MIDLANDS TECHNICAL COLLEGE
Assessment of Majors or Concentrations
Contact: Charles Parker
Director of Academic Planning and Reporting

Summary Statement of 2001-2002 Assessment Study

Midlands Technical College (MTC) assesses specific majors on a three-to-five year cycle that is designed to coincide with the reaffirmation visit from external accreditation agencies. The assessment of majors determines the degree to which specific programs provide specialized knowledge, skills and attitudes leading to employment in the field or discipline and/or success in transfer to a senior-level program.

The program review process, which generates the assessment of majors, includes an analysis of the specific data elements identified to evaluate the effectiveness and efficiency of the academic programs offered at MTC. The effectiveness component of the process focuses on the learning outcomes, clients' satisfaction, and the vitality of each program. The efficiency component focuses on quantitative data that indicates the programs' cost, space utilization rate, and average size of course section taught.

In 2000-2001 the following programs were assessed: Architectural Engineering Technology (AET), Civil Engineering Technology (CET), Electrical Engineering Technology (EET), Respiratory Care Technician (RES), and Physical Therapist Assistant (PTA). A follow-up, in 2001-2002, on the progress in meeting recommendations from the completed program reviews revealed the following program improvements:

1. AET revised its curriculum to include class projects and assignments that were more closely related to the actual work environment and revised final semester projects to involve a real "client", making them realistic, from both the production and environment perspective.

2. CET updated the South Carolina State Board of Registration for Professional Engineers and Land Surveyors on the CET Surveying Program on Courses required by the Board for the S.C. Professional Land Surveyor exam. The Board enthusiastically accepted proposed courses.

3. CET developed GPS and Geodesy courses (GMT 235) to meet future requirements for S.C. Professional Land Surveyor exam.

4. CET, AET, EET, and EDT participated in a study to determine how to better utilize the available room, faculty, and equipment resources for the Engineering Technology department.

5. RES received a TECH PREP grant that was used to improved its recruitment efforts and currently has more students accepted (17) than had been in the past three years.

6. RES developed and distributed new information sheets to all potential students to help in better preparing them for the program. The information sheets addressed the time and study requirements needed to be successful in the program.

7. RES full-time faculty are working with prospective adjunct faculty to ensure they are current on the latest techniques and are developing videotapes of testing and training sessions for use in enhancing inter-rater reliability.

8. The PTA curriculum committee approved revisions developed to improve retention.

9. The PTA program was moved to newly renovated space, which will meet its instructional, and laboratory needs.

10. The PTA program revised the board preparation materials and conducts a mock board twice during the senior seminar (PTH 276). The grade for the second mock board comprises 50% of the student's grade for the course.

Two general recommendations were developed for the 2001-2002 action plan and both were achieved. The college developed computer applications for the newly installed Colleague system, identified process problem areas on the data collection side and formulated plans for improvement. The college also monitored progress on the recommendations for the five programs reviewed in the previous year. Each program was required to report on the achievement of each priority recommendation, ensuring that the departments are held accountable for the recommendations.

The following objectives were established for the 2002-2003 action plan: (1) continue the assessment of the Program Review process, practices and data elements to better match program and college needs and (2) continue to monitor the progress of program recommendations from completed program reviews.

Description of Assessment of the Major

Assessment of the majors or concentrations in credit courses, through a complete program review process, is closely tied to the institutional effectiveness process at MTC. The program review outcomes are evaluated for consistency with the stated institutional mission and the results of the measures are used in conjunction with other institutional effectiveness measures to identify areas for institutional improvement. The assessment of the majors or concentrations in credit courses activity is significant in that it evaluates and measures outcomes of the educational process, which, in turn, helps those involved identify areas in need of institutional improvement and provides a basis for the development of strategic and annual planning initiatives.

The program review process includes the analysis of identified measures that indicate the effectiveness and efficiency of MTC's academic programs. These include: student goal achievement; mastery of capstone competencies; course progression; mastery of general education core competencies; success at senior institutions; current student, alumni (graduate) and employer satisfaction; employment in field of study; annual unduplicated program/major

headcount and FTE; advisory committee participation; program full-time/part-time faculty; faculty credentials; number of graduates; student retention in program; annual program cost; space utilization; and average section size. The Education Division has developed appropriate standards for each of these measures. The program faculty coordinated with the Assessment, Planning, and Research Department to develop data for these measures and any other measures deemed appropriate for the individual program being reviewed. The product of this comprehensive assessment is the identification of areas for improvement and development of strategies to improve them.

