Final Report - 1998
Academic Program Review
College of Technology

1. Review process

The College of Technology prepared a Self Study following program review guidelines. The documents included materials on the Center for Quality, Measurement and Automation (CQMA). An External Review Committee, composed of two faculty/administrators - one from Indiana State University at Terra Haute and one from North Carolina A & T - visited the campus, reviewed the Self Study, and interviewed unit personnel, students, and University administrators. The External Report and the Self Study were reviewed by the Program Review Committee (PRC).

2. Self Study

2.1 The College and Its Mission:

The College of Technology grew out of the former College of Education where it was originally called Industrial Arts. The Technology building was constructed in 1978. ‘Technology’ became a school in 1982 and a College in 1985. The PRC’s observation, based on the review documents and the report of the visitors, is that the College of Technology is a unit mainly educating undergraduates for direct entry into the workforce in various areas such as construction management, manufacturing, education, pilot training, airport management and visual communication technology. It is also a unit with exceptionally good coop programs, as well as strong industrial interactions and outreach programs.

The College considers its mission to develop “problem-solving and leadership capabilities for professionals who seek, create and use technical knowledge.”

The College goals are:

- To prepare exemplary professionals who are problem solvers, human resource developers, and educators for leadership roles in technology.
- To facilitate research and development in the application, innovation, and transfer of, and education about technology.
- To proactively influence technology.
2.2. The Faculty and it Organization:

The College of Technology is mainly an undergraduate college offering Master’s degrees in two areas. There are 22 full-time faculty as well as the Dean. Sixteen faculty are tenured and the average age is 42. Three of the faculty are female (all at the rank of Assistant Professor), and three are Asian/Pacific Islanders. The College also hires temporary faculty, adjuncts and lecturers. Educational summaries of 27 of the current faculty, tenure track and temporary, are listed on pages 65-71 of the self study, and full curricula vita are provided in the appendix. Of those faculty listed in the main report, most have terminal degrees in the field: nineteen have degrees in various fields of education (Ed. D. or Ph.D.), and six have advanced degrees in programs ranging from architecture to engineering science and mechanical engineering. Eight of the faculty listed have one or more degrees from Bowling Green State University.

2.3. Staff:

The College lists a total of 11 administrative and classified staff funded by the University. Three others are funded by the College.

2.4 Program Offerings:

The College consists of two departments, 11 programs, several institutes and one center, some with their own directors and staff. With the exception of Aviation Studies, Construction Management and Technology, Manufacturing Technology, and Visual Communications & Technology Education (VC&TE), the programs have one faculty member listed for each. The programs listed (faculty in parentheses) are Advanced Technological Education (no data), Aviation Studies (5), Architecture/Environmental Design (1), Construction Management and Technology (4), Electronic Technology (1), Manufacturing Technology (6), Mechanical Design (1), and Visual Communications & Technology Education (8). A BS in Education is awarded in Technology Education.

2.4.a. Coop Program.

The College has extensive interactions with the industrial community in the region. These relationships are active and carefully maintained. The College has an excellent coop program administered by Barry Piersol and requires several coop experiences for every undergraduate. According to information obtained from Sponsored Programs and Research, a significant percentage of the current external funding is generated by Mr. Piersol’s activities for various intern programs.
2. 5 Students and Curricular Aspects

The College appears to do a good job in many of the areas in which its programs are concentrated, and the College is justly proud of its alumni and alumnae, students, industrial contacts and friends. According to the External Review Team there is “a high level of interest among the students. Students are comfortable with the faculty, the university, the educational experience and the social life ...., and this is confirmed by student participation and a high retention rate”. The largest of the major areas are Construction Management, which has an excellent reputation in the region, and Visual Communication & Technology Education. The College graduates, on average, 100 or more undergraduates a year (102 in all areas in 1996-7). BS degrees in Technology are awarded (number of graduates for 1996-97) in Advanced Technological Education (-), Aviation Studies (21), Architecture / Environmental Design (10), Construction Management and Technology (10), Electronic Technology (12), Manufacturing Technology (16), Mechanical Design (6), and Visual Communications and Technology (17). A BS in Education is awarded in Technology Education. The average ACT of all entering students in 1998 is over 21, but this has decreased over the last several years. The curriculum in all the degree programs is essentially non-quantitative.

