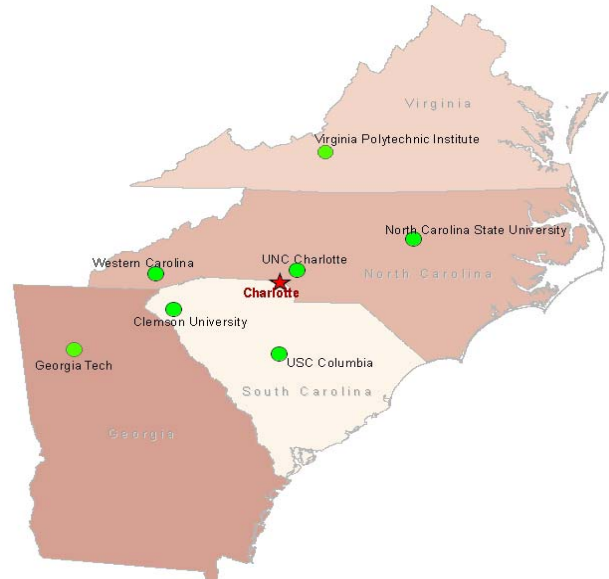




### Charlotte USA region: Engineering Community

Currently there are more than 8,000 engineers employed in the 16-county Charlotte USA region, varying in disciplines from chemical to mechanical to computer engineering.

The Charlotte-Gastonia-Rock Hill MSA is the largest metropolitan area in the Carolinas, and home to global giants such as Bank of America, Wachovia, Duke Energy and Goodrich Corp. As such, it has an incredible appeal to recent graduates across all disciplines. The Charlotte region enjoys close proximity to students from top institutions such as Duke University, Clemson University, Wake Forest University, University of North Carolina, University of South Carolina, Georgia Tech and Virginia Poly Technical.



Prevalent industries in the Charlotte region specializing in aerospace, advanced manufacturing, chemical manufacturing, energy and construction rely heavily on the ability of the region to recruit and retain a world class engineering community.

Listed below are engineering degrees awarded by institutions with major engineering programs:

*Awards conferred between July 1 2005 and June 30, 2006:*

University of North Carolina at Charlotte	Bachelor's	Master's	PhD
Civil Engineering, General	59	12	
Mechanical Engineering	83	26	6
Electrical, Electronics and Communications Engineering	35	36	4
Computer Engineering, General	21		
Engineering, General		8	
<b>Total, Engineering Degrees</b>	<b>198</b>	<b>82</b>	<b>10</b>

North Carolina State University	Bachelor's	Master's	PhD
Electrical, Electronics and Communications Engineering	166	59	26
Computer Engineering, General	114	44	10
Mechanical Engineering	143	39	9
Civil Engineering, General	116	56	13
Textile Sciences and Engineering	84	40	8
Chemical Engineering	62	20	18
Industrial Engineering	59	27	6
Construction Engineering	47		
Biomedical/Medical Engineering	35	1	
Materials Engineering	31	14	14
Aerospace, Aeronautical and Astronautical Engineering	36	13	3
Agricultural/Biological Engineering and Bioengineering	17	8	
Nuclear Engineering	27	8	5
Environmental/Environmental Health Engineering	13		
Engineering, Other	1		
Engineering, General	8	12	
<b>Total, Engineering Degrees</b>	<b>959</b>	<b>341</b>	<b>112</b>



Duke University	Bachelor's	Master's	PhD
Engineering , General		59	
Biomedical/Medical Engineering	114	11	17
Civil Engineering, General	27	2	8
Electrical, Electronics and Communications Engineering	52	18	14
Mechanical Engineering	41	9	7
Engineering, Other	1		
<b>Total, Engineering Degrees</b>	<b>235</b>	<b>99</b>	<b>46</b>

Clemson University	Bachelor's	Master's	PhD
Mechanical Engineering	154	21	8
Civil Engineering, General	98	64	3
Electrical, Electronics and Communications Engineering	64	58	7
Computer Engineering, General	36	18	1
Industrial Engineering	45	19	3
Biomedical/Medical Engineering		18	
Agricultural/Biological Engineering and Bioengineering	32	6	2
Environmental Health Engineering		11	3
Materials Engineering		10	7
Chemical Engineering	33	1	7
Ceramic Sciences and Engineering	14		
<b>Total, Engineering Degrees</b>	<b>476</b>	<b>226</b>	<b>41</b>

