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Section #1: Program Overview

Programs: Welding Technology / Welding Engineering Technology
Degrees: Associate in Applied Science Degree in Welding Technology (WELT) and Bachelor of Science Degree in Welding Engineering Technology (WELE)
Department: Welding Engineering Technology
College: Technology

Section 1: An overview of the program that addresses broadly the areas of the program included in the Administrative Program Review document (see page Appendix B). This section should acquaint the reader with the program: mission, history, impact (on the University, state, and nation), expectations, plans for improvement, and any other items that would help the reader fully appreciate the remainder of the report.

MISSION:

STATEMENT OF MISSION
To continuously define the profession by producing Welding Technology and Welding Engineering Technology graduates whose knowledge, skills, and attitudes are nationally recognized.
Adopted
2000

HISTORY:

1955 ..... Welding Started as a Related Subject
1956 ..... One Year Welding Certificate Added
1958 ..... Metallurgy Added
1965 ..... Submerged Arc Welding Added
1965 ..... Destructive Testing Added
1972 ..... A.A.S. Welding Technology Program Started
1974 ..... Plasma Welding and Cutting Added
1976 ..... American Welding Society Student Chapter Chartered
1984 ..... B.S. Welding Engineering Technology Program Started
1986 ..... Computer Aided Design Added
1986 ..... Internships Required in B.S. Degree Program
1986 ..... 1st B.S. Welding Engineering Technology Graduating Class
1990 ..... Resistance Welding Added
1990 ..... 5th B.S. Welding Engineering Technology Graduating Class
1991 ..... Laser Welding, Cutting, and Processing Added
1993 ..... 100th Anniversary of Campus World Structure Added
1995 ..... 10th B.S. Welding Engineering Technology Graduating Class
1996 ..... Pulsed Gas Metal Arc Welding Added
1997 ..... Industrial Organizational Psychology Added
1998 ..... High School Welding Articulation Program Initiated
2000 ..... 15th B.S. Welding Engineering Technology Graduating Class
2000 ..... 200th B.S. Welding Engineering Technology Graduate
2000 ..... Welding Engineering Technology Department Established
2003 ..... Exceeded $500,000 in Private Student Scholarships since 1986

2002 .....250th B.S. Welding Engineering Technology Graduate
2003 .....FSU State Secondary Welding Competition initiated
2006 .....375th B.S. Welding Engineering Technology Graduate
2007 .....Exceeded $750,000 in Private Student Scholarships since 1986

Program Overview:

Why Choose Ferris State for Welding Engineering Technology?
Established in 1984, the nationally recognized Welding Engineering Technology program is the largest of its kind in the United States. The program is designed to produce plant-level welding engineering technology graduates who are involved in the concept, design and engineering of weldments and implementation of welding processes. This overall knowledge of weldments and the ability to engineer welding and joining systems produces graduates who are in great demand and highly compensated.

Career Opportunities
With one out of two products that comprise the US gross domestic product containing a weld, the welding profession is prevalent in all areas of our economy. Graduates of the Welding Engineering Technology Bachelor of Science degree program hold a wide variety of position titles including welding engineer, manufacturing engineer, application engineer, sales engineer and project engineer or manager. Graduates find employment opportunities in various sectors of the construction, fabrication and manufacturing economy. The most common industry employers include automotive, agricultural and construction equipment producers, oil and gas industry suppliers, welding equipment manufacturers and robotics and welding automation firms. Employment has been procured in more than 30 states across the country, with Michigan, Wisconsin, Illinois, Indiana, Ohio, and Iowa having the highest concentrations. Many of the 375+ Welding Engineering Technology (WET) program alumni have enjoyed international assignments ranging from a few weeks to five years in over 20 countries on six different continents around the world. Compensation for students graduating from the WET program in May, 2007, averaged $57,200.00 annually.

Facilities and Faculty
Ferris provides several welding instructional areas including laboratories dedicated to welding skill development, inspection, mechanical testing, robotics and laser processing, resistance welding and material preparation/fabrication. Students are able to utilize the latest welding equipment technology that industry has to offer. The core welding courses are taught by professional faculty with nearly 70 combined years of teaching experience at Ferris State. The required technical-related courses in material science, electronics and machine tool are taught by faculty specialists in those departments.

Program and Student Recognition
- Since 1986, students in the Ferris welding programs have received approximately $725,000.00 in academic scholarship awards from various industry professional organizations.

- 30+ students have been recognized with endowed National Named Scholarships through the American Welding Society (AWS), including two students who have traveled to Japan as part of the AWS Matsuo Bridge Company Scholarship award – a priceless educational experience!
- The Resistance Welder Manufacturers' Association has awarded 21 National Scholarships to FSU WET students since 1995.
- WET faculty members Joseph Mikols (retired), Kenneth Kuk, and David Murray, awarded Adams Memorial Membership through the AWS as recognition for outstanding teaching activities in their undergraduate and postgraduate institutions.
- Latest laboratory welding equipment technology for student use.
- Awarded the American Welding Society national Image of Welding "Educational Facility" in 2005

1.A. PROGRAM GOALS

1.A.1 - State the goals of the program.

The **Welding Technology Associate in Applied Science Degree (WELT)** is designed to prepare students to enter the welding industry as technicians who support engineering and manufacturing activities and to provide them with technical foundation course work to enter the Welding Engineering Technology program.

The **Welding Engineering Technology Bachelor of Science Degree (WELE)** is designed to allow graduates the opportunity to enter the workforce as plant-level engineers with both theoretical and practical technical skills. ***(Please see Section #7 for Labor Market Analysis and Graduate Employment information)***

1.A.2 - Explain how and by whom the goals were established.

The ultimate goals of the Ferris welding programs remain constant. The educational path to meeting those goals changes as the needs for industry demand. The feedback and input from a variety of sources, including students, faculty, program alumni, advisory board members and employers keep the Ferris welding program curriculum as current as possible. The final decision on program goals, and attainment of those goals, rests with the department faculty.

1.A.3 - How do the goals apply to preparing students for careers in and meeting employer needs in the community / region / marketplace?

The goals of the programs were determined based on the needs of industry. The various industries in which Ferris program graduates enter are truly "international" in scope. Many North American based companies have international business activities. Feedback from employers and alumni has indicated that graduates constantly have been able to quickly adapt to the community / region / marketplace needs of employers.

1.A.4 – Have the goals changed since last program review? If so, why and how? If not, why not?

As stated above in 1.A.2, the ultimate goals have remained constant for the welding programs. In order to continue to meet the program goals, multiple

curriculum modifications have taken place since the previous APR process. These changes have been implemented based on feedback and input from a variety of sources, including students, program alumni, advisory board members and employers (***Please see Section 3.F.2 for detailed curriculum change information***)

1.A.5 – Describe the relationship of the program goals to the University's mission, and the departmental, college and divisional strategic plans.

The nationally recognized Ferris welding programs are compatible with the University mission by providing hands-on, laboratory-based career education and training. ***(Please see Statement of Mission on the opening page of this section)***

The strategic plan of the WET Department programs is outlined annually in the Unit Action Planning process. The WET Department strives to insure that our future plans align with the overall plans of the college and division.

