



UNC CHARLOTTE  
Charlotte Research Institute



**DISCOVER THE  
PIONEERING POWER  
OF UNC CHARLOTTE**

**PARTNER.  
PIONEER.  
PROGRESS.**



These three words push our innovators ahead of the pack. With 15 interdisciplinary research centers, six National Science Foundation Industry-University Cooperative Research Centers, scientists based at the North Carolina Research Campus, and the brightest minds in the region, the University of North Carolina at Charlotte is fueling research breakthroughs on a regional and global level. And, we are ready to power-up yours.

Collaboration with UNC Charlotte provides access to more than 1,000 faculty members and more than 28,000 students – of whom more than 50 percent are enrolled in science, technology, engineering, and math majors. We offer research collaboration and resource-sharing tailored to the unique needs of our industry and government partners. Whether strengthening cybersecurity, developing new ways to power our world, or uncovering discoveries in wide-ranging areas, our research centers, institutes, and knowledge clusters are positioned to help you achieve research results.

The Charlotte Research Institute is your gateway to these exceptional UNC Charlotte research capabilities. For business and research partners seeking to locate on our beautiful 1,000 acre campus, we have more than 100,000 square feet of available premium laboratory and office lease space - the perfect environment in which to take your research idea to commercial product. No matter where you are on our campus – the award winning PORTAL innovation building, one of several state-of-the-art lab facilities, or simply grabbing a cup of coffee – you're always rubbing shoulders with like-minded innovators. Only a short drive from the Charlotte Douglas International Airport and uptown Charlotte, and adjacent to Charlotte's largest research park, plugging into the pioneering power of UNC Charlotte couldn't be easier.

**Contact the Charlotte Research Institute today to connect with our thought leaders and accelerate your breakthrough research. Discover us at [cri.uncc.edu](http://cri.uncc.edu) or give us a call at 704.687.5690. Let's pioneer together.**





**COLLABORATIVE  
RESEARCH WITH  
RESULTS IN MIND**

## RESEARCH CENTERS AND INSTITUTES

### Bioinformatics Research Center (BRC)

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The Bioinformatics Research Center focuses on genomics and computing technologies as applied to microbiology and public health. We have domestic and international partners for joint research and training in academia, medicine, industry and government. Our projects range from infection control in health care to food safety and disease surveillance.

[brc.uncc.edu](http://brc.uncc.edu)

### Center for Applied Geographic Information Science

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The Center for Applied Geographic Information Science is an interdisciplinary research center that addresses pressing global resource and sustainability concerns through analysis of human-environment interactions at multiple spatial, temporal and decision-making scales. The Center resolves complex questions by integrating theory from the geospatial, natural and social sciences coupled with advanced modeling techniques and high performance computing.

[www.gis.uncc.edu](http://www.gis.uncc.edu)

### Center for Biomedical Engineering & Science (CBES)

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The complexity of biomedical issues requires collaborative and multi-disciplinary efforts to make optimal advancements. The CBES mission addresses this by fostering interdisciplinary collaborations for advancing and translating biomedical research. As such, CBES creates an infrastructure between UNC Charlotte and partnering biomedical research institutes in which to collaborate on

critical biomedical issues. In this way our CBES researchers (including UNC Charlotte faculty as well as Charlotte clinicians and clinical researchers) are able to synergize their expertise to strongly impact biomedical research, development and practices.

[www.cbes.uncc.edu](http://www.cbes.uncc.edu)

### Center for Education Innovation (CEI)

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The Center for Education Innovation (CEI) exists within the College of Computing and Informatics for the development and coordination of externally funded projects that incorporate strategies and new technologies for innovation in computing and informatics education. CEI projects are strategic in their approaches to making positive changes in computing education that improve the quality of the learning experience and the competence of our graduates while being results-driven to increase retention and reduce average time to graduation.

[www.cei.uncc.edu](http://www.cei.uncc.edu)

### Center for Lean Logistics & Engineered Systems (CLLES)

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The goal of the Center for Lean Logistics and Engineered Systems is to aid the research and continuing education needs of those who work in industry. The faculty and staff of the Center have developed training and research programs in the areas of Lean Six Sigma, System Design, and Optimization.

