly participates in group STEM outreach events. CORAL touch tanks have become a highlight of STEM education events throughout the Lowcountry. CORAL outreach was experienced by 4161 students this year.

Faculty members regularly participate in outreach activities hosted by local and regional schools, career days, and science nights. Select educational outreach activities can be found in departmental reports.

ADDITIONAL INSTRUCTIONAL CONTRIBUTIONS

Contributions to the Honors College

The School's commitment to the Honors College continues to grow. In 2017-2018 SSM faculty offered a total of 56 credit hours to the HONS curriculum. Offerings included:

- HONS 151/151L: Honors Biology I/Lab
- HONS 152/152L: Honors Biology II/Lab
- HONS 155/155L: Honors Geology I/Lab
- HONS 156/156L: Honors Geology II/Lab
- HONS 157/157L: Honors Physics I/Lab
- HONS 158/158L: Honors Physics II/Lab
- HONS 159/159L: Honors Astronomy I/Lab
- HONS 160/160L: Honors Astronomy II/Lab
- HONS 190: Accelerated General Chemistry (Replaced 191/191L and 294/294L)
- HONS 192/192L: Honors Organic Chemistry I: Applications of Molecular Structure and Properties/Lab: Purification, Separation and Characterization of Organic Compounds
- HONS 293/293L: Honors Organic Chem II/Lab
- HONS 216: Conceptual Tour of Contemporary Mathematics
- HONS 380: Special Topics, Introduction to Mathematical Biology
- HONS 380: Special Topics, Water in the Urban Environment
- HONS 399: Tutorial (5 sections)
- HONS 499: Bachelor's Essay (3 sections)

Contributions to the First Year Experience

The School also continued its strong commitment to the First Year Experience. Faculty participated in interdisciplinary learning communities as well as offering individual seminars. Offerings included:

- Learning Communities
 - Biology and Chemistry for Pre-Med Students
 - BIOL 111/111L and CHEM 111/111L
 - Gateway to Neuroscience
 - BIOL 111 and PYSC 103
 - STEM-SCAMP
 - BIOL 111/111L, Math 120/120L
 - Computer Science Scholars
 - FYSE 112 and CSCI 220/220L
- First Year Seminars
 - Biomimicry: Nature as Mentor
 - The Human Animal: Paleolithic Bodies in a Modern World
 - Apocalypse to Warp Drive: Physics in Film
 - Exploring Science and Culture Through Art

- Natural History of the Lowcountry
- Computer Science Scholars

Distance Education

The popularity of online courses in computer science and mathematics continues to grow and the two departments are responding to this need by regularly offering introductory courses online.

The need to provide hands-on laboratory experiences limits the feasibility of on-line courses in some natural science programs. However this past year, Chemistry offered Preparation for Organic Chemistry, Calculations in Chemistry, and Organic Chemistry online, while Biology offered Conservation Biology.

Interdisciplinary Course/Course in Other Schools

The School's two interdisciplinary minors, Environmental Studies and Neuroscience, are shared with the School of Humanities and Social Sciences. Both continue to be popular among students and discussions to evolve both minors to majors continue. Enrollment for the Computing in the Arts major continues to grow and maintain support from the School of the Arts. Classes offered by the Department of Geology and Environmental Geosciences support an interdisciplinary major and minor in archaeology offered by the Schools of the Arts; Humanities and Social Sciences; Languages, Cultures, and World Affairs; and Sciences and Mathematics. M. Scott Harris, Associate Professor of Geology, assumed the role of director of the archaeology program this year.

Although not a shared program, the Department of Biology has found itself servicing large numbers of students from the School of Education, Health, and Human Performance (EHHP) majoring in Public Health, Exercise Science, and Athletic Training. A roster faculty member in EHHP designated to teach Anatomy and Physiology is desperately needed in order to offer more sections. As numbers in the Public Health majors grow, the demand increases.

International/Global Initiatives

SSM Faculty work harmoniously with the Center for International Education to provide an array of study abroad experiences for students. This year, the Department of Geology and Environmental Geosciences expanded curriculum for field studies requirements to include study abroad options. All field studies requirements were generally completed during a Maymester experience in the Western region of the US studying native rock formations. Recent curriculum changes now allow students to explore topics of personal interest such as: water quality and pollution in India; volcanoes in the Galapagos Islands; geologic mapping in South Africa; or geo archaeology in Greece.

