Engineering Technology

Comprehensive Academic Program Review
2007-08

Associate in Science Degrees:
Aviation Maintenance Management Technology
Engineering Technology
Manufacturing Technology

Certificates:
Computer-Aided Design & Drafting
Engineering Technology Support
Lean-Six Sigma Green Belt
Six Sigma Black Belt

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Executive Summary

Introduction

The program review process at St. Petersburg College (SPC) is a collaborative effort designed to continuously measure and improve the quality of educational services provided to the community.

Program Description

Engineering Technology offers a variety of academic programs that are designed to enhance the educational experiences and employment opportunities of students interested in various fields of engineering.

Degrees Offered

Various degrees are offered within the Engineering Technology program. The Associate in Science degrees offered include Aviation Maintenance Management Technology; Engineering Technology; and Manufacturing Technology. Certificate programs include Engineering Technology Support; Lean-Six Sigma Green Belt; Six Sigma Black Belt; and Computer-Aided Design and Drafting.

Program Performance

- *Actual Course Enrollment* increased slightly during 2006-07 Spring, and Summer semesters, from the previous year.
- *Student Semester Hour (SSH) Productivity* has remained consistent in the Engineering Technology program over the last three semesters of 2006-07 hovering at 0.84. The 2006-07 Fall and Summer semesters increased from the 2005-06 SSH values, while the 2006-07 Spring semester decreased from the previous year.
- The number of *program graduates* in the Engineering Technology Associate in Science degree program showed an increase (17) in 2006-07 after an eight-year low (7) in 2005-06. The Engineering Technology Certificates have increased during the past three years, reaching an eight-year high (46) in 2006-07. Fall 2007 also showed significant increases, with forty-eight (48) Certificates, and five (5) AS degrees.
- *Fulltime faculty* taught 47.7% of the ECHs in 2005-06, and 47.7% in 2006-07.

Program Profitability

- The *Relative Profitability Index (RPI)* increased (0.61) in 2005-06 from the previous value (0.38) in 2004-05, and later decreased (0.40) in 2006-07.

Program Improvements

- *Capital Expenditures* for the Engineering Technology program (Fund 10 & 16) during the past three years totaled $115,850. Program improvements made as a result of the capital expenditures in 2004-05 included the purchase of function generators, pulse generators and logic analyzers to replace outdated and obsolete equipment in the electronics laboratory. Program improvements made as a result of the capital expenditures in 2005-06 included the purchase of logic

analyzers and interface cards to perform advanced measurements in the electronics and instrumentation laboratory courses.

Academic Outcomes

- The Aviation Maintenance Management Technology program has not been evaluated through an Academic Program Assessment Report (APAR). The 2006-07 APAR was closed due to insufficient enrollment.
- The Engineering Technology program has not been evaluated through an Academic Program Assessment Report (APAR). This program is scheduled to start in 2007.
- The Manufacturing Technology program was evaluated through an Academic Program Assessment Report (APAR) in 2006-07. An assessment of the program was unable to be completed due to insufficient participation.

Stakeholder Perceptions

- All the individual average content area scores for the *Student Survey of Instruction (SSI)* were above the traditional threshold (an average of 5.0) used by the College for evaluating seven-point satisfaction scales. These results suggest general overall satisfaction with the courses within the Engineering Technology program; specifically, as they relate to faculty/student interaction, course organization, course presentation, and evaluation methodologies.
- An Engineering Technology *advisory committee* meeting was held on October 2, 2007. The meeting consisted of status reports and discussions led by Brad Jenkins on enrollment; the new A.S. degree in Engineering Technology; the new CADD Certificate, new courses, and curriculum recommendations by the members.
- *Recent Graduate surveys* were provided to the 2004-05 graduates of the Engineering Technology program. Seventy-two percent (72.7%) of the 11 graduates surveyed responded to the survey. Six of the respondents provided permission to contact their employers.
  Notable results include:
  - 100.0% of recent graduate survey respondents who were employed, were employed full-time.
  - 42.9% of recent graduate survey respondents had a current position related to their studies.
  - 14.3% of recent graduate survey respondents thought that SPC did *'Exceptionally well'*, 35.7% *'Very well'*, while 14.3% thought that SPC *'Adequately'* prepared them for their current position.
  - 83.3% of recent graduate survey respondents employed in a field related to their studies believed that SPC prepared them for their chosen career.
  - For hourly employees, 25.0% of recent graduate survey respondents earned between $13.86 and $16.49 per hour, while the remaining 75.0% earned between $10.00 and $13.85 per hour.
  - For salary employees, 22.2% of recent graduate survey respondents earned between $30,000 and $39,999 per year, while the remaining 77.8% earned between $20,000 and $29.999 per year.

- 100.0% of recent graduate respondents who are continuing their education are doing so in upper division programs.
- 94.1% of recent graduate survey respondents would recommend the Engineering Technology program to another

- Six *Employer surveys* were sent out to employers based on the permission provided by recent graduates in the 2004-05 recent graduate survey. Only one employer responded, and since a single response can not accurately represent the entire program, employer survey results will not be reported.

Occupation Profile

- *2005 median yearly income* for Engineering Technology was $48,000 in the United States, and $41,900 in the local area.
- *Employment trend information* suggests a significant average annual increase (10% – 15%) in employment for the profession over the next 5 – 7 years for the country and state

State Graduates Outcomes data indicated that there were no students who completed a state Engineering Technology program in 2003-04.

- **Se**venteen (17) students completed a state Aviation Maintenance Management Technology program in 2003-04, sixteen (16) had some matching state data, and seventy-seven percent (10) of those state graduates were employed at least a full quarter.
- One (1) student completed a state Manufacturing Technology program in 2003-04, one (1) had some matching state data, and one state graduate was employed at least a full quarter
- Almost seventy (66) students completed a state Electronics Engineering Technology program in 2003-04, of those fifty-five (55) had some matching state data. Eighty-two percent (37) of those state graduates were employed at least a full quarter.
- About one-hundred and fifty (151) students completed a state Computer Engineering Technology program in 2003-04, of those one-hundred thirty-five (135) had some matching state data. Eighty-seven percent (104) of those state graduates were employed at least a full quarter.

Program Director's Perspective: Issues, Trends, and Recent Successes

I am very pleased with the general findings and data presented in this report. With so many positive indicators the Engineering Technology program continues to meet the needs of industry and students by providing innovative courses and programs. The strengths of the program include a very supportive and active Advisory Committee, excellent faculty, and the support for our programs from the local industry. I would also like to present some information related to our program success.

Engineering Curriculum Enhancements

- The A.S. Degree in Engineering Technology is 60 credit hours including 18 credit hours for general education, 18 credit hours of Technology Core, and 24 hours related to the two specialties in Electronics and Quality. This new degree

replaces a 68 credit hour Electronics Engineering Technology and 64 credit hour Quality Compliance Technology program. With this format, a new certificate, Engineering Technology Support Specialist can now be offered using the 18 credit hours of the Technology Core. Our efforts with the Florida Advanced Technology Education (FLATE) Manufacturing Center in creating this new A.S. Degree led to a statewide acceptance by 5 other community colleges to offer this same degree and 4 others considering this path.

- The Technology Core covers the curriculum and aligns with the Manufacturing Skills Standard Council (MSSC) national certification. This is an industry certification that is being recognized by the manufacturing sector as a factor for hiring new employees. The students will take this Technology Core and then decide what specialty area they would like to choose. Since the Technology Core courses relate to both electronics and quality, the students will be able to get a flavor of the specialty they want.
- The transferability of the courses will be direct for the students transferring from other community colleges since they are all the same standard course number. The program and courses will still be transferred directly to the state universities offering the B.S. Degrees in Engineering Technology and B.A.S. degrees. All the new curriculum frameworks and CIP numbers have been assigned by the state of Florida for the A.S. degree as well as all certificates.

Productivity and Enrollment

- The productivity for the Engineering Technology continues to improve along with an increase in actual student semester hours (SSHs). All CAD courses (AutoCAD and SolidWorks) are now offered only at the Clearwater Campus, and with the curriculum restructuring this past summer eliminating the TAR courses, the productivity was 1.03 (S-I, 2007-08) and 1.05 (S-II, 2007-08). All Lean Six Sigma Green Belt and Six Sigma Black Belt courses are now offered at the Epicenter in which the enrollment and productivity has also increased, The productivity was 1.04 (S-I, 2007-08) and 1.12 (S-II, 2007-08). The Engineering Technology offerings on the St. Petersburg campus was 1.28 (S-I, 2007-08) and 0.82 (S-II, 2007-08). The new Engineering Technology curriculum, the timely offerings of courses and the location closer to industry have attributed to this increase in overall productivity at these three college sites.

Program Completers

- The program completers have increased the past two years with 17 AS Degree and 44 Certificate graduates in 2006 and 10 A.S. Degree and 85 Certificate graduates in 2007. The reason for these increases was due to the development of new certificates, as requested by our local industry. There has been a tremendous growth in the Lean Six Sigma and Six Sigma Black Belt certificates. Both the Green and Black Belt programs were the first and the only college credit certificate programs of this type in the Southeast.

Areas of Concern

- Students taking introduction or beginning courses in the Engineering Technology program area, to meet the 21 technical credits prerequisite entry requirements,

to the BAS degree in Technology Management have increased the enrollment in those ET courses. However since these students have no vested interest in the AS degree programs, it makes it very hard to plan subsequent course offerings in the program.

- The lack of the HS enrollments (18-20 year olds) in the technical programs is also an area of concern. Courses in the program are offered in the evening to meet the needs of the encumbered industry workers.
- The lack of completers in the AS degrees is an issue. Students are graduating with the technical certificates, but are not continuing on with the AS degrees. Although the number of A.S. completers has increased the past two years, we really need to address this area.
- Locating credentialed faculty to teach the applications and laboratory courses for the AS degree Engineering Technology is another concern. Many engineers that have Master's degrees are project managers, systems engineers, or engineering staff consultants. They are not working with lab equipment and are not prepared or comfortable teaching our applications courses.
- The work readiness as required by industry (a fast startup on technology and course delivery) is another issue. Our advisory committee and focus groups have provided the necessary feedback in this area of concern, however with a fast changing technology this is an area we need to concentrate on more.

Program Improvements

- This equipment purchased with capital expenditures has increased the electronic workstation capability to the present eight workstations, up from the seven that we had before obtaining this much needed equipment. The equipment is now of the same industry standard eliminating the older types of different function generators that the students have previously had to use. There is also less sharing of equipment now that there is more of the equipment.
- Program and curriculum improvements made as a result of these capital expenditures included the advanced improvements in both accuracy and precision for the laboratory experiments in the EET 2140L Solid State Laboratory, the CET 1114L, Digital laboratory and the EET 1205C, Electronic Instrumentation course. The new equipment provides the opportunity to perform measurements using industry type equipment that the students will use when they are employed. They are receiving the training necessary to make them productive without much start up time and training from industry.

Recommendations/Action Plan

- Program Recommendations and action plans are compiled by the Provost and Program Director, and are located at the end of the document.

SPC Mission Statement

The mission of St. Petersburg College is to provide accessible, learner-centered education for students pursuing selected baccalaureate degrees, associate degrees, technical certificates, applied technology diplomas and continuing education within our service area as well as globally in program areas in which the College has special expertise. As a comprehensive, multi-campus postsecondary institution, St. Petersburg College seeks to be a creative leader and partner with students, communities, and other educational institutions to deliver enriched learning experiences and to promote economic and workforce development. St. Petersburg College fulfills its mission led by an outstanding, diverse faculty and staff and enhanced by advanced technologies, distance learning, international education opportunities, innovative teaching techniques, comprehensive library and other information resources, continuous institutional self-evaluation, a climate for student success, and an enduring commitment to excellence.

Introduction

In a holistic approach, the effectiveness of any educational institution is the aggregate value of the education it provides to the community it serves. For over seventy-five years, St. Petersburg College (SPC) has provided a wide range of educational opportunities and services to a demographically diverse student body producing tens of thousands of alumni who have been on the forefront of building this county, state, and beyond. This is due, in large part, to the College's institutional effectiveness.

Institutional Effectiveness

Institutional Effectiveness is the integrated, systematic, explicit, and documented process of measuring performance against the SPC mission for the purposes of continuous improvement of academic programs, administrative services, and educational support services offered by the College.

Operationally, the institutional effectiveness process ensures that the stated purposes of the College are accomplished. In other words did the institution successfully execute its mission, goals, and objectives? At SPC, the Offices of Planning, Budgeting, and Research work with all departments and units to establish measurable statements of intent that

are used to analyze effectiveness and to guide continuous quality improvement efforts. Each of St. Petersburg College's units is required to participate in the institutional effectiveness process.

The bottom-line from SPC's institutional effectiveness process is improvement. Once SPC has identified what it is going to do then it acts through the process of teaching, researching, and managing to accomplish its desired outcomes. The level of success of SPC's actions is then evaluated. A straightforward assessment process requires a realistic consideration of the intended outcomes that the institution has set and a frank evaluation of the evidence that the institution is achieving that intent.

There is no single right or best way to measure success, improvement, or quality. Nevertheless, objectives must be established, data related to those objectives must be collected and analyzed, and the results of those findings must be used to improve the institution in the future. The educational assessment is a critical component of St. Petersburg College's institutional effectiveness process.

Educational Assessment

Educational programs use a variety of assessment methods to improve their effectiveness. Assessment and evaluation measures are used at various levels throughout the institution to provide provosts, deans, program managers, and faculty vital information on how successful our efforts have been.

