

THE CITADEL
INSTITUTIONAL EFFECTIVENESS
SUMMARY REPORT

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INTRODUCTION

The Citadel's approach to Institutional Effectiveness integrates the three fundamental components: strategic planning, assessment, and budgeting. The Citadel requires periodic assessment of the programs and services of its budgeted departments and units. The Citadel's approach to assessment is in the main decentralized. That is, the school, department, or operational unit responsible for providing a program or service is responsible for the quality of that program or service and thus for its assessment. It is expected that assessment will be more effective if developed and monitored by the unit providing the program or service. It has also been found that assessment tools that are imbedded in normal operations are in general more effective than "tack-on" or external assessment requirements.

Through the annual assessment report, each budgeted department of the College presents its Mission, measurable Expected Results on which the success of meeting that mission will be judged, Assessment Tools that are used to measure results, the actual Assessment Results, and the Actions Taken or Resources Needed to address issues that have surfaced in the assessment process. In those cases where additional resources are needed to address assessment issues, a Supplemental Assessment Matrix is also presented to summarize the assessment issue and the needed resources. These matrices are presented to the Provost and Vice Presidents to facilitate the inclusion of assessment results in the budgeting process of the College.

Annual assessment reports are collected in hardcopy and provided to the President, Provost, and each Vice President to be used in the institution's budgeting process. These volumes have also been made available in the Office of Planning and Assessment, now the Office of the Associate Provost, for the entire institution and serve as the basis for annual Institutional Effectiveness Reports provided to the South Carolina Commission on Higher Education. These volumes also provide the context in which the Strategic Plan Coordination and Implementation Committee, now the Strategic Planning Council (SPC), monitors the implementation of the Strategic Plan. Since the 2002-03 academic year, annual assessment reports have been available electronically on The Citadel's webpage.

Library Services

Mission of the Library

The Daniel Library of The Citadel participates in the teaching, research, and public service programs of The Citadel: by providing access to scholarly information; through the acquisition, organization, management, preservation, and arrangement of collections for access and use; through the provision of supportive reference and instruction services; and through a variety of cooperative and reciprocal programs in the local area, the region, and the state. The Daniel Library will continue to be a place where information resources are physically and electronically available. However, through electronic networking we seek ways to deliver information to users at the place and moment of need.

The Library has five major areas in which it delivers services and expects concrete, measurable results. Those major areas are.

- The provision of scholarly information through circulation and interlibrary loan;
- The acquisition, organization, and management of scholarly collections;
- The provision of research and reference services both to groups and one-on-one;

- The organization of networked systems;
- Public service through the Library Friends and the Museum;

Information regarding student access to and use of library resources is gathered through a variety of methods:

1. Circulation and Interlibrary Loan, Cataloging, Materials Expenditures and Bibliographic Instruction statistics are gathered and analyzed;
2. "A" Company Survey, Spring 2005
3. Reference Tally
4. Database Hits Report
5. Pre/Post-Test results are analyzed from workshops for students on how to use library reference sources, on-line databases, and the Internet.

Library Assessment Results and Actions Taken

The Library is increasingly becoming an electronic service point. Students come to the Library to use electronic databases and the Internet more than they come to check out books. Database hits have skyrocketed. Students report that they increasingly connect to library resources from the Barracks. The expenditure implications for this trend are obvious. More funds are being spent each year on full text, electronic resources/databases. Document delivery accounts have been set up with national vendors.

A. Information Access through Interlibrary Loan and Circulation

According to the "A" Company Survey, 82% of the cadets used library resources (books, databases and journal articles) to complete assignments; 77% found the book collection adequate for their research needs; 73% found the indexes and databases adequate. This same survey showed that 81% of the respondents studied in their room. The Library began electronic delivery of interlibrary loan requests. When articles are received, they are placed on a server and an e-mail is sent to the patron who has the capability to log in and view or print their articles from home or office.

B. Provision of Scholarly Collections

During the period 2000-2005, the Library has increased scholarly journal titles available to students and faculty from 831 to over 16,000. 96% of the respondents to the "A" Company Survey stated that these databases supply the information they need.

Over 80% of all print acquisitions and renewals were based on specific requests from departments, teaching faculty and students. During the 2004-2005 academic year, there were 238,729 database searches. This is an increase of 10,000 from the prior year. The acquisition of Jane's defense and foreign relations online database is an important new resource for Political Science and all ROTC Departments. The resources for Civil and Electrical Engineering have vastly improved by the purchase of IEEE X-PLORE for Electrical Engineering, Computer Science and Physics. Additionally, Academic Search Premier was purchased and has full-text journals for Civil Engineering.

