Engineering Technology
Comprehensive Academic Program Review
2013-14

Associate in Science Degrees:
Aviation Maintenance Management Technology
Engineering Technology

Certificates:
Computer-Aided Design and Drafting Technology (CAD)
Engineering Technology Support (ENG)
Lean Six-Sigma Green Belt (LEAN)
Medical Quality Systems (MEDQS)
Rapid Prototyping and Design (RAPID)
Six Sigma Black Belt (SIXSG)
Comprehensive Academic Program Review Produced by

Engineering Technology Program

Bradley Jenkins, M.A.  
Associate Dean, Engineering Technology

John Chapin, Ph.D.  
Dean, Natural Science

Department of Institutional Research and Effectiveness

Amy Eggers, M.A.  
Research Analyst, Academic Effectiveness and Assessment

Robert Mohr, M.A.  
Research Specialist, Academic Effectiveness and Assessment

Magaly Tymms, M.A.  
Director, Academic Effectiveness and Assessment

Sabrina Crawford, M.A.  
Executive Director, Institutional Research and Effectiveness

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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
The Engineering Technology program was developed in part by the Florida Advanced Technological Education (FLATE) Center to give manufacturers and high technology industries qualified, highly skilled workers. It is a model for colleges in Florida and throughout the country. The program offers specializations in biomedical systems, electronics, quality or digital design and modeling, giving students a solid foundation for their career or further education. The core classes cover introductory computer aided drafting, electronics, instrumentation and testing, processes and materials, quality, and safety. These skills align with the national Manufacturing Skill Standards Council (MSSC) Portable Production Technician Certification.

Degrees Offered
Associate in Science degrees in Engineering Technology, and Aviation Maintenance Management Technology are offered at SPC, as well as Certificates in Computer-Aided Design and Drafting Technology; Engineering Technology Support; Lean Six-Sigma Green Belt; Medical Quality Systems; Rapid Prototyping and Design; and Six Sigma Black Belt.

Program Performance
- **Actual Course Enrollment** increased in 2013 (861) from the previous year (851).
- **Unduplicated Headcount** decreased in 2013 (348) from the previous year (363).
- **SSH Enrollment** increased in 2013 (2,593) from the previous year (2,581).
- **Student Semester Hour (SSH) Productivity** increased during the Fall (0.6) and Spring (0.7), and Summer semesters (0.5), during 2012-13 from the previous year.
- **Performance Metric** increased in Fall (4.0), decreased in Spring (4.3), and remained the same in Summer (3.3) 2012-13 from the previous year.
- Comparisons between the Fall semesters indicated that the **Percent Full Metric** increased in Fall 2013 (75.6%) from Fall 2012 (61.4%).
- The **success rate** decreased in 2013 (86.4%) from the previous year (90.1%).
- The number of **AS program graduates** in the Engineering Technology (3) and Aviation Maintenance Management Technology (3) programs decreased in 2013 from the previous year (17 and 5, respectively). Of the seven certificate programs, the number of graduates decreased in 2013 for the CAD-CT (2), ENGTECH-CT (6), LEAN-CT (10), and RAPID-CT (1) programs from the previous year (3, 10, 28, and 4, respectively). Three of the certificate programs (CADD-CT; MEDQS-CT; and SIXSG-CT) had no comparison data for 2013.
- **Fulltime Faculty** taught 34.7% of the ECHs in 2012-13 as compared to 39.5% in 2011-12. Adjunct Faculty taught 65.3% of the ECHs in 2012-13 as compared to 60.5% in 2011-12.
• The highest semester for Adjunct ECHs was Fall 2010-11 in which adjunct faculty taught 73.7% of the program's course load. The three-semester average for adjuncts (65.3%) in 2012-13 is not consistent with the College's general 65/35 Fulltime/Adjunct Faculty Ratio guideline.

Program Profitability
• The Relative Profitability Index (RPI-T) for the Engineering Technology program increased in 2012-13 (0.5) from the previous year.

Program Improvements
• There were no Capital Expenditures (Fund 10 and 16) for the Engineering Technology program (Org: 11260104) during the past four years.

Academic Outcomes
• The 2010-11 Academic Program Assessment Report indicated that the desired results were met for all three of the Program Learning Objectives (PLOs) assessed in the Engineering Technology Program.
• The 2010-11 Academic Program Assessment Follow-up Report was completed in July 2012. All of the action items were successfully completed, and the results published in the 2010-11 follow-up report. The next assessment report is scheduled to be completed during the 2013-14 academic year.

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 engagement, preparation and organization, and course instruction.
• An Engineering Technology advisory committee meeting was held on September 12, 2013. The meeting consisted of a discussion regarding course enrollment, updates on action items, the Collaborative Center of Emerging Technologies, the NSF and DOL Grant updates and other topics.
• Seventy-seven Recent Alumni surveys were provided to the 2011-12 graduates of the Engineering Technology program. Fourteen percent of the graduates responded to the survey (11 of the 77). Not all respondents answer every survey question; therefore, the percentages listed below represent the responses to each survey question in relation to the total number of responses received for each question.

Notable results include:
  o 100.0% of recent graduate survey respondents, who were employed, were employed full-time.
  o 87.5% of recent graduate survey respondents had a current position related to their studies.
  o 45.5% of recent graduate survey respondents indicated their main goal in completing a degree or certificate at SPC was to “Change career fields,”
36.4% “Continue my education,” 9.1% “Earn more money,” and 9.1% “Meet certification/training needs.”

- 36.4% of recent graduate survey respondents indicated that their SPC degree allowed them to “Change career fields,” 36.4% “Continue my education,” 9.1% (1/11) “Meet certification/training needs,” 9.1% “ Obtain employment,” and 9.1% “Other.” [Note: The total may exceed 100% as this question allows multiple responses]
- 45.5% of recent graduate survey respondents indicated that SPC did “Exceptionally well” in helping them meet their goal, 45.5% “Very well”, while 9.1% said “Adequately.”
- 62.5% of recent graduate survey respondents indicated that they earned over $25.00 or more per hour ($52,000 or more annually); 25.0% earned between $20.00 and $24.99 per hour ($42,000 - $51,999 annually); and the last 12.5% earned between $15.00 and $19.99 per hour ($31,000 - $41,999 annually).
- 63.6% of recent graduate survey respondents indicated they are continuing their education.
- 100.0% of recent graduate survey respondents would recommend SPC's Engineering Technology program to another.

- Three employer surveys were sent out based on permissions provided by recent graduates in the 2011-12 recent alumni survey. One survey respondent provided an evaluation of the graduates' college preparation. Since a single response cannot accurately represent the entire program, employer survey results will not be reported.

**Occupation Profile**

- Four occupation descriptions, Electrical and Electronic Engineering Technicians; Industrial Engineering Technicians; Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic; and Engineering Technicians, Except Drafters, All Other were located in the Economic Modeling Specialists International (EMSI) website.
- The 2013 median hourly earnings for Electrical and Electronic Engineering Technicians was $27.81 in the United States, $25.78 in Florida, and $24.55 in Pinellas County. The median hourly earnings for Industrial Engineering Technicians was $24.51 in the United States, $19.58 in Florida, and $19.05 in Pinellas County. The median hourly earnings for Computer numerically controlled tool programmers, metal and plastic was $22.08 in the United States, $19.12 in Florida, and $20.45 in Pinellas County. The median hourly earnings for Engineering Technicians, Except Drafters, All Other was $28.58 in the United States, $28.37 in Florida, and $26.81 in Pinellas County.
- Employment trend information for Electrical and Electronic Engineering showed an average annual increase (1.1%) in employment for the profession between 2012 and 2017 for the country, with potential decreases in the state (-0.4%) and county (-11.9%). Employment trend information for Industrial Engineering Technicians showed an average annual decrease (ranging from -0.1% to -12.3%) in employment for the profession between 2012 and 2017 for the country, state, and county. Employment trend information for Computer numerically controlled
tool programmers, metal and plastic showed an average annual increase (4.8% - 8.5%) in employment for the profession between 2012 and 2017 for the country and state, with a potential decrease in Pinellas County (-2.5%). Employment trend information for Engineering Technicians, Except Drafters showed an average annual increase (0.8% - 5.5%) in employment for the profession between 2012 and 2017 for the country, state, and county.

- The major employers of the Engineering Technology graduates are Trak Microwave Corporation, Millwork 360, Raymond James, Health Point Medical Group, Bovie Medical, QTM Incorporated, TSE, Florida Gun Drilling, ConMed-Linvatec, City of Clearwater, City of St. Petersburg, Pinellas County, Space Machine, Aerosonic Corporation, Oscar Medical, CavaForm, and American Mold & Tooling.

- Total Placement in the Engineering Technology (ENGTECH AS-TOTAL) program and the Aviation Maintenance Management Technology (AVAMM AS) program have remained at 100% for the past two years.

State Graduates Outcomes

- State Graduates data indicated that although ten students were reported as having completed a state Engineering Technology program in 2010-11, twenty-four had some matching state data and were found to be employed. Many of the total completers were not available. Eighty-three percent (83%) of those state graduates were employed at least a full quarter.

- State Graduates data indicated that although twelve students were reported as having completed a state Aviation Maintenance Management program in 2010-11, twenty had some matching state data and were found to be employed. Several of the total completers were not available. Ninety percent (90%) of those state graduates were employed at least a full quarter.

Program Administrator’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 four sub plans: Electronics, Quality, Digital Design and Modeling, and Biomedical Systems. SPC was the first college in Florida to offer the A.S. in Engineering Technology and served as the state model that has now led to a statewide acceptance by 13 other community colleges with 4 others considering this degree path.

The Technology Core covers the curriculum and aligns with the Manufacturing Skills Standard Council (MSSC) Certified Production Technician (CPT) national certification.
This is an industry certification that is recognized by the local manufacturing sector as a factor for hiring new employees. The students who complete and pass the MSSC receive 15 college credits toward the A.S. degree in Engineering Technology. The graduates of the A.S. in Engineering Technology degree are transferred directly to the state universities offering the B.S. Degrees in Engineering Technology as well as the B.A.S. degrees. The A.S. in Aviation Maintenance Management is transferred directly into the B.A.S. degrees here at SPC. The technical training for the power plant and airframe is taught through the National Aviation Academy in Clearwater and that training also provides the students the opportunity to obtain the FAA license.

The placement of our AS and certificate graduates in the local industry has been most successful. The relations and collaborations we have with the manufacturers has increased, especially these past two years with the opening of the Collaborative Center for Emerging Technologies (CCET).

**Productivity and Enrollment**

The productivity for the Engineering Technology continues to improve along with an increase in actual student semester hours (SSHs) and course enrollment, as indicated by the findings in this report.

**Program Completers**

The program completers earning either the A.S. degrees or college certificates have remained consistent the past three years. Additional data related to 2013 graduates, which was not available when Figure 10 was created, are presented below.

**Graduate Data for Year 2013 (May, July, and December)**

21 A.S. degrees:
- 7 - Aviation Maintenance Management
- 14 - Engineering Technology

69 Certificates:
- 29 - Lean Six Sigma Green Belt
- 11 - Six Sigma Black Belt
- 6 - CADD
- 15 - Engineering Technology Support
- 2 - Medical Quality Systems
- 6 - Rapid Prototyping & Design

**Areas of Concern**

The courses in the Technical Core of the ET program are also used by students to meet the technical credits prerequisite entry requirements in some of the BAS degree programs. However since these students have no vested interest in the AS ET degree programs, it makes it very hard to plan subsequent course offerings in the program.

The lack of the HS enrollments (18-21 year olds) in the ET degree and certificate programs is also an area of concern. We need to work more with the high schools and the
collegiate HS for dual enrollment in order to provide that interest in engineering technology.

The Engineering Technology program along with the other programs in our area really need to be marketed in Pinellas County. The web site needs to be upgraded and dynamic, as this is the first place people look for information and especially to see what our technology covers and opportunities for employment. This should be a number one issue for the college.