While the focus of a particular educational assessment area may change, the assessment strategies remain consistent and integrated to the fullest extent possible. The focus for Associate in Arts degrees is targeted for students continuing on to four-year degree programs as opposed to the Associate in Applied Science, Associate in Science, and Baccalaureate programs which are targeted towards students seeking employable skills. The General Education based assessments focus on the general learning outcomes from all degree programs, while Program Review looks at the viability of the specific programs.

The individual reports unique by their individual nature are nevertheless written to address how the assessments and their associated action plans

have improved learning in their program. The College has developed an Educational Assessment Website (https://it.spcollege.edu/edoutcomes/) to serve as repository for all SPC's educational outcomes reports and to systematically manage our assessment efforts.

Program Review Process

The program review process at St. Petersburg College is a collaborative effort to continuously measure and improve the quality of educational services provided to the community. The procedures described below go far beyond the "periodic review of existing programs" required by the State Board of Community Colleges; and exceeds the necessary guidelines within the Southern Association of Community Colleges and Schools (SACS) review procedures.

State guidelines require institutions to conduct program reviews every five years as mandated in chapter 1001.02(6) of the Florida Statutes, the State Board of Education (formerly the Florida Board of Education) must provide for the review of all academic programs.

> *(6) …The programs shall be reviewed every 5 years or whenever the state board determines that the effectiveness or efficiency of a program is jeopardized. The State Board of Education shall define the indicators of quality and the criteria for program review for every program. Such indicators include need, student demand, industry-driven competencies for advanced technology and related programs, and resources available to support continuation. The results of the program reviews must be tied to the university and community college budget requests.*

In addition, Rule 6A-14.060 (5) states that each community college shall:

> *(5) …Develop a comprehensive, long-range program plan, including program and service priorities. Statements of expected outcomes shall be published, and facilities shall be used efficiently to achieve such outcomes. Periodic evaluations of programs and services shall use placement and follow-up data, shall determine whether expected*

outcomes are achieved, and shall be the basis for necessary improvements.

Recently, SPC reduced the recommended program review timeline to three years to coincide with the long-standing three-year academic program assessment cycle, producing a more coherent and integrated review process. Figure 1 represents the relationship between program assessment and program reviewing during the three-year assessment cycle.

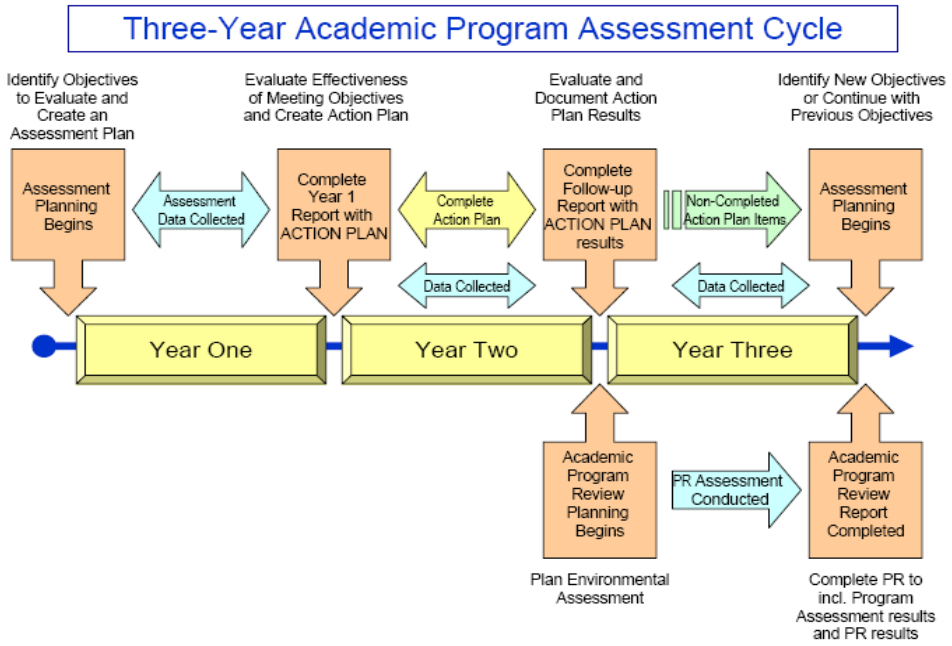

Figure 1: Three-Year Academic Program Assessment Cycle

Program Description

Engineering Technology offers a variety of academic programs that are designed to enhance the educational experiences and employment opportunities of students interested in various fields of engineering.

Degrees Offered

Various degrees are offered within the Engineering Technology program. The Associate in Science degrees offered include Aviation Maintenance Management Technology; Engineering Technology; and Manufacturing

Technology. Certificate programs include Engineering Technology Support; Lean-Six Sigma Green Belt; Six Sigma Black Belt; and Computer-Aided Design and Drafting.

For a complete listing of all courses within the Engineering Technology program, please see Appendix A.

Accreditation

No accreditation information is on file for the Engineering Technology program.

Program Performance

Actual Course Enrollment

Actual Course Enrollment is calculated using the sum of actual student enrollment for the courses within the program (Academic Organization Code). This number is a duplicated headcount of students enrolled in the program's core courses, and does not reflect the actual number of students enrolled in the A.S. program or its associated certificates (if applicable). Actual Course Enrollment increased slightly during 2006-07 Spring, and Summer semesters, from the previous year as shown by Figure 2.

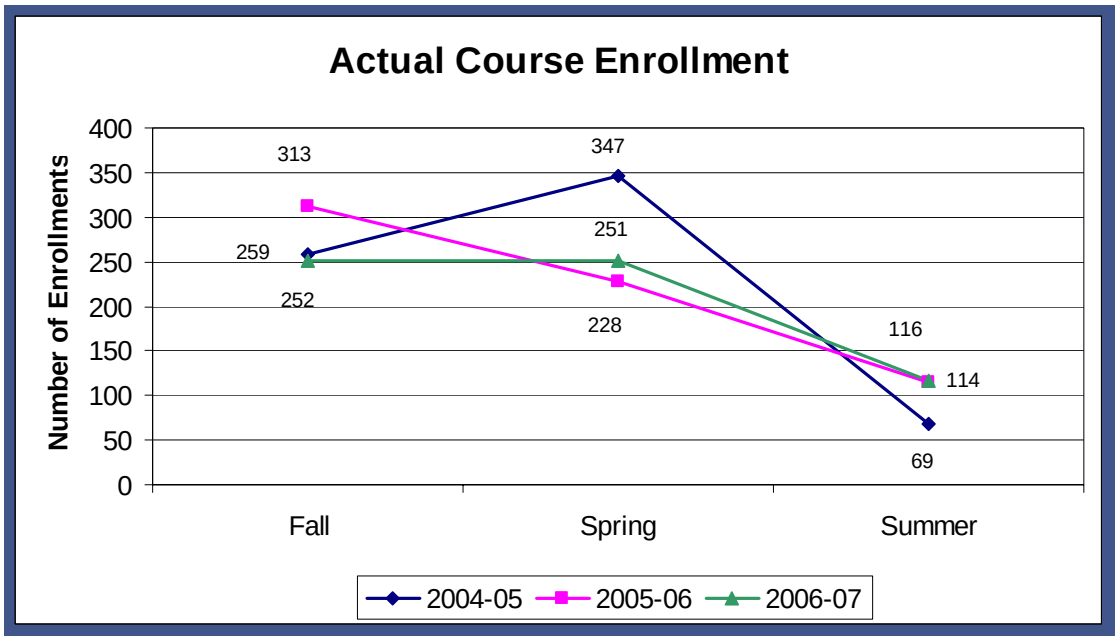

Figure 2: Actual Course Enrollment

Source: PeopleSoft Student Administration System: Course Management Summary Report (S_CMSUMM)

Productivity

- Student Semester Hour (SSH) Productivity is calculated by dividing actual SSH by the budgeted SSH. SSH Productivity has remained consistent in the Engineering Technology program over the last three semesters of 2006-07 hovering at 0.84 as shown by Figure 3. The 2006-07 Fall and Summer semesters increased from the 2005-06 SSH values, while the 2006-07 Spring semester decreased.
- The productivity for the Engineering Technology continues to improve along with an increase in actual student semester hours (SSHs). All CAD courses (AutoCAD and SolidWorks) are now offered only at the Clearwater Campus, and with the curriculum restructuring this past summer eliminating the TAR courses, the productivity was 1.03 (S-I, 2007-08) and 1.05 (S-II, 2007-08).
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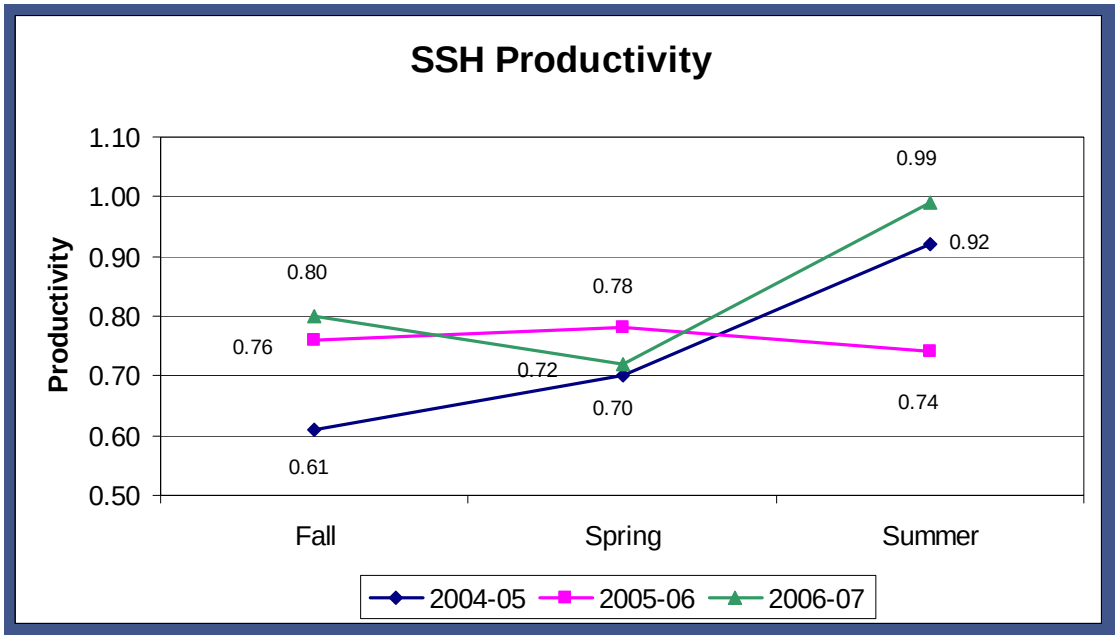

Figure 3: SSH Productivity

Source: PeopleSoft Student Administration System: Course Management Summary Report (S_CMSUMM)

Program Graduates

The number of program graduates in the Engineering Technology Associate in Science degree program showed an increase (17) in 2006-07 after an eight-year low (7) in 2005-06 as shown by Figure 4. The Engineering Technology Certificates have increased during the past three years, reaching an eight-year high (46) in 2006-07. Fall 2007 also showed significant increases, with forty-eight (48) Certificates, and five (5) AS degrees.

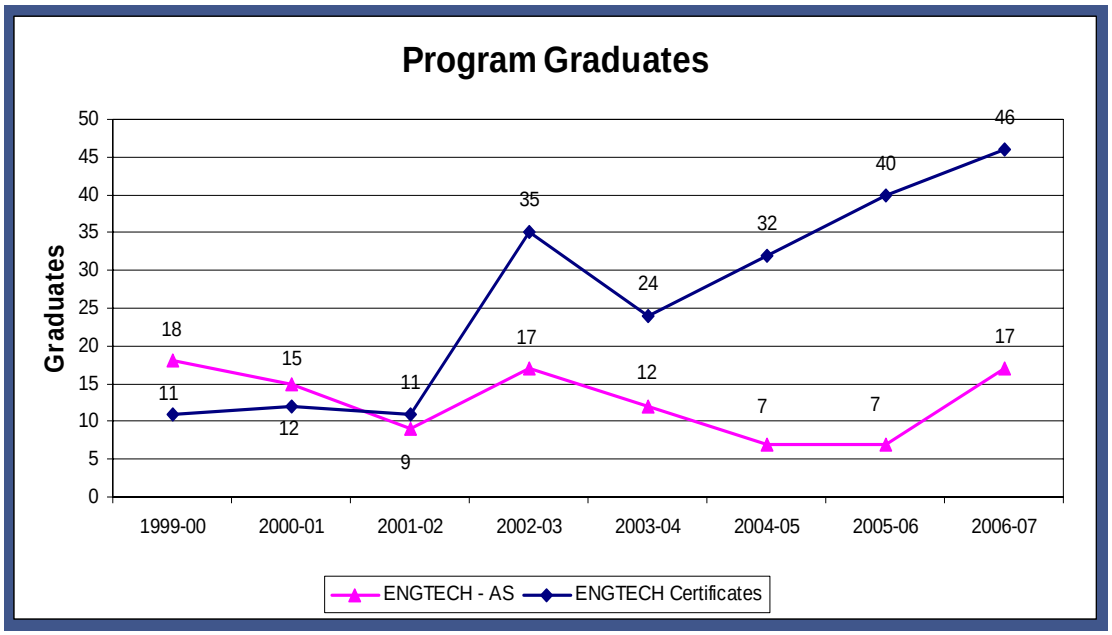

Figure 4: Program Graduates

Source: 2006-07 SPC Factbook, Table 31

Grade Distributions

To provide a reference for program performance at the classroom level, grade distributions are provided. Table 1 includes the percentage of students receiving an A, B, C, D, or F in the program core courses. The information was compiled from the college wide grade distribution report generated at the end of the session. Some course data, such as dual credit courses generally do not end at the same time as the regular campus courses and may be omitted. In addition, the number of enrollments is a duplicated headcount where students are counted for each class registered, however, only A, B, C, D, and F grades are included in the calculations.

