PROGRAM REVIEW

Welding Technology

Spring 2007

Submitted by:

Mr. Wes Chambers

Welding Technology

PROGRAM REVIEW – AY 2006–2007

Section I: History of the Program

1. *When was the program begun and why?*
   The Welding Program started in 1973 to train students to become welder and fabricators. Currently the Welding Program provides opportunities for students to achieve a technical certificate (39 semester credit hours) or an Associate in Applied Science degree (62 semester credit hours). The program is composed of postsecondary students who attend fulltime. Upon successful completion of 85% of the program, students are allowed to participate in on-the-job (OJT) training. This enables a student to hold down a fulltime job that is directly related to the welding and fabrication industry. Even though OJT participants are still students, once they start their OJT they are evaluated by their employer rather than their instructor. The goal of this program is that temporary OJT positions will become permanent fulltime jobs upon graduation.

2. *How has it evolved?*
   While the program was initially a half-day program, it has developed into a full-day, 1-year (2-semester) program. Currently the Welding Program offers a broad-based curriculum involving shop safety, electric arc welding, oxygen-acetylene welding/cutting, blueprint reading, math skills, and employability skills. Supplies, equipment, and facilities are designed and utilized to conduct welding and welding-related processes. The program is two semesters long and students spend approximately 20% of their time on classroom studies and 80% of the time in the laboratory setting. The program allows for two entry dates, January and August, each year.

3. *Have the mission and objectives of the program changed? How and why?*
   The only changes that have occurred have been implemented to remain current with changes in industry standards.

4. *Physical location.*
   The Welding Program is housed in Room 402 in a detached wing of the college. The room is devoted primarily to lab space; however, lectures are given in a classroom that joins the lab area. There have been no structural changes to the facility since the current instructor arrived in 1997.

5. *Current number of faculty & students.*
   There is one fulltime faculty member for the program. In the past year an adjunct faculty member was hired to teach evening courses for the program. The typical faculty to student ratio is 1:18 with a new class starting each fall semester.

6. *When was the last program review?*
   The date of the last formal program review is unknown; however, it appears the program was examined as part of the 1997-1998 self-study carried out by the college.
   a. *Who participated in the review (i.e., faculty, students, PAC members, others)?*
      Exactly who participated is unknown but, in reviewing records from the time, it appears the study was carried out by a committee comprised of faculty and staff.
   b. *What recommendations were made?*
      Construct an addition to either the east or north end of the building. This new addition would allow for more inside storage and a larger work area for the students. It was also suggested that an overhead hoist needed to be provided. Additionally, it was recommended that the program take advantage of its association with an industry that would provide blueprints and part for students to use for practice building objects using industry blueprints. That would provide the opportunity for students to develop skills in following welding procedures and specifications. Finally, it was suggested that the insurance carrier do a smoke and noise test prior to the 1998 academic year to check the decibel level of the shop.

Section II: Program Mission, Objectives, and Learning Outcomes

Program Mission:

The mission of the Welding Technology program is to assist and prepare students for gainful employment in and to advance the science and technology of the welding industry. Learning is enhanced with industry-based training.

Program Objectives:

1. To provide a broad competency-based curriculum detailing the acceptable skill and knowledge requirements for training and qualifications of entry-level and advanced welders students will:
   a. Demonstrate the ability to work safely with others, be a contributing member of a team and exhibit exemplary work habits.
   b. Be adequately prepared to complete a variety of manufacturing jobs requiring technical welding skills that meet industry requirements.
   c. Demonstrate improved critical thinking, problem solving, creativity and practical reasoning skills.

Department Learning Outcomes:

Goal #1

The student will:

1. Demonstrate the skill and knowledge to pass an all-position weld test to a nationally recognized code or standard
2. Analyze given procedure to simulate weld test
3. Use current guidelines and safety precautions in all welding laboratory activities

Goal # 1a

The student will:

1. Demonstrate the ability to follow safety procedures and demonstrate ethical work habits consistent with industry standards
2. Apply appropriate safe work habits when operating oxy-fuel and arc-based welding equipment
3. Apply welding shop safety procedures in an industrial setting

Goal #1b

The student will:

1. Contribute to achieving team goals
2. Apply communication skills in an industrial setting
3. Use terminology associated with welding to communicate effectively with co-workers, supervisors, customers, inspectors, engineers and vendors.

Goal #1c

The student will:

1. Demonstrate production-welding skills consistent with industry standards.
2. Read blueprints, layout, and fabricate a weld to industry standards.
3. Demonstrate the ability to reason and be creative
4. Demonstrate the ability to problem solve and think critically.

Course Learning Outcomes:

WLD-100—Welding Theory
Identify the correct usage of Arc welding power sources.
Identify the correct usage of Gas Metal Arc welding power sources.
Identify the correct usage of Gas Tungsten Arc welding power sources.

WLD-110—Welding Metallurgy
Identify the chemical, physical, and mechanical properties of metal.
Identify the cooling effect on the grain structure of carbon steel.
Classify proper heat-treated steels.
Identify hardness of steels through Spark Test Method.