About 90% of the courses in the program are offered in the evening, to meet the needs of the encumbered industry workers and for people making a career change.

Students are graduating with the technical certificates, but many are not continuing on with the AS degrees. Some students are just taking courses for job enrichment or upgrading their skills. Although the number of A.S. completers has increased the past three years, this is an issue when we look at completers of programs.

Locating credentialed faculty to teach the applications and laboratory courses for the AS degree in 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 start up 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. We are not delivering training and credit courses fast enough for industry.

We see a growing course enrollment in the Rapid Prototyping, reverse engineering, applications and fabrication, and CAD design as requested by industry. The machining of parts from prototypes has led to many collaborations with our local industry and has provided CO-OPs, part time and then full time employment of our students. We need to continue to provide the resources necessary for this growth of equipment to keep up with demand.

Using national certification like MSSC to increase interest and enrollment in the ET degree and the college certificates is a must. Other industry training certifications need to be articulated into the degree tract as well for the career sustainability process.

We continue to work with the National Science Foundation (NSF), through the Florida Advanced Technological Education Center (FLATE), for outreach, curriculum, and continued grant opportunities.

Program Improvements
Equipment purchased with the Perkins funding, capital outlay, the Florida TRADE Grant, and industry donations expenditures has increased the training and educational
experiences for the laboratory activities in the Collaborative Center for Emerging Technologies (CCET). The recent purchase of the Allen Bradley programmable logic controllers, the FANUC robots, the Faro reverse engineering arm and scanner, and the pneumatic industrial trainer has expanded our capability to the students in all of the manufacturing related classes. There is more hands on and practical use of equipment that have resulted in the collaboration with local industry on advance design and measurement.

This added equipment has led to an advanced integrated manufacturing work cell within the CCET this past year.

**Recommendations/Action Plan**

Program Recommendations and action plans are compiled by the Dean and Program Administrator, and are located at the end of the document.
**SPC Mission Statement**
The mission of St. Petersburg College is to promote student success and enrich our communities through education, career development and self-discovery. 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 eighty-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 of Associate in Arts degrees is students continuing on to four-year degree programs. The Associate in Applied Science and Associate in Science programs are targeted towards students seeking employable skills, which does not require but may include continuing on to a four-year program. 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 ([http://www.spcollege.edu/edoutcomes](http://www.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 Florida College System; and exceed the necessary guidelines within the Southern Association of Community Colleges and Schools (SACS) review procedures.

State guidelines require institutions to conduct program reviews every seven years as mandated in chapter 1001.03(13) of the Florida Statutes, the State Board of Education (formerly the Florida Board of Education) must provide for the review of all academic programs.

(13) ...CYCLIC REVIEW OF POSTSECONDARY ACADEMIC PROGRAMS.--The State Board of Education shall provide for the cyclic review of all academic programs in Florida College System institutions at least every 7 years. Program reviews shall document how individual academic programs are achieving stated student learning and program objectives within the context of the institution’s mission. The results of the program reviews shall inform strategic planning, program development, and budgeting decisions at the institutional level.

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.

In 2007, 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**

The Engineering Technology program was developed in part by the Florida Advanced Technological Education (FLATE) Center to give manufacturers and high technology industries qualified, highly skilled workers. It is a model for colleges in Florida and throughout the country. The program offers specializations in biomedical systems, electronics, quality or digital design and modeling, giving students a solid foundation for their career or further education. The core classes cover introductory computer aided drafting, electronics, instrumentation and testing, processes and materials, quality, and safety. These skills align with the national Manufacturing Skill Standards Council (MSSC) Portable Production Technician Certification.
Degrees Offered
Associate in Science degrees in Engineering Technology, and Aviation Maintenance Management Technology are offered at SPC, as well as Certificates in Computer-Aided Design and Drafting Technology; Engineering Technology Support; Lean Six-Sigma Green Belt; Medical Quality Systems; Rapid Prototyping and Design; and Six Sigma Black Belt.

For a complete listing of all courses within the Engineering Technology and Aviation Maintenance Management Technology programs, please see Appendix A.

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

Program Learning Outcomes

1. Describing the professional standards used in industry by planning and managing assigned activities effectively.
2. Describing the professional standards by working and performing effectively to meet deadlines.
3. Describing the professional standards by using oral and written communications skills in a work related environment.
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 in 2013 (861) from the previous year (851), as shown in Figure 2.

![Figure 2: Actual Course Enrollment](image)

Source: SPC Business Intelligence, Enrollment Count by Academic Org.

Date Extracted 04/22/2014
Unduplicated Headcount

Unduplicated Headcount is the total number of unduplicated students enrolled in courses within the specified Academic Organization during the selected academic years. Unduplicated headcount decreased in 2013 (348) from the previous year (363), as shown in Figure 3.

Figure 3: Unduplicated Headcount

Source: SPC Business Intelligence, Unduplicated Student Count by Academic Org.
Date Extracted 04/17/2014
**SSH Enrollment**

SSH Enrollment is defined as the total number of student semester hours in the specified Academic Organization during the selected academic years. SSH Enrollment increased in 2013 (2,593) from the previous year (2,581), as shown in Figure 4.

*Figure 4: SSH Enrollment*

Source: SPC Business Intelligence, SSH Enrollment by Academic Org.

Date Extracted 04/22/2014
**SSH Productivity**

Student Semester Hour (SSH) Productivity is calculated by dividing actual SSH by the budgeted SSH. SSH productivity increased during the Fall (0.6), Spring (0.7), and Summer semesters (0.5) in 2012-13 from the previous year, as shown in Figure 5.

![SSH Productivity Diagram](image)

**Figure 5: SSH Productivity**

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

Note: SSH Productivity data are displayed using two decimal places due to the proximity of the values.
Performance Metric
Performance Metric is calculated by dividing actual enrollment by the Equated Credit Hour (ECH), [actual workload]. The Performance Metric increased in Fall (4.0), decreased in Spring (4.3) and remained the same in Summer (3.3) 2012-13 from the previous year, as shown in Figure 6.

Figure 6: Performance Metric
Source: PeopleSoft Student Administration System: Course Management Summary Report (S_CMSUMM)
**Percent Full**

The percent full metric is calculated by dividing the actual enrollment count of the specified Academic Organization, by the Standard Course Load (SCL) for selected academic terms. Comparisons between the Fall semesters indicated that the percent full metric increased in Fall 2013 (75.6%) from Fall 2012 (61.4%), as depicted in Figure 7.

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**Figure 7: Percent Full**

Source: SPC Business Intelligence, Percent Full by Academic Org.
Date Extracted 11/21/2013
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. 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.

Table 1
Program Core Course Grade Distributions

<table>
<thead>
<tr>
<th>Semester</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spring 2012</td>
<td>61.1%</td>
<td>18.2%</td>
<td>6.5%</td>
<td>1.9%</td>
<td>5.2%</td>
</tr>
<tr>
<td>Spring 2013</td>
<td>63.0%</td>
<td>18.4%</td>
<td>8.9%</td>
<td>0.3%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Fall 2012</td>
<td>70.3%</td>
<td>15.1%</td>
<td>3.4%</td>
<td>1.1%</td>
<td>2.0%</td>
</tr>
<tr>
<td>Fall 2013</td>
<td>64.3%</td>
<td>17.6%</td>
<td>7.2%</td>
<td>2.2%</td>
<td>2.7%</td>
</tr>
</tbody>
</table>

Source: SPC Business Intelligence, Grade Distribution by Academic Org.
Date Extracted 04/15/2014
Figure 8 provides a visual representation of the grade distributions for those students receiving a grade of A, B, or C.

**Figure 8: ABC Grade Distributions**

Source: SPC Business Intelligence, Grade Distribution by Academic Org.

Date Extracted 04/15/2014
**Course Success Rate**

The performance graph displays the percent of students successfully completing a course with a grade of A, B, or C, (success rate), divided by the total number of students in courses within the Academic Organization during the selected academic years. The success rate decreased in 2013 (86.4%) from the previous year (90.1%), as shown in Figure 9.

![Success Rate Graph](image)

**Figure 9: Course Success Rate**

Source: SPC Business Intelligence, Success Rate by Academic Org.

Date Extracted 04/22/2014
**Program Graduates**

The number of ENG-AS (3) and AVAMM-AS (3) graduates decreased in 2013 from the previous year (17 and 5, respectively). Of the seven certificate programs, the number of graduates decreased in 2013 for the CAD-CT (2), ENGETECH-CT (6), LEAN-CT (10), and RAPID-CT (1) programs from the previous year (3, 10, 28, and 4, respectively). Three of the certificate programs (CADD-CT; MEDQS-CT; and SIXSG-CT) had no comparison data for 2013, as shown in Figure 10.

*Figure 10: Program Graduates*

*Source: SPC Business Intelligence, Graduates by Academic Org.*

*Date Extracted 04/22/2014*
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 34.7% of the ECHs in 2012-13 as compared to 39.5% in 2011-12. Adjunct Faculty taught 65.3% of the ECHs in 2012-13 as compared to 60.5% in 2011-12.

Table 2
Equated Credit Hours by Faculty Classification

<table>
<thead>
<tr>
<th></th>
<th>Fulltime Faculty</th>
<th>Percent of Load Faculty</th>
<th>Adjunct Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of ECHs</td>
<td>% of Classes Taught</td>
<td>Number of ECHs</td>
</tr>
<tr>
<td>Fall 2009-2010</td>
<td>22.8</td>
<td>31.1%</td>
<td>0.0</td>
</tr>
<tr>
<td>Spring 2009-2010</td>
<td>30.6</td>
<td>37.2%</td>
<td>0.0</td>
</tr>
<tr>
<td>Summer 2009-2010</td>
<td>12.6</td>
<td>34.6%</td>
<td>0.0</td>
</tr>
<tr>
<td>2009-2010 Total</td>
<td>66.0</td>
<td>34.4%</td>
<td>0.0</td>
</tr>
<tr>
<td>Fall 2010-2011</td>
<td>20.2</td>
<td>26.3%</td>
<td>0.0</td>
</tr>
<tr>
<td>Spring 2010-2011</td>
<td>30.3</td>
<td>31.7%</td>
<td>0.0</td>
</tr>
<tr>
<td>Summer 2010-2011</td>
<td>17.0</td>
<td>45.1%</td>
<td>0.0</td>
</tr>
<tr>
<td>2010-2011 Total</td>
<td>67.5</td>
<td>32.1%</td>
<td>0.0</td>
</tr>
<tr>
<td>Fall 2011-2012</td>
<td>27.8</td>
<td>32.5%</td>
<td>0.0</td>
</tr>
<tr>
<td>Spring 2011-2012</td>
<td>35.8</td>
<td>42.6%</td>
<td>0.0</td>
</tr>
<tr>
<td>Summer 2011-2012</td>
<td>15.2</td>
<td>50.9%</td>
<td>0.0</td>
</tr>
<tr>
<td>2011-2012 Total</td>
<td>78.8</td>
<td>39.5%</td>
<td>0.0</td>
</tr>
<tr>
<td>Fall 2012-2013</td>
<td>29.2</td>
<td>35.2%</td>
<td>0.0</td>
</tr>
<tr>
<td>Spring 2012-2013</td>
<td>28.6</td>
<td>33.1%</td>
<td>0.0</td>
</tr>
<tr>
<td>Summer 2012-2013</td>
<td>13.0</td>
<td>37.8%</td>
<td>0.0</td>
</tr>
<tr>
<td>2012-2013 Total</td>
<td>70.8</td>
<td>34.7%</td>
<td>0.0</td>
</tr>
</tbody>
</table>

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 11 displays the Fulltime/Adjunct Faculty Ratio information for the last four academic years. The highest semester for Adjunct ECHs was Fall 2010-11 in which adjunct faculty taught 73.7% of the program’s course load, as shown in Table 2. The three-semester average for adjuncts (65.3%) in 2012-13 is not consistent with the College’s general 65/35 Fulltime/Adjunct Faculty Ratio guideline.