Table 1
Program Core Course Grade Distributions

Semester	Grade Distributions				
	A	B	C	D	F
Spring 2006	83.3%	13.2%	2.5%	0.0%	1.0%
Spring 2007	88.6%	6.4%	0.9%	0.9%	3.2%
Fall 2005	71.4%	17.9%	6.1%	1.5%	3.1%
Fall 2006	78.6%	12.3%	5.9%	0.9%	2.3%
Fall 2007	81.3%	14.7%	3.7%	0.0%	0.4%

Source: Collegewide Grade Distribution Report (Generated at the end of the session)

Figure 5 provides a visual representation of the grade distributions for those students receiving a grade of A, B, or C.

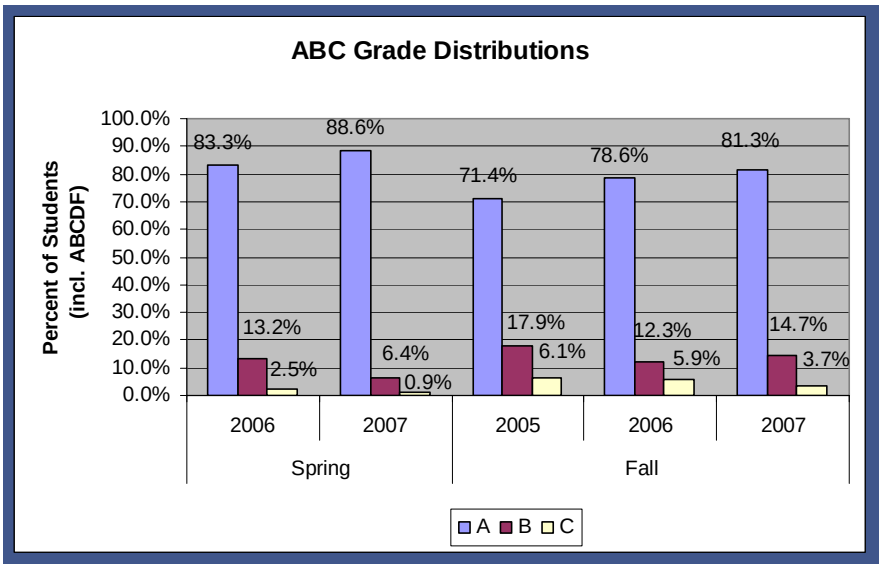

Figure 5: ABC Grade Distributions

Source: Collegewide Grade Distribution Report (Generated at the end of the session)

A classroom success rate was also calculated for the program. Classroom success is defined as the percent of students successfully completing the course, and once again only A, B, C, D, and F grades are included in the calculations. The vast majority of students in the program succeed in the courses as shown by Figure 6. In Spring of 2006, 99.0% of the students were successful, as compared to 95.9% in Spring of 2007. In Fall of 2007, 99.6% of the students were successful as compared to 96.8% in Fall of 2006.

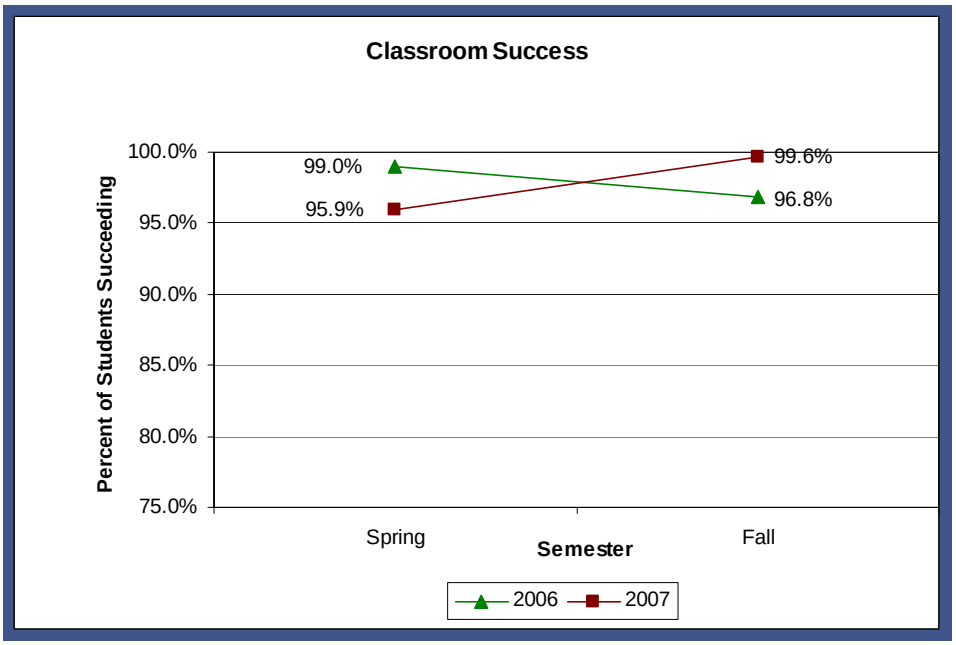

Figure 6: Classroom Success

Source: Collegewide Grade Distribution Report (Generated at the end of the session)

Fulltime/Adjunct Faculty Ratio

Table 2 displays the number and percentage of Engineering Technology program equated credit hours (ECHs) taught by the individual faculty classifications. As shown, Fulltime Faculty taught 47.7% of the ECHs in 2005-06, and 47.7% in 2006-07.

Table 2
Equated Credit Hours by Faculty Classifications

	Fulltime Faculty		Percent of Load Faculty		Adjunct Faculty	
	Number of ECHs	% of Classes Taught	Number of ECHs	% of Classes Taught	Number of ECHs	% of Classes Taught
Fall 2004-2005	21.2	38.22%	0.0	0.00%	34.3	61.78%
Spring 2004-2005	22.8	34.12%	0.0	0.00%	44.0	65.88%
Summer 2004-2005	14.6	81.78%	0.0	0.00%	3.3	18.22%
2004-2005 Total	58.6	41.81%	0.0	0.00%	81.5	58.19%
Fall 2005-2006	30.6	43.95%	0.0	0.00%	39.0	56.05%
Spring 2005-2006	20.9	46.49%	0.0	0.00%	24.0	53.51%
Summer 2005-2006	14.2	61.26%	0.0	0.00%	9.0	38.74%
2005-2006 Total	65.7	47.70%	0.0	0.00%	72.0	52.30%
Fall 2006-2007	27.2	54.14%	0.0	0.00%	23.0	45.86%
Spring 2006-2007	25.5	56.01%	0.0	0.00%	20.0	43.99%
Summer 2006-2007	10.8	54.57%	0.0	0.00%	9.0	45.43%
2006-2007 Total	65.7	47.70%	0.0	0.00%	72.0	52.30%

Source: PeopleSoft Student Administration System: Faculty/Adjunct Ratio Report (S_FACRAT)

The Fulltime/Adjunct Faculty Ratio is calculated by dividing a program's adjunct's ECHs by the sum of the Adjunct's, Percent of Load's, and Fulltime Faculty's ECHs. Figure 7 displays the Fulltime/Adjunct Faculty Ratio information for the last three academic years.

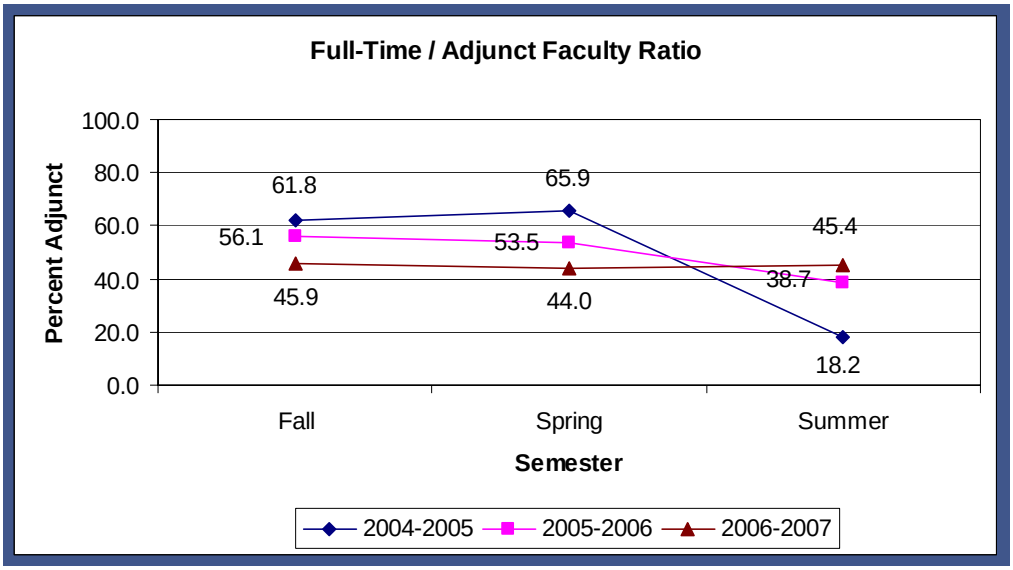

Figure 7: Full-time/Adjunct Faculty Ratio

Source: PeopleSoft Student Administration System: Faculty/Adjunct Ratio Report (S_FACRAT)

Program Profitability

Relative Profitability Index (RPI-T)

Relative Profitability Index (RPI-T) is a measure of program profitability. It is calculated by dividing a program's income by the sum of its personnel costs and current expenses. Only Fund 10 financials were used in the calculation of RPI-T for this report; specifically, 400000 level accounts were used for program revenues, 500000 level accounts were used for personnel costs, and 600000 level accounts were used for current expenses. The RPI-T increased (0.61) in 2005-06 from the previous value (0.38) in 2004-05, and later decreased (0.40) in 2006-07.

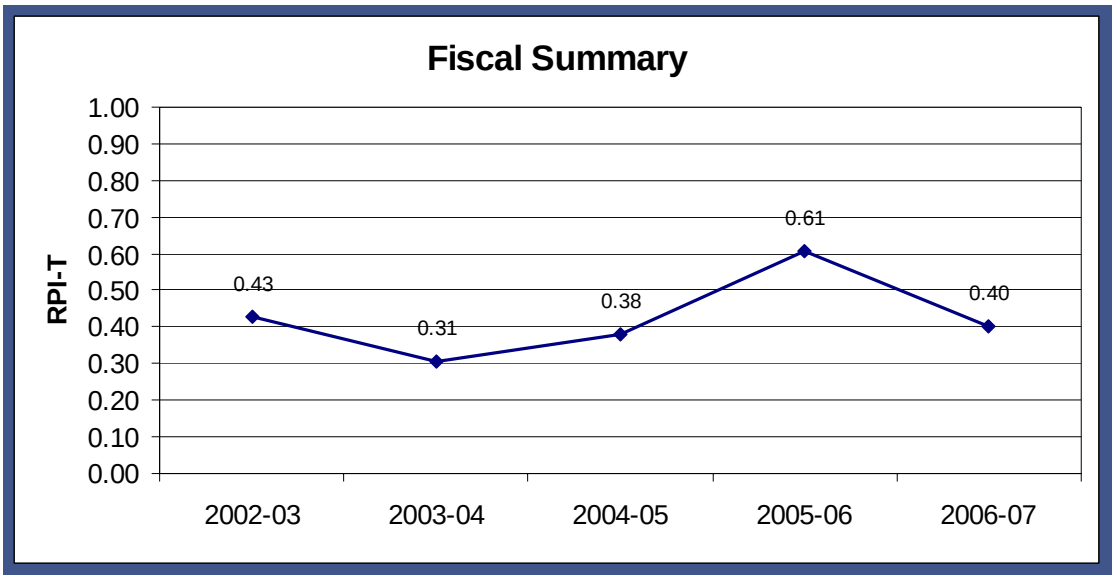

Figure 8: Fiscal Summary

Source: PeopleSoft Financial Production System: Summary of Monthly Organization Budget & Actuals Status Report (ORGBUDA1) from End of Fiscal Year

Program Improvements

Capital Expenditures

Capital Expenditures (Fund 10 and 16) for the ENGTECH program (Org: 11260104) during the past three years totaled $115,850 as shown on Table 3. Program improvements made as a result of the capital expenditures in 2004-05 included the purchase of function generators, pulse generators and logic analyzers to replace outdated and obsolete equipment in the electronics laboratory. Program improvements made as a result of the capital expenditures in 2005-06 included the purchase of logic analyzers and interface cards to perform advanced measurements in the electronics and instrumentation laboratory courses.

The Engineering Technology Advisory Committee recommended the purchase of this type of equipment in order to bring the electronics laboratory up to the industry standards due to the advancement in technology and measurement.

Table 3
ENGTECH Capital Expenditures

Capital Expenditures			
Year	**Capital Outlay**	**Account**	**Purchase Description**
2004-05	100,604	700000	function generators, pulse generators and logic analyzers
2005-06	15,246	700000	logic analyzers and interface cards to perform advanced measurements
2006-07	0	700000	n/a
Total	**115,850**		

Source: PeopleSoft Financial Production System: Summary of Monthly Organization Budget & Actuals Status Report (ORGBUDA1) from End of Fiscal Year

Academic Outcomes

As part of SPC quality improvement efforts, academic assessments are conducted on each AAS/AS program every three years to evaluate the quality of the program's educational outcomes. Recent academic assessments for Aviation Maintenance Management; Engineering Technology; and Manufacturing Technology are summarized below.

Aviation Maintenance Management Technology (AS)
The Aviation Maintenance Management Technology program has not been evaluated through an Academic Program Assessment Report (APAR). The 2006-07 APAR was closed due to insufficient enrollment.

