Plastics Manufacturing Technology (PMT)
Manufacturing Technology (MFGT)
Self-Study Report

(2009)

- **Description of the Program - This section provides a complete description of the program focusing on course content, delivery, administrative support and facilities.**

Plastics Manufacturing Technology (PMT)

- The Plastics Manufacturing Technology (PMT) program is currently made up of (34) courses listed in the Cerritos College 2009-10 catalogue (page 349). These courses are grouped into areas identified by industry to help meet both student goals as well as business and industry needs for a skilled trained workforce.

- Course offerings and focused training sessions developed in the PMT program include:
  - Fiberglass Reinforced Plastics
  - Composites
  - Injection Molding
  - Plastics Manufacturing Technology
  - Tooling and Moldmaking
  - Plastics and Composites Repair
  - Survey and Advanced courses

Course Content and Delivery

The program consists of courses that are designed to dovetail for Verification Certificates, Certificates of Achievement, and the Associates of Arts Degree requirements for student success. The following comprises the majority of the program's course content represented in Certificate and Degree options and offered in 9-week and 18-week delivery formats.
*** (This can be evidenced by viewing Certificates found in Tab 8)*

The capstone class is the PMT 100 – Plastics Technology. This class is the main course required in the following categories:

- (3) Verification of completion categories
- General AA degree in Plastics
- (4) Specialty degree options

PMT I00 - PLASTICS TECHNOLOGY 18 weeks 2.5 Units

This course provides knowledge of materials and processes used in the field of plastics manufacturing today. An overview of plastic technology and application of production processes, as well as fabrication methods are covered. This course includes molding, forming, reinforced materials, bonding, laminating, and finishing techniques and plastic materials identification.

PMT 61 – FIBERGLASS TECHNOLOGY 18 weeks 2.5 Units

This is a course in the industrial use of fiberglass resins, cloth, mat and composite materials. The care and use of equipment (fiberglass chopper gun, gel-coat spray gun) is stressed. Other areas explored are mold laminating, repair, and proper use of resins and fillers. Mixing of resins and safety procedures are emphasized. (Formerly PMT 61)

PMT 63L – SPECIALTY PLASTICS LAB 9 weeks .5 Unit

This is a lab course to complement other courses in the Plastic/Composite curriculum. It is designed to give practical experience in working with plastics and fiberglass materials. This course may be taken for a maximum of 2 units.

PMT 67 – FIBERGLASS PRODUCTION 18 weeks 2.5 Units

This is a course in fiberglass/composites manufacturing technology. Areas of concentration include the processes and techniques of fiberglass composites as applied in industry. This course will place the student in production situations similar to those encountered in industry. The student may also have an opportunity to construct a project of his or her own with instructor approval.

PMT 68 – PLASTICS MATERIALS AND PROCESSES 18 weeks 2.5 Units

This is a course directed toward the study of plastic materials used in processing areas. Proper selection and applications of various thermosetting and thermoplastics are studied. Testing of these materials is covered as specified in the ASTM Standards, including physical properties and chemical properties. Plastic material processing that is covered includes injection molding, compression molding and extrusion. (Formerly PMT 25)

PMT 70 - COMPOSITES TECHNOLOGY 18 weeks 2.5 Units

This course is designed for students in the field of fiberglass/composites. Emphasis is on the lay-up, vacuum bagging, and cure processing of wet laminating techniques and preimpregnated materials. Also included are processes of resin transfer molding (RTM), filament winding, pultrusion, bonding, and fabrication of composite structures with honeycomb core materials. Laboratory experience will cover safety of handling resins, reinforcements, and related materials. (Formerly PMT 70)

MFGT 120 - NONDESTRUCTIVE TESTING (NDT) 18 weeks 3 Units

This is a survey course designed to familiarize the student with nondestructive testing theory and applications. The major emphasis is on the ‘basic five’ nondestructive testing methods: liquid penetrant, magnetic particle, radiographic, ultrasonic, and eddy current. Students will learn to use these methods and to evaluate available NDT methods as they apply to quality control. (Formerly MET 120)

PMT 65 – MOLDMAKING 18 weeks 2.5 Units

This class introduces students to the fundamentals of plastic injection mold designs and fabrication. This course will include basic shop operation, demonstrations, safety and technology of moldmaking in the plastic industry.

PMT 72 - TOOLING FOR PLASTICS 18 weeks 2.5 Units

This course covers basic tooling concepts and materials for making various plastic composite molds. These include laminated, cast and high temperature plastic tools as well as plaster tooling. Design recommendations, physical properties data, repair procedures and techniques will be discussed.

PMT 4 – PLASTICS FABRICATION 18 weeks 2.5 Units

This is specialty course for the advanced plastics student or individuals employed in the plastics industry that wish to further their skills and knowledge of plastics. Laboratory experience will continue to stress major areas of specialization selected by the student, including: materials, process applications, and equipment.