WLD-115—Blueprint Reading
Read and interpret basic blueprints.
Interpret welding symbols, abbreviations, and joint designs.
Construct and exercise using basic prints and sketches.
Draw sketches – pictorial and orthographic.
Interpret structural shapes, size, and weights.
Prepare material for weld procedure.
Make layout of material for plate, structural, and pipe fabrication.
Properly use several math formulas in proper application.
Classify ferrous and non-ferrous metals.

WLD-120—Oxy-Acetylene Welding
Demonstrate safety procedures.
Identify types of fuels and their application.
Handle and make preliminary safely inspections and store cylinders properly.
Select and set up oxy-fuel welding and cutting equipment.
Establish and adjust flame for welding cutting.
Classify proper filler rod for proper application.
Categorize welding problems, their causes and take corrective action.
Complete weld samples that are required on lab profile chart.
Generate and adjust Oxy-fuel torch to cut, pierce, and bevel a variety of sizes of mild steel plate and sheet metal.
Develop straight cuts on mild steel metal and plate while using oxy-fuel torch.
Properly pierce and make straight line cuts by using handheld plasma torch on a variety of thicknesses of mild steel sheet metal, plate, and aluminum steel and stainless steel.
Remove fillet and butt welds by using carbon arc gouging process.
Cut and mold steel plate by using carbon arc gouging process. Generate and adjust Oxy-fuel torch to cut, pierce, and bevel a variety of sizes of mild steel plate and sheet metal.
Develop straight cuts on mild steel metal and plate while using oxy-fuel torch.
Properly pierce and make straight line cuts by using handheld plasma torch on a variety of thicknesses of mild steel sheet metal, plate, and aluminum steel and stainless steel.
Remove fillet and butt welds by using carbon arc gouging process.
Cut and mold steel plate by using carbon arc gouging process.

WLD-125—Shielded Metal Arc Welding: Pipe
Demonstrate safety procedures.
Describe the theory of shielded metal arc welding.
Identify and select power sources and set current for welding procedures.
Classify and make proper electrode position for base, material thickness and position.
Justify welding problems, their causes, and take corrective action.
Weld in all positions on pipe by using several types and sizes of electrodes.
Construct welds as listed on lab profile chart.

WLD-130—Cutting Processes
These are in the development stage

WLD-140—Shielded Metal Arc Welding I
Demonstrate safety procedures.
Describe the theory of shielded metal arc welding.
Identify and select power sources and set current for welding procedures.
Classify and make proper electrode position for base, material thickness and position.
Justify welding problems, their causes, and take corrective action.
Weld in all positions on mild steel plate by using several types and sizes of electrodes.
Construct welds as listed on lab profile chart.

WLD-145—Shielded Metal Arc Welding II
These are in the development stage

WLD-150—Gas Metal Arc Welding I: MIG
Demonstrate safety procedures.
Identify, select and safely handle shielding gasses for various transfer modes.
Adjust current, voltage, wire speed rate, and gas flowmeters.
Select and set up the proper equipment and explain their functions.
Organize and select solid wire electrode for carbon steel.
Prescribe type of cored wires for mild steel.
Weld in all positions using different types and sizes of wire.
Complete gradable welds in all positions on mild steel.

WLD-155—Gas Metal Arc Welding II: MIG
Demonstrate safety procedures.
Identify, select and safely handle shielding gasses for various transfer modes.
Adjust current, voltage, wire speed rate, and gas flowmeters.
Select and set up the proper equipment and explain their functions.
Organize and select solid wire electrode for carbon steel.
Prescribe type of cored wires for mild steel.
Weld in all positions using different types and sizes of wire.
Complete gradable welds in all positions on mild steel.. .
Organize and select filler wire electrode for aluminum.
Prescribe type of cored wires for aluminum.
Complete gradable welds in all positions on aluminum.

WLD-160—Flux Cored Arc Welding
These are in the development stage

WLD-170—Gas Tungsten Arc Welding I: TIG
Demonstrate safety procedures.
Identify, select and set up TIG welding equipment and properly explain their functions.
Analyze, select, and safely handle shielding gasses.
Classify and select the correct size and shape of Tungsten electrode.
Adjust current, gas flow setting and post flow timer to strike an arc.
Create joint designs and prepare material for weld procedure.
Select proper filler rod.
Construct a variety of welds as listed on lab profile chart.
Complete gradable welds in all positions on steel and stainless steel.

WLD-175—Gas Tungsten Arc Welding II: TIG
Demonstrate safety procedures.
Identify, select and set up TIG welding equipment and properly explain their functions.
Analyze, select, and safely handle shielding gasses.
Classify and select the correct size and shape of Tungsten electrode.
Adjust current, gas flow setting and post flow timer to strike an arc.
Create joint designs and prepare material for weld procedure.
Select proper filler rod.
Construct a variety of welds as listed on lab profile chart.
Complete gradable welds in all positions on aluminum.

WLD-190—Welding Project Management
Layout, design, and fabricate a variety of projects using all welding procedures.
Consult with the public on designs of projects.
Use a variety of skills and equipment on fabrication of projects.
Order materials to proper sizes and specifications.
Build and maintain jigs and fixtures.

WLD-195—Employability Skills
Prepare a résumé.
Contact future employers.
Demonstrate the interview process.
Interview with prospective employers.