1.B. PROGRAM VISIBILITY AND DISTINCTIVENESS

1.B.1 – Describe any unique features or components of the program.

The WELE degree program at Ferris is the only four-year Welding Engineering Technology program in the state of Michigan. Ferris State is one of only six (6) educational institutions in the United States to offer a four-year degree with an emphasis on welding.

1.B.2 – Describe and assess the program's ability to attract quality students.

Many factors contribute to the Welding Technology Associate in Applied Science Degree and the Welding Engineering Technology Bachelor of Science Degree ability to attract quality students to Ferris State University.

The WELT program has entrance requirements above and beyond the College of Technology and University. These additional requirements in mathematics and English better-prepare entering students for the academic rigors of the program. Also, our relationship with the secondary schools and welding instructors plays a key role. Most incoming freshman learned of the Ferris WELT program from their secondary instructor. This combination of encouragement and academics has consistently provided us with quality students.

As stated above in 1.B.1, the WELE program is unique in its offerings and availability. This characteristic in itself attracts students to the program. Students entering the WELE program are required to have displayed previous academic success through the attainment of a WELT degree with a 3.0 or better G.P.A. Students enter from either the Ferris WELT or transfer from a community college with a WELT degree.

1.B.3 – Identify institutions that are the main competitors for prospective students in this program.

B.S. Welding Engineering Technology (WELE)

Main Educational Competitors

Institution, Type and Location	Degree Major	Credits			
		Welding	Technical	Calculus plus	Total
Ferris State University Public Big Rapids, MI	B.S. Welding Eng. Technology WET	60	25	4	127
LeTourneau Univ. Private Longview, TX	B.S. Materials Joining Tech. MJET	29	43	6	134
LeTourneau Univ. Private Longview, TX	B.S. Materials Joining Engineering MJE	37	38	18	138
Ohio State University Public Columbus, OH	B.S. Welding Engineering WE	29	42	16	131
Weber State University Public Logan, UT	B.S. Manufacturing Eng. Welding Emphasis	26	46	4	126
Montana Tech Public Butte, MO	B.S. Engineering Science WE	28	24	16	136
Pennsylvania Tech. Public Williamsport, PA	B.S. Welding and Fabrication Engineering Technology	50	34	0	138

1.B.3.a - How are these programs similar and different from the FSU program?

The major similarity of all programs and educational institutions listed above is that they produce Bachelor of Science Degree graduates that have concentrated studies in the area of welding. The major difference between the programs is the amount of practical hands-on training and the mathematics level. Engineering Technology degrees (Ferris, LeTourneau, Penn Tech) contain more hands-on and less Calculus mathematics courses than the traditional Engineering degrees (OSU, LeTourneau, Montana, Weber).

1.B.3.b - What can be learned from them that would improve the program at Ferris?

The WET Department continues to monitor the progress and changes of educational institutions offering competitive, four-year welding programs. The Ferris WET program is viewed by industry to be the leading engineering technology degree offered in welding. The curriculum has been developed and modified over the years in an effort to continually meet the needs of business and industry. If another educational program makes a dramatic change to their

curriculum, the Ferris welding faculty takes notice and determines if any action on our part is necessary.

A.A.S. Welding Technology (WELT)

Main Educational Competitors

Every community college and industrial training institution, located in either Michigan or other states, offering welding training is viewed as a competitor of the Ferris Welding Technology program. We are all attempting to recruit the same students!

1.B.3.a - How are these programs similar and different from the FSU program?

Educational institutions vary greatly in Welding Technology A.A.S. degree content. All have concentrations on welding. Typically a community college is more focused on the practical aspect of welding, with less classroom time dedicated to the theory aspect. The Ferris State A.A.S. WELT degree Ferris has significant curriculum content in both educational areas. The reputation of Ferris graduates is that they possess excellent practical welding skills, combined with a solid, well-rounded theoretical understanding of welding technology.

1.B.3.b - What can be learned from them that would improve the program at Ferris?

The faculty is constantly looking to improve the quality of the Ferris State Welding Technology program. The methods of improvement are typically in the form of curriculum changes to meet the ever-changing needs of industry.

1.C. PROGRAM RELEVANCE

1.C.1 – Provide a labor market demand analysis: This activity is designed to assess the marketability of future graduates. Reports from the Department of Labor and from industry are excellent sources for forecasting demand on graduates. Request information from your Library Liaison.

The following Labor Market Analysis was provided by Ms. Fran Rosen, FSU FLITE.

With one out of two products that comprise the gross domestic product containing a weld, the welding profession is prevalent in all areas of our economy. Graduates of the Welding Engineering Technology program currently hold over fifty different job titles. The most common include welding engineer, manufacturing engineer, application engineer, sales engineer and project engineer or manager. Graduates find employment opportunities in all sectors of the construction, fabrication and manufacturing economy. The most common employers include the automotive industry, agricultural and construction equipment producers, oil & gas industry suppliers, welding equipment manufacturers and robotics and welding automation firms.

The US Department of Labor Bureau of Labor Statistics (BLS) projects an employment growth of 11% (about as fast as the average) over the 2006-2016 decade for Engineers, but growth will vary by specialty. The BLS writes:

"Competitive pressures and advancing technology will force companies to improve and update product designs and to optimize their manufacturing processes. Employers will rely on engineers to increase productivity and expand output of goods and services. New technologies continue to improve the design process, enabling engineers to produce and analyze various product designs much more rapidly than in the past. Unlike in some other occupations, however, technological advances are not expected to substantially limit employment opportunities in engineering because engineers will continue to develop new products and processes that increase productivity."

Growth rates for some of the areas that Welding Engineering Technology graduates enter are as follows: Industrial Engineers, 20%; Materials Engineers, 4%; Sales Engineers, 9%; Engineering Managers, 7% for a total projected job increase of 62,400. According to the BLS, employment of engineering technicians should rise 7% between 2006 and 2016, resulting in 10,600 new jobs for Mechanical Engineering Technicians and Industrial Engineering Technicians.

Graduates of the Welding Technology program become technicians involved in testing and improving welding processes, procedures and equipment. Welding Technology graduates hold job titles as welding technicians, welding supervisors, inspectors and sales representatives.

The US Department of Labor Bureau of Labor Statistics (BLS) provides job information for 2 categories of welding jobs:
51-4121 Welders, Cutters, Solderers and Brazers
51-4122 Welding, Soldering, and Brazing Machine Setters, Operators, and Tenders

While both categories are projected to grow at a slower than average pace, the BLS adds that "Job prospects should be excellent as employers report difficulty finding enough qualified people." Additional information from the American Welding Society (AWS) indicates that the job market outlook for welders is extremely positive.

The AWS is seeing a great demand for welders and a dramatic lack of people with the necessary technical and other skills to fill the jobs. This is happening for several reasons. There has been an ongoing decline in the number of people entering the welding profession. There is a global boom in industrial manufacturing as countries race to develop industry. Many new welding jobs are in industries such as Petroleum, Gas & Oil, and Nuclear Power generation. In the United States an aging infrastructure creates a demand for highly-skilled and experienced welders who must make on-site evaluations and exercise judgment in performing repairs. Many welding jobs are difficult to automate, while welding automation is also a source of new jobs, and new developments in robotics create a demand for skilled operators. Specialty welding is an ongoing activity in many areas, such as race car construction. In addition, a major reason for the demand for welders is the aging of the current workforce. In 2006 the average age of welders was 54, which means there is a large pool of highly skilled and experienced welders who will need to be replaced.