[www.clles.uncc.edu](http://www.clles.uncc.edu)

### Center for Optoelectronics & Optical Communications (OPTO CENTER)

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The Opto Center provides cost-effective access to specialized expertise and apparatus in optics, imaging and nano-fabrication, including: plasma etching, dielectric deposition and metallization; optical & e-beam lithography; optical, e-beam & atomic-force microscopy; x-ray diffraction; 3-D nano-scale printing; freeform micro-milling and magnetorheological polishing; interferometric surface characterization; spectroscopic measurements of refractive index, attenuation, reflection, transmission, emissivity and angular scattering; optical design services; fiber optics; and laser technical support. Our qualified staff can perform measurements and fabrications, design and develop prototypes, or provide training to users to operate our facilities independently. We welcome teaming opportunities with both academic and industry partners.

[www.opticscenter.uncc.edu](http://www.opticscenter.uncc.edu)

### Center for Precision Metrology (CPM)

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The Center for Precision Metrology is an interdisciplinary association of UNC Charlotte faculty and student researchers, allied with industrial partners in the research, development, and integration of precision metrology as applied to manufacturing. Recognized as a graduated National Science Foundation Industry/ University Cooperative Research Center (I/UCRC), CPM is charged with breaking new ground in precision metrology through addressing real-world industrial concerns. Working with dimensional tolerances on the order of 10 parts per million or better, precision metrology encompasses the methods of production and inspection in manufacturing, measurement, algorithms, tolerance representation and the integration of metrology into factory quality systems.

[www.cpm.uncc.edu](http://www.cpm.uncc.edu)



## Center for Transportation Policy Studies

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The Center for Transportation Policy Studies, an established research center approved by the UNC Board of Governors in 2001, is one of the research units of UNC Charlotte's Urban Institute. The Center is focused on research and development issues affecting transportation systems and services in a dynamic, rapidly-growing region, from Charlotte to North and South Carolina and across the Southeastern US.

<http://ui.uncc.edu/programs/ctps>

## Charlotte Research Institute (CRI)

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Serving as the gateway for business-government-university partnerships at UNC Charlotte, the Charlotte Research Institute cultivates and facilitates research collaboration, enhances intellectual capital, and spurs economic development on a regional, national and global level. CRI is the first point of contact for access to UNC Charlotte's top-tier research talent, exceptional laboratory and office lease space, and solution-driven research centers and knowledge clusters. Within the Charlotte region, CRI directly contributes to enhanced technology commercialization and the growth of entrepreneurial ventures. CRI's mission is to maximize partnerships, create interdisciplinary research teams, and generate results, and we are ready to start accelerating your progress today.

[cri.uncc.edu](http://cri.uncc.edu)

## Charlotte Visualization Center (VisCENTER)

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The Charlotte Visualization Center is an interdisciplinary center that

applies interactive visualization and visual analytics to a variety of large scale and complex problems in science, engineering, medicine, business, design and the arts. The VisCenter has one of the deepest programs anywhere in fundamental visualization, visual analytics, and HCI research. This has led to over \$15M in externally supported research by core visualization faculty over the last 10 years. The VisCenter provides a state-of-the-art environment for research and application development with advanced displays, interaction devices, and a large, multiscreen stereoscopic projection system. Additionally, the VisCenter fosters research collaboration through seminar series, invited speakers, symposia, workshops and other activities.

[www.viscenter.uncc.edu/](http://www.viscenter.uncc.edu/)

## Childress Klein Center for Real Estate

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The Childress Klein Center for Real Estate at UNC Charlotte was established to further the knowledge of real estate, public policy and urban economics in the professional community through its teaching, research and community outreach activities. It has been ranked among the 20 most active real estate research institutions for the past decade. The Center administers the UNC Charlotte M.S. in Real Estate program, the MBA concentration and certificate programs in real estate finance and development, and manages programming and outreach to the Real Estate Alumni Association and Real Estate Advisory Board.

[www.realestate.uncc.edu/](http://www.realestate.uncc.edu/)

## Cyber Defense & Network Assurability (CYBERDNA) Center

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The CyberDNA Center in the College of Computing and Informatics at UNC Charlotte has been established to be one of the leading national centers in research and education of network and information security. The CyberDNA Center includes strong and diverse

expertise as well as state-of-the-art facilities to address critical network security, assurability and privacy problems of high societal-impact. The CyberDNA Center offers a unique environment to facilitate joint R&D programs with industry, financial institutions, utility service providers, and government agencies. The main objective of the Center is to enable assurable and usable security and privacy for an open society by making cyber defense provable, enforceable, measurable, and automated. The CyberDNA Center includes faculty with expertise in security configuration, policy-driven security management, intrusion detection, prevention, deception and resiliency, threat/fault diagnosis, risk management, applied cryptology, privacy, application and DB security, wireless security, autonomous agents, data mining, visualization, and complex adaptive systems.