The Department of Chemistry and Biochemistry conducted Maymester studies at the University of Georgia Costa Rica Field Station. Upper level chemistry students had an opportunity to conduct chemical analysis in natural settings. The department intends to continue this program in years to come.

Other study abroad programs routinely offered by SSM include:

- **INDONESIA, BIOLOGY:** This study abroad program is located in the province of Bali. It is designed to introduce students to the natural and human ecology of the tropics, explore the complex and distinctive natural features of tropical communities and to become familiar with ecological processes as they apply to tropical ecosystems in Bali, Indonesia, with a stopover in Hong Kong.
- **BAHAMAS, BIOLOGY:** This is a study abroad option of an upper-level course that is offered to biology majors. It is a core biology course and a requirement for marine biology majors. Participants study classification, morphology, physiology, behavior and life histories of invertebrates. Laboratory work emphasized the study of living material from the local fauna. Students spent two days of Maymester at Grice Marine Laboratory (James Island, SC) and then traveled to Gerace Research Marine Station in San Salvador, Bahamas for 13 nights.
- **BRITISH VIRGIN ISLANDS, BIOLOGY:** This course introduces undergraduate students to the organismal biology, ecology, and conservation of the Caribbean coral reef ecosystem in the British Virgin Islands. Emphasis is placed on field methods and labs, including SCUBA-based field experiments that provide hands-on experience and contribute to ongoing research projects. Lectures cover the biodiversity, systematics, and population and community-level ecology of predominant species of macroalgae, fishes and invertebrates and are paired with onboard or in-water lab exercises. This program is conducted in collaboration with the [Marine Science and Nautical Training Academy](#) (MANTA).
- **PANAMA, BIOLOGY:** This combined lecture and lab course in Ecology is a biology core course and is required for Marine Biology majors. Students will spend approximately ½ week in Charleston and 2 ½ weeks in Panama, which will offer a significant portion of the laboratory in a tropical setting.
- **SOUTH AFRICA, GEOLOGY:** The Geology and Environment Field Experience, South Africa is designed to broaden students' geology and environmental experience by providing an opportunity for them to see firsthand some of the best geology in the world and some current environmental issues facing South Africa. The course is designed to teach students the fundamentals of geologic mapping using modern tools and methods. A third component of the trip is to develop an educational K-12 component, a virtual field trip. The virtual field trip will showcase African culture, history, and way of life through a series of videos, which can be shared with a primarily underrepresented Charleston area K-12 school. In addition, while in South Africa, the program visited an urban school and a rural school, observing the differences in their instruction.

- **ESTONIA, MATHEMATICS & COMPUTER SCIENCE:** Students participate in a semester long exchange program with University of Tartu can study mathematics, computer science, data science, computational neuroscience and may also include Estonian language 101, political science in regards to the European Union, or Russian language and culture. Generous gifts from the Harry and Reba Huge Foundation make this experience more tangible for our students.
- **INDIA, GEOLOGY:** Students study issues related to water resources and pollution along the Ganges River basin from the headwaters of the river in the Himalayas to its mouth near the Bay of Bengal. It has two focus areas: 1) water resource and hydrology principles that delve into specific issues, including impacts of river management for economic development and associated land use change effects on water resource availability, and 2) water quality principles that focused on natural and anthropogenic changes to the chemical character of the river water, and linkages between human and environmental health.
- **GERMANY, NEUROSCIENCE:** This program exposes undergraduate students to neuroscience research and training conducted by the consortium of the German Schools of Neuroscience (GSN) through an intensive four-week seminar experience. Students interact with leading researchers through lectures, laboratory tours and demonstrations.
- **INDIA, MATHEMATICS:** This experience teaches some of the basic mathematical ideas from Vedas, the oldest known literature from ancient time and the results obtained by one of the most renowned Indian Mathematician Ramanujan.
- **CHINA, MATHEMATICS:** Students participate in an exchange with Xiamen University for a one month long summer program. Students took MATH 250, Statistical Methods and CHST 240, Special Topics in Chinese Culture/Language.

Additional Programs and Centers

The Benthic Acoustic Mapping and Survey (BEAMS) Program completed its 11th year at the College. Housed within the Department of Geology and Environmental Geosciences, the program trains geology and marine biology students in the use of state-of-the-art technology and software, to study in detail the ocean's seafloor. The program is designed to address the omnipresent need for qualified ocean surveyors to support the expanding academic opportunities and job market in bathymetric mapping, seafloor habitat characterization, hydrography, marine spatial planning, water column process, marine geology and geophysics research, and remote observation of the ocean's variability through time. The College's BEAMS student alumni have become recognized internationally for their knowledge of and experience with mapping technologies.