For Welding, Soldering and Brazing workers, the BLS projects that most new jobs will be in Construction (17.76% increase), Wholesale Trade (17.44% increase) and Administrative & Support (35.35% increase). The only areas showing a projected decrease are Manufacturing (-0.98% decrease) and Utilities (-6.88% decrease).

Additional information about job opportunities can be found at the website America's Career Infonet (http://www.acinet.org/acinet/). The tables below show expected job increase and annual job openings for welders and for welding machine operators.

State and National Trends

United States	Employment		Percent Change	Job Openings [1]
	2004	2014		
Welders, cutters, solderers, and brazers	377,000	395,900	+ 5 %	12,540
Michigan	**Employment**		**Percent Change**	**Job Openings [1]**
	2004	**2014**		
Welders, cutters, solderers, and brazers	14,910	15,380	+ 3 %	470

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

State and National Trends

United States	Employment		Percent Change	Job Openings [1]
	2004	2014		
Welding, soldering, and brazing machine setters, operators, and tenders	51,900	52,100	0 %	1,490
Michigan	**Employment**		**Percent Change**	**Job Openings [1]**
	2004	**2014**		
Welding, soldering, and brazing machine setters, operators, and tenders	5,860	5,370	-8 %	170

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

1.C.2 – Describe and assess how the program responds to emerging issues in the discipline, changes in the labor force, changes in employer needs, changes in student needs, and other forces of change.

The Welding Engineering Technology program strives to continuously assess whether the educational objectives of the program are well-aligned with the needs of industry and are being achieved by graduates. Assessment can only be done by staying in constant dialog with alumni and employers with regard to the program. The Welding Engineering Technology program uses a three-pronged approach to achieve this assessment:

1. **Industrial Advisory Board:** The WET Industry Advisory Board is a group of employers and alumni that meets at least once a year to discuss the program as well as trends in the industry that will affect graduates in the future. Performance of graduates in key areas is reviewed to determine whether educational objectives are being met.
2. **American Welding Society Welding Exposition:** The WET department actively participates in the AWS Welding Exposition to further interact with industry to assess future industry trends and obtain feedback from alumni on how well program educational objectives are being met.

3. **Surveys:** The WET department surveys students, faculty, employers, alumni and advisory board members every six years as part of the Academic Program Review cycle. These surveys are used to sample an even wider cross section of industry for the purpose of assessing whether educational objectives are being met. Please see the Survey Instrument, Frequency Statistics and Comments at the back of this section for each constituent group list above.

   These three measures allow the WET program to assess whether program objectives are in line with industry needs and if graduates are well-prepared to successfully meet these objectives.

1.C.3 – Assess why students come to FSU for the program. Summarize the results of the graduate exit survey and the student program evaluation.

The primary reason students attend the welding programs at Ferris is the excellent employment opportunities that the degrees provide. The student survey instruments in Section 4 indicate a high satisfaction rate of the programs.

1.C.3.a – How well does the program meet student expectations?

The student surveys in Section 2 of this report indicates that 85.4% of **WELE** students responded "acceptable, good or excellent:" to question q4b: Related: Current/meaningful". The complete survey results can be found in Section 2 of this report.

The student surveys in Section 2 of this report indicates that 85.6% of **WELT** students responded "acceptable, good or excellent:" to question q4b: Related: Current/meaningful". The complete survey results can be found in Section 2 of this report.

1.C.3.b – How is student sentiment measured?

Student survey results in Section 2 indicated strong student appreciation and satisfaction with the Department of Welding Engineering Technology academic program offerings.

1.D – PROGRAM VALUE. Please refer to the faculty survey.

1.D.1 – Describe the benefit of the program, facilities, and personnel to the University.

The Welding Technology A.A.S. degree and the Welding Engineering Technology B.S. degree programs have been providing qualified welding graduates to various facets of the welding and fabrication industry for many years. The demand for Ferris welding graduates has increased annually. The shortage of

welding personnel facing industry has created a job market for graduate's unseen prior. Since August 1, 2007 more than 140 companies and/or individuals have contact the Department of Welding Engineering Technology inquiring about candidates for their employment opportunities. A complete Labor Market Analysis is included in this section.

This industry demand has resulted in steady enrollment growth. This enrollment growth benefits all aspects of the University as students are required to take courses outside of the department and College of Technology to complete their academic degree requirements.

Section 3 contains detailed enrollment data to support this response.

1.D.2 – Describe the benefit of the program, facilities, and personnel to the students enrolled in the program.

The Welding Technology A.A.S. degree and the Welding Engineering Technology B.S. degree programs have been providing qualified welding graduates to various facets of the welding and fabrication industry for many years.

The facilities that have been developed over the years are second to none when compared to other academic educational facilities. The equipment used for student learning is state-of-the-art thanks to the excellent relationship with industry established by the department faculty. Complete documentation of department lab equipment may be found in Section 4.

The faculty brings a combination of 95 years of teaching experience to the students in the department programs. This longevity, combined with solid industrial experience, provide a tremendous learning benefit to the students. The faculty can combine mandatory academics with real life, industrial experiences.

1.D.3 – What is the assessment of program personnel of the value of the program to employers? Explain how this value is determined.

The department has a very effective Industrial Advisory Board. The members represent a variety of welding and fabrication industries. The value of qualified department faculty is of primary concern to them. Many of the organizations represented by advisory board members currently employee Ferris welding graduates. Section 2 contains Advisory Board and Employer Surveys.

1.D.4 – Describe the benefit of the program, faculty, staff and facilities to entities external to the University (services that faculty have provided to accreditation bodies, and regional, state, and national professional associations; manuscript reviewing; service on editorial boards; use of facilities for meeting, etc.).

The department is currently in the process of obtaining ABET Accreditation for the Welding Engineering technology program. This credential is expected to increase the value of the degree to the program graduates. Information on ABET can be found at the web link below.

http://www.abet.org/

The department faculty and students are very active in the American Welding Society (AWS). AWS serves 50,000+ members worldwide. Membership consists of engineers, scientists, educators, researchers, welders, inspectors, welding foremen, company executives and officers, and sales associates. Interests include automatic, semi-automatic and manual welding, as well as brazing, soldering, ceramics, lamination, robotics, and welding safety and health.

AWS Mission Statement
The mission of the American Welding Society is to advance the science, technology and application of welding and allied joining and cutting processes, including brazing, soldering and thermal spraying.

The Ferris State AWS Student Chapter is a FSU Registered Student Organization. The RSO is run by students and advised by faculty member Jeffrey Carney. The chapter has done many activities in the community including, annual golf outing, Angle Tree, and Salvation Army bell ringing. The RSO has annually hosted the Western Michigan Section of the AWS for a meeting on-campus in Big Rapids for Student Internship presentations. This has been a very successful event.

The welding facilities are used for many other purposes. Industry training is taught by welding faculty on a regular basis.

Welding faculty is often involved with entities outside of the University community. Past activities have included secondary and post-secondary educational advisory boards, professional society committees, and local community organizations.