[www.cyberDNA.uncc.edu](http://www.cyberDNA.uncc.edu)

## Energy Production & Infrastructure Center (EPIC)

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The Energy Production and Infrastructure Center at UNC Charlotte was formed in response to the need from industry to supply highly trained engineers qualified to meet the demands of the energy industry through traditional and continuing education, and provide sustainable support to the Carolinas energy industry by increasing applied research capacity and support. EPIC is a highly collaborative industry/education partnership program that produces a technical workforce and advancements in technology for the global energy industry while supporting the Carolinas' multi-state economic and energy security. An ample energy supply and well-trained professional workforce are foundations for economic development, and the Charlotte region is an energy expertise hub that can become more vibrant through EPIC. With more than 250 regional energy corporations that include Duke Energy, Siemens, AREVA, Westinghouse, the Electric Power Research Institute (EPRI), The Shaw Group, URS, STEAG and several others, EPIC is facilitating the expansion of energy engineering studies in our classrooms.

<https://epic.uncc.edu>



## Infrastructure, Design, Environment & Sustainability Center (IDEAS)

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The IDEAS Center mission is to frame the challenges, provide the leadership, and create the solutions that will accelerate the technical and social shifts needed to make our built environment more sustainable. The IDEAS Center was created to focus university expertise on these challenges and solution-driven research activities. The IDEAS Center is dedicated to the notion that decision-makers seeking an alternative to “business as usual” need leadership and support from the academic community. Together we need to create, translate and disseminate technology and guidance documents that will rapidly transform and advance sustainable infrastructure, materials, and building and site design innovations and practices.

<https://ideas.uncc.edu>

## Infrastructure Security and Emergency Responder Research and Training Center (ISERRT)

### Contact:

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The ISERRT Center’s mission is to make positive contributions to the security and resilience of infrastructure, personnel, and related assets through basic and applied research, education, and training. The ISERRT Center operates two unique blast/impact/ballistics/fire testing and training facilities in the State of North Carolina: the ISERRT Facility in

Gastonia and the ISERRT-M Facility in Maxton. The facilities feature open-arena test sites with reaction structures and geotechnical test pits for structures, structural components and vehicles. These facilities also support training of emergency responders as well as research and development of technologies pertaining to situational awareness, search and rescue effectiveness, and enhanced safety of responders. ISERRT researchers access excellent computational resources and use a wide array of in-house and commercial computer programs to model multi-physics problems.

<http://eng-resources.uncc.edu/iserrt/>

## Institute for Social Capital (isc)

### Contact:

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The Institute for Social Capital, Inc. (ISC), founded in 2004, joined efforts with the UNC Charlotte Urban Institute in March 2012. Its mission is to support university research and increase the community’s capacity for data informed decision-making. At its core is a comprehensive set of administrative data gathered from governmental and nonprofit agencies in the region. By combining key sources of data into one community database, ISC provides a valuable resource to assess the impact of specific interventions across agency lines and to better understand the social and environmental variables that affect the community, particularly with regard to outcomes for our most vulnerable residents. Through its affiliation with UNC Charlotte and the UNC Charlotte Urban Institute, ISC offers valuable analytical support to assist organizations in their research and data analyses efforts.

<http://ui.uncc.edu/programs/isc>

## North Carolina Motorsports & Automotive Research Center

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The North Carolina Motorsports and Automotive Research Center is located

in the heart of NASCAR country and is the first stop for employers hiring interns and entry level engineers. The Center and the UNC Charlotte Motorsports program are housed in two state-of-the-art facilities; the Motorsports Research Building and the Kulwicki Motorsports Engineering Lab, named in honor of the 1992 Winston Cup Champion Alan Kulwicki. Located within 50 miles of 90 percent of the NASCAR Sprint Cup teams and five miles from Charlotte Motor Speedway, UNC Charlotte’s Motorsports engineering program is rigorous and widely respected in the automotive and racing industries. It offers one of the most innovative “hands-on” engineering programs available in the U.S. The program conducts valuable engagement with regional and national industries which enables its graduates to be some of the most qualified race/automotive engineers.