There are currently more than 60 Master’s students in the two programs; Industrial Technology and Career and Technology Education. According to Graduate College statistics, 34 of the current students are full time, and 33 are part time. Thirty-six students are supported by graduate assistantships. Of the more than 80 graduate alumni and alumnae of the College more than half took undergraduate degrees at Bowling Green. The graduation rate of Master’s students enrolled (%) of students getting degrees compared to total enrolled) over the last 12 years is about 40 percent.

According to the self study there is a great demand for technical professional employees. Various College indicators suggest that graduates find jobs quickly after graduation and remain employed in their field at least through the first five years. The self study provides follow-up statistics on majors in most of the programs. No salary histories are provided for any of the program majors.

2.6 Resources:

The College budget load, according to the Office of Financial Affairs was $1,878,951 for the current fiscal year. By comparison, there are departments in other Colleges, of similar or greater size, that grant the Ph.D. but have similar or smaller budget loads. College of Technology units have operating budgets, in the aggregate, of $131,167.
2. 7 Faculty Quality and External Funding.

Over a six year period, 1992-98, College faculty published two books, one book chapter and 53 papers in refereed journals. During the year just past, external funding for the College of Technology, in the aggregate, was $300,000. The trend in extramural funding has been downward over the last several years. Some projects such as the Electric Falcon are funded by private contributions and donations. The Hybrid Vehicle Project has support from the Edison Industrial Systems Center (EISC), through funds provided to EISC by the Ohio Department of Development.

Several College faculty are active in businesses around the area, both as partners and as consultants, and this enhances the educational mission at both the undergraduate and graduate level. Outreach programs are very good and the College of Technology is to be commended for doing this so well.

2.8 Proposed Growth and Enhancements - Requirements.

Instruction in the College is laboratory and studio-based, according to the Self Study. As such, “class sizes are limited by the number of work-stations, the equipment available, and the appropriate ratios for studio instruction.” Staff requests are mainly justified for programs that service students in relatively small laboratory sections and a program by program listing of all new staffing requests appears in the Self Study.

Each of the individual program units is proposing growth within the framework of a strategic plan. The College also proposes to grow by 500 students over the next five years by 75% over current enrollment levels. The College also proposes growth in its contribution to general education. There is also a suggestion of new programs such as Audio-Animatronics (design and technical management of theme parks), industrial safety and transportation systems. Accordingly the College proposes to grow to a total faculty size of 43 by 2003. Commensurate addition of 12 administrative and classified staff (total 24) is also proposed. The College of 2003 will have, if all of the projections are realized, three departments and an institute of aviation.

Like several other units under review this year, Technology claims to be under pressure for space and in need of new facilities. In addition to remodeling the current facility and adding to a laboratory annex, the College proposes a new three-story building at the current site.

The College proposes to enhance grant and contract activity through a new research and development unit, the Center of Technology Transfer.
3. Results of Previous Reviews

Although the College units have been reviewed for purposes of accreditation, this is the first comprehensive review of the College and its programs.

4. External Review Findings

The External Review Team characterizes the faculty in the College as “truly outstanding”. “Seldom has the review team witnessed an academic unit so tuned to the history, the present and the future.” The External Review Team also calls this “a high quality faculty, many of whom are recognized nationally, who are .... writing textbooks, giving numerous professional presentations, documented research and exciting special projects such as the Falcon race car.”

The External Review Team was particularly impressed with the “Falcon race car project” calling this the “most extensive commitment to research and innovation in the field of industrial technology ever witnessed by the review team.... and a great marketing tool...” This program has “attracted significant external funding and provides enormous publicity and national recognition... [I]t is the only team from industrial technology/education programs competing against colleges of engineering.”

The writers of the external review offered that “Technology” was misunderstood on campus and that there are widely based interactions on campus with business, education, computer science and the like that had gone unnoticed. The External Review Team said that what Technology really needed was better marketing. In their words, “some on campus view the College of Technology as Bowling Green’s best kept secret.”

The External Review Team found “major programs exemplified by strong curricula and mature content founded in competency and performance based outcomes.” They were particularly impressed with the energy of the current dean and the enthusiasm of the undergraduate student body. The External Review Team gives strong support to “a College turned-on by the ingenious leadership of the Dean, and a faculty that uniformly expressed a positive warm response for the college administration including the Dean, Associate Dean, the Department Chairs and the Student Program Services Director.” Their overall impression of the College of Technology led to the writing of a glowing report in virtually all aspects.