Engineering Technology (AS)
The Engineering Technology program has not been evaluated through an Academic Program Assessment Report (APAR). This program is scheduled to start in 2007.

Manufacturing Technology (AS)
The Manufacturing Technology program was evaluated through an Academic Program Assessment Report (APAR) in 2006-07. Each of the program's six Major Learning Outcomes (MLOs) was evaluated during the assessment. Each of the six MLOs are listed below:

1. Applying manufacturing processes to a system.

2. Applying manufacturing applications used for production, planning, and quality control.

3. Applying lean, six sigma, and other quality assurance methods to solve manufacturing production problems.

4. Describing the professional standards used in industry by planning and managing assigned activities effectively.

5. Describing the professional standards by working and performing effectively to meet deadlines.

6. Describing the professional standards by using oral and written communications skills in a work related environment.

An assessment of the program was unable to be completed. Only one student completed the assessment during the assessment period (Spring 2006), and no assessments were conducted during 2006-07 due to insufficient participation in the program.

Since Summer 2006, only three students have completed the program. This includes two program graduates who received transferred credits from the deleted A.S. degree in Plastics Engineering Technology program; one who graduated in December 2006 and the other who graduated in May 2007. The third student transferred with credits from a deleted program, and graduated in July 2007.

Stakeholder Perceptions

Student Survey of Instruction (SSI)

Each Fall and Spring semester, St. Petersburg College (SPC) administers the Student Survey of Instruction. Students are asked to provide feedback on the quality of their instruction using a 7-point scale where 7 indicates the highest rating and 1 indicates the lowest rating.

Several variations of the SSI survey exist including lecture, non-lecture, clinical, and eCampus (on-line) versions. The purpose of the SSI survey is to acquire information on student perception of the quality of courses, faculty, and instruction, and to provide feedback information for improvement.

The survey questions are grouped into four categories; faculty/student interaction, organization, presentation, and evaluation, as defined below:

- **Faculty/Student Interaction –** focuses on how successful the faculty was in encouraging students to excel, the time spent on relevant course material, and responding to concerns and questions both inside and outside of the classroom.
- **Organization** – deals with clear instructions, defined objectives, relevant course materials, and whether the assignments were challenging.
- **Presentation** – focuses specifically on the instructor and their preparation for the course, enthusiasm for course, time spent on course related activities, ability to speak clearly and distinctly, thorough explanation of the subject matter, and assignment of material throughout the term.
- **Evaluation** – focuses on course expectations and grading policies, applying the stated grading policies consistently and impartially, and giving applicable course assignments including quizzes and exams.

Lecture. The lecture version of the survey is distributed to all students enrolled in traditional classroom sections within the College. The 2006 SSI results show a slight increase for the Engineering Technology program, over the Fall 2005 scores in all four content areas. The average scores are all well above the traditional threshold (an average of 5.0) used by the College for evaluating seven-point satisfaction scales during all four semesters. The average survey results by semester and content area are shown by Figure 9.

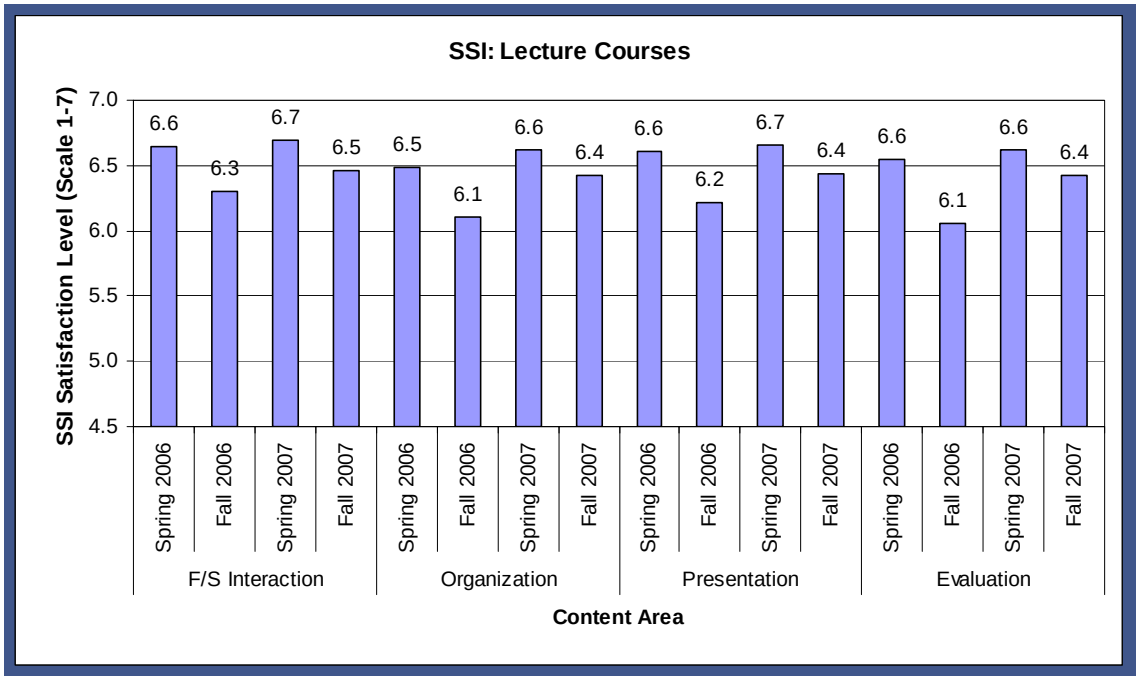

Figure 9: SSI Lecture Courses

Source: PeopleSoft Student Administration System: Query S_SSI_CHRT_QRY_CAMPUS

Non-Lecture. Lab courses and self-paced or directed individual study use the non-lecture version of the survey. The average scores are all well above the traditional threshold (an average of 5.0) used by the College for evaluating seven-point satisfaction scales. The average survey results by semester and content area are shown by Figure 10.

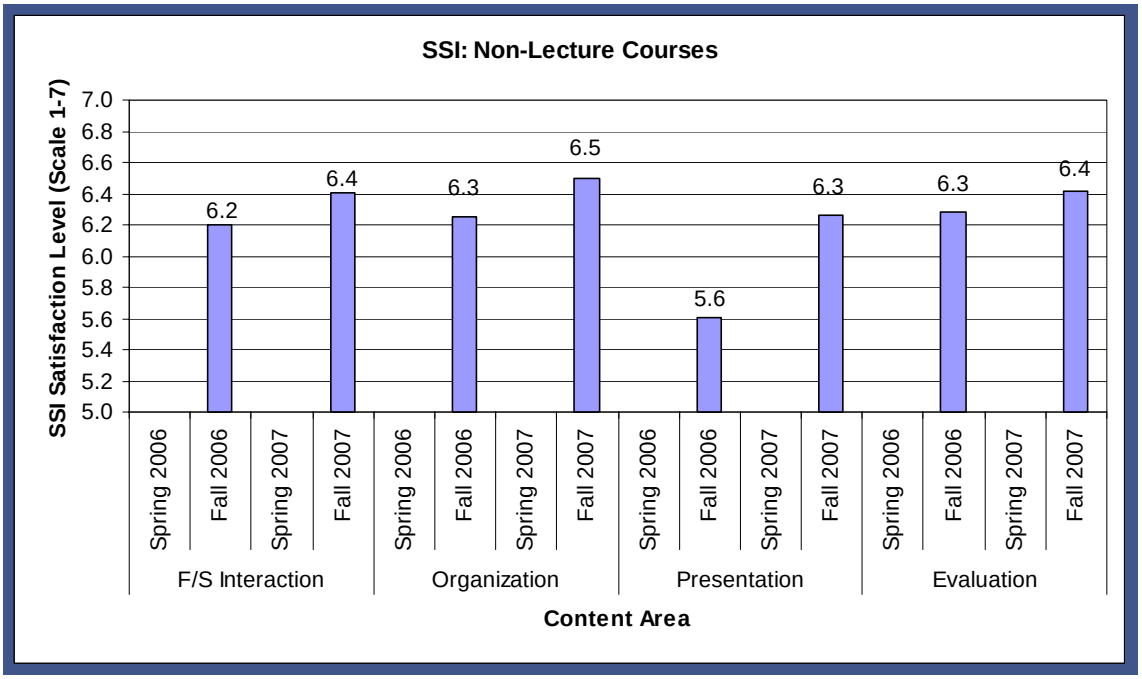

Figure 10: SSI Non-Lecture Courses

Source: PeopleSoft Student Administration System: Query S_SSI_CHRT_QRY_CAMPUS

Clinical. The clinical version of the survey is distributed to all students enrolled in a clinical specific class. The Engineering Technology program does not offer clinical courses, therefore this version of the survey was used in error. The average scores are all well above the traditional threshold (an average of 5.0) used by the College for evaluating seven-point satisfaction scales. The average survey results by semester and content area are shown by Figure 11.

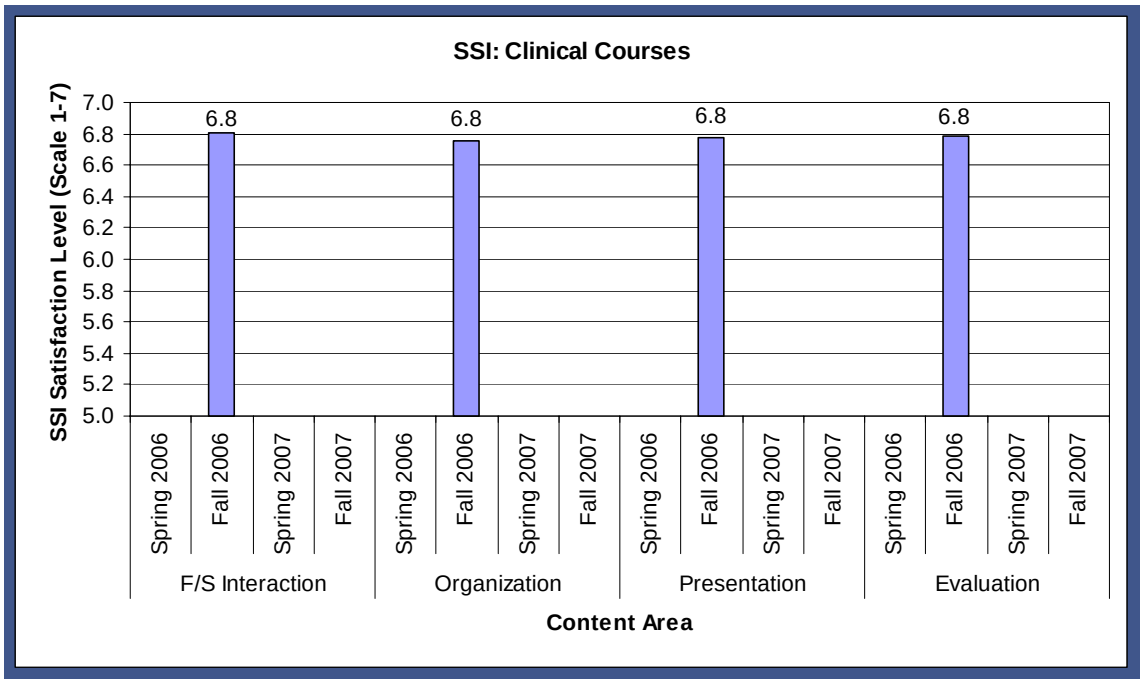

Figure 11: SSI Clinical Courses
Source: PeopleSoft Student Administration System: Query S_SSI_CHRT_QRY_CAMPUS

eCampus. The eCampus or on-line version of the SSI survey is electronically distributed to all students enrolled in on-line courses at the College. The Project Eagle Research Capsule #4 provides information on the difference in the wording of the questions (http://www.spcollege.edu/eagle/research/perc/perc4.htm). There were no eCampus classes in the Engineering Technology program during the time of the review.

Summary. All the individual average content area scores were above the traditional threshold (an average of 5.0) used by the College for evaluating seven-point satisfaction scales. These results suggest general overall satisfaction with the courses within the Engineering Technology program; specifically, as they relate to faculty/student interaction, course organization, course presentation, and evaluation methodologies.

Technical Education Advisory Committee

Community input and participation is an important component of the educational process at the College. The technical education advisory committees are an example of community input. Advisory committees meet a minimum of twice annually with additional meetings as needed for good program coordination.

Advisory committee members are appointed by the College President to serve a one-year term of office and must have a demonstrated competency in the program specialty area or an understanding of the program and of the community at large. An exception to the above may be a lay person directly involved in a related program field such as counseling, public relations, or administration of a business or industry.

Specific Duties of Advisory Committees are to:

1. serve as a communication channel between the college and the community;
2. determine specific skills and suggest related and technical information for the program;
3. suggest ways for improving public relations and articulation of the program with other institutions;
4. assist in recruiting, providing internships, and in placing qualified graduates in appropriate jobs;
5. keep the program personnel informed on changes in labor market, specific needs (competencies), and surpluses;
6. recommend curriculum revisions as necessary to comply with current trends;
7. assist in assessing the program needs in terms of the entire community (long-range planning);
8. assist program personnel in searching for sources of funding for scholarships, equipment, etc.;
9. in general, to advise, recommend, and assist in assuring a quality program as determined by community needs; and
10. discuss proposed equipment purchases in excess of $9,999.99.

Recent Meeting Summary.

An Engineering Technology advisory committee meeting was held on October 2, 2007. The meeting consisted of status reports and discussions

led by Brad Jenkins on enrollment; the new A.S. degree in Engineering Technology; the new CADD Certificate, new courses, and curriculum recommendations by the members.

Enrollment.