1.D.5 – What services for extra-University general public groups (e.g., presentations in school or to community organization) have faculty, staff or students provided? Describe how these services benefit students, program, and community.

The welding faculty, staff and students are engaged in the Big Rapids community. As community members, many department individuals are active is youth sports as coaches, mentors, officials and/or participants. As stated above the FSU AWS RSO has had a long-standing presence in the community.

The welding faculty and students provide welding services for the community. On a daily basis, the department is contacted by a community individual or

organization that is in need of an item requiring welding. This is done as a part of the academic curriculum, under the supervision of the course instructor, as repair projects. The department has also provided welding services to the FSU Physical Plant resulting in savings of thousands of dollars to the University.

Professor David Murray has provided student services for many fabricated sculptures located throughout the community. Some of his works include the "steel bulldog" located at the south end of Top Taggart Football Field, the "Morley Stanwood MS" located in front of Morley Stanwood High School, and the "World Globe" located in the Ferris Quad. Professor Murray's latest project is a sculpture designed by Robert Barnum to be displayed in downtown Big Rapids.

Section #2: Survey Information

Programs: Welding Technology / Welding Engineering Technology
Degrees: Associate in Applied Science Degree in Welding Technology and Bachelor of Science Degree in Welding Engineering Technology
Department: Welding Engineering Technology
College: Technology

Section 2: Collection of Perceptions. The survey sections must include, among others, a discussion of techniques used in collecting the information, difficulties encountered during the surveying process, number and percent of respondents, and analysis of data in accordance with established methodologies. The survey instruments must be designed and distributed, in consultation with Institutional Research and Testing, to reflect general aspects of program review as well as the specific nature of the program itself. All comments should be included, but names of individuals mentioned should be deleted.

Department of Welding Engineering Technology Survey Information

- **2.A. - Alumni, p.**
  - Instrument
  - Frequency Statistics
  - Comments

- **2.B. - Employers, p.**
  - Instrument
  - Frequency Statistics
  - Comments

- **2.C. – Graduating Student Exit Survey, p.**
  - Instrument
  - Frequency Statistics
  - Comments

- **2.D. – Student Program Evaluation,**
  - **Welding Engineering Technology, B.S. degree program; p.**
  - Instrument
  - Frequency Statistics
  - Comments

  - **Welding Technology, B.S. degree program; p.**
  - Instrument
  - Frequency Statistics
  - Comments

- **2.E. – Faculty Perceptions, p.**
  - Instrument
  - Frequency Statistics
  - Comments

- **2.F. - Advisory Committee Perceptions, p.**
  - Instrument
  - Frequency Statistics
  - Comments

2.A. - GRADUATE FOLLOW-UP SURVEY: The purpose of this activity is to learn from graduates their perceptions and experiences regarding employment based on program outcomes. The goal is to assess effectiveness of the program in terms of job placement and preparedness of the graduate for the marketplace. A mailed or e-mailed questionnaire is most preferred; however, under certain conditions telephone or personal interviews can be used to gather data.

FERRIS STATE UNIVERSITY

Welding APR - Alumni

In order to assist the Welding Department with our annual Academic Program Review (APR) process, we are asking you to take a few minutes to complete this survey. You, as alumni, can provide valuable feedback on the courses you took and offer feedback from your current perspective in the industry.

Q1 From which FSU Welding program did you graduate?

- ○ Welding Technology (AAS) ***only***
- ○ Welding Engineering Technology (BS) ***only***
- ○ ***Both*** Welding Technology & Welding Engineering Technology

Welding Technology (A.A.S.) Program

Q2 **To what extent does a graduate require the course knowledge for each of the courses listed below.**

	Not at All	Very Little	Somewhat	To a Great Extent	Did Not Take
Welding Processes 1 Lecture (WELD 111): Initial lecture environment for students enrolled in AAS prog in Welding Tech. Theory & techniques pertaining to shielded metal arc welding, oxy-fuel welding/cutting, brazing and soldering methods & applications are discussed. Equipmt & consumable requirements for specific welding processes & applications. Requirements for use of industrial welding codes to develop Welding Procedures & Welder Qualifications are discussed. Intro to gas metal welding process.	○	○	○	○	○
Welding Graphics (WELD 112): Print reading & drafting of common welded products; generating multiview drawings, interpreting welding drawings, calculating weld & part weights & an intro to welding symbols. Develop templates for optically guided cutting equipmt, calculate plate utilization and calculate bend allowance. Intro to CAD.	○	○	○	○	○
Welding Processes 1 Lab (WELD 113): Practical experience in the use & application of shielded metal arc welding on various joint configurations in all positions on plate. Oxyacetylene welding, brazing & cutting applications. Intro to the process of gas metal arc welding in the flat & horizontal positions. Destructive testing methods of weldments to develop Welding Procedure Qualification & Welder Certification records.	○	○	○	○	○
Welding Processes 2 Lecture (WELD 121): Theory & techniques in application of shielded metal arc welding (SMAW) out -of positions. Theory & techniques of gas metal arc wielding (GMAW) and flux cored arc welding out-of-position. Theory & techniques of gas tungsten arc welding of ferrous & non--ferrous alloys & material identification. Continued emphasis on qualification testing of the above process used in preparing certificate grads for entry into the welding field.	○	○	○	○	○
Welding Processes 2 Lab (WELD 123): Practical experience in the use & application of shielded metal arc welding. Practical experience in the use & application of gas metal arc welding in all positions. Practical experience in gas tungsten arc welding of ferrous & non-ferrous alloys & flux cored arc welding. Continuation of destructive testing methods of weldments to develop Welding Procedure Specification & Welder Qualification records.	○	○	○	○	○

Introduction to Material Science (MATL 240): Engineering materials: metals, polymers, & ceramics: atomic structure & bonding, properties selection, & testing of materials, failure modes, methods of production & fabrication, methods of changing properties including heat treatment of metals, alloying & surface treatments, mechanical working, composites & compound bonding. Common classification systems used to identify the various engineering materials.	○	○	○	○	○
Welding Fabrication 1 (WELD 211): Non -traditional or advanced welding & processing procedures. Resistance welding, plasma arc welding & cutting, submerged arc welding, automated shape cutting & stud welding. Design of a weldment, cost estimating of the design, material processing, welding procedure development, & fabrication of the design. Customer repairs w/ cost analysis.	○	○	○	○	○
Quality Testing (WELD 212): Non-destructive testing methods: magnetic particle (wet, dry & fluorescent), dye penetrant, eddy current, radiographic & ultrasonic testing in compliance w/ the flowing codes: A.W. S., D.1-1-91, A.P.I. 1104, & ASME section # IX. Much of the info necessary to satisfactorily complete the American Welding Society's certified welding inspectors test.	○	○	○	○	○
Welding Fabrication 2 (WELD 221): The capstone course in the AAS degree. Assorted construction projects, dealing w/ the realities of process selection, joint design, cost estimating, & design of welded products. Students will also complete a research paper dealing w/ various forms of welding & joining. Students will be required to complete 2 written semester projects, which will be entered in a national welding contest.	○	○	○	○	○
Introduction to Welding Automation (WELD 222): Welding automation used in manufacturing. Review of common justifications procedures & feasibility studies on basic weldments. Variations in joint design & filler materials, selection of optimum welding process & equipment. Lab: set-up & operation of basic automatic welding system w/ a study of the effects of welding parameters on weld outcomes.	○	○	○	○	○
Electrical Fundamentals (EEET 201): An introductory course covering the principles of electricity as applied to DC & AC circuits & operation of common electrical devices & apparatus. Topics are presented in lecture & practiced in hands-on lab activities. Basic measurements of current, voltage & power are presented. Course introduces magnetism, inductance, capacitance, generators, 3-phase power, power flow, power factor, transformers, motors & power supplies.	○	○	○	○	○

