

RESOURCES & ENVIRONMENT (R&E)

USC/ Molinaroli College of Engineering and Computing Information for Sponsored Award Proposals

The following includes 'boilerplate' (basic) information about the University of South Carolina (USC) and the Molinaroli College of Engineering and Computing (MCEC):

- *Use only what you need. Include only the information that is pertinent to your proposal (not the whole thing). Note that there is some information overlap between sections.*
- *Be sure to add specific department, lab, equipment, and collaboration information as needed for your proposal and edit out what is not relevant to it.*
- *Other USC units and external institutions/organizations should be able to supply you with their R&E information upon request.*

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The University of South Carolina (USC)

The University of South Carolina (USC) was established in 1801 and is a full-service, state-assisted research university that includes the 444-acre Columbia campus and seven regional campuses, with a total full-time student body population of more than 37,000 in Columbia and 50,000 overall. Located in the capital city of Columbia in the geographic center of the state, USC's main campus is part of a thriving metropolitan area of more than 870,000 inhabitants. USC offers a broad spectrum of educational opportunities through 15 colleges and schools, with more than 350 bachelor's, master's and doctoral degree programs, as well as certificates and specialty programs. USC confers approximately one-quarter of the bachelor's, graduate and professional degrees awarded annually by South Carolina institutions of higher education.

USC Research Capacity. In fiscal year 2026, the University of South Carolina received \$271 million in extramural sponsored awards, of which 69% supported research. USC holds Carnegie's highest research designation: Research 1: Very High Spending and Doctorate Production. The University provides researchers with a full range of grant and contract-related services through its Sponsored Awards Management and Grants and Funds Management offices. USC's Office of Research Compliance oversees the institutional review processes for human and animal subjects as well as disclosure and management of financial conflicts of interest and assists with scientific misconduct regulation and export controls.

USC Libraries. Thomas Cooper, the University's main library, is centrally located on the Columbia campus, and the School of Medicine library is a 15-minute drive from central campus. Both libraries maintain an extensive collection of health-related resources, including books, journals, and indices. Access to online databases and full-text journals is available through the Thomas Cooper Library Web page.

USC's Division of Information Technology (DoIT), under the direction of the Vice President for Information Technology and Chief Information Officer, oversees centralized computing and telecommunications services for academic, research, and administrative use to meet the needs of USC faculty, staff, and students. DoIT provides the USC community with computing, voice, and data communications, networking, data security, video transport, information technology training, web services, customer support, desktop and server support, installation and maintenance of IT infrastructure, policies and procedures assistance, software licensing and distribution, IT planning, applications development and support, and operational systems. The Columbia campus is covered by wireless service. USC has a licensing agreement with

Microsoft that includes 5TB of secure cloud storage space for every faculty and staff member on OneDrive. Microsoft has signed legal agreements with the University that holds them liable for the security and protection of data stored on OneDrive.

Reporting to the Division of Information Technology and working in close partnership with the Office of Research, the Research Computing department (RC) engages faculty and researchers across multiple colleges and campuses to help define and execute the research mission of the University of South Carolina. RC manages and supports local high performance computing resources and storage as well as teaching workshops on a variety of high-performance computing topics. RC works with researchers to improve their project performance and secure computing resources not only at the university level but beyond, to National Labs and other high profile HPC resources. Research Computing encompasses computing technology, data storage systems, advanced instruments, visualization environments, data analysis and management systems, and human resources, linked by high-speed networks to make scientific and engineering innovation and discoveries possible.

The Molinaroli College of Engineering and Computing (MCEC)

Molinaroli College of Engineering and Computing (MCEC). Engineering classes were first taught at the University of South Carolina in 1848, and engineering degrees have been offered continuously since 1894. The School of Engineering was established in 1909. In 2024, the College of Engineering and Computing was renamed the Molinaroli College of Engineering and Computing (MCEC). Based on USC's main campus in Columbia, MCEC prepares students for careers and leadership in engineering, computing and technology through seven academic departments and a broad portfolio of undergraduate and graduate programs. Its faculty and students advance research and innovation in areas including artificial intelligence, energy, health care, advanced manufacturing, materials and intelligent infrastructure. MCEC is recognized in U.S. News & World Report rankings. The college's research and educational programs are designed to develop future technology leaders, promote innovation and entrepreneurship, and address complex challenges facing industry and society.