Figure 11: 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 expenses and current expenses. Only Fund 10 financials are used in the calculation of RPI-T; specifically, program revenues (GL 400000), personnel expenses (GL 500000), and current expenses (GL 600000).

Program revenues (GL 400000) can include (1) student application fees and tuition, (2) out of state fees, and (3) gifts from alumni and charitable organizations.

Personnel expenses (GL 500000) can include (1) personnel salary expenses for program management, and instructional staff, (2) personnel salary expenses for OPS and student assistants, and (3) personnel benefits. Personnel assigned to multiple programs may have partial personnel expenses assigned to an individual program.

Current expenses (GL 600000) can include operating expenses for (1) travel, (2) goods and services, and (3) materials and supplies. Current expenses can also include scholarship and fee waivers.
The RPI-T for the Engineering Technology program increased in 2012-13 (0.5) from the previous year, as shown in Figure 12.

\[
\text{Figure 12: Fiscal Summary}
\]

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

Note: RPI data are displayed using two decimal places due to the proximity of the values.
Program Improvements

Capital Expenditures
There were no capital expenditures (Fund 10 and 16) for the Engineering Technology program (Org: 11260104) during the past four years, as shown in Table 3.

Table 3
Engineering Technology Program Capital Expenditures

<table>
<thead>
<tr>
<th>Year</th>
<th>Capital Outlay</th>
<th>Account</th>
<th>Purchase Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009-10</td>
<td>$0</td>
<td>700000</td>
<td></td>
</tr>
<tr>
<td>2010-11</td>
<td>$0</td>
<td>700000</td>
<td></td>
</tr>
<tr>
<td>2011-12</td>
<td>$0</td>
<td>700000</td>
<td></td>
</tr>
<tr>
<td>2012-13</td>
<td>$0</td>
<td>700000</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>$0</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

As part of SPC quality improvement efforts, academic assessments are conducted on each AAS/AS/BS/BAS program every three years to evaluate the quality of the program’s educational outcomes. The Engineering Technology program was evaluated through an Academic Program Assessment Report (APAR).

Each of the Program Learning Outcomes (PLOs) was evaluated during the 2010-11 assessment. Each of the three PLOs is listed below:

1. Describing the professional standards used in industry by planning and managing assigned activities effectively.
2. Describing the professional standards by working and performing effectively to meet deadlines.
3. Describing the professional standards by using oral and written communications skills in a work related environment.

Means of Assessment

The purpose of the End of Program assessment is to make summative interpretations for program improvement.

The Engineering Technology program used the results of the End of Program assessment to evaluate the students. The criteria for success stated the students should earn a mean score of 2.0 or greater on questions 1 through 11.

Data were collected during 2009, 2010, and 2011. The data findings for each PLO are displayed in Table 4. Across all three years, the scores for the three PLOs exceeded 2.0 and met the criteria for success.
Table 4
Engineering Technology Program Learning Objectives

<table>
<thead>
<tr>
<th>Years</th>
<th>N</th>
<th>Mean Score</th>
<th>Criteria</th>
<th>Above/Below</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLO 1</td>
<td>8</td>
<td>2.75</td>
<td>2.0</td>
<td>+0.75</td>
</tr>
<tr>
<td>2009 through 2011</td>
<td>8</td>
<td>2.75</td>
<td>2.0</td>
<td>+0.75</td>
</tr>
<tr>
<td>PLO 2</td>
<td>8</td>
<td>2.75</td>
<td>2.0</td>
<td>+0.75</td>
</tr>
<tr>
<td>2009 through 2011</td>
<td>8</td>
<td>2.63</td>
<td>2.0</td>
<td>+0.63</td>
</tr>
</tbody>
</table>

Source: Academic Outcomes from 2010-11 Academic Program Assessment Report (APAR)

The 2010-11 follow-up report was completed in July 2012. All of the action items were successfully completed, and the results published in the 2010-11 follow-up report. The next assessment report is scheduled to be completed during the 2013-14 academic year.
**Stakeholder Perceptions**

*Student Survey of Instruction (SSI)*

Each 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.

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.

Beginning in Fall 2008, all SSI forms (except Clinical B) have been administered electronically using an online format. During 2009-10, the SSI items were reviewed and revised by a committee composed of faculty and administrators. As a result of the revision process, the lecture, non-lecture, and eCampus forms were consolidated into one form, independent of modality, which has been administered online since Spring 2010.

As part of the instrument validation process, the results from the SSI over the last few years were assessed for reliability and validity. The results of this assessment suggested three underlying factors.

The three factors are faculty engagement, preparation and organization, and course instruction. The survey questions are grouped into these categories as defined below:

- **Faculty Engagement** - focuses on how successful the instructor was in encouraging student performance, the instructor’s level of enthusiasm for the subject and respect for students, how well the instructor applied the stated grading policies including providing students appropriate information to determine their grades, and the instructor’s responsiveness to student questions outside of the classroom.

- **Preparation and Organization** - focuses on the instructor’s overall preparation for the course, the instructor’s ability to start and end class on time, the amount of time spent on course-related activities by
the instructor, and the even assignment and appropriateness of course material throughout the term.

- **Course Instruction** - focuses on the instructor’s clarity of instruction, how well the course objectives were defined by the instructor, and how well the instructor met student expectations.

**SSI Results**
The SSI survey is electronically distributed to all students enrolled in traditional classroom sections, lab courses and self-paced or directed individual study, and online courses at the College. The average scores are all above the traditional threshold (an average of 5.0) used by the College for evaluating seven-point satisfaction scales during each semester. The average survey results by semester and content area are shown in Figure 13. The SSI survey administration is optional during Summer semester, thus only Fall and Spring results are presented in this report.

![Figure 13: SSI Results](source: Student Survey of Instruction Administration Site)
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 engagement, preparation and organization, and course instruction.
Advisory Committee

Community input and participation is an important component of the educational process at the College. The 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 Functions of Advisory Committees are:

1. Assessing how the program meets the current occupational needs of employers.
2. Reviewing and making recommendations on the program curriculum and equipment.
3. Providing input to help prepare students for work in their chosen field.
4. Assisting in recruiting, providing internships, and in placing qualified graduates in appropriate jobs.
5. Expanding and enhancing St. Petersburg College’s reputation in the community by fostering positive community relationships.
6. Approving all program equipment purchases in excess of $999.99.
Recent Meeting Summary

An Engineering Technology advisory committee meeting was held on September 12, 2013. The meeting consisted of a discussion regarding course enrollment, updates on action items, the Collaborative Center of Emerging Technologies, the NSF and DOL Grant updates, and other discussion topics.

Course Enrollment

Brad Jenkins reported that Fall 2013 enrollment increased 9.1% in Engineering Technology, as compared to the previous year. The Graduation data from May and July 2013 revealed that for Engineering Technology, 15 A.S. degrees and 49 certificates were awarded.

Update on Action Items

The committee was informed of the new equipment that was ordered and received during the summer, including the Faro reverse engineering arm/scanner and the Pneumatics equipment, to be interfaced with the PLCs.

Collaborative Center of Emerging Technologies

New equipment to the Center included a manual Bridgeport milling machine donated by Florida Gun Drilling Company. Dave Lundy, the owner, also provided the rigger and set up of this machine. The machine is meant to give students an opportunity to operate a milling machine, to apply reverse engineering techniques, and take prototypes from the 3-D printers to manufacture metal parts.

NSF and DOL Grant Updates

Brad reported on the FLATE highlights updates this summer that included the review of the Engineering Technology curriculum frameworks, with the Florida Department of Education (DOE), concerning the review of the technical specialties offered under this degree. FLATE also sponsored 11 Robotic Camps in both Pinellas and Hillsborough counties this summer.

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

Seventy-seven Alumni Surveys were provided to the 2011-12 graduates of the Engineering Technology program. Responses were received from 3 A.S. graduates and 8 Certificate completers.

Fourteen percent of graduates surveyed responded to the survey (11 of 77). After receiving permission from the respondents to contact their employers, three employer surveys were sent out. Not all respondents answer every survey question; therefore, the percentages listed below represent the responses to each survey question in relation to the total number of responses received for each question.

Notable results include:

- 100.0% of recent graduate survey respondents, who were employed, were employed full-time.
- 87.5% of recent graduate survey respondents had a current position related to their studies.
- 45.5% of recent graduate survey respondents indicated their main goal in completing a degree or certificate at SPC was to “Change career fields,” 36.4% “Continue my education,” 9.1% “Earn more money,” and 9.1% “Meet certification/training needs.”
- 36.4% of recent graduate survey respondents indicated that their SPC degree allowed them to “Change career fields,” 36.4% “Continue my education,” 9.1% “Meet certification/training needs,” 9.1% “Obtain employment,” and 9.1% “Other.” [Note: The total may exceed 100% as this question allows multiple responses]
- 45.5% of recent graduate survey respondents indicated that SPC did “Exceptionally well” in helping them meet their goal; 45.5% “Very well”; while 9.1% said “Adequately.”
- 62.5% of recent graduate survey respondents indicated that they earned $25.00 or more per hour ($52,000 or more annually); 25.0% indicated earnings between $20.00 and $24.99 per hour ($42,000 - $51,999 annually); while the remaining 12.5% earned between $15.00 and $19.99 per hour ($31,000 - $41,999 annually).
- 63.6% of recent graduate survey respondents indicated they are continuing their education.
• 100.0% of recent graduate survey respondents would recommend SPC’s Engineering Technology program to another.
• An evaluation of Engineering Technology graduates’ general education outcomes is displayed in Table 5. Graduates indicated satisfaction with their college preparation in the area of general education outcomes. Thirteen outcomes received mean scores between 4.5 and 4.7, seven received mean scores between 4.0 and 4.4, three received mean scores between 3.5 and 3.9, and two received mean scores between 3.2 and 3.4.
Table 5
College Preparation Ratings for Recent Engineering Technology Program Graduates

<table>
<thead>
<tr>
<th>General Education Outcomes</th>
<th>Item Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Five point rating scale with five being the highest)</td>
<td>N</td>
</tr>
<tr>
<td>Communicating clearly and effectively with others through:</td>
<td></td>
</tr>
<tr>
<td>Speaking</td>
<td>10</td>
</tr>
<tr>
<td>Listening</td>
<td>10</td>
</tr>
<tr>
<td>Reading</td>
<td>10</td>
</tr>
<tr>
<td>Writing</td>
<td>10</td>
</tr>
<tr>
<td>Your use of mathematical and computational skills:</td>
<td></td>
</tr>
<tr>
<td>Comfort with mathematical calculations</td>
<td>10</td>
</tr>
<tr>
<td>Using computational skills appropriately</td>
<td>10</td>
</tr>
<tr>
<td>Accurately interpreting mathematical data</td>
<td>10</td>
</tr>
<tr>
<td>Using the following forms of technology:</td>
<td></td>
</tr>
<tr>
<td>Email</td>
<td>10</td>
</tr>
<tr>
<td>Word Processing</td>
<td>10</td>
</tr>
<tr>
<td>Spreadsheets</td>
<td>10</td>
</tr>
<tr>
<td>Databases</td>
<td>10</td>
</tr>
<tr>
<td>Internet Research</td>
<td>10</td>
</tr>
<tr>
<td>Thinking logically and critically to solve problems:</td>
<td></td>
</tr>
<tr>
<td>Gathering and assessing relevant information</td>
<td>10</td>
</tr>
<tr>
<td>Inquiring about and interpreting information</td>
<td>10</td>
</tr>
<tr>
<td>Organizing and evaluating information</td>
<td>10</td>
</tr>
<tr>
<td>Analyzing and explaining information to others</td>
<td>10</td>
</tr>
<tr>
<td>Using information to solve problems</td>
<td>10</td>
</tr>
</tbody>
</table>
Table 5, continued
College Preparation Ratings for Recent Engineering Technology Program Graduates