PMT 59 - INJECTION MOLDING 18 week 2.5 Units

This course introduces the student to the fundamentals of set-up and operation of injection molding equipment as found in industry. Training on actual industrial equipment as well as safe material and equipment handling is stressed. This course may be taken for a maximum of 5 units. (Formerly PMT 12)

PMT 64 – PLASTICS PRODUCTION 18 weeks 2.5 Units

This is an intermediate course designed to further the student's knowledge of materials and processes. Laboratory work will stress the two major areas of specialization selected by the student from the following: plastics molding, thermoforming fabrication, reinforced plastics, testing equipment set-up and maintenance, and tooling.

PMT 66 – HYDRAULICS AND PNEUMATICS 18 weeks 2.5 Units

This course will introduce the student to the fundamentals and principles of hydraulics and pneumatics as they relate to plastics and machine tool equipment. Applications of each will be explored, as well as the design of simple circuits and systems in the laboratory. (Formerly PMT 23)

PMT 71 – PLASTICS MANUFACTURING 18 weeks 2.5 Units

This is a specialty course for the advanced plastics student or one employed in the plastics industry. Emphasis will be placed on development of independent problem solving in the student's major area of specialization.

This industry driven program has grown and evolved into a highly respected training institution within the local region. Industries continue ongoing support for the PMT program at Cerritos College by:

- Participating on the Advisory Committee
- Supporting and participating in workshops
- Providing contributions of equipment, supplies
- Being guest speakers and providing plant tours

The program typically provides training for students who are “new” to the technology as well as those industry professionals and working individuals within the industry seeking to upgrade their skills and acquire current educational background including:
** *(This can be evidenced by viewing the Student Information Form found in Tab 5)*

- New hires
- Assembly personnel
- Management personnel
- College Bridge Program students (Middle School, HS juniors and seniors)
- Production personnel
- Manufacturing personnel
- Sales and support personnel

In order to provide the most current and relevant industry standards, the Cerritos PMT program has forged a working relationship with the following supporting trade associations, companies and organizations who have participated with the program:

- **CCL**
- **Kyowa**
- **Gillette**
- **Alliance**
- **Calsonic**
- **UPM, Inc.**
- **Plastiglide**
- **Zenith Bag**
- **Plastcor, Inc**
- **Reid Plastics**
- **Chem Trainer**
- **Pelican Products**
- **Plastek Engineering**
- **WEA Manufacturing**
- **Perrin Manufacturing**
- **Cambro Manufacturing**
- **APEC**
- **Norton**
- **Calmar**
- **Macklin**
- **Cal Mold**
- **Rain Bird**
- **Honeywell**
- **Omni Plastics**
- **Medway Plastics**
- **Innovation Sports**
- **Addicks Engineering**
- **Plastics Dress-Up, Inc**
- **Sandia National Laboratories**
- **Society of Mfg. Engineers (SME)**
- **Defense Logistics Agency (DLA)**
- **Federal Aviation Administration (FAA)**
- **NASA**
- **Alyn Corp**
- **Tecstar Inc.**
- **BF Goodrich**
- **US Air Force**
- **Meguiar’s, Inc.**
- **US Coast Guard**
- **Innovation Sports**
- **Rockwell International**
- **Northrop Grumman B-2 Div.**
- **Composite Structures Division**
- **Society of Plastics Industry (SPI)**
- **Technology Reinvestment Program**
- **National Aerospace Supply Company**
- **US Navy**
- **Air Canada**
- **AlliedSignal**
- **Hexcel Corp.**
- **Bomhoff, Inc.**
- **Boeing Seattle**
- **USG Corporation**
- **Honeywell Aerospace**
- **Boeing Space Systems**
- **Sandia National Laboratories**
- **Aircraft Spruce & Specialty Co.**
- **Hyundai Space & Aircraft Co., Ltd.**
- **Naval Weapons Station - Seal Beach**
- **Federal Aviation Administration (FAA)**
- **Lockheed Martin Aircraft Co. (LM Aero)**
- **Experimental Aircraft Association (EAA)**
- **Composite Fabricators Association (CFA)**
- **Society of Manufacturing Engineers (SME)**
- **Great Lakes Composites Consortium (GLCC)**
- **Defense Contract Management Agency (DCMA)**
- **Association of Professional Model Makers (APMM)**
- **Society for Materials and Processes Engineers (SAMPE)**

Unique within the California Community College system today, the Cerritos Plastics Manufacturing Technology (PMT) program is the only degree and specialty certificate department of its kind offered today (www.universities.com/edu). Throughout its history, the program has been a trendsetter supported by business and industry and has gained local and national attention with honors and awards. With the support of contract education, grants, industry workforce needs, local business/industry and the College administration, the program has met and delivered focused training to hundreds of students/attendees.