WLD-199—Occupational Work Experience
Use a variety of skills and equipment to become employable.
Pass a weld, blueprint, math, and tape measure test.
Adhere to the policies and procedures of the on the job training.
Complete all necessary course requirements before credit is awarded in this class.
Notify the instructor or office if changes in employment are made.

Section III: State of the Program

In this section, the program is explained and the extent to which students are able to attain the stated program and course learning outcomes are discussed.

1. *Discuss program entrance requirements including math and reading measurements.*
   At this point there are no qualified admissions requirements for students entering the program.
   a. *Discuss the readiness and skills of entering students in relationship to the abilities of the students to successfully perform in a college setting.*
      Approximately 98% of the incoming students are fully ready for the program. That is, they appear to have no difficulty with academic issues related to math or reading.

   b. *Provide reading-level analysis data for textbook(s) and manuals.*
      Tests of readability on *Printreading for Welders,* 3rd Edition, were done on three sections; one each from Chapters 2, 5, and 11. In addition, tests of readability on *Welding Skill,* 3rd Edition, were also done on three sections; one each from Chapters 15, 28, and 38. The tests provide an indication of the number of years of formal education that a person requires in order to easily understand the text on the first reading. Data from the analyses can be seen in the table below.

Title	Chapter	Kincaid Formula	Gunning-Fog	SMOG-Index
Printreading…	2	5.81	7.18	8.07
Printreading…	5	11.52	13.07	13.00
Printreading…	11	10.45	11.81	12.87
Welding Skills	15	11.15	14.25	13.49
Welding Skills	28	11.57	12.83	11.83
Welding Skills	38	15.08	19.19	16.78

Report the numbers of students applying for admittance and the numbers accepted over the past three years.

   c. *Is there currently a waiting list? How many students? Why?*
      At the most basic level, demand for the program exceeds program capacity. On a more practical level, there is demand in the workforce for people trained in the field. It can be seen from the data; however, the waiting list is shrinking. Some of the demand was dealt with by adding an evening program.

Number of Applicants in Academic Year	Fall 2004	Fall 2005	Fall 2006
Number of Student who Applied	20	36	36
Number of Student Accepted/Enrolled	15	27	19
Number of Students on Waiting List	0	0	5

2. *Provide current programs of study for all related certificates or degrees.*
    a. *Attach as an appendix course listings with course descriptions, including general education courses, as they appear in the current Course Catalog.*
    See Appendix 2

    b. *Attach as an appendix a current learning syllabus for each course.*
    See Appendix 3

    c. *Provide a summary of the types and costs of items that students in the program are required to purchase, and the rationale for their acquisition.*
    All of the required tools are ones that will be used by the students not only in the program but also by the students once they have graduated and are working in industry. The cost for the tools, as quoted in the College's Viewbook, is $500.

        i. *Attach as an appendix an itemized listing of textbooks, tools, equipment, and/or supplies required by each student.*
        See Appendix 4

    d. *Discuss how program objectives and course learning outcomes relate to one another.*
    The program objectives are based on the types of knowledge that students will have to have for an entry-level position in the field. Within each of those broader areas there are a variety of knowledge, skills, and abilities that the students must have and/or demonstrate in order to be considered as having a minimal competency in that area. Thus, there is a direct link between the overall program objectives and the course learning outcomes.

        i. *Attach as an appendix the mapping matrices of objectives.*
        See Appendix 5

3. *Provide a rationale for the current sequencing of courses.*
    The sequencing of courses is analogous to a set of building blocks. More specifically, within the Welding arena, the ability to acquire skills in one area is dependent on possession of skills in another area (e.g., must know welding theory before welding metallurgy can be explored). For some courses the order is less important; however, the primary criterion is as described above.

4. *Discuss curricular changes that have been introduced since the last Program Review (or over the last three years).*
    Under the auspices of the Kansas Career & Technical Education Resource Center and direction of its Coordinator, Vickie Kelly, a statewide core curriculum has been developed. That curriculum was implemented in fall 2006. Mr. Wes Chambers, MATC's Welding faculty member, was on the committee to develop the curriculum, which was a 2-year process.

a. *Discuss recommendations from previous reviews and address whether the recommendations were implemented. If yes, report the results. If not, why not?*
The recommendations from the 1997-1998 review were as follows:
- A larger shop with an overhead hoist
- Arrange a collaborative relationship with outside industry so that they would provide blueprints and parts for students to practice building things using industrial blueprints. That would provide students the opportunity to develop skills in following welding procedures and specifications.
- Have insurance carrier conduct smoke and noise tests

b. *Discuss changes implemented that were not the result of a program review.*
During the 2006-2007 academic year additional exhaust fans were installed in the shop/lab area. During the summer of 2007 a new heating unit with additional exhaust capabilities was installed.

c. *Discuss additions, deletions, or modifications of courses and why they occurred.*
The only modifications to the curriculum were those implemented to bring the program into alignment with industry standards.

d. *Report updates in facilities, equipment, and/or technology that have been adopted.*
The only changes were the updated ventilation system and new heating unit noted in 4b above.

e. *Describe technological or other equipment acquisitions that have occurred.*
The only changes that have been implemented are those that allowed the program to stay up to date on changing technology.

