



Campus Visit Summary
North Carolina A&T State University

Campus Visit Date: May 8, 2007

Brief Overview

North Carolina Agricultural and Technical (NCA&T) State University is a learner-centered community that develops and preserves intellectual capital through interdisciplinary learning, discovery, engagement, and operational excellence. A doctoral/research intensive university and a land-grant institution, NCA&T offers degrees at the baccalaureate, master's, and doctoral levels. The University's academic programs are organized into two colleges (College of Engineering and College of Arts and Sciences) and six schools (Agriculture and Environmental Sciences, Business and Economics, Education, Nursing, Technology, and Graduate Studies).

NCA&T is located in downtown Greensboro (city population: 225,000 Guilford County population: 424,000), a major city in the Piedmont region, serving as a trade and business center.

- **Total Enrollment Fall 2006: 11,098**
- **Undergraduate Enrollment Fall 2005: 9,687**
 - 92% black, 5% white, 3% other
 - 53% female, 47% male
- **Graduate Enrollment Fall 2006: 1,411**
 - 65% black, 25% white, 10% other
 - 62% female, 38% male

Campus' Definition of Its "Region"

Located in Greensboro, the campus serves primarily the 12 county Piedmont-Triad region. In its capacity as one of the state's two land-grant universities¹, it also has a statewide mission through its extension programs in 42 counties across the state.

¹ A land-grant university is one so designated by a state's legislature to provide higher education outreach and extension services statewide. Historically, in 1862 Congress established the first land-grant universities with the mission of providing a liberal, practical education to working-class individuals, primarily in the fields of agriculture and technical trades. One of the hallmarks of land-grant institutions is the agriculture experiment station program and local extension offices that historically served the agriculture industry by bringing research innovations directly to farmers and agribusiness industries. There is now at least one land-grant university in each state, and extension programs have broadened beyond their original mission of agriculture and technical trades to encompass a wide array of higher education programs and services in practically every discipline.

Current Responses to Regional and Statewide Needs

The campus highlighted the following programs and initiatives as representative of its efforts to meet regional and state-wide needs:

- Economic Transformation -
 - *College of Engineering* - NCA&T is the largest producer of African American engineer graduates in the nation (over 50% of NCA&T masters and PhD engineering students are African American); the College is focusing on new emerging areas such as:
 - Geomatics (the measurement of spatial areas), which is relevant to surveying professions and addresses legal requirement that licensed surveyors have a four-year degree
 - Biochemical and Biomedical engineering
 - Environmentally responsible manufacturing
 - Solid state materials growth and characterization
 - Nanotechnology
 - *School of Agriculture and Environmental Sciences* – NCA&T is the third largest producer of African American graduates in the nation in baccalaureate degrees in the food and agricultural sciences; relative to economic transformation, the School:
 - Created NCA&T's first spin-off company, *Provagen*, that will target the multibillion-dollar market for “antibody binding proteins”
 - Collaborated with state agricultural leaders to develop a state strategic plan on biofuels, and to develop an operational plan to support projects for agricultural development and farmland preservation
 - *Gateway University Research Park* – A joint effort with UNC-Greensboro, the Park offers opportunities for increased research in areas of strength for the campus, including nanotechnology and public health.
 - *Masters of Science in Management* – This degree program trains graduates in management of emerging fields, including information systems, supply chain, and human resources.
 - *Small Business Assistance* – Faculty assist small businesses in developing business plans to submit to Small Business Technology Development Center offices and offer workshops on subjects such as franchising.
 - *Transportation Institute* – Faculty conduct research in transportation issues, and consult with state and federal transportation agencies and local transit authorities.
 - *Entrepreneurship Program* – Faculty educate students in entrepreneurial skills, and provide advice to economic development efforts of the Southeastern Economic Development for the City of Greensboro (SEEDS) and the East Market Street Development Corporation.
 - *Action Greensboro* – Faculty and administrators participate on committees and task forces working to expand educational and economic development opportunities for the City of Greensboro.

- Cooperative Extension – Through its School of Agriculture and Environmental Sciences, NCA&T operates cooperative extension offices in 42 counties that provide science-based educational programs and technical assistance to local communities; programs are coordinated with NCSU cooperative extension offices where service areas overlap.
 - Extension research and education programs are organized into five main areas:
 - Competitive agriculture system
 - Safe and secure food and fiber system
 - Health and nutrition
 - Environmental and natural resources conservation
 - Economic opportunity and enhanced quality of life
 - Examples of extension programs and activities include:
 - 4-H programs for students
 - Entrepreneurship programs for low-income youth in Wilmington
 - Fabric and Thread Art Camp for special needs middle school students
 - Future Farmers of America (FFA) programs, including hunting education workshops and “Discover Agriculture” program for 500 third graders in Wayne County schools
 - Tobacco transition – faculty research mushroom and other specialty crops and have advised over 100 tobacco farmers on crop transitions
 - Livestock enhancement programs – faculty conduct in-service workshops on livestock management for over 90 livestock producers
 - Financial literacy – seminars and assistance in personal financial management provided to over 4000 families in eight counties
 - Parenting Matters program – training for 169 parents court-ordered to receive counseling for child abuse and neglect (as a result, 338 children were not placed in foster care saving taxpayers almost \$70 per day per child)
 - A Golden Leaf Foundation funded program to train textile workers in the community on Composite Materials processing.