The External Review Team came prepared to “criticize the excessive graduation requirement of three cooperative experiences... However the documentation reflects the success rates of the students...” So, after seeing the coop program first hand they reported their impression was favorable.

The External Review Team spent some time addressing College weaknesses. Several weaknesses are related to the lack of facilities, the lack of
space, the need for an annex, and the fact that the faculty is overworked and lack the appropriate support staff.

Also according to the External Review Team “there were limited faculty development opportunities or priorities before the assessment plans were initiated and completed. In some cases, assessment plans seemed to meet very minimal objectives and were not supported or defined by clear data gathering measures, or techniques, or involved advisory board recommendations.”

Another weakness relates to the fact that the College appears isolated in spite of “recent publicity for special projects to enhance the image of the College...” Still another observed weakness addresses the lack of publicity and the lack of differentiation between what the College of Technology at Bowling Green does in industrial technology, and how this compares with programs at other institutions in the state and region.

5. Program Review Committee Determinations

In the judgment of the PRC, the External Review Report did not reflect the same level of expectations for performance as was evident in reports of other units undergoing review. Being somewhat less critical and more easily impressed, the External Review Team for the College of Technology appeared to miss opportunities for suggesting improvement. The PRC was alert to possible conflict of interest in the External Review Report, as one of the external reviewers lists a former Dean of the College of Technology as a reference.

The PRC shares an enthusiasm for undergraduate degree programs in many of the areas of current specialty in the College of Technology. It believes that Bowling Green should explore carefully focused opportunities in other fields that prepare the technically skilled for the many job sectors identified in the Self Study.

What the College of Technology lacks in its mission statement, however, is a vision of how it will prepare Bowling Green State University graduates to meet society’s needs in technical areas in the context of a four-year, Doctoral 1 university. As stated, its goals and mission do not identify those attributes that make the College truly distinctive.

The level of extramural funding, and the correlated research activity in a unit, provides evidence for the level of scholarship in that unit. These are particularly important measures of University-level viability of the unit. The level of fundable scholarship must be substantially enhanced in this College. External funding levels can be enhanced by increasing proposal submissions, by developing new areas of investigative endeavor, by collaborations, by the proper addition of new faculty, and by other similar measures.

Though it is the intention of the PRC that increased extramural funding derives mainly from an increased research activity of the faculty, this College presents extraordinary opportunities for increasing funding in other areas as
well. For example, major national granting agencies such as the National Science Foundation (NSF), the National Institute for Standards in Technology (NIST), and the U. S. Department of Commerce continue to announce initiatives targeted at improving the production processes and control of processes in the manufacturing sector. Many different mechanisms for obtaining more external support exist, and the College should position itself by developing attractive new programs to qualify for such grants. For example, there is substantial NSF and other funding available for well-designed, carefully thought out programs in everything from the training of technicians to developing high schools that focus on technical education. The Edison Center in Toledo (EISC), for example, received over one million dollars in NSF funding last year to develop a technical high school. There are also substantial opportunities for funding by the private sector.

The PRC agrees with the finding of the External Review Team that assessment efforts in the College of Technology have been insufficient. However, the PRC is less willing to ascribe this deficiency to institutional shortcomings. The Student Achievement Assessment Committee stands ready to help all units on campus develop program-level assessments. The College of Technology must become actively involved in understanding what assessment is, how it can improve teaching and learning in the College, and in implementing an assessment cycle for each of its programs.

The College proposes to grow very aggressively. However, most of the justification for additional faculty and staff, as well as facilities, is based on undergraduate enrollment patterns. Though undergraduates clearly must be provided the best educational experience in all areas, let current enrollment patterns dictate staffing and facilities construction does a disservice to other necessary aspects of the University mission. Enrollment pattern staffing also leads to a faculty spread thinly over a number of areas, which is the case in the current College of Technology, rather than a strong faculty focused in fewer areas of academic endeavor.

Furthermore, the PRC has questions about the efficiency of the use of faculty time. The 22 full time faculty in the College of Technology teach fewer than 10,000 SCH. Several departments in Arts and Sciences, including departments with large laboratory responsibilities, show workloads that are higher, per faculty member, on a student credit hour basis. Though College of Technology faculty report heavy contact hours, this may be as a result of the use of faculty to teach small laboratory sections. The PRC feels there is room for greater efficiency in staff utilization.