5. *Evaluate and report whether current facilities, equipment, and technology are effective in supporting achievement of program goals and student learning.*
The equipment meets the needs of the program and goals of student learning; however, facilities are not adequate. There is a lack of space for classrooms, storage, and lab/shop.

a. *List any equipment, software, hardware, or other types of technology that must be regularly updated to maintain student learning.*
Welding machines need to be regularly updated to parallel what is used in industry. This is particularly true of the TIG and MIG machines.

b. *Discuss a viable replacement schedule for those items.*
Equipment only upgraded with changes in technology and only 1 -2 pieces at a time can be changed due to budget constraints.

6. *Evaluate and report whether current facilities, equipment, and technology are parallel to those used in industry. Discuss why or why not.*
Equipment and technology are OK. Facilities are not. Facilities vary from job type to job type; however, there is a distinct lack of space in the existing lab/shop.

a. *Discuss the role of the Program Advisory Committee (PAC) in this area.*
The PAC is the primary source for information related to new technology and trends in the industry. Most of the equipment changes are made based on their recommendations.

7. *Discuss how the general education outcomes are met and assessed in program courses.*
The faculty recognizes the need for incorporating general education core abilities into the curriculum. Due to the nature of the Welding industry and the primary role hands-on teaching plays, we find this provides an excellent venue for the students to exercise their core abilities in this area.

Outcomes:

a. *proficiency in communicating effectively in written and oral forms;*
As a member of a team the students have to effectively communicate with one another in order to accomplish their jobs. The program is structured in such a way that the role of team leader is rotated among the members so each of the members is in a position to recognize first hand the importance of effective communication.

b. *in critical thinking and problem solving to address situations described verbally, graphically, symbolically, or numerically;*
Critical thinking and problem solving are two of the hallmarks of this industry. Welding technicians have to assess situations in all types of field conditions and then make correct decisions about installations and/or repairs. The information presented about the problem state can come in a variety of forms (i.e., verbally, graphically, symbolically, or numerically) and the sequential steps to the goal state then have to be determined and carried out.

c. *in identifying, accessing, and evaluating information and materials;*
Similar to "b" above, evaluation of information and correct usage of materials are critical to effective resolution of a variety of situations. The job of a welder can be extremely dangerous and failure to correctly assess a situation and respond appropriately can endanger not only that person, but other working onsite as well.

d. *in gaining knowledge of self; and*
As students work through the problem-solving process on a project, they acquire independence in their pursuit of the solution, knowledge and skills to solve the problem, patience to see the process through to the end, and confidence when the problem is successfully solved.

e. *in exhibiting tolerance of and respect for diversity in human abilities, cultures, age, and beliefs.*
Students are not isolated during the problem solving process. They will be sharing information access with other students, interacting with their Instructor on the proper procedures and use of equipment, and may have another student help them or help another student in the problem-solving process.

8. *Describe the use of end-of-program assessment measures (e.g., NOCTI, NATEF, etc.).*
Students in the Welding program take part in the National Occupational Competency Testing Institute (NOCTI) end-of-program testing. The written test has nine competency areas in the written component of the test, and five competency areas in the performance component of the test. Each participating student receives a certificate of completion along with his/her individual scores.

Scores are presented to the Instructor in two ways: (1) Student averages on that administration of the test as compared to national, state, and cumulative site comparison groups, and (2) current scores broken down at the individual student level. These data provide the Instructor with a very clear picture of how his students are performing on standardized tests and allows for data-driven curricular changes as needed.

   a. *Attach as an appendix the results of the last three years of end-of-program testing results.*
   See Appendix 6

   b. *Discuss how results were used to direct programmatic changes. If the results were not used for this purpose, why?*
   In general, the results of the end-of-program testing have been very favorable. In only one instance (i.e., Spring 2006) was there a drop that may have been interpreted as problematic. However, that test was a newly released version and there were only eight individuals in the national comparison group. Thus, given the trend data, the results of that test were a mere aberration and performance is now consistently at or above the national average.

9. *Describe the evaluation techniques used in the assessment of individual student performance and the assigning of grades.*
The primary assessment tools for the program fall into five different areas: (1) written tests, (2) performance tests, (3) observation of student work, (4) projects, and (5) simulations.

These five techniques are used in across all areas of assessment (i.e., classroom and shop). Since the primary goal of the program is to have students ready to move straight from school to the job, much of the assessment is geared toward the hand-on training component of the program.

Company representatives also come in and do testing. For example, Reinke Manufacturing from Deshler, Nebraska, has developed its own tests and comes to campus to administer those tests. Representatives from industry are also actively involved in the annual welding competitions that are held in the state.

   a. *Attach examples of assessment tools as appendices as appropriate to the program.*
   See Appendix 7

b. *Describe how the various elements work together as part of the overall assessment of student learning (ASL) plan.*
As with most, if not all, areas of technical education, having basic knowledge and comprehension provides the foundation for application. As such, written tests are geared toward determining whether the students have grasped the major ideas and their meanings.

Performance tests and observations are more geared toward the students' application of knowledge and their ability to analyze. The next assessment tools (i.e., projects and simulations) provide opportunities to determine the extent to which the students are able to synthesize their learning in terms of creating new ideas, generalizing, and drawing conclusions. One of the main goals of the assessment process is to maximize transfer of training.