MCEC Degree Programs. The Molinaroli College of Engineering and Computing offers bachelor's, master's and doctoral programs in engineering, computing and information technology. Current undergraduate offerings include aerospace, biomedical, chemical, civil, computer, electrical, industrial and mechanical engineering; computer information systems; computer science; and integrated information technology. Graduate offerings span engineering, computing, information technology, engineering management and related interdisciplinary fields. The College's eligible engineering and computing programs are accredited by the appropriate commissions of ABET.

MCEC Computing Resources. MCEC Information Technology Services supports the College's academic laboratories, faculty and staff technology services, local network infrastructure and information-security efforts. More than 300 Windows workstations are available in MCEC teaching laboratories and can run the software required for degree programs. These laboratories are available to students 24 hours a day, seven days a week at no additional charge; a personal computer is recommended but is not required to complete MCEC programs.

MCEC Computing Security and Capacity. MCEC Information Technology Services (ITS) maintains a secure research computing environment dedicated to protecting Controlled Unclassified Information and complying with NIST SP 800-171r2 called the Carolina Enclave for Secure Research (CESR.) The environment is based on Microsoft's GCC High cloud environment

to ensure ITARS compliance as well. The CESR service also includes a secure file transfer capability to facilitate exchange of controlled data with outside entities. Research Computing also maintains a high-performance computing cluster dedicated to CUI research which takes advantage of the infrastructure provided by CESR.

MCEC Departments. The Molinaroli College of Engineering and Computing consists of seven academic departments: Biomedical Engineering, Chemical Engineering, Civil and Environmental Engineering, Computer Science and Engineering, Electrical Engineering, Integrated Information Technology, and Mechanical Engineering. MCEC offers undergraduate and graduate programs in Aerospace Engineering, Biomedical Engineering, Chemical Engineering, Civil Engineering, Computer Engineering, Computer Information Systems, Computer Science, Electrical Engineering, Engineering Management, Health Information Technology, Information Technology, Industrial Engineering, Integrated Information Technology, Mechanical Engineering, Nuclear Engineering and related interdisciplinary fields. The college also offers select accelerated, combination and dual-degree options, including opportunities involving law and business.

Biomedical Engineering Graduates of the Biomedical Engineering program apply engineering principles to improve human health and health care. Career opportunities include medical-device design and development, biomaterials, biomechanics, tissue engineering, medical imaging, rehabilitation engineering, clinical engineering, pharmaceuticals, health technology, regulatory affairs, and research in industry, hospitals, government and academia.

Chemical Engineering Graduates of the Chemical Engineering program design and improve processes that transform materials into useful products. They pursue careers in energy and fuels, advanced materials, pharmaceuticals, biotechnology, food and consumer products, environmental protection, manufacturing, process safety, sustainability, and research and development.

Civil and Environmental Engineering Graduates of the Civil and Environmental Engineering program plan, design, construct and maintain the infrastructure and environmental systems that support communities. Career areas include transportation, structural engineering, geotechnical engineering, water resources, environmental engineering, construction, sustainable infrastructure, coastal and resilient systems, and public-sector engineering.

Computer Science and Engineering. Graduates of MCEC's Computer Science and Engineering programs are prepared for a wide range of careers in industry, government, research and entrepreneurship. Areas of opportunity include software and web development, artificial intelligence and machine learning, cybersecurity, data science, computer graphics and game development, high-performance and scientific computing, embedded and mobile systems, networking and wireless technologies, computer vision, computational biology, database systems, and enterprise computing.

Electrical Engineering Graduates of the Electrical Engineering program develop the systems and technologies that power, connect and automate modern society. They work in areas such as power and energy systems, electronics, communications, wireless networks, controls and robotics, embedded systems, semiconductors, sensors, cybersecurity, aerospace, advanced manufacturing, and research and development.

Integrated Information Technology Graduates of the Integrated Information Technology program combine technical, analytical and communication skills to solve organizational and technology challenges. Career opportunities include systems analysis, software and web

development, cloud computing, networking, cybersecurity, database administration, IT project management, business intelligence, health information technology, user experience, and technology consulting.