*** (This can be evidenced by viewing Tab 5 – WEB search AA-plasticsuniversities.com)*

Manufacturing Technology Program

The Manufacturing Technology (MFGT) Program has (15) courses as found in the current 2009-10 College catalogue (page 315). The MFGT program is comprised of courses supporting

- Quality
- Nondestructive testing
- Applied Math in Manufacturing

The MFGT program serves the need of those seeking to gain entry into a career in technology occupations as well as those individuals who are electing to expand their skill base. This program provides the specific resources for:

- New hires
- Assembly personnel
- Inspection Personnel
- Production personnel
- Management personnel
- Manufacturing personnel
- Sales and support personnel
- College Bridge Program students (Middle School, HS juniors and seniors)

*** (This can be evidenced by viewing – Student Information Form - Tab 5)*

Responding to industry requests, the Cerritos MFGT program has developed much-needed Quality Specialty Certification options. A majority of students have come from industry to receive college credit for specialization in the vast field of quality control areas utilized in virtually every industry including the aerospace, automotive, food, medical, and manufacturing and fabrication fields. This need will expand as American industry strives to meet ever-increasing competition from foreign rivalry in the field of commerce. Global success relies on effective quality control.

*** (This can be evidenced by viewing – Advisory Committee Minutes - Tab 7)*

Supporting trade associations, Companies and Organizations who have participated with the MFTG program include:

- Department of Defense (DoD)
- Northrop Grumman B-2 Div.
- Cambro Manufacturing
- Santa Fe Plastics Inc.
- Pelican Products
- Medway Plastics

- **Course and Program Content**
  - **i. Discuss currency of the course outlines and the process used by the department to develop curriculum. Include explanations for any current courses which have not been approved by the Curriculum Committee**

In collaboration with the Advisory Committee, the programs have had great success with industry support. One of the most important areas is curriculum development. The Advisory Committee regularly monitors current industry requirements that may be incorporated into existing classes or translated into a new course offering in order to ensure student success. After initial discussions, a motion is made and voted on by the committee. Once passed, the Department Chair oversees the development of course revisions, new course or certificate options. Along with the Department Chair, a curriculum "focus group" from the committee is established to review current courses and recommendations from the committee. The recommendations are then forwarded to the Dean at the Division level for administrative support and approval. At this point the recommendations are passed on to the Curriculum Committee for approval and implementation.
The committee has recommended the development of:

- New course offerings
- Certificates of Completion for each individual course that leads to Specialty or Verification Certificates.
- Verification Certificates for the students lead towards a Certificate of Achievement or an Associates of Arts Degree within the program.
  *** (This can be evidenced by viewing – Certificates - Tab 8)*

ii. Discuss the appropriateness of course designs and identify important issues or problems. For example:

1. **How the number, type, depth and breadth of the courses support program student learning outcomes and goals**.

Within the PMT program there are currently (4) Certificate of Achievement Options and (8) Specialty options as found in the 2009-10 College Catalogue (page 169).

Within the MFGT program there are (6) Specialty Certificates of Completion options listed in the 2009-10 College Catalogue (page 138).

Students in progress towards a certificate or degree path gain advanced theory through lecture, or "hands-on" experiences, related to student learning outcomes.

2. How courses in the program articulate with or complement each other.

Classes within the program generally articulate with related courses that were put into groups or "Specialties" at the suggestion of the Advisory Committee. These specialties or "Verification of Completion" certificates are made up of groups of classes ranging from 5.5 to 8 units each.

*** (See "Verification of Completion Certificates" - Tab 8)*

3. The appropriateness of the prerequisites, co-requisites, and advisories in terms of course content and program student learning outcomes and goals.

Due to the number of courses offered within the program, a rotation plan was implemented several years ago to assist in scheduling and enrollment management. The Advisory Committee recommended modifying the courses with prerequisites to "stand alone" resulting in increasing enrollment. In the past, students missing the prerequisite coursework might wait up to a year and a half for a class to be scheduled before they could enroll. Now students can take related courses that are offered during the current or upcoming term and receive "Certificates of Completion" while waiting for a selected course to be offered in the rotation cycle. The outcome of this change in prerequisite requirements has allowed students to track through Certificates of Verifications while assisting them to obtain the learning skills they can use on the job.

*** (This can be evidenced by viewing - "Rotation Plan" - Tab 8)*

4. If appropriate, how transfer and articulation agreements serve the needs of students usually enrolled in the courses.

Currently there is an articulation agreement in place with Los Altos High School. Unfortunately, the Norwalk High School articulation agreement has not been utilized as the Plastics program was eliminated due to teacher retirement and the Norwalk School Districts budget cuts.

There is a program in place (supporting core measure 2) to articulate with local high schools, and link with universities, so that students may utilize the college program.

5. **How the major(s) or occupational certificates are designed to meet the needs and goals of the students enrolled as well as employer needs, if applicable.**

The Advisory Committee identifies employer needs and reviews courses to ensure they also meet the needs of students enrolled in the program. Course and certificate additions and change recommendations are recorded in the Advisory Committee Minutes.

*** (This can be evidenced by viewing – Advisory Committee Minutes - Tab 7)*

6. **How courses in the program interact with other programs on campus; (for example: cross-listing, overlapping content or shared resources).**

Courses within the program currently do not interact with other campus programs with the exception of those students entered in the Program's Certificate of Achievement or AA degree (general education) classes.
It is anticipated that with the new Manufacturing Technology curriculum changes and recommendations made by the Advisory Committee that headway will be made in a positive direction of shared resources and instructional paths for current and new students within the Product Design, Art, Automotive, Business and Engineering Technology programs to follow.