10. *Discuss program accreditation(s) (if applicable)*
As part of MATC, the Welding program is accredited by the Higher Learning Commission of the North Central Association of Colleges and Schools.

a. *List all accrediting agencies and the date(s) of last and of next review(s).*
MATC's Welding program is an American Welding Society Sense certified program, and has been since February 2007. In addition, Mr. Chambers is an American Welding Society certified welding educator, and has been since February 2007. Both the program and the Instructor have to be recertified every four years, thus, the next recertification will be in 2011.

Section IV: Faculty

1. Identify individual faculty; enter date employed by MATC; list all licenses, training certificates, and/or degrees. Include a complete résumé for each faculty member as an appendix.

Faculty Credentials:

Name	Date of Employment at MATC	License Type	Certification	List All Earned Degree Type	List for Each Degree Academic Field/Major	List for Each Degree Conferring Institution	Pursuing Other Degree? Type?
Wes Chambers	August 1997			9 SCH	Tech Ed Inst. Training	Pittsburgh State University	Yes—BS
				BS	Management & Ethics	Manhattan Christian College	Yes—MS
					Curriculum & Instruction	Kansas State University	
			Certified Welding Educator	Feb 2007		American Welding Society	

Faculty Assignments:

Name	Courses Taught	Semesters Taught Since Last Review	Committee Assignments	Years Served on Committees (From – To)	Other Academic or Service Assignments	Period of Service
Wes Chambers	WLD-100		PDC	1997-2000		
	WLD-110		Care	1997-2001		
	WLD-115		Lead Team II	2002-2004		
	WLD-120		Campus Improvement	2005-Present		
	WLD-125		Academic Advising	2005-Present		
	WLD-130		Technology	2005-Present		
	WLD-140				Statewide Curriculum Committee	2 Years
	WLD-145				Search Committees	2 Years
	WLD-150				High School Advisory Committee	3 Years
	WLD-155				Faculty Senate	3 Years
	WLD-160					
	WLD-170					
	WLD-175					
	WLD-190					
	WLD-195					
	WLD-199					

2. *Discuss workload assignments for each instructor as defined by MATC policy.*
   The single Instructor in the program has full-time status. A full-time teaching load is 15 semester credit hours (SCH). If a faculty member is required to teach more than 30 SCH in one academic year, the faculty member is paid 1/30th of his/her salary for each SCH over 30 SCH.

3. *Do faculty members' backgrounds, education, and/or experience match areas of teaching?*
   Given his experience as a welder and teacher, the background and experience of the Instructor makes him uniquely qualified for the position he currently holds. He is well versed in the types of information required by the students and, given his experience in the field, is most qualified to teach the students what it will be like to work in the welding/fabrication industry.

4. *Are there gaps between the knowledge/training of faculty members and what they are required to teach?*
   a. No, there are no gaps.

Section V: Program Advisory Committee (PAC)*:*

1. *Provide a history of the PAC including number of members, make-up of membership, number and frequency of meetings, and general attendance trends.*
   The PAC for the Welding Program has been in existence since the current faculty member was hired. The PAC meets once each semester. Makeup of the committee is entirely of people who work in the industry. There are some former MATC students on the committee; however, none of them graduated under Mr. Chambers.

2. *Attach as an appendix a list of members including contact information and the segment (organizational affiliations) represented by the member.*
   See Appendix 8

3. *Discuss the role of the PAC in your program (e.g., recruitment, placement, donations, NOCTI performance testing, OJT, guest speakers, host field trips or experience).*
   The membership of the PAC plays a very active role in the Welding Program. Each year they serve as competition judges. They recruit and hire graduates. They also develop tests for the program and actually come to campus and test students. Their places of business serve as locations for field trips and on-the-job training (i.e., occupational work experience). They are the primary source of information about changes in technology and general trends in the field of welding. Finally, they provide ongoing advice about the program, make donations, and serve as guest speakers.

4. *Attach as an appendix minutes of meetings from last three years.*
   See Appendix 9

5. *Provide a summary of PAC recommendations*.
   April, 2004: it was suggested that students should visit worksites and undergo testing to prepare them for the workplace.

   a. *Of the PAC's recommendations which have and which have not been implemented. Rationale*.
      Both of the suggestions have been implemented

6. *Discuss the results of the PAC Satisfaction Survey. What has been done as a result of those data?*
   The results from the existing PAC surveys are positive; however, no data is available since Fall 2004. Starting in Fall 2007 a new, more comprehensive PAC survey will be implemented and its design is geared toward completing specific sections each semester. This format will provide a much more in depth look at the program and necessitate much more involvement on the part of the PAC members. In view of this change, and given the program's success on end-of-program tests and the state welding competitions, administration, at this juncture, is not overly concerned about the missing PAC survey data. Faculty has been made aware of the situation and will work more closely with the Vice President of Instructional Services and the Associate Vice President of Institutional Advancement to ensure a timely implementation of the new PAC survey.