C. Bibliographic Instruction and Reference Services

Cadets in CIT 101 and graduate students in EDUC 512 and 549 experienced considerable improvement in their research skills as a result of library instruction sessions.

Bibliographic instruction increased by 8.5%; database searches by 4.5%. Weekly library instruction as part of one political science course improved information literacy. There was a 22% increase in the students' ability to identify key words and concepts required for locating

specific information, the use of Boolean operators to structure appropriate search strategies. Librarians developed online “Research Guides and Databases by Discipline”. The Library also developed a research component to accompany *The Killer Angels*, the book selected for the freshmen common reading program.

D. Organization of Networked Systems

Laptops are now available for cadets to check out. The Citadel expended \$146,985 toward the purchase and installation of a new ILS, III’s Millennium. The majority of the Library’s faculty and staff have been involved in training sessions. Both the patron file and database have been purged and verified in anticipation of the Library’s migration to the Millennium system. In addition, the wireless network has had a major extension throughout the Library, and significant improvement has been made to the telecommunications and electrical wiring.

E. Public Service

The Daniel Library Friends hosted 17 cultural programs that were free and open to the Charleston community. Several Friends events raised money in support of The Friends Endowment. Two Patio Performances were held with large Cadet audiences.

Goals and Objectives

- Successfully migrate all circulation functions from DRA Classic library system to Innovative Millennium library system in order to track circulation statistics and make comparisons from year to year.
- Update computer hardware and software to expand “virtual delivery” of journal articles to faculty, cadets and graduate students.
- Track borrowing and lending statistics by patron type using Millennium library systems.
- Seek additional funds to assure database coverage for all disciplines
- Continue to enhance African American collections by adding books and documents on microfilm.
- Successfully migrate ordering and invoicing procedures from Access database to Millennium library system.
- Create three multimedia workstations in public area with productivity software.
- Update the Library’s website.

Majors and Concentrations

Full Report: Biology

Mission Statement

The Department of Biology offers an undergraduate major leading to the degree of Bachelor of Science in Biology. The program provides a strong background of required courses coupled with the flexibility of free electives to allow each student to achieve a broad training in biology and at the same time focus his/her studies according to their interests and goals. The primary objective of the program is the preparation of students for entry into health profession and graduate schools, and for entry-level employment in the biological sciences.

Current Assessment Tools and Goals

The Department of Biology currently uses three tools to assess the effectiveness of the BS in Biology program:

- 1. Standardized Testing:** Students graduating with a BS degree in Biology should exhibit breadth and depth in their knowledge of biology. A measure of attainment of this would be a score at or above the national average on the Biology Major Field Test or Biological Sciences section of the Medical College Admissions Test (MCAT), or a score at or above the 50th percentile in the Biology Subject Test of the Graduate Record Exam (GRE). The department's goal is that 100% of students taking these tests meet or exceed this level of achievement.
- 2. Student Satisfaction:** It is important that graduates of the BS in Biology program perceive that they have received a solid and useful education. Such data can be gleaned from the Citadel Experience Survey, and from exit interviews with each graduating class. The department's goal is that 100% of graduates are "Satisfied" or "Very Satisfied" with the instruction in their major program, and "Agree" or "Strongly Agree" that their major curriculum prepared them to use the methodologies of their discipline, that they would choose the same major again, and that their biology professors were interested in their progress as students, accessible, and had enthusiasm for the subject matter.
- 3. Course Specific Objectives:** Courses taken by Biology majors should have defined goals and measurable objectives, and students are expected to achieve these objectives in each course. All Biology major courses have defined goals and measurable objectives on file in the Biology Department office. Goals and objectives are modified at the discretion of the individual faculty members. Success in meeting course goals and objectives is measured by the instructor through exam questions, laboratory exercises, written and oral presentations, and other assignments. The department's goal is that students in each course have an average class mark of 70% on the relevant measurable objectives.
- 4. Pretest-Posttest Performance:** Biology faculty members are beginning to employ the pretest-posttest method to assess student performance in their courses for biology majors. This year five courses were assessed in this way.