Mechanical Engineering Graduates of the Mechanical Engineering program design, analyze and manufacture systems that move, produce energy and improve everyday life. They pursue careers in aerospace, automotive and transportation systems, energy, robotics and automation, advanced manufacturing, materials, thermal and fluid systems, product design, medical devices, defense, and research and development.

Aerospace Engineering Program Aerospace Engineering students and graduates apply engineering principles to the design, analysis and operation of aircraft, spacecraft and related systems. Career and research interests may include aerodynamics, propulsion, structures, flight dynamics, space systems, autonomous vehicles and advanced manufacturing.

Industrial Engineering Program Industrial Engineering students and graduates improve complex systems that involve people, technology, materials and information. They apply data-driven methods to manufacturing, supply chains, logistics, health care, quality systems, operations research and service organizations.

MCEC Research Office & Resources. MCEC Research Operations supports faculty and departmental staff throughout the sponsored-project lifecycle. Dedicated pre-award staff assist with funding searches, proposal development, budget preparation, internal review, submission and strategic collaborations. Post-award support helps faculty manage sponsored awards and comply with sponsor and University requirements

MCEC Research Capacity. MCEC advances research in engineering and computing that addresses energy, health, advanced materials, manufacturing, aerospace, infrastructure, artificial intelligence, cybersecurity and information technology. The College reports approximately \$77 million in sponsored-project awards and more than 400 active sponsored projects. Proposal narratives should supplement these College-wide figures with the principal investigator's current awards, publications, laboratory capabilities, student-researcher support and project-specific facilities.

Buildings & Labs. The Swearingen Engineering Center has been home to the Molinaroli College of Engineering and Computing since 1987 and provides classrooms, offices, teaching laboratories and research space. MCEC's facilities also extend across the Main Street corridor and nearby Innovation District. The Catawba Building houses biomedical engineering laboratories, while the 300 Main Building provides classrooms, laboratories and offices for mechanical, aerospace, nuclear, and civil and environmental engineering. Horizon I supports offices and research laboratories, and the Horizon II Innovation Center provides classrooms and offices for the Integrated Information Technology and Computer Science and Engineering departments. MCEC research is further supported by a network of faculty-led laboratories, centers and institutes, including South Carolina SmartState Centers of Economic Excellence. Together, these facilities promote interdisciplinary research, student learning, industry collaboration and the development of innovative solutions to complex engineering and computing challenges.

MCEC Faculty Offices. Faculty are provided with private office space and the technology, connectivity and administrative resources needed to support teaching, research and student engagement. Additional office, laboratory and project space is available as needed to

accommodate sponsored research activities, specialized equipment and collaborative project teams.

MCEC Research Centers and Institutes. In addition to its academic departments, MCEC supports interdisciplinary centers and institutes that connect faculty, students and external partners around shared research priorities. Current areas include artificial intelligence, computational robotics, electrochemical engineering, information assurance, mechanics and materials, predictive maintenance, catalyst synthesis, hydrogen and fuel cells, nuclear science and energy, multifunctional materials and structures, and surface-analysis capabilities. Name only the center, institute or laboratory that will contribute directly to the proposed work, and describe its relevant expertise, equipment or collaborative role.

MCEC SmartState Centers. Established by the South Carolina General Assembly in 2002, the SmartState Centers of Economic Excellence program supports endowed research leadership, infrastructure and partnerships aligned with the state's economic priorities. MCEC-affiliated SmartState efforts include Catalysis for Renewable Fuels, the General Atomics Center for Transformational Nuclear Technologies, Multifunctional Materials and Structures, Nuclear Science and Energy, the South Carolina Solid Oxide Fuel Cell Center and Strategic Approaches to the Generation of Electricity. When relevant, identify the participating SmartState center and its specific contribution to the proposed research, workforce development or industry engagement.

Proposal-specific additions to consider. Add the names and roles of key personnel; relevant square footage or laboratory locations; major equipment and shared-core resources; available technical staff; institutional commitments; research-computing and data-storage plans; safety, compliance and export-control resources; and partner or industry relationships that directly strengthen the proposed work. Remove material that is not responsive to the sponsor's facilities-and-resources instructions.