- Education -
 - *North Carolina Model Teaching Education Consortium* – NCA&T is a consortium member offering courses to lateral entry teachers to achieve licensure.
 - *ESL Teacher Preparation* – Programs for teachers and teaching students focus on Spanish language skills.
 - *Literacy* – This initiative developed reading materials to assist low-performing schools improve student reading levels.
 - *21st Century program* – This provides after-school programs on campus.
 - *Recruitment of STEM teachers* – This effort recruits engineering students to seek teaching licensure; provides content mentoring for STEM teachers in Guilford County Schools in partnership with UNC-G.

- *On-Line 2+2 Articulation Agreement* – graduated and licensed the first students in the University of North Carolina System from the Agricultural Education Program through the on-line 2+2 articulation agreement with the North Carolina Community College System
- *Adult Education program* – A master’s degree in Adult Education is offered to Rockingham Community College faculty to prepare more community college faculty.
- *Center for Learning and Teaching* – This 100-hour professional development program for public school technology teachers is intended to improve STEM education content and delivery.
- *University Studies*, a general education program - Beginning in spring, 2002, NCA&T undertook a comprehensive review and revision of its general education program as part of the FUTURES strategic vision initiative. The General Education Review Committee, with faculty representatives from each of the Colleges and Schools, oversaw the review process, developing recommendations for revising the General Education program and implementing changes in the general education curriculum. A new General Education structure and curriculum, *University Studies*, was implemented in fall, 2006. The University Studies curriculum is the heart and soul of the university's academic mission to prepare undergraduate students for careers in a dynamic, global, knowledge-based economy that demands life-long learning. The purpose of this core curriculum is to provide a framework for critical inquiry that serves as a foundation for continuing academic development and life-long learning. Through discovery, inquiry, analysis, and application, the core curriculum promotes:
 - Broad-based critical-thinking skills
 - Effective written and oral communication of ideas
 - Appreciation for diverse cultures
 - Commitment to ongoing civic engagement and social responsibility
- Health –
 - *Undergraduate research projects in minority health disparities* – Undergraduate students conduct research and present findings in areas such as cancer, which enhance students’ learning experience and soft-skills development.
 - *Online RN-BSN degree program* – This online program addresses the nursing shortage by offering the BSN program online as well as on campus.
 - *Free clinics* – Nursing school faculty and students participate in free health clinics serving indigent populations; each nursing student provides 1,020 clinical hours in these clinics.
 - *Saturday Academy* – program for middle school students to promote nursing and health profession careers and also to educate students on health disparities.
 - *Tobacco cessation* – The School Nursing students and faculty developed an on-line smoking cessation program that is being piloted this year.
 - *Institute for Public Health* – Interdisciplinary applied research projects and educational programs focus on public health issues, with special focus on minority public health issues and health disparities; the Institute hosts an

annual public health forum highlighting faculty research projects and educational programs (300 attendees).

Methods of identifying and incorporating regional and statewide needs into academic mission

- *Research Clusters* – The campus reorganized its research programs into eight clusters that align with emerging areas, industry trends and business needs. This reorganization has stimulated external community interest, and the campus is receiving increased input from business and industry. This will also assist the campus in stimulating interdisciplinary work and generating external funding sources; the eight clusters are:
 - Computational Science and Engineering
 - Logistics and Transportation Systems
 - Energy and Environment
 - Biotechnology and Bio Sciences
 - Public Health
 - Leadership and Community Development
 - Advanced Materials and Nanotechnology
 - Information Sciences and Technology
- Extension Office stakeholders input – The campus receives input from local communities on needs and issues to which the campus can respond through Extension Regional Advisory Councils. Example: In developing its eight research clusters, NCA&T Cooperative Extension offices conducted regional stakeholders meetings to receive community input on emerging trends and needs.
- Advisory Boards – Most departments have advisory boards from which the departments receive input from business leaders and leaders in professions linked to that department or college. There are plans to form an overarching Advisory Board for Research consisting of leading scientists from industry, academia, and the government.

Teaching Innovations (soft skills development, experiential learning, etc.)