Brad Jenkins provided an update on the increase in fall semester enrollment which is up over 10% from last year. The unduplicated headcount includes 84 students enrolled for the CADD program and 52 in the Lean Green Belt and Six Sigma Black Belt Certificates. The overall enrollment in Electronics is up from last year with 27 enrolled students and 12 in Manufacturing. The 2006-07 graduates included 13 students receiving AS Degrees in Electronics, Telecommunication, Aviation Maintenance, Quality, and Manufacturing with 17 receiving the Six Sigma Black Belt Certificates, 16 receiving the Lean Green Belt Certificates, and 10 students receiving the Computer Integrated Design (CID-CAD) certificates.

A.S. Degree in Engineering Technology.

The committee members received the state approved copies of the new A.S. Degree in Engineering Technology. This is a 60 credit hour degree with specialties in Electronics and Quality. The 18 credit hour technical core also provides a new certificate, the Engineering Technology Support Specialist. The new certificate in Computer Aided Design and Drafting (CADD) was also distributed. These programs are in effect for this fall session and have been received well by the students. The members also received copies of all the degree and certificate programs that are now in effect.

CADD Certificate.

After a brief discussion concerning the new certificate and the CADD courses that are also part of the Building Arts Program, the committee recommended that this new CADD certificate become a specialty under the new A.S. degree in Engineering Technology. The committee recommended developing an application course in Solid Works, which would complete the options in the program since this specialty would require 24 credit hours.

The committee also discussed and expressed interest in perhaps adding another course besides the AutoCAD and Solid Works courses to this

program. Marcus Heiler requested that we may want to add some additional mechanical course or add the ETI 1622, Concepts of Lean Six-Sigma to the specialty. The mechanical course, ETM1010C is already part of the technical core, and the ETI 1622 is also the first course in the Lean Green Belt Certificate. The Committee felt that the CADD specialty should have more of a mechanical slant. Brad Jenkins will inquire at the upcoming Engineering Technology Forum on any CADD issues that the other community colleges have in respects to developing a CADD specialty and if there are different mechanical options related to this area.

New Courses.

Brad Jenkins presented the two new courses in Risk Management and Assessment and Medical Device Design and Manufacturing to the committee for discussion. Both of these courses will be part of the new Medical Quality Systems Certificate and also part of the new nationwide National Science Foundation (NSF) Medical Device Industry Education Consortium (MDIEC) Project. The committee recommended that the curriculum proposals for the two new medical devices courses be approved and sent on to the Curriculum Committee for that approval process, so they could be offered in the January session. The committee also gave its approval to include the ETI2624, Concepts of Six Sigma, as a prerequisite, to ETI 2619, Six Sigma Project Management course.

The complete committee minutes along with the minutes from previous meetings are located in Appendices B, C, and D.

Recent Graduate Surveys were provided to the 2004-05 graduates of the Engineering Technology program. Seventy-two percent (72.7%) of the 11 graduates surveyed responded to the survey. Six of the respondents provided permission to contact their employers.

Notable results include:

- 100.0% of recent graduate survey respondents who were employed, were employed full-time.
- 42.9% of recent graduate survey respondents had a current position related to their studies.
- 14.3% of recent graduate survey respondents thought that SPC did *'Exceptionally well'*, 35.7% *'Very well'*, while 14.3% thought that SPC *'Adequately'* prepared them for their current position.
- 83.3% of recent graduate survey respondents employed in a field related to their studies believed that SPC prepared them for their chosen career.
- For hourly employees, 25.0% of recent graduate survey respondents earned between $13.86 and $16.49 per hour, while the remaining 75.0% earned between $10.00 and $13.85 per hour.
- For salary employees, 22.2% of recent graduate survey respondents earned between $30,000 and $39,999 per year, while the remaining 77.8% earned between $20,000 and $29.999 per year.
- 100.0% of recent graduate respondents who are continuing their education are doing so in upper division programs.
- 94.1% of recent graduate survey respondents would recommend the Engineering Technology program to another

Six *Employer Surveys* were sent out to employers based on the permission provided by recent graduates in the 2004-05 recent graduate survey. Only one employer responded, and since a single response can not accurately represent the entire program, employer survey results will not be reported.

Occupation Profile

Occupation Description

The occupation description used by the Bureau of Labor Statistics is shown below:

> *Lay out, build, test, troubleshoot, repair, and modify developmental and production electronic components, parts, equipment, and systems, such as computer equipment, missile control instrumentation, electron tubes, test equipment, and machine tool numerical controls, applying principles and theories of electronics, electrical circuitry, engineering mathematics, electronic and electrical testing, and physics. Usually work under direction of engineering staff.*

US, State, and Area Wage Information

The distribution of 2005 wage information for Engineering Technology is located in Table 4. The median yearly income for Engineering Technology was $48,000 in the United States, and $41,900 in the local area. The wage information is divided by percentiles for hourly and yearly wages. This information is also separated by location.

Table 4
Wage Information for Engineering Technology

Location	Pay Period	2005				
		10%	25%	Median	75%	90%
United States	Hourly	$14.28	$18.22	$23.10	$27.45	$33.64
	Yearly	$29,700	$37,900	$48,000	$57,100	$70,000
Tampa-St. Petersburg-Clearwater, FL MSA	Hourly	$12.43	$15.62	$20.16	$24.60	$27.83
	Yearly	$25,900	$32,500	$41,900	$51,200	$57,900

Source: Bureau of Labor Statistics, Occupational Employment Statistics Survey; Florida Agency for Workforce Innovation

National, State, and County Trends

Employment trend information is included in Table 5 and divided by country and state. A significant average annual increase (10% – 15%) in employment for the profession over the next 5 – 7 years for the country and state is shown.

Table 5
State and National Trends

United States	Employment		Percent Change	Job Openings [1]
	2004	2014		
Electrical and electronic engineering technicians	181,600	199,400	+ 10 %	5,580
Florida	**Employment**		**Percent Change**	**Job Openings [1]**
	2002	2012		
Electrical and electronic engineering technicians	9,180	10,570	+ 15 %	330

[1]Job Openings refers to the average annual job openings due to growth and net replacement.

Note: The data for the State Trends and the National Trends are not directly comparable. The projections period for the State Trends is 2002-2012, while the projections period for the Country and County Trends is 2004-2014.

Source: Bureau of Labor Statistics, Office of Occupational Statistics and Employment Projections; Florida Employment Projections

State Graduates Outcomes

To provide reference information for the employment trend data, program graduate state outcome data is provided for all academic programs included within Engineering Technology. Aviation Maintenance Management Technology program graduate state outcome data is provided in Table 6. Manufacturing Technology program graduate state outcome data is provided in Table 7. Engineering Technology program graduate state outcome data is not available for 2003-04. Electronics Engineering Technology program graduate state outcome data is provided in Table 8, for the purpose of comparison. Computer Engineering Technology program state outcome date is provided in Table 9.

Seventeen (17) students completed a state Aviation Maintenance Management Technology program in 2003-04, sixteen (16) had some matching state data, and seventy-seven percent (10) of those state graduates were employed at least a full quarter as depicted on Table 6.

Table 6
Aviation Maintenance Management Technology Program Graduates 2003-2004 Outcomes by Florida Community College

Florida Community College	Total Completers	# W/Matching State Data	# Found Employed	# Employed for a Full Qtr	% Employed For a Full Qtr
FCCJ	4	4	2	2	100%
Miami Dade	13	12	11	8	73%
Total	**17**	**16**	**13**	**10**	**77%**

Source: Florida Education and Training Placement Information Program (FETPIP), Community College Vocational Reports **http://www.fldoe.org/fetpip/pdf/0304pdf/cc0304asc.pdf**

One (1) student completed a state Manufacturing Technology program in 2003-04, one (1) had some matching state data, and one state graduate was employed at least a full quarter as depicted on Table 7.

Table 7
Manufacturing Technology Program Graduates 2003-2004 Outcomes by Florida Community College

Florida Community College	Total Completers	# W/Matching State Data	# Found Employed	# Employed for a Full Qtr	% Employed For a Full Qtr
Pensacola	1	1	1	1	100%
Total	**1**	**1**	**1**	**1**	**100%**

Source: Florida Education and Training Placement Information Program (FETPIP), Community College Vocational Reports **http://www.fldoe.org/fetpip/pdf/0304pdf/cc0304asc.pdf**

There were no students who completed a state Engineering Technology program in 2003-04.

Almost seventy (66) students completed a state Electronics Engineering Technology program in 2003-04, of those fifty-five (55) had some matching state data. Eighty-two percent (37) of those state graduates were employed at least a full quarter. SPC's Engineering Technology graduates exceeded this rate, with 100% of the graduates employed at least a full quarter as depicted in Table 8.

Table 8
Electronics Engineering Technology Program Graduates 2003-2004 Outcomes by Florida Community College

Florida Community College	Total Completers	# W/Matching State Data	# Found Employed	# Employed for a Full Qtr	% Employed For a Full Qtr
Brevard	11	10	8	8	100%
Chipola	1	0	0	0	--
Daytona	8	5	4	1	25%
FCCJ	5	5	5	4	80%
Gulf Coast	4	4	2	2	100%
Indian River	4	3	3	3	100%
Broward	3	3	3	3	100%
Manatee	2	2	1	1	100%
Miami Dade	17	13	9	8	89%%
Pensacola	1	1	1	1	100%
Seminole	1	1	1	1	100%
South Florida	1	1	1	0	0%
St. John's	1	1	1	0	0%
St. Petersburg	4	3	3	3	100%
Valencia	1	1	1	0	0%
Hillsborough	2	2	2	2	100%
Total	66	55	45	37	82%

Source: Florida Education and Training Placement Information Program (FETPIP), Community College Vocational Reports **http://www.fldoe.org/fetpip/pdf/0304pdf/cc0304asc.pdf**

About one-hundred and fifty (151) students completed a state Computer Engineering Technology program in 2003-04, of those one-hundred thirty-five (135) had some matching state data. Eighty-seven percent (104) of those state graduates were employed at least a full quarter as depicted in Table 9.

Table 9
Computer Engineering Technology Program Graduates 2003-2004 Outcomes by Florida Community College

Florida Community College	Total Completers	# W/Matching State Data	# Found Employed	# Employed for a Full Qtr	% Employed For a Full Qtr
Brevard	2	1	1	1	100%
Daytona	10	9	8	6	75%
FCCJ	1	1	0	0	--
Gulf Coast	15	13	12	10	83%
Broward	4	4	3	3	100%
Miami Dade	8	6	6	4	67%
Polk	19	16	14	13	93%
Seminole	33	31	27	22	81%
St. John's	4	4	4	4	100%
St. Petersburg	2	0	0	0	--
Valencia	53	50	44	41	93%
Total	**151**	**135**	**119**	**104**	**87%**

Source: Florida Education and Training Placement Information Program (FETPIP), Community College Vocational Reports **http://www.fldoe.org/fetpip/pdf/0304pdf/cc0304asc.pdf**

Program Director's Perspective: Issues, Trends, and Recent Successes

I am very pleased with the general findings and data presented in this report. With so many positive indicators the Engineering Technology program continues to meet the needs of industry and students by providing innovative courses and programs. The strengths of the program include a very supportive and active Advisory Committee, excellent faculty, and the support for our programs from the local industry. I would also like to present some information related to our program success.

Engineering Curriculum Enhancements

The A.S. Degree in Engineering Technology is 60 credit hours including 18 credit hours for general education, 18 credit hours of Technology Core, and 24 hours related to the two specialties in Electronics and Quality. This new degree replaces a 68 credit hour Electronics Engineering Technology and 64 credit hour Quality Compliance Technology program. With this format, a new certificate, Engineering Technology Support Specialist can now be offered using the 18 credit hours of the Technology Core. Our efforts with the Florida Advanced Technology Education (FLATE) Manufacturing Center in creating this new A.S. Degree led to a statewide acceptance by 5 other community colleges to offer this same degree and 4 others considering this path.

The Technology Core covers the curriculum and aligns with the Manufacturing Skills Standard Council (MSSC) national certification. This is an industry certification that is being recognized by the manufacturing sector as a factor for hiring new employees. The students will take this Technology Core and then decide what specialty area they would like to choose. Since the Technology Core courses relate to both electronics and quality, the students will be able to get a flavor of the specialty they want.

The transferability of the courses will be direct for the students transferring from other community colleges since they are all the same standard course number. The program and courses will still be transferred directly to the state universities offering the B.S. Degrees in Engineering Technology and B.A.S. degrees. All the new curriculum frameworks and

CIP numbers have been assigned by the state of Florida for the A.S. degree as well as all certificates.

Productivity and Enrollment

The productivity for the Engineering Technology continues to improve along with an increase in actual student semester hours (SSHs). All CAD courses (AutoCAD and SolidWorks) are now offered only at the Clearwater Campus, and with the curriculum restructuring this past summer eliminating the TAR courses, the productivity was 1.03 (S-I, 2007-08) and 1.05 (S-II, 2007-08). All Lean Six Sigma Green Belt and Six Sigma Black Belt courses are now offered at the Epicenter in which the enrollment and productivity has also increased, The productivity was 1.04 (S-I, 2007-08) and 1.12 (S-II, 2007-08). The Engineering Technology offerings on the St. Petersburg campus was 1.28 (S-I, 2007-08) and 0.82 (S-II, 2007-08). The new Engineering Technology curriculum, the timely offerings of courses and the location closer to industry have attributed to this increase in overall productivity at these three college sites.

Program Completers

The program completers have increased the past two years with 17 AS Degree and 44 Certificate graduates in 2006 and 10 A.S. Degree and 85 Certificate graduates in 2007. The reason for these increases was due to the development of new certificates, as requested by our local industry. There has been a tremendous growth in the Lean Six Sigma and Six Sigma Black Belt certificates. Both the Green and Black Belt programs were the first and the only college credit certificate programs of this type in the Southeast.

