



## Campus Visit Summary North Carolina State University

Campus Visit Date: May 23, 2007

### *Brief Overview*

North Carolina State University, in its second century of educational leadership and service, is a national center for research, teaching, extension and engagement in the sciences and engineering, agriculture and natural resources, the humanities, education and social sciences, design and textiles, and professional programs, from Architecture to the MBA and Doctor of Veterinary Medicine. This major research- extensive land-grant university<sup>1</sup> offers degrees at the baccalaureate, master's, intermediate, first professional and doctoral levels in 125 fields of study. Academic programs are organized into the Graduate School and 10 colleges (Agriculture & Life Sciences, Design, Education, Engineering, Humanities & Social Sciences, Management, Natural Resources, Physical & Mathematical Sciences, Textiles and Veterinary Medicine). Freshmen may also enroll in First Year College. North Carolina State University is committed to equality of opportunity and actively recruits students, staff and faculty of color.

NC State is west of downtown Raleigh, the capital of North Carolina. With a population of over 356,000, Raleigh is the largest city in a million-plus metropolitan area that includes the Research Triangle Park.

- Total Enrollment Fall 2006: 31,130
- Undergraduate Enrollment Fall 2006: 23,730
  - 80% white, 9% black, 10% other (Hispanic and Asian American), 1% American Indian
  - 43% female, 57% male

### *NC State's definition of its "region"*

- NC State serves a statewide constituency, and indeed national and international constituencies in some areas.

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<sup>1</sup> 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*

- Land-grant university mission provides systemic and institutionalized opportunities for extension and engagement through Cooperative Extension, Industrial Extension, Small Business and Technology Development Center and over 80 other established statewide, urban, rural and community programs
- NC State received Carnegie Foundation recognition for its Community Engagement in both categories: Curricular Engagement, and Outreach and Partnerships
- Engagement activities are coordinated through the Office of Extension, Engagement, and Economic Development
- Centennial Campus provides an international model of public-private partnerships with over 70 businesses, industries, government and non-profit partners
- 100 programs highlighted the impact on North Carolina in five focus areas (focus areas reflect need-based priorities for the campus, and have been incorporated into campus strategic and marketing plans). Examples of these programs (in the five focus areas) include:
  - Preparing Leaders for our State, Nation, and the World
    - *Pack Promise* – scholarship and student support program for low-income students
    - *Center for Student Leadership, Ethics, and Public Service* – comprehensive campus-wide program in leadership development, ethics training and public service outreach
    - *Shelton Leadership Initiative* – programs designed to develop values of integrity, ethics, and commitment to addressing complex social issues by business, government, military and civic leaders
    - *ARTS NC STATE* – coordination of six visual and performing arts programs at NC State providing community performances, exhibits, and internships
  - Creating Innovation in K-20 Education
    - *Friday Institute for Educational Innovation* – advances education through innovations in teaching, learning, and leadership by integrating research, technology and cross-sector collaboration
    - *The Science House* – provides teacher professional development training, content-courses, school-based assistance, curriculum materials, and student science activities
    - *Kenan Fellows Program* – engages teachers in developing cutting edge curricula and provides professional development to retain teachers in NC classrooms

- *K-12 Engineering Outreach* – collaborations to advance STEM instruction in K-12 schools, (i.e., engineering camps,) and to stimulate interest by females and underrepresented populations
  - Growing and Sustaining the Nation’s Energy and Environment
    - *Biofuels Research* – research both in woody biomass and agricultural products
    - *NC Solar Center* – research, extension, and engagement on solar energy technologies and building practices
    - *Nuclear Reactor Program* – leads a multi-university consortium on nuclear reactor teaching and training/licensing of reactor operators, and on energy, medical, forensics and materials research
  - Advancing the Health and Well-Being of Our Citizens
    - *Initiative for Inclusive Design* – research and technical assistance in affordable housing and design interventions for physically challenged residents
    - *The NC Research Campus* – transforming Kannapolis into a research center focusing on health and nutrition in fruits and vegetables
    - *Expanded Food and Nutrition Education Program* – nutrition literacy for limited resource families through Cooperative Extension teaches food purchasing, food safety and nutrition
    - *Probiotics research* – developing healthful foods in the Department of Food Science, leading to, among other discoveries, Sweet Acidophilus Milk
    - *Biopreparedness and Public Health* – research at College of Veterinary Medicine relevant to national and international bioterrorism threats
    - *Center for Comparative Medicine and Translational Research* – multidisciplinary collaborative research teams working in areas such as biomedical engineering and biomedical textiles
  - Economic Development, Community Outreach and Social Equity
    - *BioPharma Management Initiative* – teaches relevant management tools for biotech and biopharma industries
    - *Integrated Circuit Design* – College of Engineering’s work in developing innovative chip designs
    - *Economic Development Partnership* – leveraging and expanding campus resources to start, grow, retain, and recruit jobs on Centennial Campus and around the state
    - *Small Business and Technology Development Center* – 17 offices across the state providing small business counseling and management educational services to business and industry
    - *Cooperative Extension Service* – impacting agriculture, natural resources, and value-added food processing, youth, families, and