Although the program review process evaluates data that represents the perspectives of students, graduates, advisory committee members, faculty members, and administrators at MTC to obtain the most complete picture of the institution, the major focus of the process is the analysis of students' learning outcomes and successes. The weighty evaluation of students' outcomes and successes reflects the mission of MTC as a teaching institution and the importance that the faculty, staff, and administration place on teaching excellence. The capstone competencies and the general education core components are representative of the data that indicates students' learning outcomes and successes.

Capstone competencies are defined as stated expectation(s) of knowledge and skills in both occupational/technical and general education areas that a student demonstrates at the successful completion of a program. Capstone competencies serve as a major indicator of student outcomes, combining technical and general education knowledge and skills. Program faculty has typically selected one of the following methods of assessing capstone competencies: a capstone course, a capstone project, an internship, or a licensure examination and/or simulated licensure examination.

Mastery of the general education core component, evaluated in a separate report, indicates the degree of academic success experienced by associate degree students in the general education core course work. A variety of data is gathered on students' academic success in course work that represents a specific competency within each stated general education value. Student performance that does not meet the stated success criterion leads to an evaluation of the process, seeking explanation that might indicate a revision in the course(s) to better represent the specific competency.

In the program review process, data for a three-year period are reviewed to determine trends and make recommendations for program improvement. The program recommendations derived from the findings are tied to the institution's annual plan in terms of budget, equipment, facilities, and personnel. The tracking of program recommendations and follow-up action taken to ensure academic program improvement demonstrate the accountability built into the program review process at MTC. Through this annual activity of the assessment of majors or concentrations for specific programs and the generation of this report, the continued emphasis on institutional effectiveness through assessment is reinforced

A formal presentation of the data, findings and recommendations is made to the Vice-President of Education. Feedback from this presentation maybe incorporated into the final findings and recommendations.

Achievement of 2001-2002 Action Plan Objectives

Midlands Technical College evaluated and reported on the institutional effectiveness component of the assessment of majors to the Commission on Higher Education (CHE) in August 2001. The 2001-2002 action plan had two objective related to institutional effectiveness. The following section identifies those objectives and the achievement status for each.

Objective 1: **Assess the current Program Review process, practices and data elements to determine relativity of the data elements and develop computer applications to increase the efficiency of collecting and disseminating data germane to the study.**

Status: The reorganization and movement to a new computer data reporting system delayed the completion of this objective. Computer applications for the Colleague system were developed and process problem areas on the data collection side were identified and plans for improvement formulated. A process for assessing the relativity of the program review to the programs and college's needs was also developed.

Objective 2: **Continue to monitor the progress of program recommendations from completed program reviews.**

Status: The progress on the recommendations for the five programs reviewed was monitored by the Director of Academic Planning and Reporting. Each program was required to report on the achievement of each priority recommendation, ensuring that the departments are held accountable for the recommendations. This progress is also included as part of the college wide Report Card.

Major Findings of the 2001-2002 Assessment Study

The detailed, major findings of the study of scheduled selected majors through the program review process are contained in the executive summaries of each program and are placed as attachments to this report.

2002-2003 Action Plan Objectives

The 2002-2003 action plan objectives for assessing majors or concentrations at Midlands Technical College consist of the following two objectives.

Objective 1: **Continue the assessment of the Program Review process, practices and data elements to better match program and college needs.**

Objective 2: **Continue to monitor the progress of program recommendations from completed program reviews.**

EXECUTIVE SUMMARY

Program: ARCHITECTURAL ENGINEERING TECHNOLOGY (AET)

Description of Program/Background Information:

Architectural engineering technicians assist architects, engineers and contractors. A wide variety of jobs are available for graduates, including architectural technicians, estimators and surveyors. Graduates convert preliminary designs of architects and engineers into working drawings and specifications, and they plan, supervise and do preliminary cost estimates of construction projects.

Architectural engineering technicians play an important support role to architects and engineers. There is a need for qualified technicians to assist architects, contractors and the allied construction industries in implementing new technological advances. With the development of new materials, building designs are limited only by one's knowledge, skills, creativity and imagination.

This program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology.

