Electrical and Computer Engineering

Department

The department has approximately 400 undergraduate and 150 graduate students and over 25 faculty members. ECE offers ABET/EAC accredited programs in Electrical Engineering (EE) and Computer Engineering (CPE), as well as M.S. and Ph. D. programs in each discipline. The CPE program is jointly administered with the Department of Computer and Electrical Engineering. ECE is directly responsible for over $6 million in research funding and provides leadership in multidisciplinary research centers within the College and University.

Specific strengths include:

- Active and Dedicated Faculty - The average research expenditures per faculty member is approximately $250,000 per year and, in 2004, the faculty averaged 1.2 refereed journal publications and 0.6 major external proposals per faculty member. In a new initiative associated with our circuits/electronics course revisions, the faculty directed its focus to authentic laboratory experiences. This approach utilizes student laptops for hardware homework beginning with their first introductory course. This step enables in-laboratory components to be less rudimentary and instrumentation and tool usage more characteristic of professional practice.
- Co-Op program - MSU's cooperative education program is celebrating its 50th anniversary in 2005. This year the 10,000th student (an EE) entered the MSU Co-op Program. The program ranks among the elite academic enrichment programs in the country. The department has been a leading participant since its inception with spring 2005 participation involving 100 ECE students working for over 25 different companies.
- Departmental Advisory Board – The 17-member board meets twice a year and is an important source of support for the department, its programs, and the department head. The membership includes six new members added in 2005. The Board has served an essential role in the development of program educational objectives and the assessment of the EE and CPE programs.
- Chaired Positions and Professorships – ECE endowments include three chaired positions and two professorships: Robert Guyton Chair, James W. Bagley Chair, Paul B. Jacob chair, TVA Professorship in Power System Engineering, and Ergon/DTI Distinguished Professorship.
- Dedicated, Successful Alumni – Among our distinguished alumni are Jim Bagley, executive chairman of Lam Research board of directors and benefactor to the Bagley College of Engineering and ECE Department and Jim Flanagan, long-time Bell Labs research director and 2005 IEEE Medal of Honor Winner.

Challenges

- Undergraduate enrollment has fallen since 2000 as the quality of students has

increased. It is expected that the number college-age students in Mississippi will decline in coming years. ECE will need to recruit effectively both in Mississippi and the region to regain and surpass previous enrollment levels.

- Maintaining a successful assessment process is likely to require leadership from a few responsible faculty members, as well as general faculty participation. Retirement will change the existing responsibilities in this key area.
- Taking an existing, successful research position to new levels in a changing political and challenging economic environment will require imagination, experience, and strong leadership. The number of graduated doctoral students in EE and CPE falls below levels seen at other peer institutions with comparable research production.

Facilities

ECE is the sole occupant of Simrall Engineering Building that contains approximately 95,000 sq. ft. of floor area. Among its excellent laboratories is a world-class high-voltage facility. Recent upgrades of laboratories include microprocessors and embedded systems, digital system design, and senior design. Other facilities upgrades include additional electronic classrooms, 100 megabit switched network access, and WiFi networking throughout the building. There are 11 laboratories that support core and technical elective courses included in the EE's program and 5 additional labs for CPE's including those in Butler. Also, there is a shop area and general-purpose computing laboratory. All are wired with Ethernet connections, as well as being supported with wireless access.

Equipment and commercial tools for simulation, synthesis, and experimentation elements are required throughout the ECE program. Students employ Pspice and MATLAB for simulation and analysis; Cadence, Mentor Graphics, Synopsys for IC simulations and synthesis and simulations; Xilinx and Altera VHDL tools for logic synthesis and simulation; and Microsoft and MPLAB software development environments for software development and debugging.