<table>
<thead>
<tr>
<th>General Education Outcomes</th>
<th>Item Ratings</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>Mean</td>
<td>SD</td>
</tr>
<tr>
<td><strong>Working effectively with others in a variety of settings:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Participating as a team player (e.g., group projects)</td>
<td>10</td>
<td>4.5</td>
<td>0.8</td>
</tr>
<tr>
<td>Working well with individuals from diverse backgrounds</td>
<td>10</td>
<td>4.3</td>
<td>0.9</td>
</tr>
<tr>
<td>Using ethical courses of action</td>
<td>10</td>
<td>4.6</td>
<td>0.8</td>
</tr>
<tr>
<td>Demonstrating leadership skills</td>
<td>10</td>
<td>4.6</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>Appreciating the importance of lifelong learning:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Showing an interest in career development</td>
<td>10</td>
<td>4.7</td>
<td>0.5</td>
</tr>
<tr>
<td>Being open to new ideas and challenges</td>
<td>10</td>
<td>4.5</td>
<td>0.8</td>
</tr>
<tr>
<td>Willingness to take on new responsibilities</td>
<td>10</td>
<td>4.4</td>
<td>0.7</td>
</tr>
<tr>
<td>Pursuing additional educational opportunities</td>
<td>10</td>
<td>4.4</td>
<td>0.8</td>
</tr>
</tbody>
</table>

**Employer Survey Information**

Three employer surveys were sent out to employers based on the permission provided by recent graduates in the 2011-12 recent alumni survey. One survey respondent provided an evaluation of the graduates’ college preparation. Since a single response cannot accurately represent the entire program, employer survey results will not be reported.
Occupation Profile

Four occupation descriptions were located in the Economic Modeling Specialists International (EMSI) website for the Engineering Technology program. The occupation description titles were Electrical and Electronic Engineering Technicians; Industrial Engineering Technicians; Computer numerically controlled machine tool programmers, metal and plastic; and Engineering Technicians, except Drafters, all other.

Occupation Descriptions

The occupation description for Electrical and Electronic Engineering Technicians 17-3023 used by EMSI is shown below:

Apply electrical and electronic theory and related knowledge, usually under the direction of engineering staff, to design, build, repair, calibrate, and modify electrical components, circuitry, controls, and machinery for subsequent evaluation and use by engineering staff in making engineering design decisions. Excludes “Broadcast Technicians.”

The occupation description for Industrial Engineering Technicians 17-3026 used by EMSI is shown below:

Apply engineering theory and principles to problems of industrial layout or manufacturing production, usually under the direction of engineering staff. May perform time and motion studies on worker operations in a variety of industries for purposes such as establishing standard production rates or improving efficiency.

The occupation description for Computer numerically controlled machine tool programmers, metal and plastic 51-4012 used by EMSI is shown below:

Develop programs to control machining or processing of metal or plastic parts by automatic machine tools, equipment, or systems.

The occupation description for Engineering Technicians, except Drafters, all other 17-3029 used by EMSI is shown below:

All engineering technicians, except drafters, not listed separately.
National, State, and County Wage Information and Employment Trends

The distribution of 2013 wage information for occupations related to Engineering Technology are located in Tables 6 - 9. The median hourly earnings for Electrical and Electronic Engineering Technicians were $27.81 in the United States, $25.78 in Florida, and $24.55 in Pinellas County. The median hourly earnings for Industrial Engineering Technicians was $24.51 in the United States, $19.58 in Florida, and $19.05 in Pinellas County. The median hourly earnings for Computer numerically controlled tool programmers, metal and plastic was $22.08 in the United States, $19.12 in Florida, and $20.45 in Pinellas County. The median hourly earnings for Engineering Technicians, Except Drafters, All Other was $28.58 in the United States, $28.37 in Florida, and $26.81 in Pinellas County.

Employment trend information for occupations related to Engineering Technology are also found in Tables 6 - 9 and divided by country, state, and county. An average annual increase (1.1%) in employment for Electrical and Electronic Engineering between 2012 and 2017 for the country is shown, with potential decreases in the state (-0.4%) and county (-11.9%). An average annual decrease (ranging from -0.1% to -12.3%) in employment for Industrial Engineering Technicians between 2012 and 2017 for the country, state, and county is shown. An average annual increase (4.8% - 8.5%) in employment for Computer numerically controlled tool programmers, metal and plastic between 2012 and 2017 for the country and state is shown, with a potential decrease in Pinellas County (-2.5%). An average annual increase (0.8% - 5.5%) in employment for Engineering Technicians, Except Drafters between 2012 and 2017 for the country, state, and county is shown.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>145,565</td>
<td>1.1%</td>
</tr>
<tr>
<td>Florida</td>
<td>6,881</td>
<td>-0.4%</td>
</tr>
<tr>
<td>Pinellas County</td>
<td>531</td>
<td>-11.9%</td>
</tr>
</tbody>
</table>

Source: Economic Modeling Specialists International | www.economicmodeling.com
Table 7
Growth for Industrial Engineering Technicians

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>68,578</td>
<td>-0.1%</td>
<td>$24.51/hr</td>
</tr>
<tr>
<td>Florida</td>
<td>2,533</td>
<td>-1.0%</td>
<td>$19.58/hr</td>
</tr>
<tr>
<td>Pinellas County</td>
<td>163</td>
<td>-12.3%</td>
<td>$19.05/hr</td>
</tr>
</tbody>
</table>

Source: Economic Modeling Specialists International | www.economicmodeling.com

Table 8
Growth for Computer Numerically Controlled Machine Tool Programmers, Metal and Plastic

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>24,655</td>
<td>4.8%</td>
<td>$22.08/hr</td>
</tr>
<tr>
<td>Florida</td>
<td>392</td>
<td>8.5%</td>
<td>$19.12/hr</td>
</tr>
<tr>
<td>Pinellas County</td>
<td>47</td>
<td>-2.5%</td>
<td>$20.45/hr</td>
</tr>
</tbody>
</table>

Source: Economic Modeling Specialists International | www.economicmodeling.com

Table 9
Growth for Engineering Technicians, Except Drafters, All Other

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>United States</td>
<td>67,676</td>
<td>5.5%</td>
<td>$28.58/hr</td>
</tr>
<tr>
<td>Florida</td>
<td>2,159</td>
<td>4.0%</td>
<td>$28.37/hr</td>
</tr>
<tr>
<td>Pinellas County</td>
<td>164</td>
<td>0.8%</td>
<td>$26.81/hr</td>
</tr>
</tbody>
</table>

Source: Economic Modeling Specialists International | www.economicmodeling.com
**Major Employers**

Graduates of SPC’s Engineering Technology program are employed in various areas related to their field. The primary local employers of these graduates are listed in Table 10.

**Table 10**
**Major Employers**

<table>
<thead>
<tr>
<th>Employers of Engineering Technology Graduates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trak Microwave Corporation</td>
</tr>
<tr>
<td>Millwork 360</td>
</tr>
<tr>
<td>Raymond James</td>
</tr>
<tr>
<td>Health Point Medical Group</td>
</tr>
<tr>
<td>Bovie Medical</td>
</tr>
<tr>
<td>QTM Incorporated</td>
</tr>
<tr>
<td>TSE</td>
</tr>
<tr>
<td>Florida Gun Drilling</td>
</tr>
<tr>
<td>ConMed - Linvatec</td>
</tr>
<tr>
<td>City of Clearwater</td>
</tr>
<tr>
<td>City of St. Petersburg</td>
</tr>
<tr>
<td>Pinellas County</td>
</tr>
<tr>
<td>Space Machine</td>
</tr>
<tr>
<td>Aerosonic Corporation</td>
</tr>
<tr>
<td>Oscar Medical</td>
</tr>
<tr>
<td>CavaForm</td>
</tr>
<tr>
<td>American Mold &amp; Tooling</td>
</tr>
</tbody>
</table>

Source: 2010-11 and 2011-12 Alumni Survey, and Program Administrator Input
**Total Placement**

Total Placement is the percentage of students who have an acceptable placement after graduation. Acceptable placement includes students who are enlisted in the military, continuing their education, and/or employed in their field within the first year of graduation. Only students with A.S. and A.A.S. degrees are used in the calculation. The Total Placement in the Engineering Technology (ENGTECH AS-TOTAL) program and the Aviation Maintenance Management Technology (AVAMM AS) program have remained at 100% for the past two years, as shown in Figure 14.

![Total Placement Graph](image)

*Figure 14: Total Placement*

Source: 2012-13 SPC Factbook, Table 35
State Graduates Outcomes

To provide reference information for the employment trend data, program graduate state outcome data are provided for all academic programs included within Engineering Technology. Engineering Technology program graduate state outcome data are provided in Table 11.

Although ten students were reported as having completed a state Engineering Technology program in 2010-11, twenty-four had some matching state data and were found to be employed. Many of the total completers were not available. Eighty-three percent (83%) of those state graduates were employed at least a full quarter, as depicted in Table 11.

Table 11
Engineering Technology State Graduate 2010-11 Outcomes by Florida Community College

<table>
<thead>
<tr>
<th>Florida Community College</th>
<th>Total Completers</th>
<th># Found Employed</th>
<th># Employed for a Full Qtr</th>
<th>% Employed For a Full Qtr</th>
<th>FETPIP Pool</th>
<th># Training Related (Employed, Education, or Military)</th>
<th>Placement Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brevard Community College</td>
<td>****</td>
<td>5</td>
<td>4</td>
<td>80%</td>
<td>5</td>
<td>5</td>
<td>100%</td>
</tr>
<tr>
<td>College of Central Florida</td>
<td>****</td>
<td>6</td>
<td>5</td>
<td>83%</td>
<td>6</td>
<td>5</td>
<td>83%</td>
</tr>
<tr>
<td>Florida State College at Jacksonville</td>
<td>****</td>
<td>4</td>
<td>2</td>
<td>40%</td>
<td>3</td>
<td>3</td>
<td>100%</td>
</tr>
<tr>
<td>Hillsborough Community College</td>
<td>****</td>
<td>1</td>
<td>1</td>
<td>100%</td>
<td>1</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Polk State College</td>
<td>****</td>
<td>1</td>
<td>1</td>
<td>100%</td>
<td>1</td>
<td>1</td>
<td>100%</td>
</tr>
<tr>
<td>St. Petersburg College</td>
<td>10</td>
<td>7</td>
<td>7</td>
<td>70%</td>
<td>9</td>
<td>8</td>
<td>89%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>10</strong></td>
<td><strong>24</strong></td>
<td><strong>20</strong></td>
<td><strong>83%</strong></td>
<td><strong>25</strong></td>
<td><strong>22</strong></td>
<td><strong>88%</strong></td>
</tr>
</tbody>
</table>

Source: Florida Education and Training Placement Information Program (FETPIP), Community College Vocational Reports (http://www.fldoe.org/fetpip/pdf/1011pdf/fcs1011asc.pdf)
Note: *** indicates total completers not available at the time of this report
To provide reference information for the employment trend data, program graduate state outcome data are also provided for all academic programs included within Aviation Maintenance Management. Aviation Maintenance Management graduate state outcome data are provided in Table 12.

Although twelve students were reported as having completed a state Aviation Maintenance Management program in 2010-11, twenty had some matching state data and were found to be employed. Several of the total completers were not available. Ninety percent (90%) of those state graduates were employed at least a full quarter, as depicted in Table 12.

