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## Program Review

### Form for Completion of Self Study

### Instructional

(Including BOTH Academic and Continuing Education)

The ID number for this form is 1000085. You will need this number to update or edit your submission in the future.

Name of Division: Industrial and Transportation Technologies

Name of Department: Manufacturing Technologies

Name of Program: Manufacturing

This Program Review is being conducted during year: 2010-2011

#### I. Program's/Department's Purpose

A.) State the purpose of the program/department. How is this purpose within the mission of Amarillo College?

The Manufacturing Technologies Department trains students for entry level positions in industry. Students become technicians for the heating, ventilation, air conditioning and refrigeration (HVACR) and electromechanical trades; technicians for quality control and inspection; machinists and welders.

The Department's purpose statement is within the institutional mission statement in that it addresses teaching, learning, and/or public service for our community. The mission statement also addresses quality of life. The training provided in the Manufacturing Technologies department is the basis for professional employment, self-employment, and professional advancement.

B.) When was the last time the program's/department's purpose statement was reviewed/revised by faculty and staff in the program/department?

Continued curriculum development and revision, along with new faculty and supplemental faculty orientation, keeps the program mission and objectives in the forefront. Review is continual. The statement is fundamental and has not required recent revision.

C.) If the program/department offers continuing education credits, how are these courses consistent with the mission of Amarillo College?

Continuing Education credits are offered in most subject areas and are taught as a component of many classes. Cross-listing classes allow the Amarillo College Mission to be fulfilled for all segments of the service area population.

D.) Does the program have admissions policies?

No

E.) Is the program/department accredited?

No

F.) Is this program/discipline required to receive approval from an external agency or organization (other than the Texas Higher Education Coordinating Board) in order to offer courses?

No

#### II. Program's/Department's Improvements based on Planning, Evaluation and Assessment

A.) Identify at least one example of an improvement/revision which resulted from the annual PET forms for the last five years.

Recovery from changes in program location, facilities revisions, equipment/utility availability, and faculty/staff volatility have driven constant change and revision thus precluding any PET considerations.

B.) Identify at least one example of improvements/revisions which resulted from the last Program Review.

Recovery from changes in program location, facilities revisions, equipment/utility availability, and

faculty/staff volatility have driven constant change and revision thus precluding any Program Review considerations.

C.) Identify all the delivery approaches used for courses within this program/department: (Select all that apply).

traditional classroom

D.) Identify at least one example of an improvement/revision that is a response to accomplish a strategy or tactical objective within the Strategic Plan 2010-2015.

A tactic used in the Manufacturing Technologies department to accomplish the Strategic Plan is contract training through the Workforce Development Division which works with local industry to meet specific training needs and bring alternative sources of income.

E.) Provide names and titles of those who determined the process used to assess outcomes of the program and/or courses in the department.

Over all reviews:

Dr. Kim Hays, Chair, Manufacturing Technologies Department

Additional personnel and/or resources:

Industrial Maintenance Technology

Robert Johnson, Instructor, Industrial Maintenance Technology

Machining Technology

Robert Gustin, Coordinator, Machining Technology

NIMS Guidelines

Nondestructive Testing & Evaluation

John Forbis, Part-time Faculty

ASNT-SNT-TC-1A

Welding Technology

Dr. Kim Hays, Department Chair

A.W.S. SENSE Curriculum

1. Explain the primary reasons behind the competencies that were selected.

Competency outcomes are based on industry certifications, state contractor licensure requirements, industry standards as prescribed in ASNT-SNT-TC-1A, A.W.S. D1.1, NIMS, advisory committee suggestions, field experience and continual contact with industry representatives.

2. Identify the primary reasons for the assessment tool(s) selected.

The Manufacturing Technologies department's assessment efforts are modeled after industry competency evaluations and standards. Organizational certification and/or state licensure follows successful completion of written exams and calculations, demonstration of skills, and completion of reports.