[www.motorsports.uncc.edu](http://www.motorsports.uncc.edu)

## Urban Institute

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The Urban Institute is a nonpartisan applied research and community outreach center at UNC Charlotte. Founded in 1969, it provides services that include technical assistance and training in operations and data management, public opinion surveys, evaluation services, and research and analysis around economic, environmental, and social issues affecting the Charlotte region. The Institute is home to several prominent research programs, including the Institute for Social Capital, the Center for Transportation Policy Studies, and the Charlotte Regional Indicators Project, and serves as an important resource for the understanding of policy issues in the Charlotte region through several online forums.

[www.ui.uncc.edu/PlanCharlotte.org](http://www.ui.uncc.edu/PlanCharlotte.org)

**ACCELERATING  
BREAKTHROUGH  
RESEARCH**

## NATIONAL SCIENCE FOUNDATION INDUSTRY/UNIVERSITY COOPERATIVE RESEARCH CENTERS (NSF I/UCRC)

### Center on Configuration Analytics & Automation (CCAA)

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The NSF I/UCRC Center for Configuration Analytics and Automation is a multi-university and multi-industry consortium established by UNC Charlotte (Lead) and George Mason University to address current challenges, plan future leap ahead research, and provide technology transfer tools in the area of security configuration analytics and automation. The goal of CCAA is to build a critical mass of inter-disciplinary academic researchers and industry partners for addressing the current and future challenges of automating “sense-making” and “decision-making” of cybersecurity to improve security, resiliency and manageability of large-scale enterprise IT systems, cloud/SDN data centers, cyber-physical critical infrastructures, and Internet-of-Things. Current industry/government members include National Security Agency, Depository Trust & Clearing Corporation, RTI International, MITRE, Northrop Grumman Corporation, Office of Naval Research and other major financial institutions.

[www.ccaa-nsf.org/](http://www.ccaa-nsf.org/)

### Center for Free Form Optics (CeFO)

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The Center for Freeform Optics (CeFO) was established in 2013 as

an industry-university partnership supported by the National Science Foundation. The mission of CeFO is to advance research and education in the science, engineering, and application of systems based on freeform optics through a dedicated, continuing industrial partnership. CeFO is driven by shared values and common technical vision that provides a competitive economic advantage for Center members through pre-competitive research.

[www.CenterFreeformOptics.org](http://www.CenterFreeformOptics.org)

### Center for Metamaterials

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The mission of the Center for Metamaterials is to advance fundamental and applied metamaterials research, development and technology transfer through strong industry-university collaborations. The primary focus is on engineering materials spanning the electromagnetic spectrum from microwave to visible light for a range of sensing, communications and imaging needs. Participants in the Center collaborate on industry-relevant, precompetitive research jointly identified by university and industry members and include metamaterials design, fabrication, testing and device development. The projects benefit Center members through shared knowledge and intellectual property. The intent is to nurture long-term relationships and collaborations among the university, industry and government laboratories.

<http://opticscenter.uncc.edu/research/iu-crc>

### Robots and Sensors for the Human Well-being (ROSE-HUB)

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The NSF I/UCRC for Robots and Sensors for the Human Well-being is a multi-university research center focused on applied robotics and sensing research in a wide range of industries, including healthcare, energy, transportation, manufacturing, material handling, homeland security, and emergency preparedness and

# LET'S PIONEER TOGETHER.



response. As the only NSF I/UCRC focused on robotic and sensing technology, the ROSE-HUB mission is to conduct member-oriented, multi-disciplinary research on computation-driven robotic and sensor systems augmented by data analysis, to improve the safety, capability and well-being of humans as workers, patients and consumers.

<http://rosehub.uncc.edu/>

### Sustainably Integrated Building & Sites Center

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The NSF I/UCRC for Sustainably Integrated Buildings and Sites is a collaboration between leading companies, corporations, universities, government agencies, and other organizations renowned for their innovative research capabilities. The Center's mission is to conduct research that will promote improved energy use, water use, air quality and productivity in buildings through the integration of appropriate subsystems and technologies. The Center provides assets to industry-relevant research and develops innovative products and services that enhance global competitiveness.

<http://sibs.uncc.edu/>



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**PIONEER.**

**PROGRESS.**

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