*** (This can be evidenced by viewing – Advisory Committee Minutes 4-30-09 - Tab 7)*

- **Student Demographics - Compare data on student demographics and comment on any specific requirements to affect student learning.**

Students attending the program in 2009 typically work within the industry and take courses that facilitate their career goals. Many already possess degrees and plan to renew their skills for employment advancement. Student data within the 2009/10 program is being collected and will be compiled for evaluation to determine annual changes for future program planning and effectiveness.

*** (This can be evidenced by viewing - "Student Survey" - Tab 5)*

- **Human Resources**
    - **i. Analyze and discuss the instructional climate, including the program's relationship and involvement with faculty and their access to instructional and administrative support services. Include in your analysis a discussion of training, currency, workload and teaching assignments.**

The program has (one) full time faculty and a fluctuation from term to term of adjunct faculty that ranges from four to twelve members. This is based on:

1. The course rotation plan (course scheduling)
2. Budget cuts (eliminating sections)

Because of these activities, scheduling and planning for future terms is a constant challenge to ensure that students may obtain courses in certificate and degree paths in a timely manner.

The program urges staff members to utilize all instructional, administrative support services and resources for effective communication with students.

Routine and specialized instructional activity includes:

- Duplication of course materials in Publications and the Division Office
- Scheduling class time in the Learning Resource Center
- E-mail access
- Voice mail access
- Interfacing with the Career Center for student support
- Instructional media access and equipment check-out
- Podcasting
- Website
- Multimedia presentations

Instructors within the Program are selected for their specialized expertise to teach a specific course or related courses. All work within the industry and are current in their technical field. The teaching staff is urged to regularly attend seminars, trade society meetings, and conventions in order to maintain the most current information within their area. This is healthy for positive student outcomes. The Program Chairman has been selected many times to give technical presentations at local and national conventions as well as keeping current through specialized training.

The majority of the staff, with the exception of the Department Chair is adjunct faculty. Teaching assignments are clear for part-time staff, as they often time only teach one class per term. This avoids having a teaching staff that is overburdened with balancing their workload off campus with the class they teach. The department staff supports the program by looking for donations, guest speakers, plant tours and obtaining visual aids for student success with learning outcomes.

- **Scheduling patterns - Discuss your class sizes and scheduling patterns and their relationship to student learning outcomes.**

The scheduling pattern of classes with the rotation plan has helped students track through their educational goal. When courses are out of the current cycle, students can select alternative class sections that are listed in a certificate category enabling them to move forward with their educational goal. Class size can vary slightly; many of the courses have lab activities that rely on the physical space for successful hands-on student learning outcomes.
A printed copy is made available to all students within the program for guidance.
** *(This can be evidenced by viewing – Program Rotation Plan - Tab 6)*

- **Advisory Boards - How does your advisory board (if applicable) contribute to the success of your program?**

The program has an active Advisory Committee that gives advice in support of the Career and Technical Education Act (Perkins) core measures.
The committee meets twice per year. In addition, a focus group has been established to make recommendations on identified areas that require time outside of the scheduled committee meetings.

Multiple occasions occur where direct industry support has enhanced the program through recommendations in instruction which leads to student success as higher wage earners and job advancement with their careers. This is a value added activity which has greatly influenced students in the job market.

The participants of the advisory committee are selected for their specialized expertise within specific and related sectors of the industry which directly correlate to the current curriculum. All members work within the industry and are current in their technical field. They regularly attend seminars, trade society meetings and conventions to constantly receive current information within their area. This is healthy information input leading to positive student outcomes.
A current list of members is available in the Technology Division Office.
** *(This can be evidenced by viewing – Advisory Committee Minutes - Tab 7)*

Trends - Among the positive support the Industrial Advisory Committee provides, they also contribute trends of local industry up dates. It has been strongly recommended that the program provide seminars, workshops and clinics for the local manufacturers in the region again to re-establish a lead role in education for Cerritos College. The programs previously hosted over 70 successful events in 1995-96 and are encouraged to look into selecting a

group of events to offer to today's young industry personnel. The Advisory Committee approved the concept at the January 7, 2010 with recommended areas of; tooling, prototyping, industry site tours as well as special topics for industry support with topics of grants, emerging markets and intellectual property in Plastics and Composites. Other important trend recommendations include grant applications for the program, realign the Manufacturing Technology Program with certificate options and classes in nondestructive testing (NDT) classes, megatronics, industrial design and maintenance.

*** (This can be evidenced by viewing – Advisory Committee Minutes - Tab 7)*

Job Market - In addition with the local industry update on jobs, the committee provides insight to the local job outlook. In addition to the committee's input, referencing the State Occupational Projections is also done. Indicators suggest that despite the economic climate production, manufacturing and assembly will still maintain, whereas areas of traditional machining and die making may be in decline. Technology advancements will still be key.

*** (This can be evidenced by viewing – 2006-16 Occupational Projections)*

- **Facilities – How do assigned facilities contribute to the success of your program?**

The program instructional facilities are adequate. There is a constant review the fiscal space and equipment utilization as classes are rotated term to term as indicated in the "Rotation Plan". Equipment is also utilized for student learning outcomes in the same manner.