3. Evaluate the assessment approaches to date.

Current concerns about the assessment approaches deal with participation and

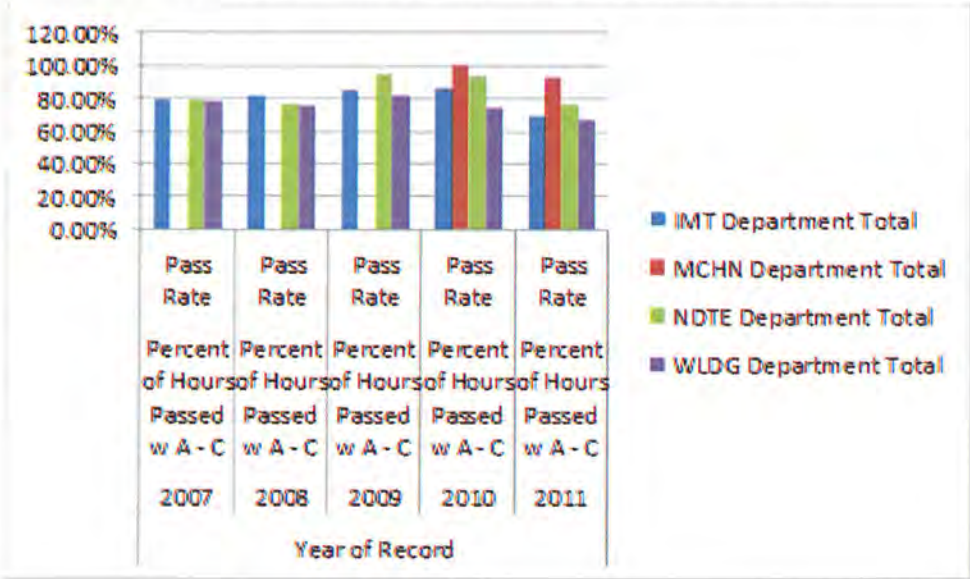
project completion, testing time, and lost time make-up issues. Practice oriented disciplines require laboratory exercise. Most Manufacturing Technologies department courses are half lecture and half laboratory time. Program moves and space restrictions have destroyed all fixed or static trainers and projects. Thus projects are hastily and haphazardly developed as needed and with limited supplies. Assessment of these student projects is difficult.

All technical programs have lost contact time to other curriculum requirements. As a result, the time required to administer a single written exam often represents ten percent of the available contact time. Normal assessment would require more than one such exam resulting in significant reduction in instructional opportunity. Alternative exam techniques must be sought.

Many students are employed in critical occupations which require that they be on call and respond as needed. These same students are stretched for time just to make the initial class. Thus make-up opportunities are limited. The lack of static trainers or space to leave projects set up further limits continuation of exercises beyond the appointed time. Students want a handout or internet exercise to fulfill their responsibilities. The concept of assessing a student based on laboratory project completion is becoming difficult.

F.) For student or program/course outcome assessments, review the program's/department's five-year graph(s) of *quantitative* results or provide a brief narrative summary of *qualitative* results.

Table 2G: Fall Course Pass Rates by Program for all Enrolled Students



1. What changes have been made in the curricula of the program/department because of the analysis of these results?

Outcome assessments have indicated an increasing need for basic instruction in applicable mathematics. It has come to a point where these needs can no longer be met in each and every course. The introductory course for most Manufacturing Technologies programs is now a common math course - Technical Algebra and Trigonometry.

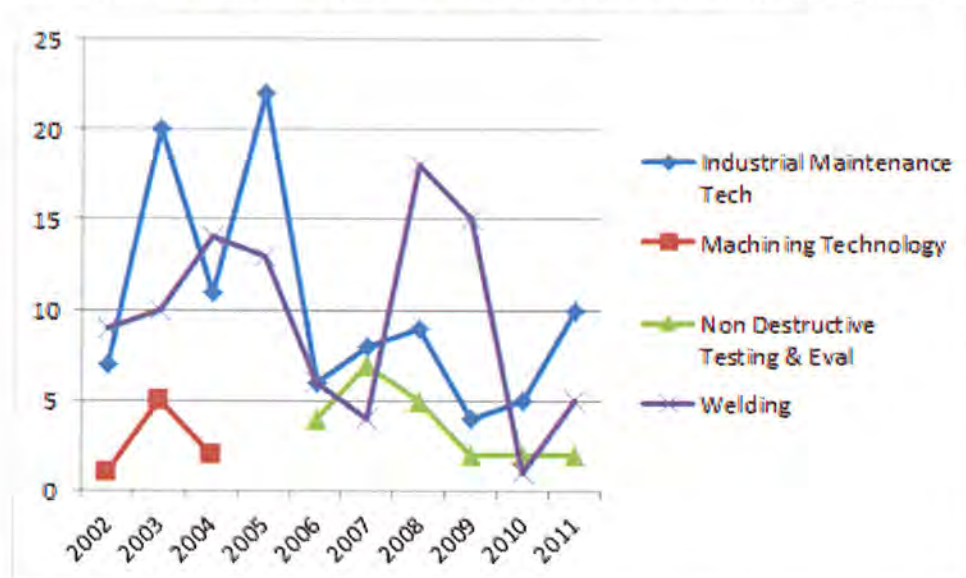
Another factor under consideration is the lack of mechanical skills possessed by current incoming students. This has led to the expansion of basic mechanical training from one course to two.