The program continues to acquire academic, government, private and industry partners. CARIS continues to provide seafloor mapping software and eTrac Engineering has made a five year commitment of funds that allow the program to support student travel to professional meetings and additional staff. Students are provided with opportunities to participate in cruises that offer hands on experience in mapping. To date, 154 students have completed the 3 courses offered by BEAMS.

Santee Cooper Geographic Information Systems Laboratory is a center for excellence in geographic information systems (GIS) and remote sensing. It supports undergraduate, graduate, and faculty teaching and research, facilitates education and outreach, and trains students in GIS software. The lab also provides data and support for community and regional groups:

- SCGIS maintains a base station on the roof of the science building that serves as part of the state's emergency management plan allowing first responders to use differential GPS during emergencies and disasters.
- The lab is a source of information about the Charleston Seismic Zone providing educational information for K-higher education users as well as the general public.
- A partner of the United States Geologic Survey, the Center is a data site for the National Map program.
- The lab supports FEMA's HAZUS-MH program by holding certification workshops at the College.
- The lab supports the South Carolina Arc Users Group and South Carolina Mapping Advisory Committee.
- The lab supports South Carolina Earthquake Education and Preparedness.

Although the SCGIS laboratory is housed, funded, and supported by SSM, the facilities, software, and storage capabilities are currently used by SOTA, SB, HSS, LCWA, the Honors College, and the Graduate School.

South Carolina Space Grant Consortium (SCSGC) is part of a nationwide network that promotes aerospace research, K-12 and college education, and public awareness of NASA mission directorate initiatives. Within the larger context of national STEM initiatives, SCSGC promotes activities in research, education, and public engagement related to NASA's mission. The College of Charleston serves as the lead institution for the SCSGC and SC NASA EPSCoR and the College acts as the Consortium's legal and fiscal agent for both programs. SCSGC's goals and objectives are: to increase access and understanding of space, Earth systems science, biological sciences, and aeronautics; encourage cooperative programs among colleges and universities, state organizations, business and industry, and pre-college interests; enhance interdisciplinary research, education and public service activities; recruit and train students, educators, and professionals, especially women and underrepresented groups; promote a strong STEM base in SC education; facilitate statewide communication of NASA opportunities and programs.

The program annually awards undergraduate research funds, graduate assistantships, NASA Center internships, Minorities in STEM awards, and Palmetto Academy awards as well as houses a faculty research program all of which directly benefit College faculty and students.

South Carolina Earthquake Education & Preparedness Program (SCEEP) is composed of Geology faculty members whose broad research interests encompass everything from the cause of earthquakes to their likely effects and then share that information with the public and the appropriate emergency management groups. The group is funded by the SC Emergency Management Division and is responsible for promoting earthquake safety and examining hazards on a statewide basis.

DIVERSITY

Faculty Recruitment Efforts

The School's 127 roster of faculty members consists of 33.6% female, the largest underrepresented group in STEM fields, and 12.7% of ethnicities other than Caucasian or of foreign descent. The highest number of female faculty members reside in the Department of Chemistry & Biochemistry and the highest number of minority faculty members reside in the Department of Mathematics.

A comparison of recent percentage of women and minorities receiving terminal degrees in various STEM fields, and our employment percentages in those fields is shown below. The comparison shows that SSM is providing fair employment opportunities to both underrepresented groups.

| CIP | Discipline | Female ¹ | |
|-----|---|---------------------|-------|
| | | NCES | CofC |
| 11 | Computer and Information Science and Support Services | 21.6% | 26.7% |
| 26 | Biological and Biomedical Sciences | 53.2% | 33.3% |
| 27 | Mathematics and Statistics | 28.2% | 34.4% |
| 40 | Physical Sciences | 32.8% | 26.3% |

NCES reported the number of percentage distribution of STEM degrees/certificates conferred by postsecondary institutions

When advertising for faculty positions, search chairs allocate additional funds to advertise in media available to minority audiences such as the Association for Women in Science and the Society for the Advancement of Native Americans and Chicanos in Science and the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers. Advertisements are also sent to institutions known to have large numbers of minority PhD students such as Howard University, Alabama A&M, Florida International University, and University of Puerto Rico. Academic requirements remain a priority in regards to potential hires.