**Table 12**

Aviation Maintenance Management Program Graduates 2010-11 Outcomes by Florida Community College

<table>
<thead>
<tr>
<th>Florida Community College</th>
<th>Total Completers</th>
<th># Found Employed</th>
<th># Employed for a Full Qtr</th>
<th>% Employed For a Full Qtr</th>
<th>FETPIP Pool</th>
<th># Training Related (Employed, Education, or Military)</th>
<th>Placement Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broward College</td>
<td>****</td>
<td>4</td>
<td>4</td>
<td>57%</td>
<td>5</td>
<td>5</td>
<td>100%</td>
</tr>
<tr>
<td>Florida State College at Jacksonville</td>
<td>****</td>
<td>5</td>
<td>3</td>
<td>43%</td>
<td>5</td>
<td>4</td>
<td>80%</td>
</tr>
<tr>
<td>Miami Dade College</td>
<td>12</td>
<td>8</td>
<td>8</td>
<td>67%</td>
<td>9</td>
<td>9</td>
<td>100%</td>
</tr>
<tr>
<td>St. Petersburg College</td>
<td>****</td>
<td>3</td>
<td>3</td>
<td>50%</td>
<td>4</td>
<td>4</td>
<td>100%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12</strong></td>
<td><strong>20</strong></td>
<td><strong>18</strong></td>
<td><strong>90%</strong></td>
<td><strong>23</strong></td>
<td><strong>22</strong></td>
<td><strong>96%</strong></td>
</tr>
</tbody>
</table>

Source: Florida Education and Training Placement Information Program (FETPIP), Community College Vocational Reports (http://www.fldoe.org/fetpip/pdf/1011pdf/fcs1011asc.pdf)
Program Administrator’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 four sub plans: Electronics, Quality, Digital Design and Modeling, and Biomedical Systems. SPC was the first college in Florida to offer the A.S. in Engineering Technology and served as the state model that has now led to a statewide acceptance by 13 other community colleges with 4 others considering this degree path.

The Technology Core covers the curriculum and aligns with the Manufacturing Skills Standard Council (MSSC) Certified Production Technician (CPT) national certification. This is an industry certification that is recognized by the local manufacturing sector as a factor for hiring new employees. The students who complete and pass the MSSC receive 15 college credits toward the A.S. degree in Engineering Technology.

The graduates of the A.S. in Engineering Technology degree are transferred directly to the state universities offering the B.S. Degrees in Engineering Technology as well as the B.A.S. degrees. The A.S. in Aviation Maintenance Management is transferred directly into the B.A.S. degrees here at SPC. The technical training for the power plant and airframe is taught through the National Aviation Academy in Clearwater and that training also provides the students the opportunity to obtain the FAA license.

The placement of our AS and certificate graduates in the local industry has been most successful. The relations and collaborations we have with
the manufacturers has increased, especially these past two years with the opening of the Collaborative Center for Emerging Technologies (CCET).

**Productivity and Enrollment**
The productivity for the Engineering Technology continues to improve along with an increase in actual student semester hours (SSHs) and course enrollment, as indicated by the findings in this report.

**Program Completers**
The program completers earning either the A.S. degrees or college certificates have remained consistent the past three years. Additional data related to 2013 graduates, which was not available when Figure 10 was created, are presented below.

**Graduate Data for Year 2013 (May, July, and December)**
- **21 A.S. degrees:**
  - 7 - Aviation Maintenance Management
  - 14 - Engineering Technology
- **69 Certificates:**
  - 29 - Lean Six Sigma Green Belt
  - 11 - Six Sigma Black Belt
  - 6 - CADD
  - 15 - Engineering Technology Support
  - 2 - Medical Quality Systems
  - 6 - Rapid Prototyping & Design

**Areas of Concern**
The courses in the Technical Core of the ET program are also used by students to meet the technical credits prerequisite entry requirements in some of the BAS degree programs. However since these students have no vested interest in the AS ET degree programs, it makes it very hard to plan subsequent course offerings in the program.

The lack of the HS enrollments (18-21 year olds) in the ET degree and certificate programs is also an area of concern. We need to work more with the high schools and the collegiate HS for dual enrollment in order to provide that interest in engineering technology.
The Engineering Technology program along with the other programs in our area really need to be marketed in Pinellas County. The web site needs to be upgraded and dynamic, as this is the first place people look for information and especially to see what our technology covers and opportunities for employment. This should be a number one issue for the college.

About 90% of the courses in the program are offered in the evening, to meet the needs of the encumbered industry workers and for people making a career change.

Students are graduating with the technical certificates, but many are not continuing on with the AS degrees. Some students are just taking courses for job enrichment or upgrading their skills. Although the number of A.S. completers has increased the past three years, this is an issue when we look at completers of programs.

Locating credentialed faculty to teach the applications and laboratory courses for the AS degree in 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 start up 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. We are not delivering training and credit courses fast enough for industry.

We see a growing course enrollment in the Rapid Prototyping, reverse engineering, applications and fabrication, and CAD design as requested by industry. The machining of parts from prototypes has led to many collaborations with our local industry and has provided CO-OPs, part time and then full time employment of our students. We need to continue to provide the resources necessary for this growth of equipment to keep up with demand.
Using national certification like MSSC to increase interest and enrollment in the ET degree and the college certificates is a must. Other industry training certifications need to be articulated into the degree tract as well for the career sustainability process.

We continue to work with the National Science Foundation (NSF), through the Florida Advanced Technological Education Center (FLATE), for outreach, curriculum, and continued grant opportunities.

**Program Improvements**

Equipment purchased with the Perkins funding, capital outlay, the Florida TRADE Grant, and industry donations expenditures has increased the training and educational experiences for the laboratory activities in the Collaborative Center for Emerging Technologies (CCET). The recent purchase of the Allen Bradley programmable logic controllers, the FANUC robots, the Faro reverse engineering arm and scanner, and the pneumatic industrial trainer has expanded our capability to the students in all of the manufacturing related classes. There is more hands on and practical use of equipment that have resulted in the collaboration with local industry on advance design and measurement.

This added equipment has led to an advanced integrated manufacturing work cell within the CCET this past year.
## Program Action Plan

Program: Engineering Technology

Date Completed: September 2013

Prepared By: Brad Jenkins

### I. Action Plan Items:

<table>
<thead>
<tr>
<th>Action Item</th>
<th>Viability Measure Addressed</th>
<th>SPC Strategic Priority</th>
<th>Responsible Party</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Development of an AS degree in Medical Device Manufacturing with specializations and certificates.</td>
<td>SSH Enrollment</td>
<td>Expand Workforce Opportunities for Students</td>
<td>Brad Jenkins</td>
</tr>
<tr>
<td>2. Development of an Advanced Manufacturing Specialization in Automation for the AS degree in Engineering Technology.</td>
<td>SSH Enrollment</td>
<td>Expand Workforce Opportunities for Students</td>
<td>Brad Jenkins</td>
</tr>
</tbody>
</table>
II. Special Resources Needed:

The expansion of the CCET for an additional 1500 square feet for a manufacturing production facility is necessary.

III. Area(s) of Concern/Improvement:

The expansion of the CCET is required in order to provide the space for the manufacturing and fabrication for the final production of material. This area would have the necessary CNC machines, other manufacturing related equipment, industrial equipment for production and training, and a process and inspection area.

In order to provide the training and offer the advanced programs in manufacturing this space is required to meet those industry demands. A capital campaign to help finance this endeavor may be one way to help provide the resources to enable this expansion. With our present Center and then this expansion, we can be assured of the support from industry to make this a working manufacturing facility.
Dean’s Council

Summary of observations, recommendations, and decisions:

Anne Cooper, Senior Vice President

Date

8/28/14
References

Contact Information

Please address any questions or comments regarding this evaluation to:

Sabrina Crawford, M.A.
Executive Director, Institutional Research and Effectiveness
St. Petersburg College, P.O. Box 13489, St. Petersburg, FL 33733
(727) 341-3118
crawford.sabrina@spcollege.edu
Appendix A: Program Overview, 2013

ENGINEERING TECHNOLOGY
ASSOCIATE IN SCIENCE DEGREE
(ENG-AS)

http://www.spccollege.edu/program/ENG-AS
Brad Jenkins, Program Administrator, (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 four specializations: electronics, quality, digital design and modeling, and biomedical systems with one common core. 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)

ENG 110T Composition for Honors 3
SPC 1017 Introduction to Speech Communication OR (SPC 1017H, 1065, 1608 or 1608H) 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 1600 Studies in Applied Ethics OR (PHI 1602H, 1631, 2635, or 2640) 3
Computer/Information Literacy Competency Requirement

TECHNOLOGY CORE COURSES (18 credits)

ETE 1064C Introduction to Electronics 3
ETD 1320C Introduction to CAD 3
ETI 1110 Introduction to Quality Assurance 3
ETI 1420 Manufacturing Processes and Materials I 3
ETI 1701 Industrial Safety 3
ETM 1010C Mechanical Measurement and Instrumentation 3

SUBPLAN A: ELECTRONICS (ELEC) (24 credits)

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

OR

SUBPLAN B: QUALITY (QUAL) (24 credits)

ETI 1622 Concepts of Lean and Six Sigma 3
ETI 1628 Developing and Coaching Self-Directed Work Teams 3
ETI 2610 Principles of Six Sigma 3
ETI 2619 Six Sigma Project Management 3
ETI 2623 Tools for Lean Manufacturing 3
ETI 2624 Six Sigma Black Belt Concepts 3
ETI 2628 Six Sigma Capstone Project 3
ETI 2670 Technical Economic Analysis 3

OR

SUBPLAN C: DIGITAL DESIGN AND MODELING (DDM) (24 credits)

ETD 1340C AutoCAD II 3
ETD 1350C AutoCAD III 3-D Modeling 3
ETD 2364C Introduction to Solid Works 3
ETD 2365C Advanced Solid Works 3
ETD 2366C Solid Works Advanced Applications 3
ETE 2949 Co-op Work Experience 3
Select any two additional ETD related courses 6
### Appendix A: Program Overview 2013, cont.

#### OR

**SUBPLAN D: BIOMEDICAL SYSTEMS (BIOM) (24 credits)**

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>ET1 1030</td>
<td>Regulatory Environment for Medical Devices</td>
</tr>
<tr>
<td>ET1 1622</td>
<td>Concepts of Lean and Six Sigma</td>
</tr>
<tr>
<td>ET1 1623</td>
<td>Developing and Coaching Self-Directed Work Teams</td>
</tr>
<tr>
<td>ET1 2031</td>
<td>Risk Management and Assessment for Medical Devices</td>
</tr>
<tr>
<td>ET1 2032</td>
<td>Change Control and Documentation</td>
</tr>
<tr>
<td>ET1 2041</td>
<td>Medical Device Design and Manufacturing</td>
</tr>
<tr>
<td>ET1 2171</td>
<td>Quality Auditing for Medical Devices</td>
</tr>
<tr>
<td>BMT 2949</td>
<td>Co-op Work Experience</td>
</tr>
</tbody>
</table>

**TOTAL PROGRAM HOURS: 60**

*To provide students with an enhanced world view in light of an increasingly globalized economy, students must include at least one of the following courses as part of the general education requirements for the Associate in Science degree:*

<table>
<thead>
<tr>
<th>Course Code</th>
<th>Course Title</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIT 2110</td>
<td>World Literature I</td>
</tr>
<tr>
<td>REL 2200</td>
<td>World Religions</td>
</tr>
<tr>
<td>LIT 2110H</td>
<td>Honors World Literature I</td>
</tr>
<tr>
<td>INR 2002</td>
<td>International Relations</td>
</tr>
<tr>
<td>LIT 2120</td>
<td>World Literature II</td>
</tr>
<tr>
<td>INR 2002H</td>
<td>Honors International Relations</td>
</tr>
<tr>
<td>LIT 2120H</td>
<td>Honors World Literature II</td>
</tr>
<tr>
<td>WOH 2040</td>
<td>The Twentieth Century</td>
</tr>
<tr>
<td>HUM 2270</td>
<td>Humanities (East-West Synthesis)</td>
</tr>
<tr>
<td>HUM 2270H</td>
<td>Honors Humanities (East-West Synthesis)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cfi 502/07</th>
<th>BOT 09/2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective 2007/03/30</td>
<td>Effective 2007/04/15</td>
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<tr>
<td>BOT 09/17/05</td>
<td>Effective 2007/04/15</td>
</tr>
<tr>
<td>Cfi 502/07</td>
<td>BOT 09/2007</td>
</tr>
<tr>
<td>Effective 2007/04/15</td>
<td>Effective 2007/04/15</td>
</tr>
</tbody>
</table>

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Appendix A: Program Overview 2013, cont.