G.) Review the five-year graph(s) of course completions for the program/department.

1. Explain any increase or decrease that is more than a one-year anomaly.



Table 4G: Unduplicated Annual Count of Students Receiving Degrees &amp; Certificates



The Industrial Maintenance numbers for 2005 and prior represented a cycle of retraining following layoffs at a local plant and the completion of a company's in-house apprenticeship programs.

The Machining numbers for 2004 and prior represented a program with gun-smithing as the emphasis. This program was stopped and has been re-started with an Industrial Machining emphasis. The new program does not show up on this data.

We are unable to explain the swings in the Welding program which continue throughout the current semester.

2. Provide the program's/department's plan of action for improving any identified problem or results from the implementation of the plan of action.

The current high demand for technicians and industries' practice of hiring the untrained has opened opportunities to contract with industry for training those already employed.

Testing standards are being raised for all technical programs which will divert some of the less prepared and less committed students. Tool and equipment lists are being increased which will require more commitment on the part of the student.

H.) Does the program/department provide for alternative methods of awarding credit? (Select all that apply).

Credit by Exam, Credit for Experience

1. What approaches are used to assure outcomes are comparable to those expected of students who enrolled and completed the course?

The Petition for Credit by Experience is required to be accompanied by a log of daily activities and detailed duties, as well as testing or certification completed. Supervisor statements and evaluations must be included.

The Petition for Credit by Alternative Methods is only used for continuing education students wishing to obtain academic standing. These students have previously been enrolled and completed the course under question and the instructor has administered testing and observed laboratory work.

I.) For general education and/or core curriculum required by this program/department, identify the relevant competencies approved by the Academic Affairs Committee (see Catalog section entitled Degrees and Certificates: General Education Competencies).

1. Explain how outcomes for the competencies have been assessed and achieved and provide links to the documentation.

2. Outline a plan for correcting any weaknesses.

J.) Do students/graduates in this program/department have to be certified or licensed?

K.) For all technical programs/departments offering one or more technical programs (Associate in Applied Science or Certificates), review the program's/department's graphs of the results for job placement during the past five years.

1. Explain any increase or decrease that is more than a one-year anomaly.

Accurate placement data is unavailable. The department has maintained a list of job openings for the last several years and normally has 40 to 50 employment opportunities which do not receive an application. Placement is fast if required. This has been the trend for more than five years.

2. Provide a plan of action for the identified problem.

Current revisions will allow for the department to develop and maintain an in-house database for job placement.

### III. Curricula

A.) Does the program/department have affiliation(s)/agreement(s)/contract(s) with any other entity for the purpose of delivering instructional content?

B.) How many curricula changes were approved by the Academic Affairs Committee during the past five years?

6

1. Which steps in the curricula change process had faculty involvement prior to submitting the curricula proposal(s) to the Academic Affairs Committee.

All program/department faculty and staff are involved as appropriate for any curricula review or change.

C.) Is any program within the department a technical program (e.g. AAS or certificate)?

Yes

1. When was the last advisory committee meeting.

November 3, 2011

2. Provide a link to the minutes of the last advisory committee(s) minutes in the Electronic Archives.

<http://www.actx.edu/archives/index.php?module=article&id=97>

3. Provide a link to the appropriate committee membership of the advisory committee(s) in the Electronic Archives.

<http://www.actx.edu/archives/index.php?module=article&id=97>

### IV. Enrollment Data

A.) After receiving the five-year graph(s) indicating the number of students enrolled in the program/department, by total students, number of full-time equivalents, and number of completers, determine if there is more than a one-year anomaly.