¹ https://nces.ed.gov/programs/digest/d13/tables/dt13_318.30.asp

In the coming 2018-2019 academic year nine, new roster faculty members will join the SSM roster:

- Jody Beers, Assistant Professor of Biology
 - Ph.D. Marine Biology, University of Maine
 - Postdoctoral Scholar, Stanford University
- Michael Janech, Assistant Professor of Biology
 - Ph.D. Molecular and Cellular Biology, Medical University of South Carolina
 - NSF International Research Fellow
- Heather Spalding, Assistant Professor of Biology
 - Ph.D. Botany, University of Hawaii
 - Postdoctoral Research Fellow, NSF DEB, Department of Botany, UHM
- Richard Himes, Instructor of Chemistry
 - Ph.D. Inorganic Chemistry, Purdue University
 - Postdoctoral Fellow, Johns Hopkins University
- Ayman Hajja, Assistant Professor of Computer Science
 - Ph.D. Computer Science, University of North Carolina, Charlotte
 - Postdoctoral Research Fellow, University of North Carolina, Charlotte
- Krishnendu Ghosh, Assistant Professor of Computer Science
 - Ph.D. Computer Science and Engineering, University of Cincinnati
 - Fellowship, North Carolina State University
- Theodore Them, Assistant Professor of Geology
 - Ph.D. Geosciences, Virginia Tech
 - Postdoctoral Fellow, Florida State University
- Mukesh Kumar, Assistant Professor of Mathematics
 - Ph.D. Computational Mathematics, Indian Institute of Technology
 - Researcher, Council of Norway and Industrial Partners, Large Scale Thermal Energy Storage and Offshore Wind Technology
- Wendy Sheppard, Instructor of Mathematics
 - M.S. Mathematics, University of Charleston
 - B.S. Environmental Science/Biology, Antioch College
- Ana Uribe, Instructor of Physics & Astronomy
 - Ph.D. Astronomy, Heidelberg University
 - Postdoctoral Research, The University of Chicago

Student Diversity Efforts

The **South Carolina Alliance for Minority Participation (SCAMP)** is an initiative of the National Science Foundation and is aimed at encouraging minorities to pursue degrees in STEM areas. A major goal of the program is to increase the number of underrepresented minorities receiving baccalaureate degrees in these areas. The long-term goal is to increase the number of students

matriculating in graduate studies in STEM fields. It is a subset of the Louis Stokes-Alliance for Minority Participation national program. In South Carolina, the consortium is made up of the College of Charleston and nine other institutions of higher learning, with South Carolina State University serving as the lead institution.

The Summer Bridge Program for SCAMP is a subset of the Speedy Consolidation and Transition (SPECTRA) Program and is held during Summer II Session. Students are enrolled in MATH 111 Pre-Calculus and corresponding Lab and Calculation of Chemistry (CHEM 103) and registered for 5 college credit hours. The goals of the program are to prepare students to successfully pass MATH 120 Calculus, improve study skills and time management, assist in making a smooth transition from high school to college, and provide students with an immersive experience of academics, social engagements, community service, and cultural activities. Thirteen students participated in the summer of 2017. The Summer Bridge Program was sponsored by Multicultural Student Programs and Services which provided room and board for all SCAMP Bridge students as well as math tutors and counselors to assist students.

Women in Computing is an initiative of the Department of Computer Science. Despite the high female population at the College as a whole, the majority of majors in computer science disciplines are males. The goal of this student organization is to increase the number of female majors by focusing on female mentoring by female faculty. Under the direction of RoxAnn Stalvey, number of female majors continues to rise. Last year the Department reported that 29% of their majors were female. The National Science Foundation reported the percentage of women obtaining bachelor's degrees in computer science in 2014 to be 18.1%.²

An external grant, provided by the Carolina National Institutes of Health IDeA Networks of Biomedical Research Excellence (SC INBRE), helps support undergraduate research and in particular emphasize the inclusion of underrepresented minorities.