AVIATION MAINTENANCE MANAGEMENT TECHNOLOGY
ASSOCIATE IN SCIENCE DEGREE
(AVAMM-AS)

(Transferable to BAS in Technology Management at SPC)
Grad Jenkins, Program Administrator, CL (727) 344-4378

The Aviation Maintenance Management Technology program is an articulated program with the National Aviation Academy (NAA), Clearwater, Florida. The goal of this program, Subplan A, 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.

Subplan B represents the industry certification that the state of Florida has approved, through the passage of the Federal Aviation Administration (FAA) exams and the issue of the FAA certification for Airframe and Powerplant.

To be eligible for the articulated credit, students must show evidence of their FAA Airframe Mechanic certification and it must have been issued within three (3) years prior to their enrollment in the program.

**SUBPLAN A: National Aviation Academy (NAA)**

**GENERAL EDUCATION COURSES (18 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC 1101</td>
<td>Composition I or (Honors)</td>
<td>3</td>
</tr>
<tr>
<td>SPC 1017</td>
<td>Introduction to Speech Communication OR (SPC 1017H, 1005, 1006, or 1006H)</td>
<td>3</td>
</tr>
<tr>
<td>Humanities/Fine Arts Approved Course *</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Mathematics</td>
<td>One college-level course with MAC, MAP, MAS, MGF, MTG or STA prefix</td>
<td>3</td>
</tr>
<tr>
<td>Social &amp; Behavioral Sciences Approved Course</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>PHI 1631</td>
<td>Studies in Professional Ethics OR (PHI 1600, 1602H, 2635 or 2649)</td>
<td>3</td>
</tr>
<tr>
<td>Computer/Information Literacy Competency Requirement</td>
<td>*Visit <a href="http://www.spc.edu/program/GENED-AS">www.spc.edu/program/GENED-AS</a> for details</td>
<td></td>
</tr>
</tbody>
</table>

**SUPPORT COURSES (9 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>MAN 2321</td>
<td>Principles of Management</td>
<td>3</td>
</tr>
<tr>
<td>ACG 2321</td>
<td>Financial Accounting</td>
<td>3</td>
</tr>
<tr>
<td>MAN 2340</td>
<td>Supervisory Management</td>
<td>3</td>
</tr>
</tbody>
</table>

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 DVY7100-R. To be eligible for the articulated credit, students must show evidence of their FAA Airframe Mechanic certification and it must have been issued within three (3) years prior to their enrollment in the program.

**TOTAL PROGRAM HOURS**

83

**OR**

**SUBPLAN B: The Federal Aviation Administration (FAA) industry certification**

**GENERAL EDUCATION COURSES (30 credits)**

<table>
<thead>
<tr>
<th>Course</th>
<th>Description</th>
<th>Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENC 1101</td>
<td>Composition I or (Honors)</td>
<td>3</td>
</tr>
<tr>
<td>ENC 1102</td>
<td>Composition II OR (approved Literature course)</td>
<td>3</td>
</tr>
<tr>
<td>SPC 1017</td>
<td>Introduction to Speech Communication OR (approved Speech course)</td>
<td>3</td>
</tr>
<tr>
<td>HUM 2240</td>
<td>Western Humanities I or (Honors) OR</td>
<td>3</td>
</tr>
<tr>
<td>HUM 2241</td>
<td>Western Humanities II or (Honors)</td>
<td>3</td>
</tr>
<tr>
<td>HUM 2260</td>
<td>Humanities (East-West Synthesis) OR (approved Humanities/Fine Arts course)</td>
<td>3</td>
</tr>
<tr>
<td>Mathematics</td>
<td>Two college-level courses with MAC, MAP, MAS, MGF or MTG prefix</td>
<td>6</td>
</tr>
<tr>
<td>Natural Sciences</td>
<td>One Biological and One Physical Science Course (One course must include lab)</td>
<td>6</td>
</tr>
<tr>
<td>POS 2041</td>
<td>American National Government or (Honors)</td>
<td>3</td>
</tr>
<tr>
<td>Social and Behavioral Sciences Approved Course</td>
<td></td>
<td>3</td>
</tr>
</tbody>
</table>
Appendix A: Program Overview 2013, cont.

PHI 1631 Studies in Professional Ethics OR (PHI 1600, 1602H, 2635 or 2649) 3
Computer/Information Literacy Competency Requirement
*Visit www.spc.edu/program/GENR-AS for details

SUPPORT COURSES (11 credits)
MAN 2201 Principles of Management 3
AGC 2201 Financial Accounting 3
MAN 2240 Supervisory Management 3
EET 2049 Co-Op Work experience 2

Total SPC Credits 47

The Federal Aviation Administration (FAA) Industry certification has been approved by the state of Florida.

MAJOR COURSES (36 credits)

Total credits approved from the industry certification for the state of Florida, through the passage of the Federal Aviation Administration (FAA) exams and the issue of the FAA certification for Airframe and Powerplant. To be eligible for the articulated credit, students must show evidence of their FAA Airframe Mechanic certification and it must have been issued within three (3) years prior to their enrollment in the program. 36

TOTAL PROGRAM HOURS 83

C&I 1/27/04; Eff 2004
Eligibility language added by CS Office on 6/18/13 per SVP's request

BCT 6/17/00; Eff 2006

C&I 4/12/11; BCT 4/29/11;

Eff 20112 0450
Appendix B: Advisory Board Committee Minutes and Recommendations, 2013-14

ST. PETERSBURG COLLEGE

Department of Engineering Technology & Building Arts

ADVISORY MEETING

Thursday, September 12, 2013

Epicenter
13805 58th Street North
Largo, FL 33770

Summary

Members Present: Tina Brudnicki, Lou Grilli, Ken Conforti, David Reese, Greg Seay, Dan Bloom, Bob Hudson, and Brad Jenkins.

Members Excused: Mark Snyder, Ed Homan, Matt Smith, Clint Mells, Joe DiPasqua, Steve Askew, Bill Erdmann, Randy Swanson, Rodney Jaramillo, Don Houdek, Scott Choquette, and Lisa Macioly.

Guests: Wayne Hamm, Outreach Specialist, AS degrees, Jill Flansburg, Project Manager, Florida TRADE DOL grant, and Giovanna Taylor, Program Director, Medical Devices Hub, DOL Biocare DOL grant.

The Advisory Committee was held at the Epicenter for a dinner meeting that was hosted by the college. The ET-BA Advisory Committee was one of 11 college wide committees that participated in the dinner. Anne Coover, Senior Vice-President of Academics, thanked the advisory members for their support and their time to ensure that the programs were successful and meeting the needs of industry. John Chapin, Dean Natural Science, provided an update on the new SPC manufacturing training facilities at the LunaStream LED manufacturing company in downtown St. Petersburg.

Following dinner the Advisory Committee met for their fall meeting.

Course Enrollment:

Brad Jenkins provided the enrollment update from this Fall 2013 year, in which the enrollment is up 9.08% in Engineering Technology and decreased 7.09% in Building Arts, as compared to the Fall session in 2012. Overall however enrollment is increasing in ET and slightly down in BA. The Graduation data from May and July 2013 indicated for Engineering Technology, 15 A.S. degrees and 49 Certificates awarded, and for Building Arts, 12 A.S. degrees and 8 Certificate were awarded. (the listing of graduates for the session is included with this summary)
Appendix B: Advisory Board Committee Minutes and Recommendations, 2013-14, cont.

Update on Action Items:

The committee received the list of the graduate data and enrollment from the May 2, 2013 meeting. The committee was informed of the new equipment that was ordered and received during the summer, including the Faro reverse engineering arm scanner and the Pneumatics equipment, to be interfaced with the PLCs. Another FANUC Robotic arm has been ordered through funding from the Florida TRADE DOL grant.

Collaborative Center of Emerging Technologies:

New equipment to this Center included a manual Bridgeport milling machine donated by Florida Gun Drilling Company. The owner Dave Lundy also provided the riggers and setup of this machine. This machine will be utilized to give the students an opportunity to operate a milling machine, to apply reverse engineering techniques, and to take prototypes from the 3-D printers to manufacture metal parts. A surface grinder is also being donated later this fall.

Architectural and Building Arts updates:

Bob Hudson reported that three graduates from the AA degree program in Architectural graduated with their Masters degree in Architecture at USF this past spring. The Building Arts graduates led the state with 100% obtaining jobs in the construction industry.

The Building Arts students also finished their practicum for the new Ethics and Social Science building.

NSF and DOL Grant updates:

Brad reported on the FLATE highlights updates this summer that included the review of the Engineering Technology curriculum frameworks, with the Florida Department of Education (DOE), concerning the review of the technical specialties offered under this degree. FLATE also sponsored 11 Robotic Camps in both Pinellas and Hillsborough counties this summer.

There are now 14 state colleges that have adopted the A.S. degree in Engineering Technology. Additional state colleges expressing interest in the A.S. degree include Santa Fe, Broward, Gulf Coast, and Pasco-Hernando.

All the information is available on the FLATE website: [www.fl-ate.org](http://www.fl-ate.org) and [www.madeinfloirda.org](http://www.madeinfloirda.org).

The U.S. Department of Labor (DOL) Trade Adjustment Assistance Community College and Career Training (TAA/CCCT) grant updates were provided by Giovanna Taylor, on the Bioscience Credentialing, Biomedical Devices, and Jill Flandburg, for the Florida TRADE grant. Jill provided that the state training course for the Manufacturing Skills Standards Council (MSSC) Certified Production Technician (CPT) will start next week with 12 participants at the Midtown Campus in St. Petersburg. This will be a 6-week training session, meeting 4 days a week, for 6 hours a day. Other training certificates will include CNC machining, robotics, mechatronics, and SolidWorks. The Florida TRADE grant will cover the participants cost for courses and workbooks.

Giovanna provided the update on the medical devices national meeting to be held at SPC, which will develop the standardized set for various skills and programs for the Lab Science, Bio-manufacturing, and the Medical Devices sub of this grant. A skills matrix has been developed for the common skills required by the medical device industry. Other discussion topics will include using the SPC Collaborative Laboratory to develop what degree and certificates are needed and setting up skill sets and educational pathways. Giovanna also reported that the first two courses in the Medical Quality Systems college certificate are filled with 24-27 students in each course. Baycare Healthcare will also partner with this grant as they are an end user of the medical devices and their need is for biomedical technicians.

Brad provided the update on the DeafTech NSF grant of the Rochester Institute of Technology (RIT) National Technical Institute for the Deaf (NTID) that will begin this fall with training modules for faculty and counselors.
Appendix B: Advisory Board Committee Minutes and Recommendations, 2013-14, cont.

Other Discussion topics:

Wayne Hamn, Outreach Specialist, reported on the recruiting efforts for students and the tours being conducted in the Collaborative Center for Emerging Technologies. Wayne also reported on the October 24 town hall meeting for parents they want to learn more about manufacturing and the educational pathways. Jill provided an update on the Manufacturing Day activities in that will be held October 3.

Action Items:

The action items of this meeting included:

1. Brad Jenkins will send the list of the graduate data and enrollment to all advisory members, in order to provide that information to the members not attending this meeting.

2. The Advisory Committee approved developing a new AS degree in Medical Devices, a new Regulatory Affairs Certificate, and an Advanced Manufacturing Subplan for Automation under the AS degree in Engineering Technology.