communities in all 100 counties and on the trust lands of the Eastern Band of the Cherokee

- *Industrial Extension Service* – for over 50 years providing process improvement training and technical assistance, such as Six Sigma and Lean Manufacturing, to manufacturing businesses
  - *Institute for Nonprofits* – assists in building capacity in nonprofits by providing technical assistance and educational programs, and coordinating faculty research and student service learning activities that benefit nonprofit communities
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- Strong focus on interdisciplinary and inter-institutional collaboration:
    - 2+2 program with Craven County Community College for agricultural degree
    - Biomanufacturing Training and Education Center (BTEC) and NC Community College System partnership for bio-manufacturing industry

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

- NC State has 149 advisory boards for departments, centers, institutes, etc.; receives input on regional and statewide needs through members of advisory boards
- External input received through county extension offices (priorities sometimes determined by county funding)
- Strategic planning process incorporated
  - Faculty survey
  - Strategic marketing survey
  - Data analysis of state and regional trends
  - “Compact” planning between administration and departments – three-year review cycle
- Marketing study revealed need for more degree programs in liberal arts, building on strength in relationship with RTP and UNC-Chapel Hill
- Strategic planning process lead to five focus areas (see discussion above), which are incorporated into compact and marketing plans

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

- Scholarship for the 21<sup>st</sup> century (global competitiveness and soft skills development) is a concept that drives University strategic planning, analysis and actions

- Overall approach to education is “holistic,” recognizing importance of developing applied skills, leadership, and “soft” skills (“soft” skills differentiate leaders from workers) to complement basic knowledge and technical skills
  - *Center for Excellence in Curricular Engagement* – first such center in the nation focusing on use of curriculum to engage and involve students, faculty and communities in mutually beneficial service learning collaborations and opportunities
- Program development and course delivery that stress the need for graduates to develop the following skills: *teamwork, critical thinking and reasoning, oral and written communication, information organization, innovation and creativity, analytics and foreign language proficiency*
- LITRE (Learning in a Technology Rich Environment) seeks to improve teaching through the application of appropriate technology use
- 40% of NC State students participate in cooperative education, internships or similar activities before graduating
- Service (experiential) learning – 25 courses available each semester (100 in the next 4 years) that translate classroom learning to the community
- Fine and performing arts are producing well-rounded students in high volume, for example, 1800 students participate in 18 musical ensembles each year
- Campus houses one of the most comprehensive craft centers in the nation with 100 classes offered annually in art, pottery, photography, fibers, woodworking, glass, lapidary and more
- First Year College Program – provides first year students one year of general college experience that emphasizes career counseling, academic skills enhancement and campus involvement and awareness before declaring a major

### ***Enrollment growth – General***

- NC State is preparing for 40,000 total students in 10 years (increase of 9,000) understanding that many of the newly enrolled students will be “hybrids” that are educated through different formats of on-site and distance education
- Current use of space planning is a national model
- 2+2 model with other University institutions: engineering degrees offered with UNC-Asheville

- 44 degree, certificate and licensure programs currently available online or at a distance. Distance education is becoming an important part of every student's education on this campus
- Planned growth in priority areas (through 2012):
  - Engineering – 3,500 new students (+50%)
  - Management – 1,000 new students (+33%)
  - Education – 500 new students (+33%)
  - Biological Sciences (Agriculture and Life Sciences) – 500 new students
  - Veterinary Medicine – 100 new students (+25%)