A Program clean-up plan has been implemented to aid in District insurance compliance by identifying, re-evaluating, organizing, eliminating obsolete instructional material and equipment from specific areas (classroom, labs, office, tool crib, mezzanine, outside storage and instructional area) for program effectiveness and success. Significant progress has been made and is still in progress.

- **Equipment – How does equipment contribute to the success of your program?**

The equipment within the program aids in the enhancement of the student success by using real-world production type operating equipment as utilized in industry. Theory, applications and safe equipment operations lead towards student success within the program. Recommendations from the Advisory committee are ongoing with ideas to implement new technology i.e. introducing current prototyping methods into the program which will bring the program into focus with industry trends to make sample designed parts into reality in a time compression mode for economic success.

A focus group has been established from the Advisory Committee that identifies new and obsolete equipment for the program that is anticipated to be an ongoing activity to keep pace and scale with technology trends.

*** (This can be evidenced by viewing – Program Facilities Layout - Tab 6 and Advisory Committee Minutes 4-30-09 - Tab 7)*

- **Technology – How does the use of technology contribute to the success of your program?**

The program utilizes technology in a variety of ways. The use of computer based learning, hands-on equipment set-up and operations as well as the use of instructional technology presentations in courses contribute to success of the program.

- **Instructional Improvement**
  - **Please discuss how teaching effectiveness is evaluated.**

Teaching effectiveness is evaluated by reviewing student class evaluations of each course within the program. By understanding student comments and concerns about the course, instructors receive immediate feed-back that leads to effective change and instructional improvement for continued student success. These student evaluations are collected, reviewed by the instructor, and turned in to the Department Chair.

- **Please provide a chronology or timeline to document the following:**
  - **i. What activities has your department engaged in to improve student learning?**

Following the Campus SLO Committee's recommendations, the program has implemented SLO's into each course with approval by the curriculum committee in the fall of 2009. The goals of the SLO committee to move forward with the campus plan will be followed to improve student learning.
*** (This can be evidenced by viewing – SLO Activity check list - Tab 6)*

  - **ii. How does your department assess student learning outcomes, and what measures are used?**

Student learning outcomes are assessed with the collection and review of student course evaluations. These evaluations are reviewed to see if outcomes have been achieved. The program is in the process of the campus-wide effort of expanding and evaluating student learning outcomes including rubrics.
The completion of the first year cycle of the campus task has been completed for one class. The assessment method selected,

student collection plan, actual data collection, assessment results and improvement plan have all taken place and are in compliance according to the SLO Committee as per Mr. Frank Mixson, Committee Chair.

iii. How does the department ensure that student learning outcomes are assessed consistently across different sections of the same course?

Student learning outcomes are individually assessed consistently as the department does not currently have multiple sections taught by multiple instructors.

iv. What program or course changes have been made based on the result of the assessed outcomes?

Changes have been made within individual courses which include more student hands-on activity for better student success of project completion. Recently the SLO has been evaluated in one class within the program as stated in (section ii). The date collected and student outcomes were above satisfaction and recommendations by the staff are to have similar SLO activity imbedded into related classes to insure student success in the next phase of the campus SLO cycle.

v. How closely aligned are syllabi to course outlines of record?

Course syllabi and course outlines are closely aligned with the review of course outlines department wide. Recently all course outlines have been reviewed and are scheduled to be submitted to the Curriculum Committee for approval.

- **Course grading and retention patterns. Explain any patterns in grading or retention in terms of the student demographics and program goals.**

The program has enjoyed good retention rates as reflected in the campus retention data. This can be attributed to the student's interest in completing the courses with immediate recognition of recieving a "Certificate of Completion" from each completed course as proof to employers of their student success.
*** (See retention rate comparison -Tab 5)*

- **Course and Program Completion – Analyze and discuss the results of course and program completion rates for certificates, external certifications, licenses, and/or degrees.**

Course completion rates are above the campus rates, while program completions rates are low. Many attendees already possess degrees and want to refresh their professional skills leading towards obtaining their learning outcomes.
*** (See completion rate comparison - Tab 5)*

- **Program Outcomes – Discuss the program's efforts to track students who complete the program.**

The program is aware of the need to track student completion statistics and is in the process of developing an ongoing list of those students who have completed specialty "Verification Certificates" issued internally by the program.
*** (See Department data for Verification Certificates Issued 2000 – 2009)*

- **Core indicators of the Program – Describe the core indicators, if applicable, and comment on any trends identified. (Occupational programs only)**

Funding resources through the Perkins funds for Career and Technical (CTE) programs with core indicators are in place for the Department.

Core Indicator 1

Technical Skill Attainment –

1) The program is above the target state level 92.46, but below the target district level 96.50, the Program is rated at 95.83 with a -0.7 percent.

   This is a very small difference.

4) The program is above the target state level 92.46, but below the target district level 96.50 with a -3.6 percent.

   This is a very small difference.

Core Indicator 2

Completions – Credential, Certificate, Degree of Transfer Ready–

9) The program is below the target state level 66.13 and below the target district level 55.00 with a Not Applicable (N/A) percentage. The total count is 8.