The ECE program computing and informational administrative support exist locally in ECE (Simrall) with the University's Information Technology Services providing overarching support in key areas such as networking, the Banner Information System, and WebCT. Two computer clusters support departmental and educational needs: a ten-node Linux computer cluster (3.6GHz 2GB nodes) and three 400MHz 1GB Suns. The ECE Department is completely networked using 100base-T switched networking to each desktop. All four floors of Simrall are connected through a gigabit ethernet backbone that in turn is connected to the University's 10-gigabit ethernet backbone. ECE's main file server is a Sun Enterprise 450. This unit employs 4 processors, 1 gigabyte of memory, and over 1.2 terabytes of disk storage. ECE also has 13 servers to handle the network infrastructure, including web services, mail, centralized authentication, and backup. Of the 280 PCs and 20 workstations in Simrall, essentially all are connected through 100 Mbit switched ethernet. Simrall is a major campus node on the University's core network. With a 10 gigabit connection to the University backbone, Internet access for the department is only limited by the 45Mb and 9.6Gb Internet and Internet2 connections of

the University. All electrical engineering students are provided departmental accounts that allow them access to e-mail, departmental services, and the World Wide Web.

Other computing facilities are available to faculty collaborating at the ERC, a coalition of research centers, laboratories, and groups designed for cross-disciplinary research. It is housed in a 44,000 square foot building, with construction on a 28,000 square foot expansion currently underway. In addition to the main ERC building, the ERC's Center for Advanced Vehicular Systems occupies a 57,000 square foot building on campus as well as a 24,000 square foot extension facility in Canton, MS. The ERC also maintains a branch facility at the NASA John C. Stennis Space Center on the Mississippi Gulf Coast. Each building has a video classroom, affording the use of video equipment in classroom settings and allowing the production of videotaped classes or live satellite transmission to remote sites as well as network-based instruction.

The ERC houses a desktop infrastructure of general-purpose workstations and high performance servers for faculty, staff, and student use. An immersive CAVE-like virtual environment facility (consisting of four ten-by-nine-foot projected stereoscopic display surfaces, motion tracking, and voice recognition) provides virtual reality research and teaching capabilities. High performance computing needs are served by a 384 processor IBM x335-based Linux cluster; a 1038 processor IBM x330-based Linux cluster; SGI Challenge 10000, Onyx, and Onyx2 servers; and Sun UltraSPARC-based and HyperSPARC-based clusters, V880, V440, V240, V210, and Ultra 60 servers. Additionally, the ERC utilizes approximately 200 Sun workstations, 30 SGI workstations, 300 PCs, and an assortment of printers and peripherals. The ERC is also a heavy user of supercomputers at installations around the country.

Financial

The budget components include the following: (1) State E & G funds for faculty/staff/graduate student salaries and operating funds, (2) gifts and grants, (3) overhead funds generated by research, and (4) residual funds resulting from expired fixed price research or service contracts. In addition, the Department manages numerous research contracts that are indirectly supportive of the instructional program. The combined funds have given the Department adequate support to conduct quality instructional and research programs.

E & G funding has been consistently sufficient to assure that stable resources are available for faculty, staff, and teaching assistants needed to support the program. Funds have been available from gifts and grants, returned overhead, and faculty release to support program enhancements such as the entrepreneurship initiative, technical communications skills, curriculum revision, new course offerings, and student competitions. The State E & G budget provides support for faculty and staff salaries, stipends for graduate teaching assistants. In the previous year, 87% of faculty salaries were covered under the E&G budget. The State operating budget for commodities, contractuals, travel, equipment, and student wages is much less substantial. The 2003/2004 E & G budget for ECE is $2,858,274 that includes fringe benefits for

employees. Flexibility in the other departmental accounts has enabled the program to flourish.

The University has a generous policy in which 40% of overhead generated by research contracts and 100% of released funds generated by the purchase of faculty time by research contracts are returned to the Department. The Department returns 10% of these funds directly to faculty residual accounts. The Department encourages each faculty member to attend and participate in professional conferences each year and works with the College to help fund expenses. The departmental budget is developed annually by the department head prior to the start of the fiscal year on July 1. The distribution of funds at the College level is determined by the Dean of Engineering based on the support from the previous fiscal year and adjustments due to salary raises and possible changes in operating funds. The administration has the option to make adjustments associated with changing priorities, productivity, enrollment trends, or other special opportunities or circumstances. The department head recommends raises for faculty and staff where productivity and job performance are principal criteria. The Department typically has the highest productivity index in the College.