### ***Enrollment growth – Special Populations***

- Increasing recruitment and outreach to Latino population:
  - Initiated University task-force on Hispanic/Latino diversity
  - Provide bi-lingual admissions recruiters and literature to high schools and smaller towns
  - New initiative preparing to meet the need for Hispanic teachers
- Minority student development is fostered through:
  - Office of African American Student Affairs and African American Cultural Center, providing a sense of “place” for minority students
  - Office of Multicultural Student Affairs (ex. Native American and Latino student population served in this office.)
  - Minority orientation symposia that provide students with additional transitional support both academically and socially

### ***Faculty Issues***

- Faculty involved in strategic planning process (60% response rate on faculty survey)
- “Six Realms of Faculty Responsibility” developed that reflect campus priorities and guide appointment, promotion, and tenure decisions
  - Teaching and mentoring undergraduate and graduate students
  - Discovery of knowledge through discipline-guided inquiry
  - Creative artistry and literature
  - Technological and managerial innovation
  - Extension and engagement with constituencies outside the university
  - Service in professional societies and within the university itself
- Promotion and tenure policies reward faculty for engagement activities and patents
- Faculty turnover not seen as a pressing issue; but replacement costs of salary, start-up, and upgraded teaching and research facilities are issues

- Recognized need for more Hispanic/Latino faculty members (task force appointed by Chancellor to address this need)

### ***External Communications***

- Campus does excellent work in assessing its impact on the state
  - \$1 in state funding = \$8 in total income for NC
  - ROI of 8:1 on state appropriations for Cooperative and Industrial Extension
  - ROI of 10:1 on state appropriations for SBTDC
  - 552 active patents
  - 60 spin-off companies and 13,000 jobs created based on faculty research
  - 1,200 off-campus employees statewide
- Compilation of 100 programs impacting the state is an excellent resource for accessing campus resources:  
[http://www.ncsu.edu/univ\\_relations/impactstatements/impactstatement.pdf](http://www.ncsu.edu/univ_relations/impactstatements/impactstatement.pdf)
- Campus website being redesigned in response to marketing study
- Recognized need to communicate campus programs and impacts to a broader audience (e.g., reality of scope of campus programs broader than perception of campus), including policy leaders and legislators

### ***Barriers and Challenges facing the campus***

- North Carolina is a net *importer* of STEM graduate students; recognized need for increased STEM focus in K-12 to increase number of NC students pursuing STEM undergraduate and graduate studies (NCSU has highest number of STEM graduate students in NC, SC, and VA)
- Need for more research funding, lab space, and funding for graduate students as well as tuition remission funding
- Funding for summer school programs; recognized that online programs are fully funded year-round and can increase opportunity for student summer programs

### ***Opportunities***

- Enhance extension and engagement activities through:
  - Increasing capacity of regional campuses in the UNC system to participate in more regional engagement programs (example: SBTDC offices co-located on other campuses)
  - Increased coordination between extension offices and regional campuses to avoid duplication of engagement activities

- Future focus for extension and engagement activities:
  - K-12 STEM educational programs (example: 4-H program, which currently serves 208,000 children involving over 21,000 adult volunteers)
  - Entrepreneurship and economic development
- Extension faculty of the “future” include more multidisciplinary generalists; changes over time in focus of extension programs come in response to local needs based on funding from counties
- Satellite / branch campus model offers opportunity for more student enrollment growth and expanded outreach. NC State will be responsive to community needs and partner with other campuses and community colleges. An example of recent growth at a satellite campus is the College of Management MBA at RTP, which in two years will meet its target goal of 150 students. Other sites with potential for enrollment growth and expanded extension and outreach include Rocky Mount with the College of Education programs in NC Teach and Master of School Administration, and planned SBTDC and Cooperative Extension initiatives; and Roanoke Rapids in textiles, design and tourism programs.
- Cooperative programs offered with other campuses (such as engineering program collaboration w/ UNC-Asheville) offers opportunity for expanded access to degree programs in cost-effective manner
- Partnerships with other institutions will focus and grow the state’s ability to grow and sustain the nation’s energy and environmental resources (ex. NC State’s Solar Center and ASU’s Energy Center)
- Prepare leaders of the state, nation and world that “know, care, and do” – thus differentiating leaders from workers