1. If so, provide the faculty and staff analysis of their assessment of the problem.

Table 5D: Total Annual Enrollments Generated by Students Receiving Grade Reports or Enrolling in a Continuing Education Class

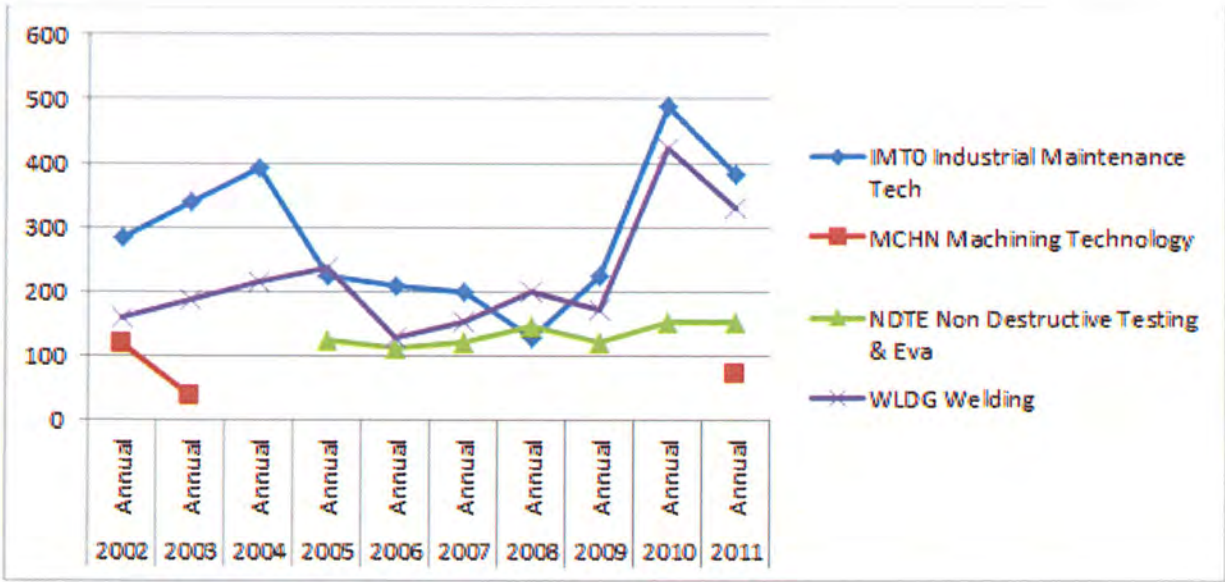


Table 5A: Total Annual Full-Time Equivalent Students (30 Hrs / FTE) Generated by Students Receiving Grade Reports