The ECE department has enjoyed success in recruitment. Since 2000, 13 new faculty members have been successfully recruited with terminal degrees from U. of Alabama Huntsville, U. of South Florida, Georgia Tech, Istanbul Technical University, U. of Kansas, LSU, U. of Maryland, U. of Minnesota, UNLV, Rice, and Clemson.

Faculty

The faculty is highly productive, balancing research, service and teaching. In 2004, the breakdown was 38% for research (release and scholarly achievements), 20% for significant contributions to service (e.g., ABET evaluator, national committee officer, mentor to new faculty member) and 42% for teaching. ECE currently has by 25 tenure track faculty members and 1 instructor. The ECE faculty is diverse in rank; There are 9 at the assistant professor level, 5 are at the associate professor level, and 11 are at the full professor level. All have Ph.D.'s; 24 in electrical engineering, and 1 in physics. All faculty members at assistant or higher level are full time and tenure track. ECE faculty members also support the computer engineering program. In the fall of 2004, the student to faculty ratio was 14.2 to 1. On average, faculty members had a teaching load of three courses per academic year or 1.5 classes per semester.

Faculty members are active in the student organizations including the student branch of the IEEE and Tau Beta Pi. Eta Kappa Nu activity needs improvement. Undergraduate ECE students have been recognized recently taking 1st place at the IEEE Region 3 hardware competition in both 2003 and 2005.

Faculty members within the department are members of professional organizations such as IEEE (and a variety of its technical committees), the IEEE Computer Society, ASEE, ASPRS, and numerous other societies and organizations. Faculty members attend an average of more than two meetings per year. Sabbatical leave and other leave options

have been provided to Drs. Picone, Hu, King, Fowler, Follett, and Mazzola to support faculty development in speech processing, computer networks, wireless communication, controls, microelectronics, and remote sensing applications.

ECE faculty members are recognized by awards on campus such as the Eminent Scholar designation, the College of Engineering Outstanding Instructional Paper of the Year, the College of Engineering Outstanding Research Paper of the Year, the College of Engineering Outstanding Educator Award, and the College of Engineering Research Award. Also, recognitions at the national level have been also achieved as well, such as the HKN National Teaching Award.

The Department's Robert Guyton Chair in Teaching Excellence is currently filled by past president of the IEEE Education Society and IEEE Fellow, Dr. Marion Hagler. Recently, two additional chaired positions (the Bagley Chair and the Jacob Chair) have been endowed, plus two professorships (the TVA Professorship held by Dr. Noel Schulz, IEEE PES Secretary, and the Egron/DTI Professorship by Dr. Marshall Molen, former ECE Department Head). The Bagley College also has three Billie Ball Professorships named in honor of long-time ECE Department Head, one is currently held by ECE Professor Dr. Robert Moorhead.

Bagley College of Engineering

The College of Engineering at Mississippi State University was founded in 1902 with four divisions – Mechanical, Civil, Electrical and Mining. In 2002, a $25M gift from Jean and James Bagley led to the naming of the James Worth Bagley College of Engineering. Today, the Bagley College of Engineering has eight departments (Aerospace Engineering, Agricultural & Biological Engineering, Chemical Engineering, Civil Engineering, Computer Science & Engineering, Electrical & Computer Engineering, Industrial Engineering, and Mechanical Engineering) and offers ABET accredited BS degrees in ten programs (aerospace engineering, biological engineering, chemical engineering, civil engineering, computer science, computer engineering, electrical engineering, industrial engineering, mechanical engineering, and software engineering). Graduate degrees are available in each of these areas (except software engineering) as well as computational engineering and biomedical engineering. The college has approximately 1,900 undergraduate students, 275 masters students and 150 PhD students.