	2003-04	2004-05	2005-06
Advisory Committee involvement with program[1]	57%	36%	
Advisory Committee satisfaction with program[2]	4.75	4.80	

Section VI: Instructional Resources

Resources	Amount		
	2004-05	2005-06	2006-07
Program Expenditures (General Fund):			
Faculty costs:			
Salary & benefits for full-time faculty……	$45,712	$49,546	$50,657
Overload for full-time faculty……	----------	----------	----------
Expenditures for part-time faculty……	$725	$4,920	$6,000
Instructional supplies ……	$10,345	$15,956	$13,307
	----------	----------	----------
Software……..	----------	----------	----------
Repairs……	$737	$758	$862
Travel……..	$50	----------	----------
Library……	$459	----------	----------
Professional Development……..	----------	$110	----------
Capital Outlay (Fund 18):			
Building Improvement—Exhaust fans….....	$8,985	----------	----------
Building Improvement—Manifold relocation.....	$2,868	----------	----------
Lincoln Idealarc 250……..	$5,850	----------	----------
Lincoln MIG Welder……..	$4,636	----------	----------
Miscellaneous Supplies……	----------	$15,885	----------
Materials for trailer……	----------		$945

[1] Advisory Committee involvement = Membership participating in survey/Total membership

[2] Advisory Committee Satisfaction Rating represents the average of the participant ratings in response to the following statements included in the annual Advisory Committee survey:

1. I have adequate contact with instructors.
2. Program instructors request my input.
3. Recommendations or suggestions from the advisory committee are implemented by program instructors.

Survey asks participants to rate agreement with statement on a scale from 1 to 5 (1 = strong disagreement; 5 = strong agreement)

Instructional Resources, continues…

Resources	Amount		
	2004-05	**2005-06**	**2006-07**
Perkins Funding:			
Professional Development……....	$60	----------	----------
Equipment—Drill press……..	----------	----------	$4,142
Equipment—MIG Welders and carts……	----------	----------	$17,662
	2003-04	**2004-05**	**2005-06**
Donations List:			
Caterpillar: Steel, .035, .045, .052 welding wire, gas ……	$3,000		
Reinke: Steel, Aluminum……...	$1,000		
Liberty, Inc.: Aluminum……	$1,000		
Caterpillar: Steel, welding wire, gas……..		$2,000	
Reinke: Steel, aluminum……..		$1,000	
Liberty, Inc.: Aluminum……		$1,000	
RSMS/Ft. Riley: Steel……..		$500	
Caterpillar: Steel, welding wire, gas……..			$2,000
Reinke: Steel, alimunum, welding wire……			$2,000
Liberty, Inc.: Aluminum……			$1,000
RSMS/Ft. Riley: Steel……..			$500

Resource Allocation	2003-04	2004-05	2005-06
Ratio of faculty FTEs to graduates	**1:15**	**1:13**	**1:15**
Ratio of faculty to students[3]	**1:22**	**1:28**	**1:27**

[3] Ratio is at the start of the academic year

Section VII: Support Services

Events

Students are encouraged to participate in the many activities Manhattan Area Technical College hosts throughout the year. Two major events are Insight/Onsite (6th grade tours) and Open House. These events involve students, faculty, and staff in promoting MATC to area youth, parents, prospective students, and the general public.

Organizations

National Technical Honor Society

The National Technical Honor Society is an honor organization for students enrolled in career and technical education. The purpose of the organization is to promote the ideals of honesty, service, leadership, and skill development; to reward excellence in workforce education; to develop self-esteem and pride; to encourage students to reach for higher levels of achievement; to promote business and industry's critical work-place values - honesty, responsibility, initiative, teamwork, productivity, leadership, and citizenship; and to champion a stronger, more positive image for workforce education in America**.** Membership in the society is awarded on a merit basis

Student Government Organization (SGO)

The Student Government Organization, made up of student representatives from each program of study at Manhattan Area Technical College, acts as a liaison between the student body and administration and faculty, plans activities for students, represents Manhattan Area Technical College at college and community events, and participates in a variety of philanthropic activities. Its primary mission is to sustain a high quality of student life at MATC.

Services

Accident Insurance

Despite all precautions, students at Manhattan Area Technical College may become involved in accidents and/or incur injuries related to their attendance and studies at MATC. It is in the best interest of all students that some measure of protection be provided. Therefore, a group accident policy exists that provides coverage for all accidents that occur during the school year on school premises or during College-supervised activities. Payment for protection is included in the application fee. This is a supplemental policy that provides coverage if the student is without personal insurance, or if the personal insurance does not cover the cost of the claim. It is important that all accidents, regardless of the severity, be reported to an instructor, and an Occurrence Report be submitted to the administrative office. Additionally, for the students' convenience, Student Services provides in the main office policy information from companies that cater to college students. MATC does not promote, sell, or service such policies. Any student interested in purchasing insurance from one of these companies should contact a company representative using the number(s) provided on the policy information.

Counseling

A Manhattan Area Technical College counselor is available on a walk-in basis or by appointment to assist students with career or academic concerns, or with personal interests and concerns. The counselor is also accessible for advice and assistance concerning employability skills such as resume and cover letter preparation, job search organization, and interviewing techniques.

Confidentiality: A high value is placed on the confidentiality of information about individual students at Manhattan Area Technical College. If there is a need to share information in student records, the student will first be consulted and asked to sign a form authorizing transfer of the information. The form specifies both the information to be released, as well as to whom and by whom it is to be released. The student may revoke the permission by giving written notice at any time. (Also see the Release of Student Information section).