- Group projects are often course requirements and incorporate the use of case study based exams that focus on real world application of course information.
- Class presentations and competitions
- Inquiry-based learning
- Service learning
- Internships
- Co-curricular activities
- Freshmen courses focusing on analysis skills, communications skills (oral, written and auditory), critical thinking, problem solving, ability to work in teams, computer/IT skills, technical proficiency, global competence and social responsibility

Enrollment Growth – General

- NCA&T is prepared and willing to grow, but note that scholarship and facilities funding is critical to realize that growth.
 - Particular areas of growth:
 - School of Agriculture and Environmental Sciences can grow 5-8% per year
 - College of Arts and Sciences is positioning itself for 1-5% growth per year for the next 5 years
 - School of Business and Economics has the current capacity to increase on-campus enrollment by approximately 10-15% (incorporation of online courses may increase that capacity)
 - School of Education projects a 5% increase in enrollment over the next five years
 - College of Engineering expects to grow 15% over the next 5 years with current resources and infrastructure
 - The following graduate programs have very good or exceptional potential for growth: Computational Science and Engineering, Energy and Environmental Studies, Leadership Studies, and Biotechnology (these programs need to be grown and physical space provided).
 - BS in Technology Education has the capacity for 40 more students (MA and MAT degrees can accommodate 20 more students)
- In preparation for continued growth, NCA&T is fostering online and Web-enhanced delivery methods, as well as evening and weekend degree programs. The need for increased facilities and additional faculty and staff will be a challenge to growth.

Enrollment Growth – Special Populations

- There is a need for The University to increase its diversity. The University will seek to hire a Latino/Hispanic recruiter and provide the necessary staff to increase our outreach to these communities.

Faculty Issues

- *Research support* – Faculty need increased resources for PhD research programs, including funding for graduate students (tuition remission funding).
- *Retirement and attrition* – The campus does not currently assess faculty retirement and attrition trends and projections.
- *Professional development* – Faculty indicate a desire for increased professional development programs, but the lack of resources hinders increased opportunities.
- *Time for innovation* – As faculty research activity increases, faculty report having less time to engage in and develop innovative programs and perform community outreach services.

External Communications

- The campus does not currently assess its overall impact on the region; impact of Extension programs is assessed through its impact study, “Solutions for North Carolina,” and research dollars received through grant awards are compiled.
- Several campus departments noted the need for more comprehensive external communications of on campus activities, programs and initiatives that would benefit the public.
- Cooperative Extension Offices provide a strong venue for external communications.
- WNAA-FM, the student-run radio station provides opportunity for communications about campus activities and programs.

Barriers and Challenges Facing the Campus

- *Research Intensive Status* – In being awarded a high research designation in 2004, NCA&T must develop more PhD programs to fully achieve its capability under this designation, and anticipates needing to grow its graduate student population to 20% of the total student enrollment along with recruiting additional faculty. Low faculty salaries and lack of graduate student tuition remission funds inhibit NCA&T’s ability to achieve these goals. In addition, the development of non-science PhD programs (such as English and Social Work) is difficult because of the lack of external funding sources.
- *Technology Transfer* – The campus lacks sufficient resources (namely funding) to bridge the gap between research and development, thus impeding its ability to form spin-off companies and engage extensively in tech transfer.
- *Retention and Graduation Rates* – The campus acknowledges a need to improve retention and graduation rates and is considering expanding student mentoring programs as one response to this issue:
 - Retention rate: 68.9%
 - 4-yr Graduation rate: 14.8%
 - 6-yr Graduation rate: 38%

Also noted as needing improvement is the licensure passing rate of first time writers from the School of Nursing graduates.

- *Enrollment growth* – Enrollment growth presents particular challenges in light of the need to simultaneously improve retention and graduation rates while also accommodating increased student enrollment:

- 2005 total enrollment: 11,103
- 2017 projected enrollment: 14,641

Opportunities

- *Enhanced research* - The campus received a designation of High Research University in 2004. This designation creates opportunities for enhanced basic and applied research programs and additional revenue for the campus. For example, NCA&T faculty have been awarded 15 patents in the past three years, and last year the campus began to receive revenue from its first intellectual property licenses. NCA&T also spun off for the first time two companies, one in biotechnology and the other in information technology.
- *Improving K-12* – Because of its status as a HBU, the campus recognizes both a responsibility and an opportunity to increase outreach into K-12, focusing on issues related to minority students, such as closing the achievement gap, recruiting more minority students into teaching, and improving professional development programs for teachers.
- *Gateway University Research Park* – In addition to the opportunities for regional economic development and enhancement of campus research and education programs, the development of the Park as a joint effort between NCA&T and UNC-G provides an opportunity to model inter-institutional collaboration that can be applied elsewhere in the UNC system, and used to explore current barriers to such collaborations (cost accounting systems, faculty time allocation systems, space utilization, etc.)
- *North Carolina Research Campus* – This Research Campus is a generational opportunity that is certain to be one of the most advanced nutrition-related biotechnology facilities in the world. NCA&T faculty and students will pursue innovative research initiatives focusing on post-harvest technologies and food sciences related to nutrition and health concerns. These include processing and preservation, storage stability, safety and quality, composition, recovery and identification of bioactive compounds for health applications, product development, consumer research, and value-added processing.