The Bagley College of Engineering has approximately 110 tenure-track faculty and approximately 55 research faculty. Sixteen of these faculty have been recognized by their professional societies with the designation of Fellow. The college has 19 faculty members in endowed chair or professorship positions. The college has working groups for interdisciplinary research in the scientific computing, biotechnology, transportation, energy, biomedical engineering, environmental, and materials areas.

The Bagley College of Engineering is housed in several buildings across the MSU campus. The Swalm Chemical Engineering building was completed in 2000 and provides state-of-the art facilities for the Dave Swalm School of Chemical Engineering. The original engineering building, McCain hall was renovated in 2003 and now houses the dean's office and the Department of Industrial Engineering. The Agricultural and Biological Engineering department is slated to break ground on a new building in the fall 2005 semester. Carpenter Hall houses the Mechanical Engineering department. The Civil and Aerospace Engineering departments are located in Walker and Patterson halls. Electrical Engineering is housed in the Simrall Engineering building. Computer Science & Engineering is located in Butler Hall. The college also has facilities in the Thad Cochran Research Park located across the highway from the main campus as well as the Raspet Flight laboratory facility near the Starkville airport.

Several research centers are part of the Bagley College of Engineering. The Diagnostic and Instrumentation Analysis Laboratory (DIAL) is housed at the Thad Cochran Research Park and has strong support from the Department of Energy. Its research program includes the development and application of advanced diagnostic analytical model development and validation, test facilities process development, and on-site field measurements and analysis. The Center for Advanced Vehicular Systems (CAVS) was founded in 2001 to enhance the interaction of the state with the automotive industry. CAVS has a research partnership with Nissan due to Nissan's manufacturing investment in Mississippi as well as other automotive and vehicular manufacturing companies. The Computational Simulation and Design Center (SimCenter) conducts research and

development of advanced computational modeling, as well as simulation and design of physical systems to solve real-world problems. The SimCenter was originally part of the NSF funded Engineering Research Center for Computational Field Simulation at Mississippi State University. The Raspet Flight Laboratory provides MSU with leading-edge innovation and proof-of-concept research in flight testing, composite structures development, and rapid prototyping. It has the capability to design, build, and test prototypes of full-scale manned and unmanned aircraft. The recent location of Aurora Flight Sciences to the Starkville area is a direct result of the availability of this capability at MSU. The Center for DoD Programming Environment and Training (PET) has the mission of bringing University research results and expertise to bear in collaborative assistance and training for DoD users as part of the DoD High Performance Computing Modernization Program. The High Voltage Laboratory, housed within the Simrall Electrical Engineering building supports research in the areas of lightning protection of electrical power transmission and distribution lines and substations; electrical breakdown mechanisms in high voltage polymer insulation; lightning impulse performance of composite insulation; electrical degradation of high voltage polymer insulators; and lightning protection of marine vehicles. Engineering faculty are also involved in other research centers on campus such as the Center for Computer Security Research, GeoResources Institute, and the Center for Science and Math Technology.

The Bagley College of Engineering was ranked 24th in the nation among colleges of engineering in research expenditures in fiscal year 2003 with over $50M of research expenditures. In fiscal year 2004, this figure again climbed to exceed $55M in research expenditures.

Through the Center for Engineering Student Excellence housed in the Bagley College of Engineering, students have the opportunity to be involved in many activities beyond the traditional engineering education. Programs in this center allow students to:

- participate in congressional internship programs in Senator Lott or Senator Cochran's offices in Washington, DC
- study abroad in several programs offered at different times of the year
- participate in an entrepreneurship certificate program including seminars by successful engineering entrepreneurs
- improve their communication skills through our technical communication and toastmasters organizations
- develop their leadership skills through the leadership institute
- be involved in recruiting the next generation engineers through our K-12 outreach program
- gain certification in the six sigma process improvement program