Job Placement Assistance

It is the sole responsibility of individual students to secure employment following graduation. To assist students and graduates in their endeavors, Manhattan Area Technical College representatives pursue relationships with employers in business and industry to identify and coordinate employment opportunities for MATC graduates. Efforts are made to recruit prospective employers and arrange on-campus and off-campus interviews. An area is maintained in the MATC Library to provide students and graduates with convenient and continuous access to employment information. It is a resource (books, directories, periodicals and videos) location for job search-related activities. Additionally, employment opportunities are posted in program areas and on a job board outside the library on a regular basis.

Learning Resource Center

The Learning Resource Center (LRC) is available to all students for help with basic computer, reading and math skills. An open-lab format enables ready access to current technology, including 12 computer workstations, for students and graduates. The LRC also provides specialized short courses in computer usage for beginning word processing, reading, writing and math skills. Upon request, small group instruction workshops can be formed, and/or students can receive individualized help. Instructors staff the LRC and provide assistance from 7:30 a.m.–8:00 p.m., Monday–Thursday, and 7:30 a.m.–4:00 p.m. Friday.

Library

MATC's library supports both general education courses and program curriculum. All MATC students, faculty and staff have access to print resources, electronic databases, video and audio material, as well as Inter-library Loan. At the beginning of each semester, new students receive a library orientation over current resources and database searching. Four computer workstations with Internet access are available for research projects. A coin operated copy machine and paper shredder are located in the library for student use.

The MATC Library is a member of the North Central Kansas Library region, which allows students to access resources from other member libraries through Inter-library Loan. Hours of operation are 7:30 a.m.– 8:00 p.m. Monday–Thursday and 7:30 a.m.– 3:30 p.m. on Fridays.

Services for Special Needs Students
Faculty and staff at Manhattan Area Technical College are sensitive to the special needs of students with documented physical and/or learning disabilities, and will work with them in their pursuit of their educational goals. All students with special needs or disabilities **MUST** provide documentation in order for MATC to make available an academic environment that addresses the needs of the disability.

Transcripts
Transcripts will be prepared upon written request from Manhattan Area Technical College students, former students, or graduates at a cost of $5.00 per transcript to former students and graduates. Transcripts for graduating students will be obtainable within 10 days of the last day of the semester. **Transcripts are available for continuing education students as of Fall 1994, and for all workforce development students as of Spring 2004.** Transcript request forms are available in the MATC main office or on the web page at www.matc.net. Transcripts released directly to students will be stamped "Issued to Student" and may not be considered "official" transcripts. Students must pay all outstanding debts to Manhattan Area Technical College before their degree/technical certificate and/or transcript will be released. Any release of a Manhattan Area Technical College student transcript will be approved and documented by the Registrar. Official transcripts or reproductions of official transcripts from other institutions cannot be released to any individual or institution.

Enrollment, Graduation, and Placement Data

	2003-04	2004-05	2005-06
Number of Applicants in Academic Year	38	35	36
Total number enrolled	22	28	27
Active students (those who will continue studies in next academic year)	2	5	2
Students who dropped from program	1	7	8
Students who did not complete all requirements for graduation	4	2	4
Graduated	15	13	15
Percent graduated[4]	75%	46%	56%
Student satisfaction with program as reported in Noel-Levitz survey[5]			
Academic Advising	0.62	-0.10	0.10
Concern for the individual	0.30	0.10	0.02
Instructional effectiveness	0.18	0.03	-0.01
Graduate Placement			
Graduates reporting employed in field of study	10	10	10
% of graduates employed in field	66%	77%	66%
Graduates reporting employed (not in field of study)	1	0	1
% of graduates employed (not in field of study)	7%	0%	6%
Graduates reporting not employed	0	0	2
% of graduates not employed	0%	0%	13%
Graduates reported pursuing additional education	2	2	2
% of graduates pursuing additional education	13%	15	12%
Graduates reported entering military service	1	1	0
% of graduates reported entering military service	7%	8%	0%
Graduates not located	1	0	0
% of graduates not located	7%	0%	0%
Average hourly wage reported by graduates employed in field	$10.47	$11.42	$16.10

[4] Percent graduates = graduates/(enrolled - active)

[5] Performance gap scores (importance rating minus satisfaction rating) demonstrate a program's effectiveness in meeting the students' expectation.
A large performance gap score (e.g. 1.5) indicates that the program is not meeting student expectations
A small or zero gap score (e.g. .50) indicates expectations are being met
Negative gap score indicates expectation being exceeded. Source: Noel-Levitz Student Satisfaction Survey Report