Areas of Concern

Students taking introduction or beginning courses in the Engineering Technology program area, to meet the 21 technical credits prerequisite entry requirements, to the BAS degree in Technology Management have increased the enrollment in those ET courses. However since these students have no vested interest in the AS degree programs, it makes it very hard to plan subsequent course offerings in the program.

The lack of the HS enrollments (18-20 year olds) in the technical programs is also an area of concern. Courses in the program are offered in the evening to meet the needs of the encumbered industry workers.

The lack of completers in the AS degrees is an issue. Students are graduating with the technical certificates, but are not continuing on with the AS degrees. Although the number of A.S. completers has increased the past two years, we really need to address this area.

Locating credentialed faculty to teach the applications and laboratory courses for the AS degree Engineering Technology is another concern. Many engineers that have Master's degrees are project managers, systems engineers, or engineering staff consultants. They are not working with lab equipment and are not prepared or comfortable teaching our applications courses.

The work readiness as required by industry (a fast startup on technology and course delivery) is another issue. Our advisory committee and focus groups have provided the necessary feedback in this area of concern, however with a fast changing technology this is an area we need to concentrate on more.

Program Improvements

This equipment purchased with capital expenditures has increased the electronic workstation capability to the present eight workstations, up from the seven that we had before obtaining this much needed equipment. The equipment is now of the same industry standard eliminating the older types of different function generators that the students have previously had to use. There is also less sharing of equipment now that there is more of the equipment.

Program and curriculum improvements made as a result of these capital expenditures included the advanced improvements in both accuracy and precision for the laboratory experiments in the EET 2140L Solid State Laboratory, the CET 1114L, Digital laboratory and the EET 1205C, Electronic Instrumentation course. The new equipment provides the opportunity to perform measurements using industry type equipment that the students will use when they are employed. They are receiving the

training necessary to make them productive without much start up time and training from industry.

Recommendations/Action Plan

Program: Engineering Technology

Date Completed: February 2008

	Action Item	Completion Date	Responsible Party
1	Explore growing enrollment in the CAD area of courses and the need for new course development in: • AutoCAD and Solid Works • Rapid prototyping • Machining of parts using plastic • Applications based courses	June 2009	Bradley Jenkins
2	Explore development of a new specialization for the A.S. degree in Engineering Technology: • CADD and Medical Systems	June 2009	Bradley Jenkins
3	Identify resources to market the new programs and courses to high school and industry	June 2009	Bradley Jenkins
4	Explore using a national certification like MSSC to increase interest and enrollment in new degree and specialties.	June 2009	Bradley Jenkins
5	Explore working with high schools and their Career Academies and making use of the MSSC skills in an attempt to recruit the HS students into our program. This may increase program enrollment if the high schools select a technology that fits within our programs.	June 2009	Bradley Jenkins

Special Resources Needed:

- Resources for new course development
- Resources to market the new programs and courses to high schools and industry

Area(s) of Concern/Improvement:

- Students are not completing certain certificates; they are just picking up courses for work skills. Students that are completing certificates, but are not spending the extra time for completing the AS degree. Students may not need the AS degree for job employability.

- Students are only taking the introduction or beginning courses to meet the 21 technical credits for the prerequisite requirement entry to the BAS degree in Technology management. These students have no vested interest in the AS degree programs and as a result of this situation, it makes it very hard to plan subsequent course in the AS degrees. Follow up courses generally have to be cancelled due to low enrollment.

- Improving the curriculum to provide the updated technology to meet industries demand.

Bradley Jenkins, Program Director — Date: 2-11-08

Lars Hafner, Provost — Date: 2-11-08

President's Cabinet Review

Summary of observations, recommendations, and decisions:

President's Signature _____ Date 2/18/08

Action Plan Follow-up and Evaluation Report

Program: Engineering Technology

Date Completed:

Prepared By:

I. Action Plan Item Status

	Action Item	Completion Date	Completion Status
1			
2			
3			
4			

II. Non-Completed Action Plan Items and Plan for Completion

	Action Item	Completion Date	Completion Status
1			
2			
3			
4			

III. Evaluation of the Impact of Action Plans on Program Quality

_____ _____

Provost Date

_____ _____

Responsible VP Date

References

Rule 6A-14.060(5). *Florida Administrative Code, Accountability Standards.* Retrieved October 2002, from the Division of Community Colleges Web site: http://www.firn.edu/doe/rules/6A-14.htm

Contact Information

Please address any questions or comments regarding this evaluation to:

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St. Petersburg College, P.O. Box 13489, St. Petersburg, FL 33733
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weideman.carol@spcollege.edu

Appendix A: Program Overview (2007)

AVIATION MAINTENANCE MANAGEMENT TECHNOLOGY (AVAMM-AS)

ASSOCIATE IN SCIENCE DEGREE

(Transferable to Technology Management BAS program at SPC)
Brad Jenkins, Lead Instructor (727) 341-4378

The Aviation Maintenance Management Technology program is an articulated program with the National Aviation Academy (NAA), Clearwater, Florida. The goal of this program is to provide the opportunity for students who have successfully completed all the course requirements of study and who have been certified with the Aviation Maintenance Program for Airframe and Powerplant Technology, through the passage of the Federal Aviation Administration (FAA) exams, to pursue the college level education appropriate for management and supervision. The Aviation Maintenance Technology program, offered through NAA, consists of instruction and practical training in the maintenance, repair, inspection, and troubleshooting of different types of aircraft. The student must meet all NAA entrance and tuition requirements.

GENERAL EDUCATION COURSES (18 CREDITS)			
ENC	1101	Composition I or (Honors)	3
SPC	1600	Introduction to Speech Communication **OR** (SPC 1600H, 1016, 1060, or 1060H)	3
Humanities/Fine Arts Approved Course			3
Mathematics		One college-level course with a MAC, MAP, MAS, MGF, MTG or STA prefix	3
Social & Behavioral Sciences Approved Course			3
PHI	1631	Studies in Professional Ethics **OR** (PHI 1600, 1602H, 2635 or 2649)	3
Computer/Information Literacy Competency Requirement			
SUPPORT COURSES (9 CREDITS)			
MAN	2021	Principles of Management	3
AGC	2021	Financial Accounting	3
MAN	2340	Human Factors in Supervision	3
Total SPC Credits			**27**
NATIONAL AVIATION ACADEMY MAJOR COURSES (56 CREDITS)			
Total credits approved from the Aviation Maintenance Program for Airframe and Powerplant Technology. This program has met all the standards established by the Federal Aviation Administration (FAA) for Aviation Maintenance Technician Schools under the FAA Certificate Number DV9T100-R.			56
TOTAL PROGRAM HOURS			**83**

Appendix A: Program Overview, 2007 (con't)

ENGINEERING TECHNOLOGY
(ENG-AS)
ASSOCIATE IN SCIENCE DEGREE
Brad Jenkins , Program Director, SPG, (727) 341-4378

The purpose of this program is to prepare students for employment or provide additional training for persons previously or currently employed in the manufacturing, medical, electronics, aerospace, or other related industries. This degree is a planned sequence of instruction consisting of the two specializations; electronics and quality with one common core for both. It is recommended that students complete the core before advancing to the courses in the next level of specialization. The coverage includes communication skills, technical competency, safe and efficient work practices and a combination of theory and laboratory activities to gain the necessary cognitive and manipulative skills to support engineering design, processes, production, testing, and product quality.

The 18 credit hour technical core has also been aligned with the Manufacturing Skills Standards Council's (MSSC) skills standards. The MSSC skill standards define the knowledge, skills, and performance needed for positions in manufacturing. After completing this core and the General Education requirements, the students will be eligible to take the exam for the MSSC Production Technician Certification. The graduates of the Engineering Technology Program can transfer to universities offering the B.S. degree in Engineering Technology.

GENERAL EDUCATION COURSES (18 credits)

ENC	1101	Composition I or Honors	3
Humanities/Fine Arts Approved Course			3
SPC	1600	Introduction to Speech Communication or any approved SPC course	3
Mathematics		One college-level course with a MAC, MGF or MTG course	3
Social & Behavioral Sciences Approved Course			3
PHI	1600	Studies in Applied Ethics OR (PHI 1602H, 1631, 2635, 2649)	3
Computer/Information Literacy Competency Requirement			

TECHNOLOGY CORE COURSES (18credits)

EET	1084	Introduction to Electronics	3
ETD	1320C	Introduction to CAD	3
ETI	1420	Manufacturing Materials and Processes	3
ETI	1110	Introduction to Quality Assurance	3
ETI	1701	Industrial Safety	3
ETM	1010C	Mechanical Measurement and Instrumentation	3

SUBPLAN A: ELECTRONICS (ELEC) (24 credits)

EET	1015C	DC Circuit Analysis with Lab	4
EET	1025C	AC Circuit Analysis with Lab	4
CET	1114C	Digital Fundamentals with Lab	4
EET	2140C	Solid State Electronics with Lab	4
EET	2155C	Linear Integrated Circuits with Lab	4
EET	1205C	Electronic Instrumentation	1
EET	2949	Co-op Work Experience	3

TOTAL PROGRAM HOURS **60**

OR

SUBPLAN B: QUALITY (QUAL) (24 credits)

ETI	1622	Concepts of Lean and Six Sigma	3
ETI	2623	The Lean Enterprise for the Expert	3
ETI	1628	Development of Self Directed Work Teams	3
ETI	2601	Six Sigma for the Expert	3
ETI	2624	Six Sigma Black Belt Concepts	3
ETI	2670	Technical Economic Analysis	3
ETI	2619	Six Sigma Project Management	3
ETI	2626	Six Sigma Capstone Project	3

TOTAL PROGRAM HOURS **60**

Appendix A: Program Overview, 2007 (con't)

MANUFACTURING TECHNOLOGY (MNTEC-AS)

ASSOCIATE IN SCIENCE DEGREE

(Transferable to Technology Management BAS degree at SPC)
Brad Jenkins, Instructor-in-Charge (727) 341-4378

The program curriculum provides the coverage of the advanced manufacturing techniques related to lean manufacturing, six sigma, just-in-time (JIT) and ISO standards. Major aspects of the program also include manufacturing processes and operations through applications in manufacturing, using automated manufacturing techniques, production and inventory systems, CAD/CAM development, forecasting and scheduling, quality control, MRP and statistical process control.

GENERAL EDUCATION COURSES (18 credits)

ENC	1101	Composition I or (Honors)	3
Humanities/Fine Arts Approved Course			3
SPC	1600	Introduction to Speech Communication **OR** (SPC 1600H, 1016, 1060 or 1060H)	3
Mathematics		One college-level course with a MAC MGF or MTG prefix	3
Social & Behavioral Sciences Approved Course			3
PHI	1600	Studies in Applied Ethics **OR** (PHI 1602H, 1631, 2635, 2649, or 1603 and 2621 or 2622)	3
Computer Competency Requirement			

SUPPORT COURSES (12 credits)

EET	1084	Introduction to Electronics	3
ETD	1320C	AutoCAD I	3
PSC	1001C	Physical Science with Lab	3
STA	2023	Elementary Statistics	3

MAJOR COURSES (34 credits)

EGS	2122C	Geometric Dimensioning and Tolerancing	3
ETI	1420	Manufacturing Processes & Materials I	3
ETI	1482C	Introduction to Integrated Manufacturing	3
ETI	1622	Concepts of Lean and Six Sigma	3
ETI	1628	Developing and Coaching Self Directed Work Teams	3
ETI	1644	Production and Inventory Control	3
ETI	1701	Industrial Safety	1
ETI	2110	Introduction to Quality Assurance	3
ETI	2411	Topics in Modern Manufacturing I	3
ETI	2601	Six Sigma for the Expert	3
ETI	2623	The Lean Enterprise for the Expert	3
EET	2949	Co-op Work Experience	3
TOTAL PROGRAM HOURS			**64**

Appendix A: Program Overview, 2007 (con't)

COMPUTER-AIDED DESIGN & DRAFTING CERTIFICATE (CADD-CT)

(Theses courses are only taught on the Clearwater Campus)
Brad Jenkins, Program Director, SP/G (727) 341-4378

Job Related Opportunities:
- CAD Designer
- CAD Technician
- Design Technician
- Detailer
- Engineering Aide

This certificate provides a program of study with courses in CAD and solid modeling needed to assist the engineering activities of industry and consultants in planning, designing, and detailing. Rapid Prototyping is also utilized throughout the solid modeling courses. These courses are also applied to the 62-credit hour Associate in Science Degree in Drafting and Design Technology. Students new to this field will be able to obtain employment by completing this certificate and work in those areas where CAD technicians and designers are needed.

PROGRAM REQUIREMENTS

ETD	1320C	Introduction to CAD	3
ETD	1350C	AutoCAD II	3
ETD	1355C	AutoCAD III 3-D Modeling	3
ETD	2359C	Introduction to SolidWorks	3
ETD	2367C	Advanced SolidWorks	3
Select any additional ETD related course			3
TOTAL CERTIFICATE HOURS			**18**

Appendix A: Program Overview, 2007 (con't)

ENGINEERING TECHNOLOGY SUPPORT CERTIFICATE (ENGTECH-CT)

Brad Jenkins, Program Director, SP/G (727) 341-4378

Job Related Opportunities:

- Engineering Support Specialist
- Engineering Technician
- Process Technician
- Quality Specialist
- Manufacturing Specialist

The purpose of this certificate is to prepare students for initial employment with an occupational title as Engineering Support Specialist or Engineering Specialist in various specialized areas to support engineering design, manufacturing processes and production, testing, and/or maintaining product quality, or to provide supplemental training for persons previously or currently employed in these occupational areas.