This may not be significant, as the program has 171 short-term certificates.
*** (See Tab 8 – certificate of completions on file)*

12) The program is below the state target 66.13 and below the district target 55.00 , the Program is rated at 25.00 with a with a Not Applicable (N/A) percentage.

This may not be significant, as the collected data may be too small to evaluate. The total count is 4.

15) The program is below the state target 66.13 and below the district target 55.00 , the Program is rated at 50.00 with a with a Not Applicable (N/A) percentage.

This may not be significant, as the collected data may be too small to evaluate. The total count is 2.

Core indicator 3

Persistence and Transfer

17) The program is below the state target 82.18 and below the district target 82.18 , the Program is rated at 73.91 with a -8.3 percent and a Not Applicable (N/A) percentage.

This may not be significant, as the collected data may be too small to evaluate. The total count is 23.
This is a small difference as many students already possess degrees or already work in industry.

20) The program is below the state target 82.18 and below the district target 82.18 , the Program is rated at 76.92 with a -5.3 percent and a Not Applicable (N/A) percentage.

This may not be significant, as the collected data may be too small to evaluate. The total count is 13.
This is a small difference in the sub population in the program.

Core indicator 4

Employment

25) The program is below the state target 79.86 and below the district target 83.00 , the Program is rated at 62.50 with a Not Applicable (N/A) percentage.

This may not be significant, as the collected data may be too small to evaluate. The total count is 8.
This is a small difference as many students already possess jobs or already work in industry.

Core indicator 5a

Non Traditional participation

33) The program is below the state target 21.47 and below the district target 19.00 , the Program is rated at -14.8 in both Non-Traditional and Displaced homemaker areas.

This result of being below the negotiated level may be due to the direct tie-in with industry which may include traditional and non-displaced homemakers who are working in the industry participating in the Program. In addition this year a 10% District reduction in the program offering has taken place which may reduce the actual percentage values.

The Program has been aggressively reaching out to non-traditional populations by recruiting in the high school tours (senior preview days), the many trade shows and trade society meetings.

*** (This can be evidenced by viewing – 2009-2010 Core indicator Info - Tab 4)*

- **Student Feedback – Discuss any additional data gathered from students not specifically addressed above.**

The program collects ongoing data from all students who complete courses during final exams as a type of exit interview. This is the student "Course Evaluation" administered during the final exam, reviewed by the instructor, and then turned in to the Department chair. This process has provided important information specific to the class. The instructor can make adjustments immediately, or changes can be recommended related to the course content, course outline or learning outcomes all with the goal of increased student success.

*** (This can be evidenced by viewing – Course Evaluation - Tab 5)*

Institutional Data – Analyze all institutional data provided to the department not specifically addressed above. See appendix E for a list of available data.

- **Strengths and Weaknesses of the Program**
  - **Present any strengths and/or weaknesses from the self-evaluation process, referencing the specific topics above.**

- **Strengths**

Program Curriculum

The curriculum meets the standards and is always being updated to meet the need of industry. Ongoing curriculum review has taken place with the Advisory Committee's guidance as recorded in the meeting minutes. All courses have student learning outcomes (SLO's) which are currently being considered for the Curriculum committee's approval. Changes to certificate options, as well as new courses, are in line for approval thereby enhancing program and student success.

Equipment

The program is equipped with appropriate industrial stationary and portable equipment to complement and support both courses and degree options. Due to the rotation of courses from term to term, certain specialized pieces of equipment utilization are rotated also. This provides students in courses with hands-on activity and gives quality experiences with equipment found in industry.

*** (A copy of the equipment within the facility is attached – Tab 6)*

Industry Support

Throughout the years the program has had a very good relationship with industry partners. These partners have provided plant tours, guest speakers and advisory committee members. Materials, supplies and equipment have also been provided in support of the program along with students scholarship funds from companies such as 3M, Maguire's, and Composites One. After completion of coursework, students may qualify for full-time, part-time, or internship positions. Local companies who have employed our students include: Northrop Grumman, Advanced Composite Products and Technology, BJB Enterprises, Lockheed Martin, Boeing, Century Composites, Pelican Plastics, Cambro Plastics, Bondline Products etc.

Certification

Based on a recommendation of the Advisory Committee made several years ago, the program began offering a path for student success by grouping related courses together. This is called "Certificate of

Verification." Enrollment in the Program, and evidence of completion, are rewarded by industry and allow students to rapidly advance their career goals. This encourages more students to continue in the program and earn recognition for completing, typically, three classes within the curriculum.

*** (A copy of the Certificate options are attached – Tab 8)*

- **Weaknesses**

Budget

Instructional supplies

The program is constantly in need of consumables for student projects required in the lab for academic success. This is a need that is hard to ignore without district support. In the current budget environment, all funds normally used for these supplies have been frozen.

Typically the amount for instructional supplies for the year is $3000. Due to the nature of certain supply items, it is necessary to stretch out the budget over the year to allow for parishable (shelf life) supplies to be ordered just in time (JIT) as to avoid waste. This small budget amount for the program has an adverse effect on the overall instructional effectiveness. Students are placed into groups as opposed to being assigned individual projects. This somewhat reduces the process of gaining valuable learning skills through the completion of a full project.