The Bagley College of Engineering is committed to the diversity of its student body and faculty. In 2004, the college was 14th in the nation in number of engineering bachelor's degrees awarded to African American students. The college's undergraduate population was 11.3% African American and 17.6% women in the fall 2004. The college is actively working to increase representation from both of these groups with targets of 20% for African Americans and 25% for women by 2010. Currently, 14 of the 110 faculty in the

college are women. The Bagley College of Engineering and MSU have a goal of increasing the diversity of the faculty at all levels by 2010 as well. The Bagley College of Engineering has an active faculty development program administered from the dean's office that strives to help all new faculty be successful in obtaining tenure and promotion at MSU. This program includes a mentoring program, faculty development seminars and a trip to NSF for new faculty to meet with program officers and directors in their research areas.

Overview of Mississippi State University, Bagley College of Engineering, and the Department of Electrical and Computer Engineering

Starkville & Mississippi State University

The Setting. Mississippi State University forms part of a cohesive town-university community with the growing agricultural-commercial-industrial town of Starkville (pop. 22,000). Located in the eastern part of north-central Mississippi, it is 125 miles northeast of Jackson and 23 miles west of Columbus; it is served by Highways 82, 12 and 25 and by feeder air service through the Golden Triangle Regional Airport 14 miles east. Away from urban complexities, the community enjoys many intellectual, cultural, and recreational advantages: the MSU-Starkville Civic Symphony and Chorus; the Starkville Community Theater; the University Lyceum series, bringing professional musical, dramatic, and artistic groups and performers to the campus; the Speakers Forum lecture series; art exhibits, plays, and recitals by local and visiting artists; public radio and public television programs through the Mississippi Authority for Educational Television; performances by popular musical groups of regional and national celebrity; frequent intercollegiate athletic events in modern facilities; and a variety of recreational opportunities on playing fields and courts, in neighboring forests, fields, and lakes, and along the nearby Tennessee-Tombigbee Waterway.

The University. Mississippi State University is a comprehensive, doctoral-degree-granting university offering to a diverse and capable student body a wide range of opportunities and challenges for learning and growth; to the world of knowledge, vigorous and expanding contributions in research, discovery, and application; and to the State and its people in every region, a variety of expert services. Mississippi State University is designated as a Doctoral/Extensive institution by the Carnegie Foundation for the Advancement of Teaching. It is representative of the American Land-Grant tradition and distinctive in its own character and spirit, born of its Mississippi heritage and the vision and loyal perseverance of those who have labored in its development. Mississippi State University is accredited by the Commission on Colleges of the Southern Association of Colleges and Schools (1866 Southern Lane, Decatur, Georgia 30033-4097; telephone (404) 679-4501) to award baccalaureate, master's, specialist, and doctoral degrees. An able faculty, drawn from the best institutions in all parts of the nation, strive earnestly to demonstrate excellence in teaching, while producing in their specialized studies scholarly books, articles, and conference papers that gain respect for themselves, the University, and the state. Thus they ensure for their students instruction that is in immediate touch with current knowledge and thought. A body of energetic researchers, both faculty and other, assisted by an effective research administration, places Mississippi State among the first one hundred universities in the nation in research and development in the sciences and engineering. The University's service agencies are similarly distinguished, earning the respect and support of their varied constituencies throughout the state, as well as in other states and in foreign countries.