Assessment Results for the 2004-2005 Academic Year

Standardized Testing:

Ten biology majors took the MCAT during the 2004-2005 academic year. Of these, five scored at or above the national average on the Biological Sciences section of the test. As of this date no biology majors have reported GRE scores to the department. Seven graduating senior biology majors took the Biology Major Field Test during the Spring 2005 semester. Scores for Citadel biology majors were at the national average in all assessment categories. This is the third year that the Biology Department has used the Major Field Test as an assessment tool and results indicate that we are continuing to reach our stated goal.

Student Satisfaction

Nine out of eleven graduating biology majors responded to the on-line survey (“The Citadel Experience”). Eight of these were “Satisfied” or “Very Satisfied” with the instruction in their major program, and all nine “Agreed” or “Strongly Agreed” that their major curriculum prepared them to use the methodologies of their discipline. Eight graduating seniors “Agreed” or “Strongly Agreed” that their biology professors were interested in their progress as students, were accessible, and had enthusiasm for the subject matter. However, despite the apparent satisfaction with the biology major and the biology faculty, only five out of the nine respondents indicated that they would choose the same major again.

Course Specific Objectives

In the 2004-2005 academic year the department reached its goal in 90.9% of the stated course specific objectives.

Pretest-Posttest Performance

During the 2004-2005 academic year five courses were assessed using the pretest-posttest method. Student performance on the posttest was higher than on the pretest in all courses assessed in this way.

Interim Report: Electrical Engineering

Program Objectives

The Department of Electrical and Computer Engineering’s program of study is designed to:

- Provide a quality engineering education by offering a cohesive set of sequenced courses designed around a strong core curriculum that provides the breadth and depth required to practice engineering within the electrical and computer engineering disciplines in a technological society.
- Provide a solid foundation in basic sciences, mathematics, and engineering topics, and in the application of these disciplines to the solution of practical engineering problems.
- Provide a program that stresses oral and written communication skills as well as those computer skills required of engineers in a technological society.
- Attract and retain qualified electrical and computer engineering students
- Provide up-to-date laboratory equipment so our graduates are familiar with the capabilities, application and operation of the equipment currently used in engineering analysis, design and research environments.
- Provide an environment that encourages creativity, fosters the need and desire for lifelong learning, and promotes the awareness of contemporary issues facing society.
- Provide a program that emphasizes strong leadership and teaming skills.

Expected Results

1. Maintain national accreditation by the Engineering Accreditation Commission of the Accrediting Board for Engineering and Technology (ABET), 111 Market Place, Suite 1050, Baltimore, MD 21202-4012 - telephone: (410) 347-7700. Accreditation Board for Engineering and Technology (ABET). The ABET review and evaluation of our engineering program provides an independent assessment based on national recognized standards.
2. Enroll a minimum of 50 incoming electrical engineering students with an average SAT approaching 1150 and with SAT math scores approaching 650. Retain at least 50% of the students that meet the expected SAT math score.
3. It is expected that at least 75% of the enrolled sophomore electrical engineering students will meet or exceed the minimum grade requirement of a "C" in ELEC 201 and ELEC 202. Demonstrated proficiency in ELEC 201 and ELEC 202 (Electric Circuits I & II) is necessary for students to advance in the electrical engineering program.
4. It is expected that at least 75% of the enrolled sophomore electrical engineering students will have successfully completed MATH 131, 132, 231, 234, and PHYS 221, 222, 271, and 272 prior to the start of their fifth semester. The successful completion of these courses provides an adequate foundation for the student to enroll in junior level electrical and computer engineering courses.
5. It is expected that at least 80% of the students entering the junior electrical engineering curriculum will complete the two-semester sequence successfully.
6. Students who transfer into The Citadel's College of Graduate and Professional Studies under the '2+2' program with area Technical Colleges will enter in the junior year of the electrical engineering major. Attrition in this program should be minimal, and it is expected that 80% of these students will complete degree requirements within four years of transferring to The Citadel.
7. For those students who graduate in a given academic year (December, May, July, or August), the Department expects that at least 80% will have taken the Fundamentals of Engineering/Engineer-in-Training Examination and that, of those who take this exam, at least 70% will pass. Senior students' performance on the Fundamentals of Engineering exam is evaluated annually. These exam results are analyzed to aid in identifying areas in the engineering program requiring attention, and to verify strengths of the program. For assessment purposes, we are interested in pass rates of individuals who graduate in a given academic year. The passing percentages are expected to be equal to or above the national averages for electrical engineering seniors.
8. The Department expects that at least 90% of its graduates, other than those receiving commissions in the Armed Forces or entering graduate school, will be employed as professional engineers within six months of their graduation date.
9. At least once every six years an Electrical Engineering Graduate Questionnaire is mailed to the electrical engineering graduates of the past ten years. The Department uses this instrument to assess our graduates' professional status and growth, the progress toward an advanced degree of those graduates who have chosen to attend graduate school, and the advancement of those graduates who are commissioned