Progress Made to Date:

Important Findings

Strengths:

1. Increased integration of construction site visits in the curriculum.

2. The number of CAD stations and upgraded software available to AET students

Weaknesses:

1. Low graduation rates

2. Initial student class projects and assignments were not representative of the skills required in the work force.

Priority Recommendations (See Recommendation Section for details):

1. The AET program will incorporate an aggressive student advisement and tracking system.

2. The AET program will incorporate class projects and assignments to meet the required skills in the work force.

Progress Made To Date

1. The AET program chair personally tracked students who were eligible for graduation and worked with them to ensure that they took the required courses for graduation (and that the courses were available). The program is expected to come off probation status as of this year due to these efforts. To help with first to second year retention a 3rd CAD application was offered and the information on the employment opportunities not normally associated with the degree was added.

2. The AET program revised the curriculum to include class projects and assignments that were more closely related to the actual work environment. Drawing and modeling courses now have more design and drawing projects infused throughout the curriculum and final semester projects now involve a real "client", making it realistic, from both the production and environmental perspective.

EXECUTIVE SUMMARY

Program: CIVIL ENGINEERING TECHNOLOGY (CET)

Description of Program/Background Information:

Civil Engineering Technology graduates play a major role in the design and construction of airports, bridges, highways, pipelines, and water and sewage systems. They can become professionally licensed land surveyors, steel detailers, construction superintendents, cost estimators and public works technicians. To perform this work, civil engineering technicians must possess knowledge and skills in such technical areas as surveying, drafting, estimating, use of construction materials and use of computers.

This program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology.

Important Findings

Strengths:

1. Results from a DACUM panel affirmed the current curriculum as effective at preparing graduates for jobs in a wide range of civil engineering-related fields.

2. Graduate are well prepared to work in many aspects of the construction, consulting, industry and government fields. Emphasis placed on firm technical background and practical problem solving.

3. Students develop teamwork skills by working together on special projects, classroom activities, laboratory exercises and research projects. A through knowledge of civil engineering technology is achieved.

4. CET graduates are well prepared to enter a career in civil engineering because:
    a. ABET accreditation opens the way for graduates to work toward professional certification in civil engineering technology or as professional land surveyors.
    b. The equipment used in surveying is top-of-the-technology

Weaknesses:

1. Prospective students and those who advise them in high schools may not know enough about the CET program and the potential careers available to graduates. This has led to student enrollment that is lower than optimal for efficient scheduling and resource allocation.

2. CET graduates could benefit from more on-site experience.

3. The high demand by the local industry for steel detailers is not being met.

4. The curriculum needs to incorporate aspects of project management, scheduling, statistics, and engineering economics, as recommended by the DACUM committee.

5. Study of the current surveying course to evaluate course additions/revisions may be needed to meet regulatory changes in land surveyor license requirements.

Priority Recommendations (See Recommendation Section for details):

1. CET counselors should make every effort to increase contact with high school counselors and teachers in the service area and provide better advice and encouragement to potential CET students.

2. Students should be encouraged to participate in cooperative education efforts. This will provide them more actual industry experience.

3. A needs analysis is needed to ascertain the need for a program in steel detailing.

4. The CET curriculum should be revised to include project management, scheduling, basic statistics, and engineering management.

5. A study of the college's surveying courses needs to be conducted to enable the college to respond to regulatory changes in professional land surveyor license requirements.

Progress Made To Date

1. Although the heavy overload in teaching and administrative responsibilities of the CET Program Coordinator has precluded any regular, systematic, and active program of outreach to local high school counselors and students, contacts with area high school counselors have been established. The CET Program Coordinator has made a special effort over the past academic year to meet with representatives of industry and community leaders on a bi-weekly or monthly basis.

   With the recent hiring of an additional instructor within the Department of Engineering Technologies and Engineering Transfer who is anticipated to share in some of the teaching responsibilities in the CET Program, it is planned that the CET Program Coordinator will be able to take a more active role in high school counselor, teacher, and student outreach.

2. The CET Coordinator has developed a strong working relationship with the Coop Office, maintained an electronic database of potential employers, aided students in resume preparation and finding suitable positions – either through or outside of the coop program and placed a continuing emphasis on further strengthening the coop program.

3. The CET Program Coordinator had a number of discussions with industry representatives concerning training in steel detailing but the industry is currently divided on the issue of meeting the need through a credit program. CET is also pursuing an option of meeting this industry need in partnership with Continuing Education.

4. The CET Program Coordinator began development of a course (CET 238) that includes project management, scheduling, basic statistics, and engineering management for College approval. The course will be added to both the CET and AET curriculum as soon as practical. Within the CET program, CET 238 will likely replace the current Free Elective.