Manufacturing Processes (MFGT 150): A basic machine process course. The fundamental operations on machine tool equipment including engine lathe, band saw & horizontal & vertical milling machine. Measuring & inspection tools, drill press & surface plate.	○	○	○	○	○
Science: Introductory Physics (PHYS 211): Basic concepts & applications of motion, force, energy, fluids, heat & sound.	○	○	○	○	○
Math: Intermediate Algebra & Numerical Trig (MATH 116): Special factoring forms, exponents, roots & radicals, scientific notation, fractions, 1st & 2nd degree equations & inequalities, functions & graphs, logarithms & solutions of logarithmic & exponential equations, systems of equations up to 3x3 & Cramer's Rule, numerical trig including vectors, Law of Sines & Cosines & graphs of trigonometric function.	○	○	○	○	○
Cultural Enrichment (In General, 3 credits): (i.e.: HUMN, ARTS, HIST, SPAN, GERM...)	○	○	○	○	○
Social Awareness (In General, 3 credits): (i.e.: PSYC, SOCY, PLSC, SSCI, ECON...)	○	○	○	○	○

Welding Engineering Technology (B.S.) Program

Q3 **To what extent does a graduate require the course knowledge for each of the courses listed below.**

	Not at All	Very Little	Somewhat	To a Great Extent	Did Not Take
Welding Automation & Robotics 1 (WELD 311): Advanced welding theory & practical applications. Emphasizes the economics, feasibility & fundamentals of welding automation. Fixturing, positioning, safety & adaptive control devices will be applied to various fixed, flexible & programmable automated welding processes. Students will be required to program, perform & analyze various automated welds.	○	○	○	○	○
Design of Weldments (WELD 312): The design, drawing, manufacturing engineering & cost considerations of creating weldments: engineering graphics, weld joint types & welding symbols, estimating welding costs, production considerations needed in designing & fabricating weldments, the use of tolerance dimensioning, geometric tolerancing, mechanical & section properties of materials; load & stress analysis & code requirement for welding.	○	○	○	○	○
Electrical Fundamentals (EEET 301): A 2nd course that builds on principles taught in EEET 201 & applies them to industrial automation systems. Sensor & actuator control elements are presented. Ladder diagrams & fluid power symbology emphasized. Solenoids, starters, timers, counters, relays, contactors, heaters, motors, 3-phase power, PLC's, other I/O devices are discussed & applied to manufacturing applications. Safety standards & other system integration issues are presented.	○	○	○	○	○
Welding Automation & Robotics 2 (WELD 321): Continuation of WELD 311 advanced theory & lab welding automation course. Emphasizes laser, plasma, robotic & fixed automated welding & cutting applications. Technical & economic feasibility studies are performed. Students will be required to set-up, program, operate & apply various welding automation hardware & software systems.	○	○	○	○	○
Advanced Resistance Welding (WELD 322): Resistance welding: set-up & operation of systems typically found in automotive, appliance & other sheet metal manufacturing industries. Written lab reports required.	○	○	○	○	○
Fluid Power with Controls (MECH 240): Lecture-lab course which introduces the student to fluid power. Emphasis is placed on hydraulics. Included are fluid power components, elementary controls, systems, trouble-shooting & fundamental fluid science principles.	○	○	○	○	○

Internship (WELD 393): Placement in an industrial setting for a minimum of 400 hours over a 10-wk period a combined effort of the training site, univ & student. Industrial projects & daily activities involved in the design, engineering & manufacturing of welded products.	○	○	○	○	○
Statistical Quality Control (MFGE 353): Fundamentals & applications of stats in the control of manufacturing quality. The construction & interpretation of histograms, Pareto, variable & attribute control charts. The calculation & interpretation of process capability, regression analysis, measurement error techniques, an overview of design of experiments & cause & effect diagrams.	○	○	○	○	○
Computer Aided Weldment Design (WELD 412): Application of computer aided drafting, material selection & finite element analysis software & hardware to facilitate the process of designing weldments. Mechanical & shape properties of materials utilized to determine & analyze weldment design functionality. Design approach methods & programs. Solve several weldment design problems.	○	○	○	○	○
Material Science (WELD 422): Exposure to the chemical composition, metallurgical aspects, applications, weldability & specific requirements for welding of several materials. The metallurgical response to heating & cooling during the welding cycle; proper welding techniques & requirements. Ferrous & non-ferrous alloys, along w/ non-metals.	○	○	○	○	○
Engineering Economics (MFGE 423): Engineering economic analysis. Money & time relationships in respect to capital purchases & equipment justification in detail.	○	○	○	○	○
Advanced Welding Processes (WELD 411): Welding processes, techniques & methods for joining materials not previously covered. Mechanical & chemical energy joining systems, high-energy electrical joining processes, adhesive bonding & mechanical fasteners. How to & why select a process for a specific application.	○	○	○	○	○
Project Engineering & Management (WELD 499): Capstone for the Welding Eng. Tech. program. Designing, engineering, manufacturing & managing a welding project. Design of welded structures & machine elements in terms of allowable stresses, joint configuration, material & process selection, welding procedures, equipment specification & purchasing, production forecasting, project supervision & resource management techniques.	○	○	○	○	○

Science: Introduction to Chemistry (CHEM 114): A survey course covering the major topics of general chemistry relevant for biological or allied health applications, including atomic structure, chemical bonding, interpretation of equations, solution chemistry & an intro to acids & bases. Concurrent lab sessions will include experiments illustrating the principles discussed in lecture.	○	○	○	○	○
Math: Algebra & Analytical Trig (MATH 126): Analytic trig & trigonometric equations, the j-operator, DeMoivre's Theorem, non-linear inequalities, applications of logarithmic & exponential equations & plane analytic geometry w/ polar sketching. Equations of higher degree including the remainder theorem, factor theorem, synthetic division, rational & irrational roots of polynomials.	○	○	○	○	○
Math: Applied Calculus (MATH 216): The derivative & applications of the derivative. Integration & applications of the integral: derivatives of the trigonometric, inverse trigonometric & transcendental functions, w/ applications of each. Techniques of integration, integration using tables & approximate integration.	○	○	○	○	○
Comm: Fundamentals of Public Speaking (COMM 121): Training & experience in preparation & delivery of short speeches w/ emphasis on the clear, concise, logical communication of ideas. Emphasis on informative & persuasive speaking.	○	○	○	○	○
Advanced Technical Writing (ENGL 311): Advanced course to train technical communicators: technical concepts, facts, data analysis & evaluation to both a scientific or technical audience; skills in editing, organization & development of technical articles for publication, abstracting, proposals, memorandum reports, project/progress reports, technical descriptions, professional & technical letters & the protocols of formal research reporting.	○	○	○	○	○
Cultural Enrichment (In General, 6 credits): (i.e.: HUMN, ARTS, HIST, SPAN, GERM...)	○	○	○	○	○
Social Awareness (In General, 6 credits): (i.e.: PSYC, SOCY, PLSC, SSCI, ECON...)	○	○	○	○	○