This 18 credit hour certificate has been defined to align with the Manufacturing Skills Standards Council's (MSSC) skills standards. MSSC skill standards define the knowledge, skills, and performance needed by today's frontline manufacturing workers. After completing this core and the General Education requirements in the A.S. degree, it is anticipated that students will be prepared to pass the MSSC Production Technician Certification.

These courses are also part of the 60-credit hour Associate in Science Degree in Engineering Technology.

PROGRAM REQUIREMENTS

EET	1084	Introduction to Electronics	3
ETD	1320C	Introduction to CAD	3
ETI	1420	Manufacturing Processes and Materials I	3
ETI	1110	Introduction to Quality Assurance	3
ETI	1701	Industrial Safety	3
ETM	1010C	Mechanical Measurement and Instrumentation	3
TOTAL CERTIFICATE HOURS			**18**

Appendix A: Program Overview, 2007 (con't)

LEAN SIX-SIGMA GREEN BELT CERTIFICATE (LEAN-CT)

Brad Jenkins, Program Director, SP/G (727) 341-4378

Job Related Opportunities:

- Quality Technician
- Process Technician
- Production Assistant
- Manufacturing Technician

This Green Belt certificate provides a series of courses that focuses on the concepts, theories, and tools of the Lean Enterprise and Six Sigma as used in the manufacturing and services industries. The program covers the methods used in Lean and Six Sigma such as continuous flow, overall equipment effectiveness (OEE), Kaizen, process mapping, the 5S's, total productive maintenance (TPM), cellular manufacturing, the DMAIC, self-directed work teams, the kanban system, design for manufacturing, and value steam mapping. Throughout industry today there is a significant need of individuals educated in the methods of the concepts and tools of the Lean Enterprise and Six Sigma. The courses in this Green Belt certificate program are part of the Quality Specialty Subplan in the AS degree in Engineering Technology.

PROGRAM REQUIREMENTS

ETI	1622	Concepts of Lean and Six-Sigma	*3*
ETI	1628	Developing and Coaching Self-Directed Work Teams	*3*
ETI	2601	Six-Sigma for the Expert	*3*
ETI	2623	The Lean Enterprise for the Expert	*3*
TOTAL CERTIFICATE HOURS			**12**

Appendix A: Program Overview, 2007 (con't)

SIX SIGMA BLACK BELT CERTIFICATE
(SIXSG-CT)

Brad Jenkins, Program Director, SP/G (727) 341-4378

Job Related Opportunities:

- Quality Technician
- Quality Analyst
- Quality Control Specialist
- Manufacturing Technician

The Six Sigma black Belt certificate provides a four course sequence of classes covering the theory of Six Sigma along with a Six Sigma Project Course. This certificate, intended for the manufacturing and services industries, will build from the concepts of the Lean Six-Sigma Green Belt Expert Certificate. The major objectives of Six Sigma methodology include problem solving, strategic improvement, and business transformation. The course offerings of this certificate program will focus on the theory and methods of Six Sigma and concentrates using facts and data to improve customer satisfaction, reduce cycle time, and reduce defects. The courses in this Black Belt certificate are part of the Quality Specialty in the AS degree in Engineering Technology.

PROGRAM REQUIREMENTS

ETI	2624	Six Sigma Black Belt Concepts	*3*
ETI	2670	Technical Economic Analysis	*3*
ETI	2619	Six Sigma Project Management	*3*
ETI	2626	Six Sigma Capstone Project	*3*
TOTAL CERTIFICATE HOURS			**12**

Appendix B: Advisory Board Committee Minutes, 2007-2008

St. Petersburg College
Department of Engineering Technology

Engineering Technology Advisory Committee Minutes
Tuesday, October 2, 2007

Members Present:	**Marcus Heiler, Frank Cain, Mark Snyder, John DeBella, Ken Conforti, Steve Askew, Jonathan Bull, Lisa Maciolek, David Reese, Don Houdek, Clint Mells, Lou Grilli, Ed Homan, Steve Askew and Bill Venz.**
Members Absence:	**Greg Seay, and Maryanne Litteri.**
Member Excused:	**Bill Erdmann, Greg Seay, Mark Snyder, Jerry McCollum, Keith Matthews, Matt Smith, Tina Brudnicki and Jim Bittner.**
Special Guest:	**Susan Burnett, Coordinator Tech Prep, St. Petersburg College.**

The St. Petersburg College's Advisory Committees met for the first time at the Epicenter for an evening dinner and President Carl Kuttler addressed the 10 different committees that assembled during dinner and thanked them for their service to the college.

Brad Jenkins welcomed the advisory members to the fall meeting and provided the update on the increase in fall semester enrollment which is up over 10% from last year.
The unduplicated headcount includes 84 students enrolled for the CADD program and 52 in the Lean Green Belt and Six Sigma Black Belt Certificates. The overall enrollment in Electronics is up from last year with 27 enrolled students and 12 in Manufacturing. The 2006-07 graduates included 13 students receiving AS Degrees in Electronics, Telecommunication, Aviation Maintenance, Quality, and Manufacturing with 17 receiving the Six Sigma Black Belt Certificates, 16 receiving the Lean Green Belt Certificates, and 10 students receiving the Computer Integrated Design (CID-CAD) certificates.

The committee members received the state approved copies of the new A.S. Degree in Engineering Technology. This is a 60 credit hour degree with specialties in Electronics and Quality. The 18 credit hour technical core also provides a new certificate, the Engineering Technology Support Specialist. The new certificate in Computer Aided Design and Drafting (CADD) was also distributed. These programs are in effect for this fall session and have been received well by the

Appendix B: Advisory Board Committee Minutes, 2007-2008 (con't)

students. The members also received copies of all the degree and certificate programs that are now in effect.

There was some discussion concerning the new A.S. degree in Engineering Technology and if the courses included the usage of automatic testing software. The committee agreed that this technology is needed as the industry is using this test software in applications. The committee members said that there are many types of software on the market and Brad Jenkins remarked that Electronics Workbench and Labview are currently being used in the electronics curriculum. There is not any automatic testing that is being offered however in the curriculum.

After a brief discussion concerning the new certificate and the CADD courses that are also part of the Building Arts Program, the committee recommended that this new CADD certificate become a specialty under the new A.S. degree in Engineering Technology. The committee recommended developing an application course in Solid Works, which would complete the options in the program since this specialty would require 24 credit hours.
The committee also discussed and expressed interest in perhaps adding another course besides the AutoCAD and Solid Works courses to this program. Marcus Heiler requested that we may want to add some additional mechanical course or add the ETI 1622, Concepts of Lean Six-Sigma to the specialty. The mechanical course, ETM1010C is already part of the technical core, and the ETI 1622 is also the first course in the Lean Green Belt Certificate. The Committee felt that the CADD specialty should have more of a mechanical slant.
Brad Jenkins will inquire at the upcoming Engineering Technology Forum on any CAD issues that the other community colleges have in respects to developing a CADD specialty and if there are different mechanical options related to this area.

Brad Jenkins presented the two new courses in Risk Management and Assessment and Medical Device Design and Manufacturing to the committee for discussion. Both of these courses will be part of the new Medical Quality Systems Certificate and also part of the new nationwide National Science Foundation (NSF) Medical Device Industry Education Consortium (MDIEC) Project. The committee recommended that the curriculum proposals for the two new medical devices courses be approved and sent on to the Curriculum Committee for that approval process, so they could be offered in the January session. The committee also gave its approval to include the ETI2624, Concepts of Six Sigma, as a prerequisite, to ETI 2619, Six Sigma Project Management course.

The action items included:

1. The committee recommended that this new CADD certificate become a specialty under the new A.S. degree in Engineering Technology.

2. The committee recommended developing an application course in Solid Works.

3. Brad Jenkins will inquire at the upcoming Engineering Technology Forum on any CAD issues that the other community colleges may have in regards to any mechanical options.

Appendix B: Advisory Board Committee Minutes, 2007-2008 (con't)

4. The committee recommended that the curriculum proposals for the two new medical devices courses be approved and also gave its approval to include the ETI2624, Concepts of Six Sigma, as a prerequisite to the Project Management course.

The meeting was adjourned at 8:25 p.m.

The next meeting will be determined in the spring 2008. The meeting date and agenda will be sent out prior to the meeting.

Respectfully submitted,

Bradley E. Jenkins
Secretary

Appendix B: Advisory Board Committee Minutes, 2006-2007

St. Petersburg College
Department of Engineering Technology

Engineering Technology Advisory Committee Minutes
Wednesday, April 4, 2007

Members Present:	Bill Erdmann, Frank Cain, Mark Snyder, Keith Matthews, Ken Conforti, Steve Askew, Jonathan Bull, Jim Bittner, Lisa Maciolek, David Reese, Don Houdek, Jerry McCollum, Clint Mells, Tina Brudnicki, and Bill Venz.
Members Absence:	Harold Aponte, Greg Seay, and Maryanne Litteri.
Member Excused:	Marcus Heiler, John DeBella, Steve Askew, Keith Matthews, Jonathan Bull, Matt Smith, Lou Grilli, and Ed Homan.
Special Guest:	Amy Brush, Coordinator Program Reviews, St. Petersburg College.

Brad Jenkins welcomed the advisory members to the spring meeting and provided the update on the spring semester enrollment that included an increase of enrollment for the CAD and quality courses including the Lean Six Sigma Green Belt and Six Sigma Black Belt Certificates. The overall enrollment in electronics was down from last year with the enrollment in manufacturing steady. The May graduates will include 24 students receiving their Six Sigma Black Belt Certificates, 10 students receiving the Lean Green Belt, 6 students the Computer Integrated Design (CID), and 4 students receiving AS Degrees (Electronics, Telecommunication, Aviation Maintenance, and Manufacturing).

The committee members received a copy of the final draft of the new A.S. Degree in Engineering Technology. This is a 60 credit hour degree with specialties in Electronics, Quality, and Manufacturing. The 18 credit hour technical core also provides a new certificate and will be named the Engineering Technology Support Specialist. The committee members gave approval to move forward with the curriculum proposal to offer this degree, which would replace the separate A.S. Degrees in Electronics, Manufacturing, and Quality Compliance. The committee liked the fact that new specialties could be developed in response to industry needs and also expanded to include additional certificates that fit into these specialty areas. A brief discussion followed concerning the new course in Mechanics and Instrumentation that had not been developed yet. Brad Jenkins is developing that new class and will present the curriculum proposal to the committee for their input before submitting it for college approval. Brad Jenkins also provided additional material in regards to a new Computer Aided Design and Drafting (CADD) certificate that would provide two tracks; one for an architectural option and the

Appendix B: Advisory Board Committee Minutes, 2006-2007 (con't)

other for a mechanical option. The mechanical certificate could fit as a separate specialty under this new A.S. Degree. The architectural option would remain under the present format. Another discussion point was to drop the word Compliance from Quality Compliance and call this specialty Quality Analysis or just Quality. A draft of a new 18 credit hour certificate in Medical Device Quality Systems was also reviewed. This is part of the MDIEC NSF ATE Project that may also be under the Manufacturing or Quality as a separate certificate.

Some other curriculum concerns that were brought up included replacing the Development of Self Directed Work Teams course, in the Lean Green Belt Certificate, with a Supply Chain Management course. Also mentioned was a course in Electronic Troubling Shooting which could be offered in the Electronics.

The committee also discussed the recruitment of more high school students to the programs and Bill Venz suggested that we look into a summer camp that would have applications related to electronics, robotics, CADD, rapid prototyping, and mechanical measurements. The committee thought this was a good idea and recommended that the department look into this type of camp for high school students.

The action items included:

1. The Committee approved of the curriculum development process of new 60 credit hour A.S. Degree Engineering Technology along with the Options for the Electronics, Manufacturing and Quality Specialties.

2. Brad Jenkins will send out the curriculum frameworks of the Technical Core for the Engineering Technology Support Specialist Certificate and the new Mechanical and Instrumentation Course he is developing

3. The committee members gave the recommendation to develop a CADD specialty to the new degree.

4. The committee gave a recommendation to starting a summer camp for high school students as part of the recruitment efforts in improve the enrollment of that population.

5. The committee recommended replacing the Development of Self Directed Work Teams course, in the Lean Green Belt Certificate, with a Supply Chain Management course.

6. Develop a trouble shooting course.

The meeting was adjourned at 6:15 p.m.

The next meeting will be determined at a later date.

Respectfully submitted,

Bradley E. Jenkins
Secretary

Appendix B: Advisory Board Committee Minutes, 2006-2007 (con't)

St. Petersburg College
Department of Engineering Technology

Engineering Technology Advisory Committee Minutes
Thursday, November 9, 2006

Members Present:	**Bill Erdmann, Keith Matthews, Ken Conforti, Steve Askew, Jonathan Bull, Jim Bittner, Jerry McCollum, Marcus Heiler, Bill Venz, and Ed Homan.**
Members Absence:	**Don Houdek, Harold Aponte, Greg Seay, and Maryanne Litteri.**
Member Excused:	**David Reese, Tina Brudnicki, John DeBella, Frank Cain, Mark Snyder, Matt Smith, Lisa Maciolek, Lou Grilli, Clint Mells,**
Special Guests:	**Jim Moore, Executive Officer, EpiCenter, and Amy Brush, Coordinator Program Reviews, both from St. Petersburg College.**

Brad Jenkins welcomed the advisory members to the fall meeting and introduced special guests Jim Moore and Amy Brush to the meeting. A new member, Ed Homan, from Baxter Healthcare, was also introduced to the advisory committee.