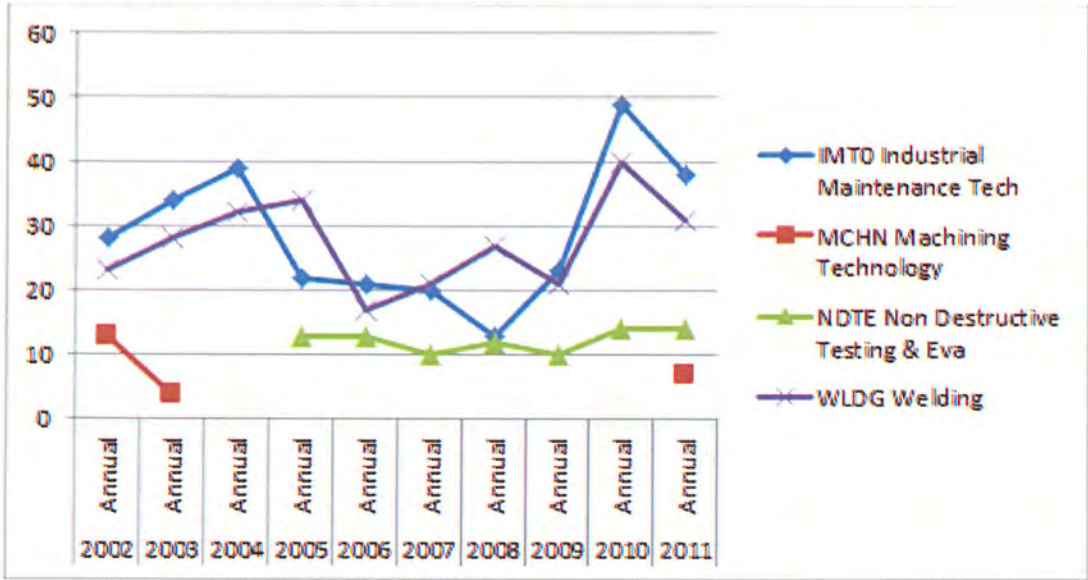
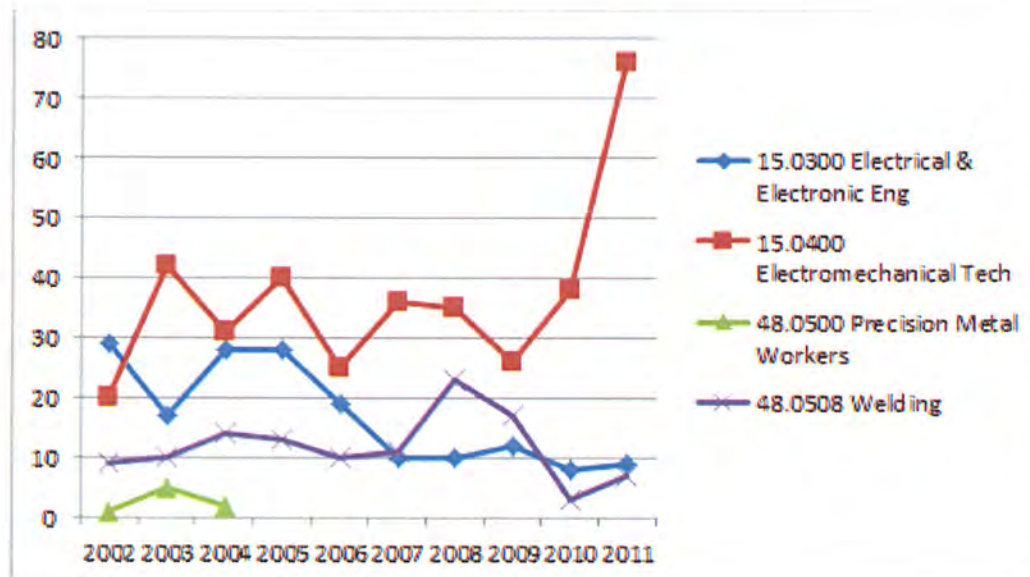


Table 8C: Completers in THECB Technical CIP Programs Unduplicated Annual Count of Technical Students Receiving Degrees & Certificates





All the above data is not applicable to programs within the Manufacturing Technologies Department. Using CIP codes to show student completers does not correctly reflect the programs.

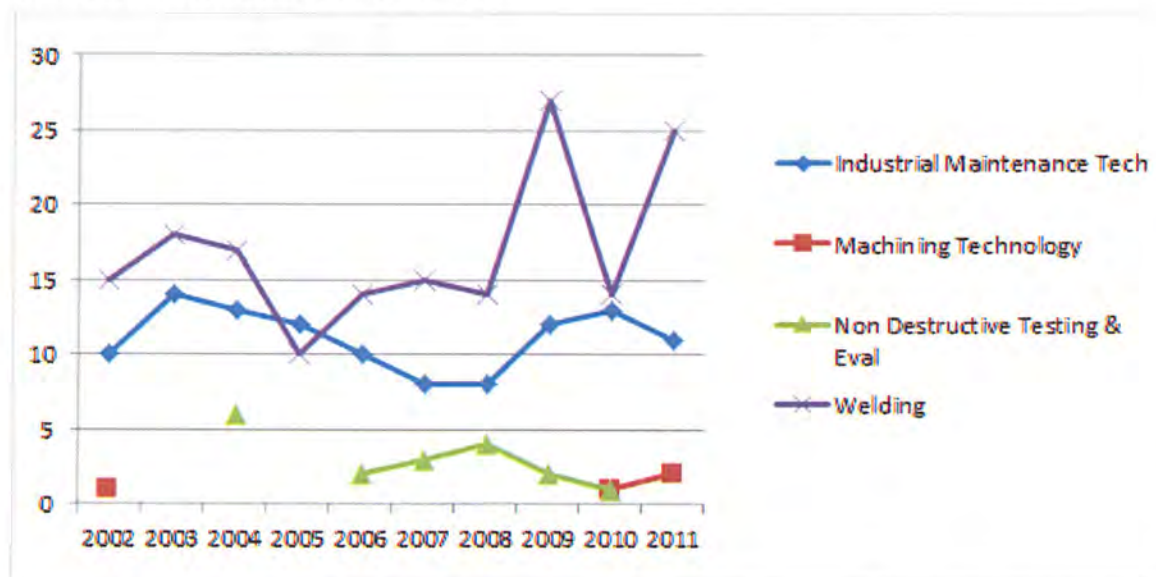
2. Create an action plan for needed improvement and commendation for any dramatic improvement.