Q4 **In thinking over your experiences at FSU, to what extent do you feel your education prepared you for success in the following areas?**

	Not at All	Very Little	Neutral	Somewhat	To a Great Extent
Overall technical training	○	○	○	○	○
Gaining a broad general education about different fields of knowledge	○	○	○	○	○
Writing clearly and effectively	○	○	○	○	○
Acquiring proficiency with the use of personal computers	○	○	○	○	○
Developing values and ethical standards	○	○	○	○	○
The ability to think analytically and logically	○	○	○	○	○
The ability to learn on your own, pursue ideas, and find info you need	○	○	○	○	○
How effectively did the FSU Welding program(s) prepare you for employment	○	○	○	○	○

Q5 **When you were a Welding major at Ferris, did you receive an American Welding Society scholarship?**

- ○ Yes
- ○ No

Q6 **When you were a Welding major at Ferris, did you receive scholarship(s) other than the American Welding Society scholarship?**

- ○ Yes
- ○ No

Q7 **Are you currently an American Welding Society member?**

- ○ Yes
- ○ No

Q8 **Do you currently hold a professional certification/registration from any of the following? *Please indicate all that apply.***

- ☐ None
- ☐ American Welding Inspector
- ☐ Society of Manufacturing Engineers, Certified Manufacturing Engineer
- ☐ Professional Engineer
- ☐ Other

Please Specify:

Q9 **What is your approximate annual salary?**

- ○ Less than $50,000
- ○ $50,000 - $59,999
- ○ $60,000 - $69,999
- ○ $70,000 - $79,999
- ○ $80,000 or more

Q10 **What industry are you employed in?**

- ○ Automotive related manufacturing
- ○ Welding and/or automation equipment manufacturing/application/sales
- ○ Defense or aerospace
- ○ Construction
- ○ Other/general manufacturing

Q11 What is your job title?

- Engineer
- Technician
- Management
- Sales
- Other

Please Specify:

Q12 Are you currently enrolled in a degree granting program?

- Bachelor's of Science
- Master's of Science
- Doctoral
- No

Q13 Have you received an additional degree(s) since completing the Ferris Welding program?

- Bachelor's of Science
- Master's of Science
- Doctoral
- No

Your thoughtful responses to the following questions are especially necessary and appreciated.

Q14 What do you believe was the most valuable part of your coursework?

Q15 What do you believe was the least valuable part of your coursework?

Q16 What trends in the welding industry do you see impacting the welding program(s) in the next five years?

Q17 In general, how satisfied were you with your overall experience in the welding program(s) at Ferris State University?

- Not at All
- Very Little
- Neutral
- Somewhat
- To a Great Extent

Q18 Would you recommend the welding program(s) to a friend or relative?

- Yes
- No
- Not sure

Q19 Does your company currently employ FSU Welding graduates?

- ○ Yes
- ○ No

Q20 Are you a direct supervisor for FSU Welding graduates?

- ○ Yes
- ○ No

Q21 Are you responsible for hiring?

- ○ Yes
- ○ No

Q22 If so, would you be willing to complete a short employer survey?

- ○ Yes
- ○ No

Q23 If so, would you be willing to be added to the employer database?

- ○ Yes
- ○ No

Q24 If you are willing to complete an employer survey and/or be added to the employer database, please provide your name, company name, company address and your valid e-mail address.

Thank you for your time and feedback.

WELD APR...Alumni

Frequencies

Prepared by: Institutional Research & Testing, 01/08

Statistics

	N				
	Valid	Missing	Mean	Median	Std. Deviation
q1 FSU Welding prog graduated	46	0	2.28	2.50	.807
q2a WELD 111	33	13	3.79	4.00	.415
q2b WELD 112	33	13	3.94	4.00	.242
q2c WELD 113	33	13	3.91	4.00	.384
q2d WELD 121	33	13	3.94	4.00	.242
q2e WELD 123	33	13	3.88	4.00	.415
q2f MATL 240	33	13	3.79	4.00	.485
q2g WELD 211	33	13	3.88	4.00	.600
q2h WELD 212	33	13	3.82	4.00	.528
q2i WELD 221	33	13	3.94	4.00	.429
q2j WELD 222	33	13	3.97	4.00	.394
q2k EEET 201	33	13	3.73	4.00	.574
q2l MFGT 150	33	13	3.82	4.00	.846
q2m PHYS 211	33	13	3.36	3.00	.742
q2n MATH 116	33	13	3.33	3.00	.854
q2o Cultural Enrichment (3 cr)	33	13	2.39	2.00	.864
q2p Social Awareness (3 cr)	32	14	2.78	3.00	1.008
q3a WELD 311	36	10	3.81	4.00	.467
q3b WELD 312	36	10	3.64	4.00	.593
q3c EEET 301	36	10	3.42	4.00	.732
q3d WELD 321	36	10	3.94	4.00	.410
q3e WELD 322	36	10	3.72	4.00	.779
q3f MECH 240	36	10	3.42	3.50	1.251
q3g WELD 393	36	10	3.83	4.00	.447
q3h MFGE 353	36	10	3.42	3.00	.692
q3i WELD 412	36	10	3.36	3.00	.683
q3j WELD 422	36	10	3.58	4.00	.649
q3k MFGE 423	36	10	3.39	4.00	.871
q3l WELD 411	36	10	3.44	4.00	.735
q3m WELD 499	36	10	3.78	4.00	.681
q3n CHEM 114	36	10	2.89	3.00	.950
q3o MATH 126	36	10	3.06	3.00	.924
q3p MATH 216	36	10	3.00	3.00	1.287
q3q COMM 121	36	10	3.81	4.00	.525
q3r ENGL 31	36	10	3.64	4.00	.639
q3s Cultural Enrichment (6 cr)	34	12	2.65	3.00	.884
q3t Social Awareness (6 cr)	35	11	2.74	3.00	.852
q4a Overall technical training	46	0	4.74	5.00	.575
q4b Broad gen ed about different fields of knowledge	46	0	4.35	4.00	.706
q4c Writing clearly & effectively	46	0	4.20	4.00	.749
q4d Proficient with computers	46	0	3.80	4.00	1.088
q4e Developing values & ethical standards	46	0	4.00	4.00	1.054
q4f Think analytically & logically	46	0	4.43	5.00	.750