Brad Jenkins also provided the update on the fall semester enrollment that included a ten percent increase for the CAD offering as well as a slight increase overall in the electronics, manufacturing and quality courses. The summer graduates in Engineering Technology included 39 certificates and 10 AS Degrees with 17 students receiving their Six Sigma Black Belt Certificates in July 2006. The Lean Green Belt and Six Sigma Black Belt Certificate Programs are now being offered at the Epicenter thus providing a better location for industry interaction.

The major curriculum actions taken this fall included the deletion of the Telecommunications Engineering Technology AS Degree along with the two certificates in Internetworking Support and Wide Area Networks.

The members received a copy of the final draft of the Technology Core in regards to the new A.S. Degree in Engineering Technology. A brief discussion followed and the approved the new curriculum and also liked the Options for the Electronics and Quality Specialties.

Appendix B: Advisory Board Committee Minutes, 2006-2007 (con't)

Concerning the drafting and design programs that the college offers, the members were asked to provide input on these programs and were given a Computer Aided Design and Drafting (CADD) sample A.S. Degree that would provide two tracks; one for an architectural option and the other for a mechanical option. The reasons for this consolidation is bring these programs in line with other state programs, become more efficient in the course offerings, establish a common core of CAD courses for both the architectural and mechanical students, and eliminate the existing drafting certificates and Computer Integrated Design (CID)Certificate and A.S. degree program. The CID degree does not properly address the needs required for CAD. There are only 6 CAD courses required with a number of other courses needed to comply with the new 62 credit hour requirement and after a brief discussion, the members gave approval to look at the new 60 hour Engineering Technology degree and see if the CADD would fit as a specialty.

The final curriculum concern was that of the new certificate in Medical Device Manufacturing. The committee members gave approval of the two new courses: Introduction to Medical Device Design and Manufacturing and the Risk Management and Assessment for Medical Devices.

The action items included:

1. The Committee approved the technology core and the new 60 credit hour A.S. Degree Engineering Technology along with the Options for the Electronics and Quality Specialties.

2. The Committee gave the approval to continue the development of a new CADD program under the new A.S. Degree in Engineering Technology. Brad Jenkins will look into that option and along with the Committee's recommendation to develop the CADD specialty to FL-ATE.

3. The committee members gave approval of the two new courses: Introduction to Medical Device Design and Manufacturing and the Risk Management and Assessment for Medical Devices.

The meeting was adjourned at 6:25 p.m.

The next meeting will be March 21, 2007.

Respectfully submitted,

Bradley E. Jenkins
Secretary

Appendix B: Advisory Board Committee Minutes, 2005-2006

St. Petersburg College
Engineering Technology

Electronics, Manufacturing & Quality, Telecommunications Committees

Joint Advisory Committee Minutes
Tuesday, June 6, 2006

Members Present:	**Bill Erdmann, David Reese, Don Houdek, Tina Brudnicki, Keith Matthews, Ken Conforti, Steve Askew, Greg Seay, Jim Bittner, and Bill Venz.**
Members Absence:	**Harold Aponte, Scott Kellogg, Lance Stone, and Maryanne Litteri.**
Member Excused:	**John DeBella, Marcus Heiler, Frank Cain, Mark Snyder, Matt Smith, Jonathan Bull, Lisa Maciolek, Lou Grilli, John Feit, Clint Mells, and Jerry McCollum.**
Special Guests:	**Jim Moore, Executive Officer, EpiCenter, St. Petersburg College and Greg Lewis, Lead CAD Instructor, Engineering Technology.**

Brad Jenkins informed the committee of some department reorganization changes as well as the update on the enrollment. The summer enrollment was up somewhat from last year and included 50 students enrolled in the CAD courses, 65 in the, quality and manufacturing courses, and 10 in the CO-OP and self study courses. 17 students will also receive the new Six Sigma Black Belt Certificate in July. The committee was also informed that the Telecommunications Engineering Technology program would be deleted due to the lack of interest in the program and the few remaining students would be able to finish the final courses for their degree. Any new students, interested in networking, would still have the opportunity to take the Cisco AS Degree program in Computer Engineering Technology.

The CAD courses, including the AutoCAD and SolidWorks, will be moving to the Clearwater Campus this August so that all CAD courses will be housed at the same campus. The electronics, manufacturing, and quality programs will remain on the St. Petersburg/Gibbs Campus. The Architecture, Building Construction and the Engineering Technology programs will be under the leadership of Brad Jenkins.

The final Manufacturing Frameworks Survey was also discussed and the committee approved the motion to go ahead with the writing of the new curriculum

Appendix B: Advisory Board Committee Minutes, 2005-2006 (con't)

frameworks for Manufacturing Technology. It was noted that creating a resume should be a task included in the Demonstrate employability skills section of the frameworks.

The members also reviewed the results of the survey from the Technology Core and felt that there should be some additional information in regards to the Applied Mechanics course. The name of this course should be changed in relation to what would be covered in this course. If the use of both mechanical and electrical/electronics equipment are included then perhaps the course should be changed to Instrumentation and Measurement Techniques. The discussion also included the fact that perhaps some if not all the topics in this course could be incorporated in the other 5 core courses leaving the opportunity to develop a new 6th course in perhaps Process and Product Development, but the areas were previously approved so the original course areas have to remain the same. The members however wanted to see what this Applied Mechanics content covered so that a decision on that course could be made.

The members were also asked to provide some names from their organizations to form the Task Force for Electronics. The work that electronic technicians perform needs to be defined in order to develop a new curriculum in electronics.

The Advisory Committee Evaluation will be sent out to all members this month to meet that yearly requirement.

The action items included:

1. The Committee will send the names of persons that can work on the Task Force by June 20 to Brad Jenkins.

2. Brad Jenkins will send the Committee's recommendation to develop the Manufacturing Frameworks to FL-ATE.

3. Brad Jenkins will send the course description from the Applied Mechanics course to the members. This is currently a course that is offered in the space technology program at Brevard Community College.

4. Brad Jenkins will send the evaluation forms to the committee members by June 30. The members can fax back the evaluations.

The meeting was adjourned at 6:45 p.m.

The next meeting will be determined for the fall session with updates on the action items emailed to the committee.

Respectfully submitted,

Bradley E. Jenkins
Secretary

Appendix C: Advisory Board Committee Minutes, 2005-2006 (con't)

St. Petersburg College
Engineering Technology

Electronics, Manufacturing & Quality, Telecommunications Committees

Joint Advisory Committee Minutes
Tuesday, April 18, 2006

Members Present:	**Bill Erdmann, Marcus Heiler, David Reese, Frank Cain, Mark Snyder, Matt Smith, Jonathan Bull, Don Houdek, Tina Brudnicki, Keith Matthews, Lisa Maciolek, Ken Conforti, and Bill Venz.**
Members Absence:	**Harold Aponte, Steve Askew, Scott Kellogg, Lance Stone, and Maryanne Litteri.**
Member Excused:	**John DeBella, Greg Seay, Jim Bittner, Lou Grilli, John Feit, Clint Mells, and Jerry McCollum.**
Special Guest:	**Omar Mohammed, Program Director Manufacturing Technology, Hillsborough Community College.**

The Joint Advisory meeting of the Electronics, Manufacturing & Quality, and Telecommunications Committees held the first meeting of this spring to discuss the program enrollment, curriculum concerns in the specialty areas of technology, and work on the curriculum frameworks for the Manufacturing Technology AS Degree program.

Brad Jenkins presented the enrollment report from this Spring Session along with a list of the May graduates. There was a total of 143 students enrolled in the Engineering Technology programs for this spring session, with 16 students receiving the Lean Six Sigma Expert Certificates, one receiving the Computer-Integrated – Design Certificate and 4 receiving AS Degrees in May. For July, there will 17 students scheduled to receive the new Six Sigma Black Belt Certificate.

The committee members were informed about the continued decrease in the enrollment especially in the Telecommunications and Electronics programs. There are no new enrollments in Telecommunications, just some students that are

Appendix C: Advisory Board Committee Minutes, 2005-2006 (con't)

finishing up that degree. Some of the discussion related to the vendor programs, like Cisco and Microsoft that have flooded this market and thus a lack of students interested in obtaining a certificate or an AS degree due to the lack of demand and employment in this field. There was some other discussion as to the returning military with their specialized training that are also entering the job market. They have been trained on the most modern equipment and generally go right into similar job positions. It was mentioned that those students might need additional education and some will be able to transfer their training back into our AS Degrees through the experiential learning programs (ELP). The members were also informed that the college now offers an AS Degree in Cisco Certified Network Professional. This program covers certain topics with similar courses in the Telecommunications Engineering Technology program, and it was felt that the Telecommunications program should be deleted. The students that wanted to enter the Telecommunications program would be directed to the Cisco program of study.

The Electronics program was reviewed differently by the committee. The members felt that this program needed to be reviewed to determine what the Electronic Technicians in 2006 actually do in their jobs. The present AS Degree needs to be revised and the committee recommended that a Task Force be formed to go over the actual work skills needed in order to develop a new curriculum. The members also stated that the Electronics was a backbone for all technology programs and that additional advertisement would be needed to market the program especially in the high schools. Many of the committee members stated that there was still a need for technicians, but recommended that the job skills must to be developed for today's worker. The Task Force will be able to identify these new skills.

The members also reviewed the draft of a new proposal for the AS Degree in Engineering Technology with an 18 hour technology core of courses required for all programs and then a series of courses for the specialty area. The committee liked this approach and will also give some feedback on the format as well as the technology core. Some of the comments centered around the new course topics that included the environmental issues of lead-free solder, EPA emissions, cleanliness techniques, environmental health, supply chain management, automation, and CAD drafting requirements.

Appendix C: Advisory Board Committee Minutes, 2005-2006 (con't)

The Manufacturing Frameworks were also discussed in reference to the comments received from the completed forms that were sent out earlier. That information will be compiled and sent back to the committee for their final comments. This has been a state of Florida initiative, sponsored by FL-ATE and endorsed by the Department of Education.

The committee members also received the program information on the new Six Sigma Black Belt Certificate. It was also noted that the Lean Manufacturing Certificate has had over 120 graduates in the past 3 years.

The action items included:

1. **Brad Jenkins will send the compiled results from the Manufacturing Frameworks Survey to the members by May 3. Any frameworks that are still will need to be sent in by May 2. The committee members will also send any additional feedback on the frameworks.**

2. **The committee members will send in their thoughts and concerns on the Technology Core by May 2 through the email to Brad.**

3. **The committee members will also give their feedback for what is missing in the Specialty areas by May 2.**

3. **Brad Jenkins will form a Task Force for Electronics and ask the members help in developing a list of participants.**

The meeting was adjourned at 6:50 p.m.

The next meeting will be held June 6, 2006, at 5:30PM.

Respectfully submitted,

Bradley E. Jenkins
Secretary

Attachments

Appendix D: Advisory Board Committee Minutes, 2004-2005

St. Petersburg College
Engineering Technology

Electronics, Manufacturing & Quality, Telecommunications Committees

Joint Advisory Committee Minutes
Tuesday, June 21, 2005

Members Present:	**Bill Erdmann, Marcus Heiler, David Reese, Steve Askew, Frank Cain, Matt Smith, Maryanne Litteri, Jonathan Bull, Don Houdek, Lance Stone, Lou Grilli, John Feit, Clint Mells, Tina Brudnicki, and Bill Venz.**
Members Absence:	**Harold Aponte, Scott Kellogg, Donna Fontana, and Greg Seay.**
Member Excused:	**John DeBella, Keith Matthews, Mark Snyder, Jim Bittner, and Jerry McCollum.**
Special Guest:	**John Vaughan, Program Director Natural Science, Engineering, and Wellness**

The second Joint Advisory meeting of the Electronics, Manufacturing & Quality, and Telecommunications Committees was held to discuss program enrollment, curriculum concerns in these specialty areas of technology, and receive updates related to FLATE, new program development, the fall Engineering Technology Forum, and the Southern Association of Schools and Colleges (SACS) requirements.

Brad Jenkins distributed the enrollment report from the Spring Session along with a list of May and July graduates. There was a total of 239 students enrolled in the Engineering Technology programs for that spring session, with 7 students receiving Certificates and 4 receiving AS Degrees in May. For July, there are 21 students scheduled to receive Certificates and 5 for the AS Degree.

The committee members were also updated with the new certificate and program information related to the Six Sigma Black Belt and Medical Devices Technician Certificates. The activities related to FLATE were also presented to the committee and included the manufactures response to providing tours to the High Schools and the state initiative to identify all manufacturing and related programs in the state.

Appendix D: Advisory Board Committee Minutes, 2004-2005, con't

The committee members were informed of the enrollment in the programs and the discussion revolved around the following issues and concerns: increase awareness for high school students; the lack of technical courses available in the high schools; the increase in student enrollment; providing advanced training for industry; off-shore initiatives; shorten time offerings for courses; developing additional one-credit hour courses; improving the response to a changing market place; offering more on-site industry course.

The college will have its SACS accreditation visit in the spring of 2006 and the faculty credentialing procedure, to teach courses, was also presented to the members.

The next Engineering Technology Forum will be October 27-28, 2005, in Brandon, Florida, sponsored by FLATE and Hillsborough Community College. The industry advisory committees from the community colleges will be asked to participate in joint meetings.

The action items included:

1. Brad Jenkins will send the copy of a completed survey, to the committee members, that was conducted this past spring on the national Engineering Technology list serve. The survey discusses why enrollments are down, the steps to improve the curriculum, and why ET jobs are in decline in certain areas of the country.

2. The committee members will send in their thoughts on the discussion concerning the programs and enrollment trends.

3. The Engineering Technology website can be found at www.spcollege.edu/spg/engineering.

The meeting was adjourned at 6:55 p.m.

Respectfully submitted,

Bradley E. Jenkins
Secretary