We often speak to companies who are experiencing the problem of recruitment. One solution is for employers to seek the untrained and then send the employee to get the training. This may be done as a contract class or through traditional enrollment.

B.) For programs/departments with majors, review the graphs of program majors and the number of new majors by year.

1. Provide an analysis of the program's/department's faculty and staff assessment of the problem and an action plan for needed improvement and commendation for any dramatic improvement.

Table 4F: Unduplicated Fall Headcount of Students Receiving Grade Reports Limited to Students New to Amarillo College



All skilled trades will continue to demand more workers than are being trained. This is a trend we see increasing.

#### V. Resources

## A. Faculty

1.) Review the five-year graph(s) of the student to faculty ratio in the program/department.

a. Explain any increase or decrease that is more than a one-year anomaly.

No five-year graphs could be found showing student to faculty ratio.

Technical programs with extensive laboratory requirements, no laboratory assistant, no static trainers, limited space, and students who have no mechanical background, are equipped to properly handle 12 to 15 students per class. There is a need to offer all classes as advanced students finish and smaller groups begin. This results in a lower student to teacher ratio.

Lectures can be larger, but in lab classes, the student to teacher ratio is limited by equipment and/or supplies availability. For example, five years ago, the student to teacher ratio was much higher and the waste of consumables and equipment loss was epidemic. Three years ago, the program underwent curriculum revision and an effort was made to limit the ratio to 12 students to one teacher whenever possible.

b. Provide an action plan for improvement of any identified problem.

Increasing enrollment or getting the bulk of students on the same schedule will correct this problem. Efforts continue to streamline student course sequence.

2.) In the database for Roster of Instructional Staff (also known as Roster of Faculty), review the credentials of each full-time and part-time faculty member within the program/department. If any faculty member does not meet the SACS and THECB requirements, evaluate whether additional documentation is significant to grant an exemption.

There is a continual struggle to maintain a cadre of supplemental faculty for the Manufacturing programs. Not only for instructional qualifications, but also individuals capable of maintaining and operating the required equipment for practice oriented disciplines.

All full-time and part-time faculty members for the Manufacturing Technology department meet SACS and THECB requirements.

3.) List the names and the last date for all full-time faculty evaluations based on the schedule indicated in the Faculty Performance Review (FPRP).

No student course evaluations have been collected for full- or part-time instructors since the 2009-2010 year.

Mr. Robert Gustin, Instructor, FPRP-2010-2011

Dr. Kim Hays, Professor, FPRP-

Mr. Robert Johnson, FPRP-2010-2011

4.) List the names of each part-time faculty and the last date of evaluation by students and supervisor for each course taught.

This department has not previously conducted faculty performance reviews for part-time instructors. Reviews will be started this year for any current instructors.

5.) Amarillo College's Board Policy Manual defines each faculty member's academic freedom as 'full freedom in the classroom in discussing the subject being taught and to pursue research and publications. However, a faculty member must not attempt to force on students a personal viewpoint and must at all times allow for diversity of opinion.' Has anyone in the program/department filed a grievance for violation of the aforementioned academic freedom?

No

## B. Library

1.) Which of the following library collections/resources/services have been used by faculty, staff and/or students within the past five years? (Select all that apply)

Credit by Exam, Credit for Experience Reference collection, Classroom instruction, Seminars/conferences

2.) Which two or three collection/resources/services should be improved to support Amarillo College's mission regarding teaching and service?



Amarillo College's department reference collection is a continual struggle. We don't have room or resources and means of maintaining the collection.

3.) Does your program/department have discipline accreditation?

No

#### C. Technology and Security/Privacy

1.) After assessing the strengths and weaknesses of the program's/department's access to technology, what improvements would ensure that the students have access and training in the use of technology?

Most of the Manufacturing Technologies department is fortunate to have access to reasonable technology resources. The only way to assure proper training and use of such equipment for students is to require a comprehensive course in office applications. Access is not usually the problem, adequate training time is. Student self perceived efficacy is a delusion.