The meeting was adjourned at 8:55 p.m.

The next advisory committee meeting will be 5:30PM, Thursday, April 14, 2014 at the Clearwater Campus.

Respectfully submitted,

Bradley E. Jenkins
Secretary
Appendix B: Advisory Board Committee Minutes and Recommendations, 2013-14, cont.

Engineering Technology & Building Arts

Graduate Data for May 2013 Graduates

**Engineering Technology**
12 AS degrees: 9 - Engineering Technology; 3 – Aviation Maintenance Management
38 Certificates:
   - 13 - Lean Six Sigma Green Belt
   - 10 - Six Sigma Black Belt
   - 2 - CADD
   - 10 - Engineering Technology Support
   - 1-Medical Quality Systems
   - 2 - Rapid Prototyping & Design

**Building Arts**
8 AS degrees: 5 –Architectural Design & Construction; 3 – Drafting and Design
4 Certificates:
   - 4 – Building Construction

Graduate Data for July 2013 Graduates

**Engineering Technology**
3 AS degrees: 2 - Engineering Technology; 1 - Aviation Maintenance Management
11 Certificates:
   - 5 -Lean Six Sigma Green Belt
   - 1 - Six Sigma Black Belt
   - 2-CADD
   - 1-Medical Quality Systems
   - 2 - Rapid Prototyping & Design

**Building Arts**
4 AS degrees:  1 –Architectural Design & Construction; 3 – Drafting and Design
4 Certificates:
   - 4 – Building Construction

Total Department Enrollment increase from Fall 2012 to this Fall 2013 (based on student semester hours (SSH))

**Engineering Technology**: Fall 2012 = 1101 SSH; Fall 2013 = 1208; increase 9.88%

**Building Arts**: Fall 2012 = 538; Fall 2013 = 495; decrease 7.99%
Appendix C: Advisory Board Committee Minutes and Recommendations, 2012-13

ST. PETERSBURG COLLEGE
Department of Engineering Technology & Building Arts
ADVISORY MEETING

Thursday, May 2, 2013
5:00 - 6:15PM
Clearwater Campus
Collaborative Center for Emerging Technologies
2465 Drew Street
Clearwater, FL 33765

SUMMARY

Members Present: Tina Budnicki, Ed Heman, Don Houdek, David Reese, Matt Smith, Scott Choquette, Lisa Marisiek, Bill Venz, Bob Hudson, and Brad Jenkins.

Members Excused: Mark Snyder, Ken Conforti, Dan Bloom, Lou Grilli, Greg Seyal, Roger Harvey, Clint Meeks, Joe DiPasqua, Steve Askew, Bill Erdmann, Randy Swanson, Rodney Jaramillo, Ned Stacy.

Guests: Alex McKenna, Amy Apicerno, Krista Fusari, Dustin Smith, Giovanna Taylor, Greg Lewis

After the introduction of members and guests, Brad Jenkins, and Greg Lewis, Senior instructor for Solid Works, provided a tour of the Collaborative Center for Emerging Technologies (CCET) that opened last August 2012. The tour highlighted the open manufacturing layout of the Center with the different work cells and areas for Solid Works Design, manufacturing with the rapid prototyping and CNC equipment, the electronics work cell, the metrology and inspection area, advanced testing with PLCs and robotics and the soft wall clean room. The Center now has over $1.1 million of equipment and facilities. Separate lab rooms have been eliminated as labs are conducted in the Center in an open access area. Everyone was quite impressed with the equipment and laboratories in the CCET.

Course Enrollment:

Brad Jenkins provided the enrollment update from this Fall 2012 and Spring 2013 year, in which the enrollment is up 9.88% in Engineering Technology and decreased 11.74% in Building Arts, as compared to the Fall session in 2011. For the Spring 2013, the enrollment is up 12.09% in Engineering Technology and increased 2.84% in Building Arts, as compared to the Spring session in 2012. The Graduation data from December 2012 and May
Appendix C: Advisory Board Committee Minutes and Recommendations, 2012-13, cont.

2013 indicated for Engineering Technology, 20 A.S. degrees and 61 Certificates awarded, and for Building Arts, 16 A.S. degrees and 9 Certificates were awarded (the revised enrollment sheet is attached)

Update on Action Items:

The committee received an update on the action items from the September 6, 2012 meeting concerning the Collaborative Center of Emerging Technologies along with the contacts of industry for donated industrial equipment. The committee members not attending also received the list of the graduate data and enrollment.

Architectural and Building Arts updates:

Bob Hudson reported that of the 7 Architectural AA degree transfer students that applied to the USF Masters in Architectural program, that 5 were accepted. Bob also reported that of the 30 USF Masters in Architecture graduates, which 5 were from our SPC program. The Building Arts students completed their work with the construction company building for new Ethics and Social Science classroom building this spring. The students kept a journal on their experiences.

U.S. Department of Labor (DOL) Grant updates:

The college has written and participated in two proposals with the U.S. Department of Labor (DOL) Trade Adjustment Assistance Community College and Career Training (TAACCCT) grant. Brad provided a brief update on the Florida TRADE grant, a $15 million proposal for industry training certifications that also involves 11 other state colleges. The structure for the application process and the path for training are underway at all colleges. SPC will begin later this summer to begin some preliminary training.

Giovanna Taylor, the newly selected Program Director of the other DOL grant, Biosciences Credentials, Medical Devices, provided an update on the activities of that grant. SPC is a partner with Ivy Tech Community College, in Indiana, and Salt Lake City Community College for the Medical Devices Hub. The major goal is to develop an A.S. degree in Medical Manufacturing with a number of specializations and college certificates. Giovanna will be contacting the medical device industry this summer in regards to validating the skills and training needs for this industry. SPC will be hosting the fall meeting of the Medical Devices Hub September 17-18, 2013.

Equipment Requests and approvals:

Brad presented for approval two equipment requests. A Pneumatic equipment package to be used in automation and robotics, and a Reverse Engineering Arm to provide the reverse engineering for our manufacturing and rapid prototyping program. The committee gave the approval for both of these equipment purchases.

NSF Grant Updates:

Brad provided the update on the Deaf-Tec NSF grant of the Rochester Institute of Technology (RIT) National Technical Institute for the Deaf (NTID) that started this fall. The training for faculty and counselors will begin this summer and continue in the fall. Local industry will be invited to participate later this summer for training.

The FLATE updates this year included the new remodeled FLATE website with its updated industry page. FLATE is continuing to work with the Florida Department of Education (DOE) to review and update the Engineering Technology curriculum frameworks concerning the college certificates for this summer. There are now 14 state colleges that have adopted the A.S. degree in Engineering Technology.

All the information is available on the FLATE website: [www.fl-ate.org](http://www.fl-ate.org) and [www.madeinflorida.org](http://www.madeinflorida.org)
Appendix C: Advisory Board Committee Minutes and Recommendations, 2012-13, cont.

Action Items:

The action items of this meeting included:

1. Brad Jenkins will send an updated list of the graduate data and enrollment to all advisory members, in order to provide that information to the members not attending this meeting.

2. Brad will be completing the purchasing process to order the equipment approved.

The meeting was adjourned at 6:35 P.M.

The next advisory committee meeting will be September 12, 2013 at the EpiCenter for a dinner meeting. The agenda will be sent out prior to the meeting. (there may be a late summer meeting, but a notification will go out on that later)

Respectfully submitted,

Bradley E. Jenkins
Secretary
Appendix C: Advisory Board Committee Minutes and Recommendations, 2012-13, cont.

ST. PETERSBURG COLLEGE

Department of Engineering Technology & Building Arts
ADVISORY MEETING

Thursday, September 6, 2012
Epicenter
13805 58th Street North
Largo, FL 33760

Summary

Members Present: Tina Brudnicki, Ken Conforti, Lou Grilli, Ed Homan, Don Hondek, David Reese, Greg Seay, Matt Smith, and Brad Jenkins.

Members Excused: Mark Snyder, Dan Bloom, Roger Harvey, Clint Mells, Joe DiPasqua, Steve Askew, Bob Hudson, Bill Erdmann, Randy Swanson, Rodney Jaramillo, Ned Stacy, Scott Choquette, and Lisa Maciolek.

Guests: Stan Vittert, Provost, Clearwater Campus, Gary Graham, Project Manager, Academics, John Chapin, Dean, Natural Science, La' Kesha O'Neal, Workforce Recruiter, and Rod Davis, Outreach Director.

The Advisory Committee was held at the Epicenter for a dinner meeting that was hosted by the college. The ET-BA Advisory Committee was one of 11 college wide committees that participated in the dinner. President Bill Law thanked the advisory members for their support and their time to ensure that the programs were successful and meeting the needs of industry.

Following dinner the Advisory Committee met for their fall meeting.

Course Enrollment:

Brad Jenkins provided the enrollment update from this Fall 2012 year, in which the enrollment is up 3.89% in Engineering Technology and decreased 14.6% in Building Arts, as compared to the Fall session in 2011. Overall however enrollment remains steady in ET and down in BA. The Graduation data from May and July 2012 indicated for Engineering Technology, 17 A.S. degrees and 39 Certificates awarded, and for Building Arts, 15 A.S. degrees and 6 Certificate were awarded. (the listing of graduates for the session is included with this summary)
Appendix C: Advisory Board Committee Minutes and Recommendations, 2012-13, cont.

Update on Action Items:

The committee received an update on the action items from the April 4, 2012 meeting concerning the Collaborative Center of Emerging Technologies, the contacts of industry for donated industrial equipment. The new ET and BA department web pages were updated this summer and are in effect now. 40 HS students were contacted this past spring/summer and sent additional information on the ET program. These contacts were made through the FLATE website.

Collaborative Center of Emerging Technologies:

The Collaborative Center for Emerging Technologies opened on August 17 with a ceremony in the morning that included the Chancellor for the State Colleges, Randy Hanna from Tallahassee, President Bill Law, and Board of Trustee member, Robert Fine. Other dignitaries were also present with about 50 others attending the opening. The center is the first of its kind to have an open manufacturing floor plan giving the students an opportunity to work in an industry related workspace. The Center has over $750,000 of equipment and includes an electronics work cell and measurement space, a Solid Works Design Center, a metrology and inspection area, an advanced measurement area, a manufacturing center featuring rapid prototyping, 3-D printers along with subtractive manufacturing featuring CNC machines. This is the newest and most up to date Center in the state.

Architectural and Building Arts updates:

Bob Hudon was selected as the Teacher of the Year for the Clearwater Campus during the April Awards ceremony. Bob works with all the students in both the Architectural and Building Arts courses and continues to help those students obtain jobs and other positions on the construction industry.

The Building Arts students are continuing their work this fall, with the construction company building the new Ethics and Social Science classroom building. The students are on site one day a week and are keeping a journal on their experiences. The building is now scheduled for a January 2013 completion.

NSF and DOL Grant updates:

Brad provided the update on the DeafTec NSF grant of the Rochester Institute of Technology (RIT) National Technical Institute for the Deaf (NTID) that started this fall with training for faculty and counselors this upcoming spring.

The college has written and participated in two proposals with the U.S. Department of Labor (DOL) Trade Adjustment Assistance Community College and Career Training (TAAACCCT) grant. The one is the Florida TRADE grant, a $15 million proposal for industry training certifications that also involves 11 other state colleges. SPC is the lead institution for this grant. The other DOL grant is related to medical devices and SPC is a partner with several other colleges around the country to other college certificates and AS degrees in this medical field. The college will receive notice sometime later this month as to status of the awards which be announced by DOL.

The FLATE updates this year included the new remodeled FLATE website with its updated industry page. FLATE is working with the Dream It Do It activity with the Made in Florida materials. FLATE is also working with DOE to review and update the Engineering Technology curriculum frameworks concerning the technical core. This industry is required every three years by the Department of Education and the next stage will be the review of the technical specialties offered under this degree.