5. The CET Program updated the South Carolina State Board of Registration for Professional Engineers and Land Surveyors on the CET Surveying Program. Courses to be required by the Board to take the S.C. Professional Land Surveyor exam were proposed and enthusiastically accepted by the Board. Of the 5 courses, three are already being taught in the CET program. One of the other two courses, GMT 235 GPS and Geodesy, has been developed and approved and will be offered beginning Fall 2002. The other course will be developed and offered in the future well before the new licensing requirements are implemented.

EXECUTIVE SUMMARY

Program: ELECTRONICS ENGINEERING TECHNOLOGY (EET)

Description of Program/Background Information:

Electronics engineering technicians combine a practical hands-on approach with a theoretical approach toward repairing, maintaining, trouble-shooting and designing electronics equipment including computers, Plus, electronic instruments, and control devices. Graduates of this program may work in a manufacturing environment, a research facility, sales center or an educational institution.

This program is accredited by the Technology Accreditation Commission of the Accreditation Board for Engineering and Technology.

Progress Made to Date:

Important Findings

Strengths:

1. EET students have enjoyed high placement rates and readily get jobs related to their field of study.

2. The EET program is "hands'on" in nature. Courses emphasize the practical application of principles to solve problems. Laboratory exercises and projects are modeled after current industry problems and practice.

Weaknesses:

1. The ratio between beginning students and graduates indicates a retention problem that needs to be addressed.

2. High turn over rate of faculty in the past three (3) years.

3. Labs and offices are inadequate in terms of space and usability.

Priority Recommendations (See Recommendation Section for details):

1. The EET program will incorporate an aggressive student advisement and tracking system.

2. Review current hiring practices with the Vice President of Career Programs.

3. Assess office space and lecture/labs to determine ways to improve.

Progress Made To Date

1. EET has reviewed student files to ascertain any trends or patterns that would lead to low retention and has used this information in advising students. The implementation of the new Colleague software has hampered the development of a tracking system.

2. Emphasis has been placed on hiring qualified faculty and ensuring they have a realistic perspective of the college's expectations**.**

3. The college has assessed the existing office space and teaching areas and developed some innovative "options" for short- term improvement in both areas. The building which houses the EET program will undergo major renovation in the next 3-5 year time frame and more permanent solutions will be available.

EXECUTIVE SUMMARY

Program: Physical Therapist Assistant   (PTA)

Description of Program/Background Information:

The Physical Therapist Assistant is a skilled technical health-care worker who carries out patient treatment programs under the supervision of a physical therapist. The assistant works to relieve pain and/or increase function in patients via therapeutic application of heat, cold, light, water, electricity, sound, massage, exercise, gait, and functional activity.

Clinical experience is provided in a variety of settings including hospitals, rehabilitation agencies, schools, private offices, and long-term care facilities.

The Physical Therapist Assistant curriculum is sequenced in a one-plus-one format that allows the student to complete the general education courses (Phase I) in a flexible format. During Phase I, the student can complete not only the academic requirements needed for the associate degree, but can also complete the observation requirements and all necessary documentation required prior to acceptance to the technical portion (Phase II) of the degree. Movement into the second phase is achieved by successful completion of the certificate.

Progress Made to Date:

Important Findings

Strengths:

1. Clinical experience of faculty.
2. Dedication of faculty to teaching and offering students "special' experiences via field trips and guest lecturers.
3. Most equipment is current and comparable to what students work with during clinical experiences.
4. Participation/support of Advisory Committee.

Weaknesses:

1. High attrition rate.
2. Limited campus space for program (impacts acquisition of large equipment for program use)
3. Licensure results are below benchmarks set by program.

Priority Recommendations (See Recommendation Section for details):

1. Explore curriculum change to increase student success and retention.
2. Increase and upgrade program space on the Airport campus.
3. Enhance board preparation materials and instruction. Stress mastery of the mock board examination.

Progress Made To Date

1. Curriculum changes to improve retention were developed and approved by the curriculum committee.

2. The PTA program was moved to newly renovated space that will meet its needs.

3. The PTA program revised the board preparation materials and conducts a mock board twice during the senior seminar (PTH 276). The grade for the second mock board comprises 50% of the student grade for the course.