The History. The University began as The Agricultural and Mechanical College of the State of Mississippi, one of the national Land-Grant Colleges established after Congress had passed the Morrill Act in 1862. It was created by the Mississippi Legislature on February 28, 1878, to fulfill the mission of offering training in "agriculture, horticulture and the mechanical arts . . . without excluding other scientific and classical studies, including military tactics." The College received its first students in the fall of 1880 in the presidency of General Stephen D. Lee. In 1887 Congress passed the Hatch Act, which provided for the establishment of the Agricultural Experiment Station in 1888. Two other pieces of federal legislation provided funds for extending the mission of the College: in 1914, the Smith-Lever Act called for "instruction in practical agriculture and home economics to persons not attendant or resident," thus creating the state-wide effort which led to Extension offices in every county in the State; and, in 1917, the Smith-Hughes Act provided for the training of teachers in vocational education. By 1932, when the Legislature renamed the College as Mississippi State College, it consisted of the Agricultural Experiment Station (1887), the College of Engineering (1902), the College of Agriculture (1903), the School of Industrial Pedagogy (1909), the School of General Science (1911), the College of Business and Industry (1915), the Mississippi Agricultural Extension Service (1915), and the Division of Continuing Education, (1919). Further, in 1926 the College had received its first accreditation by the Southern Association of Colleges and Schools. By 1958, when the Legislature again renamed the College, as Mississippi State University, the Office of Graduate Studies had been organized (1936), doctoral degree programs had begun (1951), the School of Forest Resources had been established (1954), and the College of Arts and Sciences had been created (1956). The College of Architecture admitted its first students in 1973. The College of Veterinary Medicine admitted its first class in 1977, and the School of Accountancy was established in 1979.

Purpose. As a Land-Grant institution, Mississippi State University is dedicated to the three broad purposes already mentioned—learning, research, and service: learning, on-campus and off-campus, to enhance the intellectual, cultural, social, and professional development of its students; research, both to extend the present limits of knowledge and to bring deeper insight, understanding, and usefulness to existing knowledge; and service, to apply knowledge and the fruits of research to the lives of people. Fulfilling these purposes is the chief work of the large number of educational units that make up the total university, including, among others, the academic departments, schools, and colleges; Continuing Education; the Mississippi State University Extension Service, and the Mississippi Agricultural and Forestry Experiment Station.

The quality of the faculty, staff, and administrators ensures the high quality of the instruction, research, and service provided. The quality of the University's programs ensures that its students receive a well-designed and comprehensive education that will assist them to lead constructive lives and achieve their personal and professional goals. From its beginnings, Mississippi State University has been known as "The People's University"; through its state-wide efforts, it keeps that character. The main campus in Starkville is augmented by a degree-granting center in Meridian and a program center at the Stennis Space Center, a Master of Science degree in Engineering at the Waterways

Experiment Station in Vicksburg, 10 branch stations of the Mississippi Agricultural and Forestry Experiment Station, and offices of the MSU Extension Service in almost every county of the state. The University thus makes available degree and non-degree courses, programs, and services to all citizens, regardless of race, age, sex, or economic condition.

Statement of Institutional Purpose
Mississippi State University was founded as a land-grant institution in 1878 to meet the needs of the people, institutions, and organizations of the state, the region, and the nation through undergraduate and graduate education, basic and applied research, and service to institutions and organizations. The University's fundamental purpose is to develop knowledgeable and skilled people who engage in the pursuit of intellectual truth, help constitute an informed electorate, and contribute to economic growth and prosperity. Mississippi State is committed to performing basic research to expand the bounds of knowledge, to using applied research to translate knowledge into practice, to providing service to institutions and organizations, and to providing education to its students.

Educational Philosophy - Mississippi State's primary responsibility is to provide a high quality educational opportunity to all adequately prepared students in the state and region. It seeks to inculcate in its students a lifelong love of learning; an appreciation of the cultural, intellectual, and historical impact of the search for truth and knowledge; the opportunity for professional specialization and emotional and social development through out-of-class experiences. All students are expected to master the skills that enable them to communicate clearly, to use mathematics, and to understand their cultural heritage and that of others. The University seeks to develop in its students the ability to think independently, to accept responsibility to interact with people different from themselves, to assess ideas, to challenge orthodoxies, and to criticize opinions in order to achieve the intellectual, ethical, and aesthetic maturity expected in educated citizens. Mississippi State affirms the right of all students to achieve an educational level limited only by their own commitment and ability.