The College of Technology appears to some members of its own faculty to be isolated. This surfaced in several places in the reports. This isolation is occurring for potentially troubling reasons that perhaps have to do with the intellectual relationships between Technology faculty and other University faculty. Collaborations on a materials science initiative begun several years ago are to be abandoned. Attempts by faculty in Technology to collaborate with faculty in other Colleges have been limited.
Semantics also cause problems. Though it may be established practice that the word ‘technology’ is used to mean industrial technology in some segments of the academic community, continued use of a term that has a much different meaning to many is puzzling. If the College retains this name, they must work to overcome the misperception it causes around campus.

In any case, it is a misconception to think that what the College of Technology needs is a better marketing plan to reduce its isolation, as was suggested by the External Review Team. The PRC’s observations are that the College needs a better definition of collegiate goals and objectives, as well as higher standards of scholarship. Given this, collaborations across collegiate units could become standard fare. As among other campus units, interactions are defined on a faculty by faculty basis and higher levels of research activity in Technology will also enable that.

6. Program Review Committee Recommendations.

**Recommendation 1:** Rework the mission statement to identify the intellectual *raison d’être* of the College.

The PRC recommends that the College refine its mission statement to identify the attributes of the College of Technology that make it distinctive, on the one hand, and that define the unity of purpose within the College as a whole, on the other. The collegiate mission statement should address the overall rubric under which the combination of such seemingly different programs as VC&TE, Construction Management and Aviation Studies, makes sense. Several of the other recommendations depend on the particulars of the revised mission of the College, making the creation of the revised mission the number one priority.

It is recommended that this be completed by the end of fall semester, 1998.

**Recommendation 2:** University faculty, particularly in technical areas in a four-year, Doctoral 1 university, should provide financial support for their programs and contribute to the overall economic health, as well as professional reputation, of the University.

2A. The PRC recommends the College faculty and the Dean, in collaboration with the Vice Provost for Research, develop a mechanism to aggressively increase College extramural funding.

2B. The PRC recommends that future resources provided the College expand opportunities to educate technical professionals in fields that can achieve external support from state and national agencies.

It is recommended that the College develop strategies whereby their extramural funding, as a unit, can increase by large steps every 4 years; and it is recommended that a preliminary strategy for increased external funding be
completed by the end of the academic year, 1998-99. In order to meet this ambitious goal, the PRC recommends that the Vice Provost for Research meet with College faculty on a regular basis during fall, 1998, to provide the guidance and mentoring necessary to achieve the emphasis on research and proposal writing.

The PRC emphasizes the relationship of this recommendation to the first recommendation about mission. It is through research and scholarly productivity that a four-year program in Technology should achieve distinction.

**Recommendation 3: The College should focus its programmatic offerings.**

3A. The Dean, in collaboration with the appropriate faculty, should review programs and staffing patterns throughout the College, with the purpose of strengthening or eliminating small programs.

3B. The College should review instructional policies and curricular collaborations to improve staffing efficiencies.

The PRC recommends that a college-wide review of each programmatic unit be undertaken, and that future staffing patterns in the College be directed so as either to eliminate units with only one or two faculty, or to identify mechanisms for adding to them and strengthening them.

Because instructional policies have particularly significant impact on functioning in small units, the PRC recommends that the College review instructional policies. Attention should be given both to small unit teaching by faculty, in laboratory and studio sections. Greater economy of staff use can be achieved without sacrificing quality of instruction. A correlative recommendation is that the College explore the additional use of graduate assistants for laboratory instruction. It is the recommendation of the PRC that this be completed by the end of academic year, 1998-99.

**Recommendation 4: We recommend the Dean, after consulting with his colleagues and the Deans of other Colleges, develop a strategy to involve the faculty of the College of Technology with their colleagues in departments and programs in other Colleges at the University.**

There are many possible strategies to change College isolation. Our recommendation is that the Dean work with the Provost to outline specific approaches to alleviating this isolation, and that future hires in this College be made, whenever possible, to enable cross-collegiate collaborations and interactions. The recommendation is that these discussions be on-going, but that the Dean report to the Provost on the matter by the end of the academic year, 1998-99.