Program: RESPIRATORY CARE (RES)

Description of Program/Background Information:

Respiratory care professionals are instrumental in the diagnosis, treatment, preventative care, management, and training of patients with cardiopulmonary problems. Patients who suffer with deficiencies, diseases and abnormalities affecting the process of breathing are cared for by respiratory therapists. They work as an essential member of the health care team and are specialists trained to use highly technical life support equipment. The procedures and instrumentation used by respiratory therapists are vital elements in the overall treatment and care of patients.

The Respiratory Care curriculum offers a variety of program options, all culminating with the completion of the associate degree. Students can choose to enter at anytime into Pre-respiratory Care to take general education and related courses (English, math, anatomy and physiology, integrated science, etc.) required by the curriculum. They can take all or some of these courses prior to starting professional course work. Each student can determine the length of time they want to spend in this phase before moving into the professional curriculum.

The professional tract may be started only in the fall semester and completes the technical or professional training. Here, students study respiratory care procedures and concepts in class, laboratory and clinical facilities.   Much of the time is spent in supervised patient care learning while working with physicians, nurses, professional therapists, and other health care team members at the clinical sites. At the end of the fourth semester students will complete the Entry Level Therapist phase. This will qualify them to take the first credentialing examination and qualify for a state license. Due to national accreditation changes, this aspect of the program will end in 2002.

The Respiratory Care program is fully accredited by the Council on Accreditation of Allied Health Education Programs (CAAHEP) in cooperation with the Committee on Accreditation for Respiratory Care (CoARC).   Graduates are eligible to take all credentialing examinations offered by the National Board of Respiratory Care (NBRC) and, upon successful completion of the registry examinations, be designated Registered Respiratory Therapists (RRT).   Upon successful completion of the first examination (Entry Level Therapist Exam), graduates are eligible to apply to the South Carolina State Board of Medical Examiners for state licensing.

Important Findings

Strengths:

1. Excellent employment opportunities with satisfied employers who rate graduates at a high level of skills achievement.

2. Knowledgeable, conscientious, and dedicated faculty committed to the students' personal and

professional growth.

3. College-employed clinical instructors that ensure quality and direction of clinical education.

4. Specialty training in areas such as EKG, surgery, hyperbaric medicine, cardiovascular surgery, patient rescue transport, ECMO and neonatal care and sleep medicine provide a comprehensive training background.

5. Support in the area hospitals as evidenced by their commitment to clinical training, participation of medical directors and other physicians.

6. Laboratory facilities available for independent study/practice.

7. Flexible curriculum design with developmental course support, re-entry and advance degree options.

Weaknesses:

1. Recruitment, enrollment and attrition rates.

2. High contact hours for faculty and students with the perception of students and alumni that the program is very intense and too demanding.

3. Advisory committee members with inconsistent attendance, involvement and personal agendas that do not coincide with accreditation requirements.

3. Students with many outside demands, weak academic backgrounds, and stressed by the hours it takes to master the material. They're use to being spoon-feed and memorizing instead of analyzing or thinking critically.

4. Salary schedule that has not kept pace with inflation or comparable professional salaries.

5. Limited small study rooms in library. Student teams cannot use research materials for support of group library research projects

6. Financial Aid office and availability.

<u>Priority Recommendations</u>:

1. Increase recruitment and work to decrease attrition. Enlist assistance in recruitment for qualified students.

2. Work with hospitals to limit exposure to respiratory therapists who downgrade profession.

3. Work with students to help them realistically face the time, information, amount and depth of knowledge required in the program.

4. Work with Advisory Committee members to increase participation, attendance and involvement.

5. Train adjunct faculty in effective instructional technologies and other learning strategies.

<u>Progress Made To Date</u>

1. Recruitment has improved. Both students and faculty have undertaken this activity. The award of a Tech Prep grant greatly enhanced our ability to contact and disseminate information. The program currently has more students accepted (17) than in the past three years.

2. Hospital managers are actively addressing employee morale as best they can during this manpower shortage period. The program has devised priority assignments to those who like to and best supervise students. This was addressed during our advisory meeting and by our Director of Clinical Education to the Department directors at each hospital.

3. New information sheets are being distributed to all who show interest. They address and define, in great detail, what it takes to succeed in the program. The amount of work hours, out of class study and personal requirements are addressed. The programs will continue to review the effectiveness of this strategy.

4. The program constantly works with Advisory Committee members to increase participation, attendance and involvement. Attendance is still very variable.

5. Prospective faculty are working with current faculty to be trained in appropriate techniques. Modifications and re-development will continue into next year. Videotaping of testing and training is being developed and will be used to enhance inter-rater reliability.