Academic Freedom and Responsibility - Freedom of inquiry and expression is fundamental to the idea of a university and to a democratic society. Mississippi State affirms this principle and vigorously defends it. At the same time, faculty are obligated to exercise good judgment, to maintain the highest professional and personal standards of intellectual integrity, and to ensure that the free exchange of ideas is marked by both accuracy and relevance of information to the subjects or issues under consideration. Mississippi State recognizes the value of diverse opinions in decision making and pursues its mission in an atmosphere of shared governance and open communication. Faculty and staff are involved in policy formulation and in implementing the learning, research, and service missions of the University. Faculty and staff also recognize their shared accountability for the performance of the University in carrying out its mission.

Curricular Offerings - Mississippi State offers high quality education at the bachelor's, master's, professional, and doctoral levels. The University offers a liberal education for all students in a broad-based curriculum of the sciences, the arts and the technological disciplines to prepare them for productive careers and positions of leadership. Methods of

inquiry and critical thinking are emphasized to prepare students to solve complex societal problems and to engage in lifelong learning and exploration. As a comprehensive land-grant university, Mississippi State serves both in-state and out-of-state students through instruction in engineering and agriculture, along with significant elements of the humanities, sciences, arts, business, and education. Besides a comprehensive range of undergraduate academic programs, the University offers outstanding graduate programs, capitalizing on the unique ability of a research university to expand the horizons of its students.

Traditional and Non-Traditional Education - The University affirms its mission to address education as a lifelong process by providing appropriate opportunities for continuing education and interacting with the pre-college educational system to prepare students for university study. Mississippi State continually assesses both traditional and innovative educational delivery systems in order to provide education in the most efficient and effective ways to as many citizens as possible.

Research - Research is an integral part of the mission of Mississippi State. It expands the frontiers of human knowledge and provides practical applications of accumulated knowledge. The University fosters an environment in which faculty, together with students, can establish and maintain high quality research. The University makes available the results of its research to improve the well-being of the citizens of the state and to enhance the competitiveness of the state and nation in a global society. Research is essential to the instructional mission of the university. It brings state-of-the-art knowledge into the classroom and inspires superior undergraduate and graduate teaching and learning.

Responsibility to Constituencies - Mississippi State is responsive to numerous and rapidly changing constituencies. The University provides rigorous education to the state's citizens, preparing students for careers and positions of leadership in state, regional, national, and world institutions and organizations. Mississippi State's public service mission stresses problem-solving, economic development, social and ethical responsibility, and aesthetic awareness among the individuals, governments, businesses, and communities it serves. Recognizing its legal and ethical responsibilities, the University is committed to enhancing the cultural, artistic, and intellectual life of these multiple constituencies. This commitment includes sharing expertise through cooperative extension, technical assistance, professional development, and technology transfer.

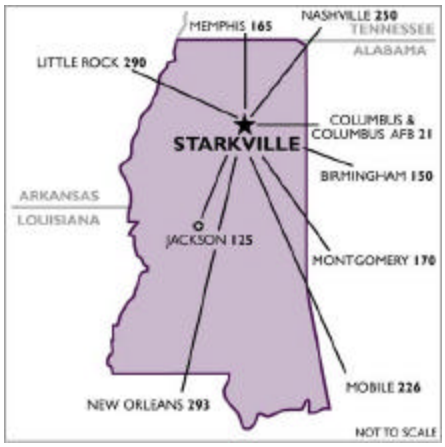
The University Today. Mississippi State University now comprises the following academic units: the College of Agriculture and Life Sciences including the school of Human Sciences; the College of Architecture, Art, and Design; the College of Arts and Sciences; the College of Business and Industry including the School of Accountancy; the Division of Continuing Education; the College of Education; the James Worth Bagley College of Engineering including the Swalm School of Chemical Engineering; the College of Forest Resources; the Office of Graduate Studies, and the College of Veterinary Medicine. In addition, the Mississippi Agricultural and Forestry Experiment Station, operating 10 branch stations throughout the State, conducts research in a variety