Job Market Analysis

Outlook for employment in field from the U.S. Dept. of Labor Occupational Outlook 2014	Welding, soldering, and brazing workers held about 429,000 jobs in 2004. Of these jobs, more than 6 of every 10 were found in manufacturing. Jobs were concentrated in fabricated metal product manufacturing, transportation equipment manufacturing (motor vehicle body and parts and ship and boat building), machinery manufacturing (agriculture, construction, and mining machinery), architectural and structural metals manufacturing, and construction. Most jobs for welding, soldering, and brazing machine setters, operators, and tenders were found in the same manufacturing industries as skilled welding, soldering, and brazing workers. Employment of welding, soldering, and brazing workers is expected to grow more slowly than average for all occupations over the 2004-14 period. Despite this, job prospects should be excellent as employers report difficulty finding enough qualified people. In addition, many openings are expected to arise as a large number of workers retire over the next decade. Despite slower-than-average job growth, technology is creating more uses for welding in the workplace and expanding employment opportunities. For example, new ways are being developed to bond dissimilar materials and nonmetallic materials, such as plastics, composites, and new alloys. Also, laser beam and electron beam welding, new fluxes, and other new technologies and techniques are improving the results of welding, making it useful in a wider assortment of applications. Improvements in technology have also boosted welding productivity, making welding more competitive with other methods of joining materials.
Outlook for employment in field from Kansas Occupational Outlook 2012[6]	Services provide the largest proportion of employment in the non-goods producing group. The “Welders, Cutters, Solderers, & Brazers” occupations had an average annual employment of 4,740 statewide in 2002 and a projection of 5,450 in 2012. That represents an increase of 710 (15.00%) jobs. It is predicted that there will be 220 total annual openings in the field.[7]

[6] Percent change represents the anticipated change in number employed in field comparing actual number employed in 2002 to predicted in 2012

[7] Net employment increase and net replacements, not represented in the data, were calculated together to create the total annual openings, which is noted. Workers who permanently leave their occupation – due to retirement, death, career change, or any other reason – are a significant source of occupational opportunities.

Section VIII: Efforts to increase student participation/involvement

1. *Report of Noel-Levitz responses for following questions (last 3 years)*

General Category	Results		
	2003-04	**2004-05**	**2005-06**
Concern for the Individual	0.30	0.10	0.02
Student Centeredness	0.08	-0.03	-0.15

This instrument measures 71 expectations about college life from the perspective of the students. It asks students to rate the importance of each of these expectations using a 7-point Likert-type scale where 1 = "Not Important at All" and 7 = "Very Important." Then, for each item, the student is to rate his or her level of satisfaction with how the College is meeting that expectation. That is also rated on a 7-point Likert-type scale where 1 = Not Satisfied at All" and 7 = "Very Satisfied." While the results are presented in a variety of ways, the focus is on performance gap scores. More specifically, for each item, students' levels of satisfaction are subtracted from their importance ratings to determine a difference score. Positive scores reflect a situation where expectations are higher than levels of satisfaction; negative scores reflect the opposite. Difference scores of zero indicate a situation where, in the opinion of the students, the school is perfectly meeting their expectations. Positive gap scores of 1.50 or greater are considered to be indicative of the need for intervention.

2. *Include a brief discussion of the methods used within program to promote student involvement and provide leadership opportunities for students in program-related activities.*

   There is one student representative on the Student Government Organization. There are no other formal leadership opportunities available for the students within the program.

Section IX: SWOT Analysis

Strengths:

- Instructor has 25 years in field with last 10 at MATC
- Instructor worked on core curriculum at state level
- Involvement of PAC members
- Location in Manhattan, Kansas

Weaknesses:

- Lack of space in all areas (i.e., lab, storage, classroom)
- Not enough funding

Opportunities:

- Establishing linkages with KSU's agriculture programs
- MATC certified SENSE (**S**chools **E**xcelling Nationally through **N**ational **S**kills Standards **E**ducation) welding program.

Threats:

- Increasing costs for equipment to keep program current
- Cannot do robotically operated technology
- Rising costs of consumables (e.g., steel, welding gases)

Section X: Recommendations for the future

- More space in all areas (i.e., lab, storage, classroom)
- Find funding for robotics
- Elmo projector for classroom

Section XI: Appendices

1. Results of reading level analyses
   See Appendix 1

2. Course listings with course descriptions, including general education courses, as they appear in the current Course Catalog.
   See Appendix 2

3. A current learning syllabus for each course.
   See Appendix 3

4. Itemized listing of textbooks (see table below for formatting), tools, equipment, and/or supplies required by each student.
   See Appendix 4

5. Mapping matrices of objectives.
   See Appendix 5

6. Results of the last three years of end-of-program testing.
   See Appendix 6

7. Examples of assessment and evaluation techniques used in the assessment of individual student performance and the assigning of grades.
   See Appendix 7

8. A résumé for each faculty member.
   See Appendix 8

9. A list of PAC members including contact information and the segment (organizational affiliation) represented by the member.
   See Appendix 9

10. Minutes of PAC meetings from last three years
    See Appendix 10

Additional Appendices Required:

1. A complete listing of the last two years of Noel-Levitz survey results for department.
   See Appendix 11

2. Program assessment calendar for the current year and reports on the assessment of student learning to improve instruction for the last two years.
   See Appendix 12

Current Textbooks:

Title and Edition	Required/ Supplemental	Date of Publication
Moniz, B. J., & Miller, R. T. (2004). *Welding Skills* (3rd Ed.). Homewood, IL: American Technical Publishers, Inc.	Required	2004
Gosse, J. F. (2004). *Welding Skills Workbook* (3rd Ed.). Homewood, IL: American Technical Publishers, Inc.	Required	2004
Proctor, T. E., & Gosse, J. F. (2004). *Printreading for Welders* (3rd Ed.). Homewood, IL: American Technical Publishers, Inc.	Required	2004