There are now 11 state colleges that have adopted the A.S. degree in Engineering Technology. Additional state colleges expressing interest in the A.S. degree include Santa Fe, Broward, Gulf Coast, Pasco-Hernando, and Seminole State.

All the information is available on the FLATE website: (www.flate.org and www.madeinflorida.org).
Appendix C: Advisory Board Committee Minutes and Recommendations, 2012-13, cont.

Other Discussion topics:

Rod Davis, the college Outreach Director and La’Kesha O’Neal, the Workforce Recruiter provided an update on the activities that they are involved to support our programs. They also provided information on the college’s new internship program.

Action Items:

The action items of this meeting included:

1. Brad Jenkins will send the list of the graduate data and enrollment to all advisory members, in order to provide that information to the members not attending this meeting.
2. Brad will be contacting industry this fall to obtain donated industrial equipment.

The meeting was adjourned at 8:05 p.m.

The next advisory committee meeting will be in the spring 2013 with the date to be determined. The agenda will be sent out prior to the meeting.

Respectfully submitted,

Bradley E. Jenkins
Secretary
Appendix D: Advisory Board Committee Minutes and Recommendations, 2011-12

St. Petersburg College

Department of Engineering Technology and Building Arts
Advisory Committee Meeting

Wednesday, April 4, 2012

Summary

Members Present: Tina Brudnicki, Ken Conforti, Bob Hudson, Greg Seay, Matt Smith, and Brad Jenkins.

Members Excused: Mark Snyder, Don Houndek, John DeBella, Lon Griffi, Marcus Heiler, Dan Bloom, David Reese, Roger Harvey, Clint Mells, Joe DiPasqua, Steve Askew, Bill Erdmann, Randy Swanson, Ed Homan, Keith Matthews, Rodney Fischer, Deb Ashman-Jaramillo, Bob Hudson, Ned Stacy, Bill Erdmann, Scott Choquette, and Lisa Maciolek.

Guests: Stan Vittetoe, Provost, Clearwater Campus, Gary Graham, Project Manager.

Course Enrollment:
Brad Jenkins provided the enrollment update from this Spring 2012 year, in which the enrollment is down 9.76% in Engineering Technology and 19.48% in Building Arts, as compared to the Spring session in 2011. This decrease is attributed to students taking fewer courses and the companies draw back on tuition reimbursement. Overall however enrollment remains steady. The Graduation data from December 2011 indicated for Engineering Technology, 7 A.S. degrees and 25 Certificates awarded, and for Building Arts, 7 A.S. degrees and 3 Certificate were awarded. (the complete listing of graduates for the session is included with this summary)

Update on Action Items:
The committee received an update on the action items from the April 13, 2011 meeting concerning the Collaborative Center of Emerging Technologies and the contracting of industry for donated industrial equipment. The ET and BA department web pages are still being updated for this summer.

Collaborative Center of Emerging Technologies:
The committee received the layout of the lab and equipment placement for the Collaborative Center for Emerging Technologies. The building will be ready for classes for August. The Facilities Planning Department will give an updated timetable later this summer for the completion date. Brad also mentioned that he will be looking to have some donated industrial equipment to the Center and will be contacting his industrial partners this fall.
Appendix D: Advisory Board Committee Minutes and Recommendations, 2011-12, cont.

Architectural and Building Arts updates:
Bob Hudson provided the update in regards to the Architectural and Building Arts students that are continuing their work with the construction company building the new Ethics and Social Science classroom building. The students are on site one day a week and are keeping a journal on their experiences. The building is now scheduled for an October 2012 completion.

Nanotechnology Survey Activity:
Brad Jenkins provided the summary information from the Nanotechnology Forum held at the Epicenter Collaborative labs from that March 20 activity. The committee also received additional information on the ETS 2360 course, Introduction to Nanotechnology and expressed interest in this course especially if it goes on-line. Brad will have additional information on the nanotechnology curriculum later this summer.

NSF Grant updates:
Brad provided the update on the DeafTech NSF grant of the Rochester Institute of Technology (RIT) National Technical Institute for the Deaf (NTID). The RIT grant team has met with SPC in March to begin the work on this grant.

Gary Graham informed the advisory committee that the NSF did not approve the SPC proposal for the National Center Grant for Medical Devices. The NSF review committee suggested that the SPC develop an NSF project for national certification in the medical devices.

Brad also provided the FLATE updates from this spring and also remarked that there are now 11 state colleges that have adopted the A.S. degree in Engineering Technology. The success of this state program is now looked as a national model for Engineering Technology.

Other Discussion topics:
Brad informed the committee about the dual enrollment program and also the Early College High School program at SPC. The students receive their high school diploma as well as their A.A. degree by going through this Early College program. He suggested that the students be given an opportunity to work on either the A.A. or the A.S. degree. The committee agreed that this would provide a choice that the students might be interested in and suggested a follow up to this issue.

Action Items:
The action items of this meeting included:

1. Additional information regarding Nanotechnology will be sent to the committee.

2. Brad Jenkins will send the list of the graduate data and enrollment to all advisory members, in order to provide that information to the members not attending this meeting.

3. Brad will be contacting industry this spring/summer to obtain donated industrial equipment.

4. Information concerning the AA/AS degree for the high school students will be addressed.

The meeting was adjourned at 8:45 p.m.

The next meeting will be September 6, 2012 dinner meeting, at a college site to be determined. The agenda will be sent out prior to the meeting.

Respectfully submitted,

Bradley E. Jenkins
Secretary
Appendix D: Advisory Board Committee Minutes and Recommendations, 2011-12, cont.

St. Petersburg College  
Seminole Campus – Advisory Dinner Meeting  
Department of Engineering Technology and Building Arts  
Advisory Committee Meeting  
Wednesday, November 2, 2011  

Summary  

Members Present: Tina Brudnicki, Ken Conforti, Clint Mells, Lou Grilli, Greg Seay, Matt Smith, John DeBella, Bill Venz, and Brad Jenkins.  

Members Excused: Mark Snyder, Don Houdek, Marcus Heiler, Dan Bloom, David Reese, Roger Harvey, Joe DiPasqua, Steve Askew, Bill Erdmann, Randy Swanson, Ed Homan, Keith Matthews, Rodney Fischer, Deb Ashman-Jaramillo, Bob Hudson, Ned Stacy, Frank Cain, Bill Erdmann, and Lisa Maciolek.  

Guests: Gary Graham, Project Manager, and Ryan Beckman, College Recruiter.  

Course Enrollment:  
Brad Jenkins provided the enrollment update from this Fall 2011 year, in which the enrollment is down 7.73% in Engineering Technology and 13.93% in Building Arts, as compared to the Fall session in 2010. This decrease is attributed to students taking less courses and the companies draw back on tuition reimbursement. Overall however enrollment remains steady. The Graduation data from the May and July 2011 graduation dates indicated for Engineering Technology, 15 A.S. degrees and 48 Certificates awarded, and for Building Arts, 11 A.S. degrees and 6 Certificate were awarded. (the complete listing of graduates for the session is included with this summary)  

Update on Action Items:  
The committee received an update on the action items from the April 13, 2011 meeting concerning the Collaborative Center of Emerging Technologies and the contacting of industry for donated industrial equipment. The ET and BA department web pages are still being updated.  

Collaborative Center of Emerging Technologies:  
The Collaborative Center of Emerging Technologies plans were finalized, however the building will not be ready to move into for January. The Facilities Planning Department will give an updated timetable later this fall for the completion date. Brad also mentioned that he will be looking to have some donated industrial equipment to the Center and will be contacting his industrial partners this fall.
Appendix D: Advisory Board Committee Minutes and Recommendations, 2011-12, cont.

Architectural and Building Arts updates:
The Architectural and Building Arts students are working with the construction company that is building a new three story classroom building here at Clearwater. The students will pick up some valuable practical experience as they follow the construction process. The Architectural students are also designing a new area in the Quad area as part of their experience and will present their design to SPC Board for consideration.

Nanotechnology Survey Activity:
Brad Jenkins led an activity concerning the importance of nanotechnology and the significance of this technology that are now in use in all types of manufacturing, research, and design. There has been much discussion as to how nanotechnology fits into a certificate or 2 year technology degree and what type of skills would be needed in this area.

The committee members formed five groups for this activity. A questionnaire on nanotechnology was provided to each group for their input to the questions. The groups were asked to brainstorm with ideas, comments, thoughts, and new approaches for each of the questions.

Upon completion of this activity the following statements and answers were compiled for each question.

Question 1 – List some industry sectors that utilize nanotechnology:

Materials, electronics (devices and semiconductors), textiles, medical, medical device manufactures, aviation, military, cosmetics, building industry, agriculture, information technology, pharmaceutical, and communications.

Question 2 – What are some products that utilize nanotechnology and how are they used?

Drug development, biomedical sensors, medical probes, nano connectors, internal organ analysis, body armor, athletic shoes, MEMS – robotic surgery, non-invasive sensors, water purification, and energy systems.

Question 3 – What are the commonalities of these nanotechnology-based products?

Small, lightweight, strong, nano-based products function in a variety of environments, they have common manufacturing processes, precision manufacturing and engineering, and are high technology products.

Question 4 – What would be the skill requirements for the workforce that makes these products or work in a facility that manufactures them?

Able to understand detailed instruction, follow detailed processes, strong math and science background, knowledge of physics, chemistry, mechanical and electrical, measuring techniques, clean room environment, safety, and regulations knowledge.

Question 5 – What job titles would these workers have?

Assembly technician, test technician, materials engineer, mechanical engineer, lab technician, process technician, engineering technician, manufacturing technician, and basically the same as today, but with micro technology.
Appendix D: Advisory Board Committee Minutes and Recommendations, 2011-12, cont.

There was quite a bit of discussion concerning the usage of nanotechnology, the type of education required, the industry using it, and the special skills required. Most agreed that nanotechnology is a very broad area. This survey data will be used to set up larger discussion group to highlight particular skills and curriculum for courses in Nanotechnology. The ET department is also working with the University of South Florida (USF) in Tampa concerning any Nanotechnology opportunities.

NSF Grant updates:
The grant opportunities and updates included the National Science Foundation (NSF) proposal for a National Center with the National Technical Institute for the Deaf (NTID) of the Rochester Institute of Technology (RIT) to offer the curriculum and special education for the deaf and hearing impaired students of Engineering Technology programs and industry through the proposal named DeafTEC. That grant proposal has been funded and the RIT grant team is meeting with SPC later in the month to start the preliminary work on this grant.

SPC submitted the proposal to NSF for the National Center Grant for Medical Devices in October. SPC is the lead college with 5 other partner colleges around the country participating in this $4.9 million grant proposal. Gary Graham was the program manager for this proposal and provided the leadership for SPC. An NSF review committee will meet in December and based on their recommendation, a decision will be made on the awarding of this grant. The college should know the status sometime by March 2012.

The FLATE activities from this summer included the Engineering Technology Summer Institute on Rapid Prototyping and Design workshop that took place in June. 16 high school and community college instructors participated in this workshop that also included a tour of TSE, a rubber and plastics fabricating company in Pinellas Park.

Other Discussion topics:
Ryan Beckman, the College Representative for Recruitment, is available to talk with employees at companies during their educational days and can set up an information booth at their locations.

Action Items:
The action items of this meeting included:

1. Brad Jenkins will provide the summary of the Nanotechnology Survey to the committee members.

2. Brad Jenkins will send the list of the graduate data and enrollment to all advisory members, in order to provide that information to the members that did not attend this meeting.

3. Brad will be contacting industry this fall/spring to obtain donated industrial equipment.

The meeting was adjourned at 8:35 p.m.

The next meeting will be April 4, 2012, at the Clearwater Campus. The agenda will be sent out prior to the meeting.

Respectfully submitted,

Bradley E. Jenkins
Secretary
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