Statistics

	N				
	Valid	Missing	Mean	Median	Std. Deviation
q4g Learn on your own, pursue ideas & find info you need	46	0	4.37	5.00	.799
q4h Effectiveness of Welding prog(s) preparing employment	46	0	4.72	5.00	.502
q5 Receive AWS scholarship	46	0	1.50	1.50	.506
q6 Scholarship other than AWS	46	0	1.70	2.00	.465
q7 Current American Welding Society member	45	1	1.33	1.00	.477
q8_1 Pro Cert: None	43	3	.60	1.00	.495
q8_2 Pro Cert: American Welding Inspector	43	3	.21	.00	.412
q8_3 Pro Cert: SME, Certified Manufacturing Engineer	43	3	.05	.00	.213
q8_4 Pro Cert: Professional Engineer	43	3	.00	.00	.000
q8_5 Pro Cert: Other	43	3	.26	.00	.441
q8a Pro Cert: Other specified	46	0			
q9 Approximate annual salary	45	1	3.93	5.00	1.405
q10 Industry are you employed in	46	0	2.52	2.00	1.709
q11 Job title	46	0	2.78	3.00	1.576
q11a Job title: Other specified	46	0			
q12 Currently enrolled in degree prog	45	1	3.87	4.00	.505
q13 Received degrees since FSU	46	0	3.30	4.00	1.209
q14 Most valuable part of coursework	46	0			
q15 Least valuable part of coursework	46	0			
q16 Trends impacting program	46	0			
q17 Overall satisfaction	46	0	4.89	5.00	.315
q18 Recommend program	46	0	1.02	1.00	.147
q19 Currently employ WELD grads	46	0	1.28	1.00	.455
q20 Direct supervisor for FSU WELD grads	46	0	1.76	2.00	.431
q21 Responsible for hiring	46	0	1.72	2.00	.455
q22 Willing to do employer survey	34	12	1.65	2.00	.485
q23 Willing to be added to directory	32	14	1.59	2.00	.499
q24 Name, Address, e-mail	46	0			

Frequency Table

q1 FSU Welding prog graduated

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Welding Technology (AAS) only	10	21.7	21.7	21.7
	Welding Engineering Technology (BS) only	13	28.3	28.3	50.0
	Both Welding Technology & Welding Engineering Technology	23	50.0	50.0	100.0
	Total	46	100.0	100.0	

q2a WELD 111

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat	7	15.2	21.2	21.2
	To a Great Extent	26	56.5	78.8	100.0
	Total	33	71.7	100.0	
Missing	System	13	28.3		
Total		46	100.0		

q2b WELD 112

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat	2	4.3	6.1	6.1
	To a Great Extent	31	67.4	93.9	100.0
	Total	33	71.7	100.0	
Missing	System	13	28.3		
Total		46	100.0		

q2c WELD 113

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat	4	8.7	12.1	12.1
	To a Great Extent	28	60.9	84.8	97.0
	Did Not Take	1	2.2	3.0	100.0
	Total	33	71.7	100.0	
Missing	System	13	28.3		
Total		46	100.0		

q2d WELD 121

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat	2	4.3	6.1	6.1
	To a Great Extent	31	67.4	93.9	100.0
	Total	33	71.7	100.0	
Missing	System	13	28.3		
Total		46	100.0		

q2e WELD 123

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat	5	10.9	15.2	15.2
	To a Great Extent	27	58.7	81.8	97.0
	Did Not Take	1	2.2	3.0	100.0
	Total	33	71.7	100.0	
Missing	System	13	28.3		
Total		46	100.0		

q2f MATL 240

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat	8	17.4	24.2	24.2
	To a Great Extent	24	52.2	72.7	97.0
	Did Not Take	1	2.2	3.0	100.0
	Total	33	71.7	100.0	
Missing	System	13	28.3		
Total		46	100.0		

q2g WELD 211

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	2	4.3	6.1	6.1
	Somewhat	2	4.3	6.1	12.1
	To a Great Extent	27	58.7	81.8	93.9
	Did Not Take	2	4.3	6.1	100.0
	Total	33	71.7	100.0	
Missing	System	13	28.3		
Total		46	100.0		

q2h WELD 212

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat	8	17.4	24.2	24.2
	To a Great Extent	23	50.0	69.7	93.9
	Did Not Take	2	4.3	6.1	100.0
	Total	33	71.7	100.0	
Missing	System	13	28.3		
Total		46	100.0		

q2i WELD 221

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat	4	8.7	12.1	12.1
	To a Great Extent	27	58.7	81.8	93.9
	Did Not Take	2	4.3	6.1	100.0
	Total	33	71.7	100.0	
Missing	System	13	28.3		
Total		46	100.0		

q2j WELD 222

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat	3	6.5	9.1	9.1
	To a Great Extent	28	60.9	84.8	93.9
	Did Not Take	2	4.3	6.1	100.0
	Total	33	71.7	100.0	
Missing	System	13	28.3		
Total		46	100.0		

q2k EEET 201

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	1	2.2	3.0	3.0
	Somewhat	8	17.4	24.2	27.3
	To a Great Extent	23	50.0	69.7	97.0
	Did Not Take	1	2.2	3.0	100.0
	Total	33	71.7	100.0	
Missing	System	13	28.3		
Total		46	100.0		

q2l MFGT 150

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	1	2.2	3.0	3.0
	Somewhat	9	19.6	27.3	30.3
	To a Great Extent	17	37.0	51.5	81.8
	Did Not Take	6	13.0	18.2	100.0
	Total	33	71.7	100.0	
Missing	System	13	28.3		
Total		46	100.0		

q2m PHYS 211

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	4	8.7	12.1	12.1
	Somewhat	14	30.4	42.4	54.5
	To a Great Extent	14	30.4	42.4	97.0
	Did Not Take	1	2.2	3.0	100.0
	Total	33	71.7	100.0	
Missing	System	13	28.3		
Total		46	100.0		

q2n MATH 116

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	1	2.2	3.0	3.0
	Very Little	4	8.7	12.1	15.2
	Somewhat	12	26.1	36.4	51.5
	To a Great Extent	15	32.6	45.5	97.0
	Did Not Take	1	2.2	3.0	100.0
	Total	33	71.7	100.0	
Missing	System	13	28.3		
Total		46	100.0		

q2o Cultural Enrichment (3 cr)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	5	10.9	15.2	15.2
	Very Little	13	28.3	39.4	54.5
	Somewhat	12	26.1	36.4	90.9
	To a Great Extent	3	6.5	9.1	100.0
	Total	33	71.7	100.0	
Missing	System	13	28.3		
Total		46	100.0		

q2p Social Awareness (3 cr)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	4	8.7	12.5	12.5
	Very Little	7	15.2	21.9	34.4
	Somewhat	14	30.4	43.8	78.1
	To a Great Extent	6	13.0	18.8	96.9
	Did Not Take	1	2.2	3.1	100.0
	Total	32	69.6	100.0	
Missing	System	14	30.4		
Total		46	100.0		

q3a WELD 311

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	1	2.2	2.8	2.8
	Somewhat	5	10.9	13.9	16.7
	To a Great Extent	30	65.2	83.3	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3b WELD 312

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	2	4.3	5.6	5.6
	Somewhat	9	19.6	25.0	30.6
	To a Great Extent	25	54.3	69.4	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3c EEET 301

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	5	10.9	13.9	13.9
	Somewhat	11	23.9	30.6	44.4
	To a Great Extent	20	43.5	55.6	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3d WELD 321

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat	4	8.7	11.1	11.1
	To a Great Extent	30	65.2	83.3	94.4
	Did Not Take	2	4.3	5.6	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3e WELD 322

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	3	6.5	8.3	8.3
	Somewhat	8	17.4	22.2	30.6
	To a Great Extent	21	45.7	58.3	88.9
	Did Not Take	4	8.7	11.1	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3f MECH 240