Equipment

The program is equipped with appropriate industrial stationary and portable equipment to complement and support both courses and degree options however; some items are outmoded and need to be considered for replacement.

A focus group is in place to assist in the identification of new equipment and instructional items needed and current items that may be listed for surplus, discarded or repurposed within the program.

PR funding

Public Relation funding is very important to the program. Flyers, brochures and hand-outs are necessary for student awareness. PR activities take place on and off campus and typically include trade show booths, Senior Preview Day, High School visitations, table top exhibits, guest speaking opportunities and industry visits. An effort was undertaken by the Technology Division to design a 3-fold brochure for all the Departments through the campus PR Office, but the funds dried up last year for this internal project.

Staffing funds

Budget cuts to the adult hourly rate have been counterproductive to the program. Support is necessary for the smooth operation of the department, which includes preparation of mandatory reports, curriculum development, scheduling assistance, record keeping and instructional course support.

- **Present any strategies developed by the Program to optimize strengths and improve identified weaknesses.**

The Program will continue to seek the input from the industrial Advisory Committee on a regular basis (each semester) by having agenda items that specifically address program strengths and weaknesses that directly impact student success.

- **Opportunities and Threats of the Program**
  - **Describe any opportunities or threats to the Program and their affect on student learning.**

- **Opportunities**

Seminars

The Advisory committee has recommended that the program look into providing short half to one-day, or multiple-day general and focused workshops, seminars and clinics. When the program provided short term exposure to the industry and private individuals, it helped establish credibility within the trade. By hosting some 70 events over a 2-year period, the College and the program gained notice within the Manufacturing industries. Throughout the semesters there have been a number of inquires as to when there might be another event. The program staff members are looking into the following possible topics for recruitment purposes;

1. Autoclave Operation and Maintenance
2. Composites Overview
3. Tooling Techniques
4. Prototyping Methods
5. RTM and Infusion Methods
6. Repair Methods

The program will develop a plan and seek the advisory committee recommendations for implementation and district approval.

Grants

The program is actively in search of grant funding for the support of instruction. Public and private sources, as well as internal Intensive Program Improvement Initiative (IPII) grants, are especially important in view of the current California state budget crisis. The program will seek the advisory committee recommendations for implementation and district approval.

- **Threats**

Staffing – Adult hourly

Due to the budget cuts, adult hourly staffing has been limited. Last year cuts and this year's budget for the much needed support have been limited further. Support especially in a small program is very important for consistency of instruction, administration of tasks and duties required for completion of reports and deadline achievement. The program will review anticipated deadlines with District allocations for the completion of necessary program activities.

Budget cuts

Due to the current budget status, the program is in jeopardy of losing enrollment as a result of support personnel (adult hourly) and losing the week-end college courses (Sat. and Sun.).
The Program will alert the Advisory Committee every opportunity with the limitations of services and supplies to campaign industry resources to help back fill necessary instructional items for the success of student learning outcomes.

*** (This can be evidenced by viewing – Advisory Committee Minutes - Tab 7)*

- **Present any strategies developed by the Program to address the opportunities or threats to the Program**

The Program will continually seek the input from the industrial Advisory Committee on a regular basis by having agenda items address program opportunities or threats required for success in the form of a survey.

*** (This can be evidenced by viewing – Advisory Committee Minutes "Trends in Technology" Survey - Tab 7)*

- **Goals of the Program**
  - **Describe the program goals for mid-range (2 -3 years) and long term (>3 years) time periods. Use the 'Instructional Program Review Goal Establishment Form' (See appendix D). Discuss any projected changes and anticipate how the changes may affect staffing, facilities, equipment, and other operational areas.**

The program goal remains the same by providing quality instruction with the guidance from industry meeting learning outcomes for student success.

Cerritos College
Instructional Program Review
Instructional Program Review Goal Establishment Form (Appendix D)

Goals	Action to be taken	Timeframe	Person Assigned
Mid-range goals (next 3 years)			
1. Curriculum -SLO Activity	Update all courses with current SLO's	-9/18/09 Submit the Course SLO -10/16/09 Submit SLO Method -11/20/09 Submit collection Plan -12/18/09 collect Student work -3/19/10 submit Improvement Plan	-Dept. Chair -Staff (P/T)
2. Marketing	Establish Activity List (Trade shows, tours, workshops, etc.)	-2/10/09 PLASTEC Trade Show -6/1/09 ACMA Conf. -9/28/09 world Composites Expo -10/14/09 Moldmakers Trade Fair -4/10/10 SME Composites Mfg. Show	-Dept. Chair -Staff (P/T)
3. Grant Applications -Grant Activity – on file within the Dept. Office	Seek internal and external funding sources -work with Campus Grant office 3/10/09	-4/14/09 IPII Grant (internal) Submit grant application	-Dept. Chair -Staff (P/T) -Staff (Adult Hourly)
4. Data Base Development	Establish, compile and maintain student data base	-1/15/09 Spring term Data base development -5-14-09 Summer Term data Base Development -8/20/09 Fall Term Data Base Development	-Dept. Chair -Staff (Adult Hourly)
Long Term Goals			
1. Track Industry Trends	Agenda item on each Advisory Committee Mtg.	-4/30/09 Advisory Committee Mtg. -8/13/09 Focus Group Mtg.	-Dept. Chair -Staff (Adult Hourly)
2. Equipment Updating	Review and assess current assets for replacement	-4/30/09 Advisory Committee Mtg. -8/13/09 Focus	-Dept. Chair