**Recommendation 5: Faculty in Visual Communication & Technology Education should meet with their counterparts in the School of Art and the School of**
Communication Studies to study collaboration as well as possible overlap in programs and curriculum.

A report of this study with recommendations should be presented to the appropriate School Directors and College Deans by the summer of 2002.

**Recommendation 6: The College should explore the development of 2+2 programs with Ohio community colleges.**

Another way to decrease isolation is to seek additional collaborations off campus. Ohio community colleges, for example, are playing an increased role in the post-secondary education of Ohio high school graduates. Arts and Sciences graduates relatively often take their first two years at a community college, and then transfer to a four-year university for upper level courses. It would seem that the College of Technology offers degree programs that could benefit from increased direct interactions with their community college counterparts. The recommendation is that the College of Technology explore, with its community college partners, collaborative interactions in which Bowling Green provides four-year degree options for graduates of Ohio community colleges. The recommendation is that these discussions be on-going, but that the Dean report on the matter by the end academic 1998-99.

**Recommendation 7: The Committee recommends that the College discontinue the hiring of Bowling Green alumni and alumnae into faculty positions.**
Recommendation 8: Bowling Green State University’s involvement in the consortial Ph.D. program in Technology should undergo authentic review, comparable to reviews of Ph.D. programs under our own degree authority.

The PRC has particular concern for the quality of our Ph.D. programs, partly because of the scrutiny to which they have been subjected at the state level, and partly because of the resource commitment implied by doctoral programs. Consequently, if BGSU is to participate in a consortial Ph.D. program, the PRC recommends that our “part” of the program be reviewed according to our standards, our mission, and our commitment of resources. The Graduate Dean should monitor the progress of the consortial Ph.D., and the decision about the timing and nature of the review should rest with him.

A related concern is the hiring of graduates of this program. There is the possibility for the same sort of “inbreeding” within the consortial program that we referred to with respect to our own graduates, in the previous recommendation. Consequently, we recommend that the hiring of graduates of the Ph.D. consortial program be approached with caution.

Recommendation 9: Assessment.

The PRC recommends that each program in Technology review the appropriateness of its learning objectives and implement at least one new assessment activity by the end of Spring term, 1999. It is further recommended that the assessment plan be evaluated and additional assessment activities be undertaken on a yearly basis throughout the review period. Reports should be made yearly to the Dean and to the Vice Provost for Academic Affairs regarding assessment activities.

Recommendation 10: The PRC recommends that new facilities for the College of Technology be tied to performance, including increased research activity of College faculty, enhanced extramural funding levels, active involvement with assessment, improvement of staffing efficiency, definition of mission, consolidation of program offerings, and response to other recommendations in this report.

The College proposes an aggressive pathway for growth. Though aggressive growth may be commendable, it should not occur without measurable progress in productivity and contribution to the mission of the University.

Recommendation 11: The PRC does not support the recommendation for a technology transfer office in the College of Technology.

We see several problems with the proposal for a technology transfer office in the College of Technology. First, by the College’s own claim resources are limited. Second, technology transfer should be a coordinated, University-wide effort. Third, the term ‘technology transfer’ is used in two different ways. The Self Study suggests what they have in mind is a pathway to improving
extramural support, which we support. But the term implies collaboration and outreach, which we also support, but not in an office that limits these activities to the College of Technology.

**Recommendation 12: University policy on the use of the term “Institute” and “Center” should be followed.**

Though no one would deny the importance of digital editing, digital media, and electric cars, not every program or objective needs be part of an ‘institute’. Misuse of alternative methods to group intellectual pursuits in the academy damages University credibility. Technology should make sure they follow established University approval processes for Centers and Institutes.

**Recommendation 13: Recommendation with reference to CQMA:**

We recommend that a small external group of visitors with professional experience and recognized regional/national reputations in quality control, who understand the objectives aspired to by CQMA, be assembled under the Direction of the Vice Provost for Research, and that the Center be reviewed with the purpose of determining if it, in its current or modified configuration, can be self-sustaining. If CQMA is determined to be potentially self-sustaining, then the University should conduct a national search for a Director, and provide that Director with the resources to make CQMA a competitive entity. We further recommend that CQMA be reviewed on a regular basis, say every three years, if the decision to continue it is positive.

*The College of Technology should report annually to the Provost and Vice President for Academic Affairs on the implementation of these recommendations.*