ASSESSMENT ACTIVITIES

Assessment takes place at both the school-wide and at departmental/programmatic levels. School-wide assessment studied outcomes involving instruction in our introductory general education courses, students participating in high impact learning experiences, admissions to professional schools, outreach, and faculty research productivity. The results show that we need additional lines to provide roster faculty to teach in introductory lectures and thus lessen our dependency on adjuncts (54% of intro students are taught by adjuncts – down 2 % from last year). Thanks to the new school fee we provided high impact learning experiences to our 539 students which sets our baseline moving forward. High impact experiences include research, internships, field studies, tutorials, bachelor essays, etc. 114 students were accepted into various medical/allied health programs. Our outreach activities we reached over 126,000 people – an anomaly thanks to the solar eclipse and NPR hosting their

² <https://www.nsf.gov/statistics/2017/nsf17310/digest/fod-women/computer-sciences.cfm>

coverage from Rivers Green. Over 3.2 million dollars in external grant funds were obtained by SSM faculty.

STUDENT ACCOMPLISHMENTS

Undergraduate/Graduate Research

Undergraduate research remains a priority and a high impact experience for Science and Math majors. This experience often results in students presenting their research findings at regional and national conferences and/or being published alongside their faculty mentors in peer reviewed journals. This credit is invaluable for graduate and professional health school applications and further prepares students for their graduate studies. Each year approximately 250 students work in a research lab with approximately 50 experiences resulting in student author credit on an article published in a refereed scientific journal.

In November 2017, the School held its now annual research match-making session which introduces faculty mentors to undergraduates eager for a high impact research experience. Approximately 100 students stopped by to meet with researchers from our six academic departments and researchers from the Medical University of South Carolina. Dozens of students were matched to a faculty mentor and began working in labs Spring 2018.

Revenue from School Fees was distributed this year. This new line of income allowed the Dean's office to provide 40 SSM majors with a summer research stipend which allowed them to continue research projects over the summer.

Associate Dean James Deavor serves as principal investigator for the South Carolina IDEa Networks of Biomedical Research Excellence. This summer, SC INBRE awarded summer research stipends to 17 SSM majors working with SSM faculty mentors.

SSM majors were also awarded a total of 19 research grants from the Office of Undergraduate Research and Creative Activities (URCA).

Many more students remained on campus to conduct research, supported by external grants secured by faculty members.

Most of these students will present their research at the Celebration of Scholars, hosted by URCA, in late August 2018. A complete list of awardees can be found in [Appendix B](#).

Grice Marine Lab conducted its annual Fort Johnson Summer Undergraduate Research Program. Ten undergrads participated and presented at a colloquium at the South Carolina Department of Natural Resources.

In 2017-2018, students presented research at regional and national conferences often winning scholarships and awards. Conferences and meetings include: SYNAPSE annual meeting; Ecological Society of America; Society for Integrative Comparative Biology; American Chemical Society; US HYDRO Conference; American Fisheries Society Southeastern Division; Southeastern Society of Parasitologists; Southeastern Developmental Biology Conference; Southeast Enzyme Meeting; Lunar and Planetary Sciences Conference; IEEE International Conference on Bioinformatics and Bioengineering; International Conference on New Interfaces for Musical Expression; Geological Society of America; USA CARIS 2016 Conference. Computer science students competed in international, national, and regional programming competitions.

Professional Health Advising

The 2017-2018 academic year saw a steady flow of student activity drawn from a pool of prospective students, currently enrolled students, transfer students, athletic recruits and alumni. An average of 30 students per week visited the Health Professions Advising Office. Of these, 120 students were accepted to professional schools including clinical programs in the following areas: medicine, dental, veterinary, pharmacy, allied health, and nursing. 42 students were accepted to medical schools (both MD and DO). Overall medical school applications had a 58% acceptance rate. Trends in medical school applications have changed and approximately 50% of students are applying the year they graduate rather than starting medical school immediately after graduation. This trend has been well received by medical schools, but it presents new challenges in accurate student tracking as many are no longer associated with the College upon acceptance.

Since the launch of Banner, the College's software system, the pre-health category helps to identify and track incoming pre-health students. As of June 2017, more than 800 students were designated as pre-health students with an assigned pre-health advisor. Pre-Health Peer Mentors continue to be made available to make pre-health information more accessible to all interested pre-health students at the College. Student to student interaction has proven to be very successful.

This year, Professional Health Advising offered its very own MCAT prep test course.

At the time of the writing of this report the following acceptances were reported:

- Medical School, 42
- Osteopathic, 5
- Veterinary, 3
- Dental, 11
- Pharmacy, 5
- Cardiovascular Perfusion, 2
- Physician Assistant, 6
- Physical Therapy, 9
- Occupational Therapy, 4

- Nursing, 33

DRAFT