- officers in the Armed Forces. The survey results are used to aid in identifying program deficiencies.
10. In assessing teaching effectiveness, the Department expects the mean score on the twenty core items addressed by the college's evaluation of instruction to exceed 4.25 on at least 85% of the core items and that no item score be will be less than 3.9. The Department also requests that each graduating electrical engineering student fill out a student review of each electrical and computer engineering faculty member he had at The Citadel. Senior students are encouraged to discuss this assessment of faculty, the electrical engineering program and The Citadel in general with the Department Head. Results are shared with the faculty after graduation.

Assessment Tools

- Results and comments from previous ABET visit.
- Analysis of SAT scores of freshman enrolled in the Electrical Engineering program.
- Analysis of basic Science, Mathematics and Electrical Engineering Grades.
- Analysis of the academic performance of electrical engineering juniors.
- Analysis of academic progress of '2+2' students.
- Percentage of electrical engineering students passing the Fundamentals of Engineering Exam.
- Electrical Engineering Senior exit surveys.
- Alumni surveys of Electrical Engineering graduates.
- Student Evaluation of Teaching results.
- Comprehensive Final Exam Averages of courses offered in electrical and computer engineering.
- Videotapes and Proceedings of CEEDS Symposium.
- Survey of Employers of Electrical Engineering graduates.
- Employment record of Electrical Engineering graduates.
- Graduate school admission of Electrical Engineering graduates.
- Mathematics Department Exit Exam Averages of electrical engineering students.
- Cadet and CGSP Student Leadership Profiles and Teamwork Assessment.

Assessment Results

1. In September 2002, the Engineering Accreditation Commission (EAC) of the Accrediting Board for Engineering and Technology (ABET) reviewed and evaluated our engineering program and provided an independent assessment based on national recognized standards. This was the first time the program was reviewed and evaluated using Engineering Criteria 2000 which is centered on the program's mission and objectives defined by the Institution to meet the needs of our constituencies. Assessment of program outcomes is linked to program objectives through processes designed to ensure continuous improvement. The Department has developed and implemented procedures that the faculty uses to identify and assess the objectives/outcomes of each course. These techniques are: comprehensive finals with focus questions addressing course objectives, required term papers for senior level courses, oral presentations, and comprehensive written/practical lab exams. Three years of data were collected using Engineering Criteria 2000. Processes are installed

- and outcomes are being used to continually improve our program. Refinement to our processes will be implemented as necessary. In addition, the Department is collecting data from our constituencies - students, graduates, employers and an advisory board to aid in the process of ensuring continuing improvement and relevance of our program. The 2002 visiting ABET team identified ECE program concerns relating to the professional component of the ECE senior design sequence, a continuing concern with respect to faculty workload, a concern specific to ECE laboratory facilities, and an institutional weakness in the area of faculty salaries. A formal response to these findings was forwarded to the visiting team in May 2003. Each finding was reviewed in depth and corrective action planned. All corrective actions have been executed, and final and full ABET accreditation was bestowed during fall 2003.
2. 2004 enrollment fell short of the goal of 50, even including 5 active duty US Navy personnel enrolled as part of the Seaman to Admiral program. However, retention of this freshman as rising sophomore EE majors significantly exceeded the 50% goal for the third year in a row, not including the unknown Seaman to Admiral component that could begin in fall 2005. While the SAT averages for entering electrical engineering students consistently exceed those of the entering freshman class as a whole, we continue to fall short against our objectives of 1150 overall and 650 in Math. Electrical engineering students entering in 2004 had an average SAT score of 1114 average SAT Math score of 577. The Department remains concerned by the quantity and quality of entering students choosing to major in electrical engineering, and continues to work with the Dean of the School of Engineering to develop programs to target and attract outstanding engineering students.
 3. Ninety-two percent of the enrolled electrical engineering sophomore students met at least the minimum grade requirement of a "C" in ELEC 201, as did 96% in ELEC 202.
 4. Seventy-nine percent of the enrolled electrical engineering sophomore students completed the first four semesters of the required Math (22 of 28) and Physics (24 of 28) courses by the end of their fourth semester at The Citadel. Seventy-one percent of the enrolled sophomores pre-registered for the fifth semester of the electrical engineering curriculum.
 5. One hundred percent of electrical engineering cadet juniors completed their junior year successfully and have the necessary background to undertake a major design project along with senior elective courses in their areas of interest.
 6. Sixteen members of the South Carolina Corps of Cadets received Electrical Engineering degrees at the May 2005 graduation ceremony. Fourteen of these (87.5%) completed their degrees within four years of beginning the program at The Citadel. Eight '2+2' students graduated in May 2005 from The Citadel's College of Graduate and Professional Studies earning the Bachelor of Science in Electrical Engineering degree. All completed degree requirements within four years of transferring to The Citadel.
 7. Performance on the Fall FE exam was below the overall national average by 5 percentage points and 3 percentage points below the average of Carnegie Masters Comprehensive (CMC) institutions. Seven of the ten students taking the exam in fall 2004 passed, as did only one of the three students taking the exam in the spring 2005 sitting.