The Welding Technology program has just recently gained internet access, yet students do not have computer access on location. This has prevented checking standards or doing research on projects. This could possibly be corrected soon in planned program re-locations.

2.) What improvements would ensure that students use technology?

If students had prerequisite training then class requirements could demand technology usage. As long as the program has cross-listed classes and no prerequisites, demands cannot be made which will assure technology usage.

3.) Review program/department operations. Does any operation present the possibility for violations of security, confidentiality, or integrity of student records?

No

#### D. Support Services for Students

1.) Which support services need to be strengthened to better serve students in this program/department?

##### East Campus Learning Center

a. Explain what aspects of the services need to be strengthened.

There are many students in this department who work during the day and attend classes at night. Accessible hours for the Learning Center do not allow for nighttime or weekend hours causing students to be unsuccessful in their remediation without taking time off of work.

The Learning Center must better coordinate remedial skill sets with the skill sets taught in the academic programs.

2.) Describe any indicators or problems that prevent a healthy, safe and secure environment for the students, faculty and staff of this program/department.

Program location for most classes is currently under construction.

Ventilation and lighting in the Welding program location is so poor that it is an imminent health hazard, but anticipated relocation should make it much better.

3.) Describe any indicators or problems that hamper adequate physical facilities, both on and off campus, to meet the needs of the program/department.

Physical facilities fall very low when it comes to storage. Providing hands-on lab equipment is essential to learning in the Manufacturing Technologies programs. This equipment is large, takes much space to store and must be rotated according to the taught skill set at the time. While current location is in the beginning phase of remodel, the plan for storage has been excluded.

The Welding facility is unsecure, dark, dirty inflexible in design, low ceiling, limited on electrical capabilities, and presents many problems. Much of the equipment is fixed in place and in poor repair. Needed repairs exceed the value of the building.

Manifolds and storage facilities fall short of OSHA requirements and are leaking. Electrical service is hazardous and unsafe in many locations of the building. Bad news!! Again, anticipated program relocation should alleviate these problems.

Student parking continues to be an issue with no lighting and no security.

#### **VI. Budget**

A.) Which program/department outcomes have resulted in budget requests to date?

No outcome, including increases in enrollment or increases in completers, has resulted in the opportunity to increase budget requests. The only item that has resulted in an increased operational budget is the increases in consumable fees that are passed on to our students.

B.) Project the program's/department's strategic initiatives for the next five years based on the program's/department's outcomes.

Planned moves and construction will consume much of the next five years. Hopefully, this will allow instructors to achieve the outcomes that are promised to students and industry and the Manufacturing Technologies department will have classrooms with control of the heat and possibly air conditioning, laboratories with water, heat and electricity, and training equipment with an average age less than that of the students. Recovery from the planned disruptions will include realignment and allow a synthesis and blending of programs.

#### **VII. Publications**

A.) If the program/department publishes any advertising or recruitment documents (electronic or paper), do the documents accurately represent Amarillo college and the program/department?

Yes

B.) Does the program/department publish any documents (electronic or paper) with references to SACS accreditation?

No

#### **VIII. Other**

A.) State any additional comments/concerns which may impact this program/department during the next five years.

The most imminent threat to technical programs is the inflation of equipment and supply prices. Hard work and good teachers cannot overcome the changes in equipment standards and the lack of materials to work with. The budget for teaching supplies has remained relatively flat for 15+ years, while rudimentary consumable supplies have increased by 500 to 1300 percent.

Almost all the functional equipment in the Welding program is over 40 years old, has little or no trade in value, and will be prohibitive to replace. Much of this equipment has received no maintenance and is in poor repair. Safety is a major concern for the continuation of the program. Other basic equipment prices have increased 200 to 400 percent. All this rise in prices has happened while rapid changes in industry have taken place, and these changes need to be taught in the curriculum.

Recruitment, the cost of advertising and students willing to relocate after graduation will continue to plague the Nondestructive Testing and Evaluation program. Maintaining equipment requirements can only be achieved by raising funds through contracts.

Another concern is the changing student body. The coming generation has less "real world" exposure to build on. Learning technical skills for any program takes a good deal of time and effort. Few students enter the program with the commitment and finances to complete a proper program. They are coming with less background and are expected to leave with more knowledge.