University of South Carolina at Columbia	Bachelor's	Master's	PhD
Mechanical Engineering	61	17	8
Electrical, Electronics and Communications Engineering	39	19	12
Civil Engineering, General	39	7	6
Chemical Engineering	31	8	9
Computer Engineering, General	25	24	4
<b>Total, Engineering Degrees</b>	<b>195</b>	<b>75</b>	<b>39</b>

Georgia Tech	Bachelor's	Master's	PhD
Industrial Engineering	266	68	28
Mechanical Engineering	273	162	47
Electrical, Electronics and Communications Engineering	262	207	82
Civil Engineering, General	156	68	27
Computer Engineering, General	96		
Chemical Engineering	73	23	23
Aerospace, Aeronautical and Astronautical Engineering	136	100	25
Biomedical/Medical Engineering	77	13	15
Textile Sciences and Engineering	10	1	3
Engineering Mechanics		2	
Environmental Health Engineering		18	9
Materials Engineering	17	12	14
Operations Research		27	
Polymer/Plastic Engineering		1	
Nuclear Engineering	22	4	1
Engineering, Other		2	1
<b>Total, Engineering Degrees</b>	<b>1388</b>	<b>708</b>	<b>250</b>



Virginia Polytechnical Institute	Bachelor's	Master's	PhD
Biomedical/Medical Engineering		3	2
Mechanical Engineering	277	52	15
Electrical, Electronics and Communications Engineering	144	62	42
Civil Engineering, General	145	81	19
Aerospace, Aeronautical and Astronautical Engineering	113	23	10
Industrial Engineering	99	67	20
Systems Engineering		18	
Polymer/Plastic Engineering		1	6
Engineering, Other		8	1
Computer Engineering, General	99	21	5
Chemical Engineering	43	5	8
Mining and Mineral Engineering	37	5	2
Agricultural/Biological Engineering and Bioengineering	24	3	1
Materials Engineering	19	6	6
Environmental Health Engineering		16	
Engineering Mechanics	20	15	7
<b>Total, Engineering Degrees</b>	<b>1,020</b>	<b>386</b>	<b>144</b>



### University of North Carolina at Charlotte: Focus on Engineering

UNC Charlotte is a dynamic research university committed to high quality graduate and undergraduate education. Beginning this year, extensive new and renovated academic space will open on its beautiful, wooded 1000-acre campus located in dynamic Charlotte. A wide array of bachelor's, master's, and doctoral degrees are offered in the College of Arts and Sciences and six professional colleges---Architecture, Business, Education, Engineering, Information Technology, and Health and Human Services. UNC Charlotte is renowned for business-university partnerships engaged in applied research in exciting fields such as optoelectronics, precision engineering, and information technology, involving undergraduate and graduate students in cutting-edge real-world research.

#### **Lee College of Engineering:**

Approximately 2,400 undergraduate and graduate students enrolled in Lee College of Engineering. College offers bachelor's, master's and PhD degree programs in:

- Civil Engineering
- Electrical and Computer Engineering
- Engineering Technology
- Mechanical Engineering and Engineering Science
- Engineering Management

A few of the many areas of study and research provided by the College's departments include environmental engineering, computer engineering, biomedical engineering, motorsports engineering, geo-technical engineering, microelectronics, manufacturing, mechanical design, fluid mechanics, transportation engineering, structural engineering, heat transfer, and materials engineering.

#### **Charlotte Research Institute:**

The Charlotte Research Institute is an umbrella organization specifically designed and staffed to assist the University's research programs to more effectively partner with government entities and the private sector. Four research centers exist at the Institute:

- **Center for Precision Metrology** - focuses on precision engineering and measurement including: research in manufacturing processes and quality assurance for mechanical parts to within a millionth of a meter. New state-of-the-art facilities will include clean rooms and multiple metrology labs. The Center's efforts—which have included high speed machine parts, specialized sensors, aerospace industry applications—have attracted companies such as Caterpillar, Mitutoyo and Boeing for collaboration. The Center has been recognized as a National Science Foundation Center of Excellence in New Industry Collaboration and in Nanoscale Science and Engineering.
- **Center for Optoelectronics and Optical Communications** - includes research areas in: design and fabrication of photonic devices, integrated optical circuitry, assembly and packaging of optical systems, optical materials, methods for precision optical metrology, and optical imaging and inverse methods for wavefront synthesis. The center has successfully allied with the Massachusetts Institute of Technology, Duke University, The Carolinas MicroOptics Triangle, and the North Carolina Photonics Consortium. The center has won Defense Advancement Research Projects Agency (DARPA) grants for the past three years.
- **Center for eBusiness Technology Institute** - currently focused on the financial industry. The center is partnering with Bank of America and Wachovia to solve industry issues pertaining to technology applications. These applications include information privacy and security, intelligent data analysis, systems integration, information visualization.
- **Center for Bioinformatics** – recently established program. This is a joint effort by scientists within the Departments of Chemistry, Biology, Computer Science, and Mathematics, and in the Research Division of the Carolinas Healthcare Center. The focus of the program is on genetic factors in disease and gene regulation.



Article from Charlotte Business Journal  
February 23, 2007

### **UNC Charlotte engineering enrollment, space growing**

CHARLOTTE - There's concern the United States isn't producing enough scientists and engineers to meet the growing needs of a high-tech world. But you wouldn't know it by the phenomenal growth at the University of North Carolina at Charlotte's William States Lee College of Engineering or by its \$23 million, 110,000-square-foot Duke Centennial Hall. In the past six years, the college's enrollment has increased 70 percent to 2,400 undergraduate and graduate students - the fastest growth rate of any academic program at the university, says Bob Johnson, engineering dean.

New programs are being added, such as a Bachelor of Science degree in construction management and master's degrees in engineering management and fire-safety engineering technology.

Mechanical engineering is the college's fastest-growing department; its enrollment has doubled in the past six years to 774 students. Department chair Jay Raja says that growth makes it one of the 50 largest among the country's 265 mechanical-engineering programs. Five professors will be added in the next academic year, bringing the total to 30. Although the college is spread over four buildings, space remains at a premium for its students. "Even with the new building, we're still crowded," Johnson says. "We could put up two more buildings and still just have adequate space." Duke Hall, a Georgian-style brick building, was formally dedicated in September, when it made its public debut with Grigg Hall, which sits beside it. The two buildings are part of the university's Millennial Campus off U.S. Highway 29. Like lab facilities elsewhere, Duke Hall is built on isolated pads to minimize vibration, has access to ionized water, features heating and cooling systems with increased capabilities, and uses lots of hoods in enclosed areas for ventilation and to keep fumes out of the air system.

Duke Hall houses the mechanical engineering department, College of Engineering administrative offices and the **Center for Precision Metrology**, which is part of the **Charlotte Research Institute**.

Grigg Hall is home for the Charlotte Research Institute's Center for Optoelectronics and Optical Communications, classrooms and offices for the institute, and the Charlotte office of the North Carolina Biotechnology Center. Connected to Duke Hall is a 5,000-square-foot annex dedicated to motorsports and crash analysis. Students use the latest equipment, much of it donated by manufacturers, and **NASCAR** race teams are regular visitors.

Inside Duke Hall, the labs feature equipment valued at about \$7.5 million that measures and works in microns and nanometers (a billionth of a meter). In high-tech manufacturing processes, precise measurements on a minuscule scale are a must. One example is the recent news that **Intel Corp.** and **IBM Corp.** had separately claimed to develop a transistor measuring 45 nanometers, a breakthrough that could allow handheld devices to pack the computing power of desktops.

Work in the labs and at the Center for Precision Metrology encompasses more than just academic projects and research funded by the federal government. Faculty members and industry representatives collaborate to develop projects that address concerns in manufacturing metrology.

The projects are funded by dues from corporate affiliates, which also provide stipends for the students assisting in research. In addition, affiliates can contract with the center for proprietary research. The affiliates include **Boeing Co.**, and **Lawrence Livermore National Labs**.

Local companies are also supporters of the college. Johnson says their contributions helped finance the equipment in Duke Hall, and a fundraising campaign in the corporate community last year yielded \$600,000 for scholarships. A third building will house the Bioinformatics Center, and Bob Wilhelm, executive director of the Charlotte Research Institute, says construction will begin later this year. A student union will eventually be built in the area as well.