		Group Mtg.	
3. Technical Library -Updating	Convert all AV materials (slides & videos) to digital format	-1/15/09 Spring term AV Library Review -5-14-09 Summer Term AV Library Review -8/20/09 Fall Term Data Base Development AV Library Review	-Dept. Chair
4. Facilities Upgrading	Focus group input	-4/30/09 Advisory Committee Mtg. -8/13/09 Focus Group Mtg.	-Dept. Chair

- **Summarize program and/or course modifications made since the program's last self-evaluation. Show how the changes responded to changing demographics, technologies, requirements at transfer institutions or other relevant factors.**

Changes to the curriculum have taken place by:

- Removing prerequisites which were a stumbling block for students, many of whom had to wait as long as a year and a half for the course to be offered in the enrollment cycle. This left a gap where students left the program and did not return.
- Specialty Certificates of verification were put into place whereby student tracking and learning outcome achievement is now in a smoother transition.
- Enrolment management activity through the course rotation plan was implemented to better serve students with their educational goals.
- Weekend courses were placed into the schedule taking care of those students who could not participate in classes during the work week (Due to recent budget cuts, the weekend courses have been cut and forcing insurmountable scheduling challenges for students).

- **Respond to the commendations and recommendations from the Executive Summary of the previous program review.**

- **Commendations:**

Since the previous program review, the program has:

- Been responsive to the student population served by delivering Certificates of Verification as recommended by industry.

- Provided responsiveness to industry with instructional program content and customized education.
- Maintained a strong partnership with industry and keep an actively involved Advisory Committee.
- Offered bilingual courses in collaboration with Adult Education. This needs to be reinstituted in the near future.
- A Department Chair who is dedicated and remains actively involved with the industry he serves.

- **Recommendations:**

  Since the previous program review, the program has:

  - Tried to strengthen the ability to link student support services to evening and weekend students through accessing the Learning Center, coordinating availability of Student Activities for student photo ID participation.
  - Implemented a student friendly schedule attracting day, evening and weekend learners with section options and rotating courses for ease of selection.
  - Increased marketing efforts informing students of the facility resources that mimic industry conditions.

- **Describe notable achievements since your last self-evaluation.**

1. **Industry Partnerships**

   The program has an ongoing working relationship with the Northrop Grumman Corporation in El Segundo, CA. Skilled trainees for employment selection has been completed through the completion of the Composites Fabrication course. Recently the program was recognized with a "Partnership in Excellence" award by Northrop Grumman for this assistance.

2. **Enrollment management success**

   Despite being a relatively small program, courses have been scheduled for student success with a rotation plan and Certificates of Verification that have been followed. It is a challenge with budget cutbacks causing many sections to be cut, but with the opportunity of students to take alternative courses and meet their educational goal this will be a temporary setback until the budget allows full scheduling again.

3. **Marketing**

   The program has been successful in steady growth through actively informing potential attendees of the capabilities and courses of interest. This takes place by both internal and external activity such as:

   - Councilors meeting presentation
   - Open House
   - Trade show presence (PLASTEC, SAMPE, etc.)
   - Internal marketing strategies to include exposure to Developmental Education Studies Program Students on campus.

4. **Professional presentations to Industry conferences**

   Professional presentations have been made by the Department Chair to National trade associations and Industrial Organizations on behalf of the program. Acknowledgment and validation have been rewarded through industry recognition of the program.

5. **Hosted technical meeting/workshops**

   The program has been effective in providing activity that serves the local industry and the students in the program. By working with the Advisory Committee to keep the program on the leading edge, and by making technical activity available, Cerritos College has been recognized as a valuable resource for an employment workforce.

6. **The program has been able to augment the District budget by securing funding to support the instructional needs.**

   This has been done through the collaborative efforts of the Advisory Committee and the Program staff working closely to support the specialized education at Cerritos College. The following is a sample of results of support.

   - Plastics recycling trailer with sponsors contributions and support. (Plastics Pioneers, Society of Plastic Engineering (SPE), Society of the Plastics Industry (SPI) and the American Plastics Council)
   - IPII Instructional Improvement Grant – 2006/07
   - IPII Instructional Improvement Grant – 2009/10

7. **Contract Training**

   The program has been very successful in obtaining, developing and delivering specialized training to Lockheed Martin, Palmdale CA. This has been a direct result of the marketing efforts through trade show presence and the curriculum development in the Composites area. As an end result of this activity, the District, through the Office of Economic Development has enjoyed income, and the California Community College Association of Occupational Education (CCCAOE) has acknowledged the program. The state “Excellence in Partnership” award from CCCAOE was in recognition of the training partnership with Lockheed Martin in providing a much needed trained specialized workforce.