of areas and assists in the University's teaching and service functions. Finally, the Mississippi State University Extension Service offers programs and services to the people of the State through campus and county offices and personnel. Supporting the academic and educational programs of the total University are the Mitchell Memorial Library and branch libraries. Within the framework of the University, several units perform specialized teaching, research, or service activities. Among these are the University Honors Program, the Biological and Physical Sciences Research Institute, the Division of Business Research, the Bureau of Educational Research and Evaluation, the Engineering and Industrial Research Station, the Food Science Institute, the Institute for the Humanities, the Research Center at the John C. Stennis Space Center, the Diagnostic Instrumentation and Analysis Laboratory, the GeoResources Institute, the Social Science Research Center, the Cobb Institute of Archaeology, Engineering Services, the Division of Business Services, the Raspet Flight Research Laboratory, the Research and Curriculum Unit for Vocational-Technical Education, the A. B. McKay Food and Enology Laboratory, the Office of Planning, Evaluation, and Institutional Effectiveness, the John C. Stennis Institute of Government, the Forest Products Utilization Laboratory, the Engineering Research Center, the Southern Forest Experiment Station, the Division of Plant Industry, the State Seed Testing Laboratory, the State Chemical Laboratory, the BollWeevil Research Laboratory, the South Central Poultry Research Laboratory, the Community/Economic Development Center, the Center for Environmental Studies, the Center for Robotics, Automation and Artificial Intelligence, the Research Services Biosafety Office, Electron Microscope Center, Hazardous Waste Office, Laboratory Animal Veterinarian, Radiological Safety Office, the University-Industry Chemical Research Center, the Research and Training Center for Blindness and Low Vision, the *Mississippi Quarterly*, the Center for International Security and Strategic Studies, and the Center for International Programs. Mississippi State University operates an off-campus, degree-granting center in Meridian where both undergraduate and graduate programs are offered and a program center at the Stennis Space Center. In cooperation with the U. S. Army Engineer Waterways Experiment Station, the College of Engineering offers the Master of Science degree to qualified students in Vicksburg. At the request of the U.S. Navy, the College of Education offers the Master of Science degree in Counseling at the U.S. Naval Base in Roosevelt Roads, Puerto Rico.

The Board of Trustees of State Institutions of Higher Learning has designated Mississippi State University as a comprehensive, doctoral degree-granting university. These designations, in concert with the University's original Land-Grant mission, make Mississippi State University a major contributor to the educational system of the State. For over a century, the State has benefited from the University and its graduates, most of whom have remained in Mississippi and aided the State's economic, social, and educational development. Through its membership in such organizations as the Southern Regional Education Board, the American Council on Education, and the National Association of State Universities and Land-Grant Colleges, Mississippi State University is justly recognized for its educational and technological contributions to the national and international communities. The commitment of faculty, administrators, and staff personnel is to continue the high quality of teaching, research, and service to Mississippi and her people and to people beyond the borders of this State and nation.

MSU is a comprehensive research university with over $190 million research expenditures in 2004, including nearly $85 million for federally funded research. In the latest National Science Foundation report on research expenditures (2002), MSU is ranked 57th among public universities in total research expenditures, 8th in agricultural total research expenditures, and 24th in engineering total research expenditures.

In the fall 2004, MSU enrolled approximately 12,500 undergraduate students and 3,200 graduate students making it the largest institution in the state. The student body as 48% women and 18.6% African American at that time. The faculty at MSU consists of approximately 700 tenure-track faculty, 120 instructors and lecturers, and 213 research, clinical and extension faculty. The average ACT score for entering freshmen in the fall 2004 was 23.3.



DISTANCE TO MAJOR MARKETS:

Jackson, MS	125 miles
Memphis, TN	165 miles
Birmingham, AL	130 miles
Atlanta, GA	298 miles
Nashville, TN	250 miles
Dallas, TX	502 miles
Chicago, IL	704 miles
New Orleans, LA	293 miles
Mobile, AL	226 miles
Gulfport/Biloxi, MS	240 miles