8. Eleven 2004-2005 electrical engineering graduates entered the US armed forces, and four are employed in engineering positions with the Department of Defense or Department of Defense support contractors. Five accepted engineering jobs in the private sector and two chose to pursue fulltime graduate study. Two graduates had no job plans at the time of graduation.
9. The Electrical Engineering Graduate Questionnaire was deployed during AY 2000/2001 in preparation for the 2002 ABET self-study and visit. The results of this survey are reported in the 2002-2003 ECE assessment report. The next such survey will be conducted no later than AY 2006/2007.
10. The department's mean scores on the college's evaluation of instruction exceeded 4.00 (agree) of a possible 5 points (strongly agree) for all core questions on CGPS student responses and for twelve of the twenty core questions on cadet student responses. The lowest average of 4.29 from evening students and 3.83 from cadets, were associated with the statement "*Tests accurately assess what I have learned in this course*". This statement earned, as it usually does, the lowest response across the institution. The department's survey of graduating electrical engineering students on teaching effectiveness of the electrical engineering faculty indicated a similarly strong approval rating. The survey also indicated that the electrical engineering faculty members are readily accessible to the students. After graduation each faculty member is provided with the overall department survey results and with the student's assessment of his teaching. Eight graduating electrical engineering students responded to the Office of Institutional Research's 2005 Citadel Experience Survey. The department fairs well against the institutional averages on this survey.

Technologically Skilled Workforce

The Citadel prepares its students to be principled leaders in an ever more technologically dependent world. Electronic information management technology is, therefore, incorporated in every aspect of the student's educational experience. Students and faculty have ready access to 15 fully equipped, general purpose computer labs; special purpose labs in Civil Engineering, Electrical Engineering, Computer Science, Physics, and Modern Languages; and 80 multimedia classrooms and lectures halls. In 2004-05, two additional auditoriums were refurbished and converted to multimedia facilities. Two floors in Thompson Hall that house the Department of Mathematics and Computer Science have been converted to "wireless network" as has a section in Daniel Library.

The Citadel campus is fully networked giving students and faculty direct access to each other, other resources on campus, and the Internet. Each faculty member has a state-of-the-art PC linked to the campus network and with a full range of application software. Each student is encouraged to have a computer in his/her barracks room, and in the 2004-05 academic year more than 90% of day students had personal computers that were linked to the campus network. Electronic communication has become the norm for students, faculty, and staff. Perhaps most important, The Citadel has moved aggressively to provide users access to library information through electronic databases. This enables students and faculty to find and retrieve information when they need it and where they are working. This capability is used in practically every course offered. The Citadel requires that every student demonstrate "computer literacy" either

by passing a test developed and administered by Information Technology Services or by completing an approved computer-related course. Since fall 1999, each entering freshman has also been required to complete Citadel 101, a course intended to help the student make the academic/emotional transition to college/cadet life and ensure that the student has, or is aware of, the tools needed to reach his/her full potential. As part of this course, students are provided workshops on the computer as an essential tool for success at The Citadel and in professional life. Students are introduced to the electronic resources of the College; email as an efficient communication tool; on-line access to their academic records through "PAWS"; and access to library holdings and the internet.

The Web address of The Citadel's Title II report is:

<http://www.citadel.edu/academicaffairs/index.html>