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	2	4.3	5.6	5.6
	Very Little	8	17.4	22.2	27.8
	Somewhat	8	17.4	22.2	50.0
	To a Great Extent	9	19.6	25.0	75.0
	Did Not Take	9	19.6	25.0	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3g WELD 393

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat	7	15.2	19.4	19.4
	To a Great Extent	28	60.9	77.8	97.2
	Did Not Take	1	2.2	2.8	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3h MFGE 353

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	3	6.5	8.3	8.3
	Somewhat	16	34.8	44.4	52.8
	To a Great Extent	16	34.8	44.4	97.2
	Did Not Take	1	2.2	2.8	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3i WELD 412

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	4	8.7	11.1	11.1
	Somewhat	15	32.6	41.7	52.8
	To a Great Extent	17	37.0	47.2	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3j WELD 422

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	3	6.5	8.3	8.3
	Somewhat	9	19.6	25.0	33.3
	To a Great Extent	24	52.2	66.7	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3k MFGE 423

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	1	2.2	2.8	2.8
	Very Little	5	10.9	13.9	16.7
	Somewhat	10	21.7	27.8	44.4
	To a Great Extent	19	41.3	52.8	97.2
	Did Not Take	1	2.2	2.8	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3l WELD 411

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	5	10.9	13.9	13.9
	Somewhat	10	21.7	27.8	41.7
	To a Great Extent	21	45.7	58.3	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3m WELD 499

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	2	4.3	5.6	5.6
	Somewhat	7	15.2	19.4	25.0
	To a Great Extent	24	52.2	66.7	91.7
	Did Not Take	3	6.5	8.3	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3n CHEM 114

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	2	4.3	5.6	5.6
	Very Little	9	19.6	25.0	30.6
	Somewhat	19	41.3	52.8	83.3
	To a Great Extent	3	6.5	8.3	91.7
	Did Not Take	3	6.5	8.3	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3o MATH 126

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	2	4.3	5.6	5.6
	Very Little	7	15.2	19.4	25.0
	Somewhat	15	32.6	41.7	66.7
	To a Great Extent	11	23.9	30.6	97.2
	Did Not Take	1	2.2	2.8	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3p MATH 216

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	5	10.9	13.9	13.9
	Very Little	9	19.6	25.0	38.9
	Somewhat	8	17.4	22.2	61.1
	To a Great Extent	9	19.6	25.0	86.1
	Did Not Take	5	10.9	13.9	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3q COMM 121

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat	9	19.6	25.0	25.0
	To a Great Extent	25	54.3	69.4	94.4
	Did Not Take	2	4.3	5.6	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3r ENGL 31

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	3	6.5	8.3	8.3
	Somewhat	7	15.2	19.4	27.8
	To a Great Extent	26	56.5	72.2	100.0
	Total	36	78.3	100.0	
Missing	System	10	21.7		
Total		46	100.0		

q3s Cultural Enrichment (6 cr)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	2	4.3	5.9	5.9
	Very Little	13	28.3	38.2	44.1
	Somewhat	16	34.8	47.1	91.2
	To a Great Extent	1	2.2	2.9	94.1
	Did Not Take	2	4.3	5.9	100.0
	Total	34	73.9	100.0	
Missing	System	12	26.1		
Total		46	100.0		

q3t Social Awareness (6 cr)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	2	4.3	5.7	5.7
	Very Little	12	26.1	34.3	40.0
	Somewhat	14	30.4	40.0	80.0
	To a Great Extent	7	15.2	20.0	100.0
	Total	35	76.1	100.0	
Missing	System	11	23.9		
Total		46	100.0		

q4a Overall technical training

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	1	2.2	2.2	2.2
	Somewhat	9	19.6	19.6	21.7
	To a Great Extent	36	78.3	78.3	100.0
	Total	46	100.0	100.0	

q4b Broad gen ed about different fields of knowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	1	2.2	2.2	2.2
	Neutral	3	6.5	6.5	8.7
	Somewhat	21	45.7	45.7	54.3
	To a Great Extent	21	45.7	45.7	100.0
	Total	46	100.0	100.0	

q4c Writing clearly & effectively

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	2	4.3	4.3	4.3
	Neutral	3	6.5	6.5	10.9
	Somewhat	25	54.3	54.3	65.2
	To a Great Extent	16	34.8	34.8	100.0
	Total	46	100.0	100.0	

q4d Proficient with computers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	1	2.2	2.2	2.2
	Very Little	7	15.2	15.2	17.4
	Neutral	5	10.9	10.9	28.3
	Somewhat	20	43.5	43.5	71.7
	To a Great Extent	13	28.3	28.3	100.0
	Total	46	100.0	100.0	

q4e Developing values & ethical standards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	5	10.9	10.9	10.9
	Neutral	10	21.7	21.7	32.6
	Somewhat	11	23.9	23.9	56.5
	To a Great Extent	20	43.5	43.5	100.0
	Total	46	100.0	100.0	

q4f Think analytically & logically

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	7	15.2	15.2	15.2
	Somewhat	12	26.1	26.1	41.3
	To a Great Extent	27	58.7	58.7	100.0
	Total	46	100.0	100.0	

q4g Learn on your own, pursue ideas & find info you need

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	1	2.2	2.2	2.2
	Neutral	6	13.0	13.0	15.2
	Somewhat	14	30.4	30.4	45.7
	To a Great Extent	25	54.3	54.3	100.0
	Total	46	100.0	100.0	

q4h Effectiveness of Welding prog(s) preparing employment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	1	2.2	2.2	2.2
	Somewhat	11	23.9	23.9	26.1
	To a Great Extent	34	73.9	73.9	100.0
	Total	46	100.0	100.0	

q5 Receive AWS scholarship

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	23	50.0	50.0	50.0
	No	23	50.0	50.0	100.0
	Total	46	100.0	100.0	

q6 Scholarship other than AWS

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	14	30.4	30.4	30.4
	No	32	69.6	69.6	100.0
	Total	46	100.0	100.0	

q7 Current American Welding Society member

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	30	65.2	66.7	66.7
	No	15	32.6	33.3	100.0
	Total	45	97.8	100.0	
Missing	System	1	2.2		
Total		46	100.0		

q8a Pro Cert: None

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	17	37.0	39.5	39.5
	Selected	26	56.5	60.5	100.0
	Total	43	93.5	100.0	
Missing	System	3	6.5		
Total		46	100.0		

q8b Pro Cert: American Welding Inspector

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	34	73.9	79.1	79.1
	Selected	9	19.6	20.9	100.0
	Total	43	93.5	100.0	
Missing	System	3	6.5		
Total		46	100.0		

q8c Pro Cert: SME, Certified Manufacturing Engineer

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	41	89.1	95.3	95.3
	Selected	2	4.3	4.7	100.0
	Total	43	93.5	100.0	
Missing	System	3	6.5		
Total		46	100.0		

q8d Pro Cert: Professional Engineer

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	43	93.5	100.0	100.0
Missing	System	3	6.5		
Total		46	100.0		

q8e Pro Cert: Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	32	69.6	74.4	74.4
	Selected	11	23.9	25.6	100.0
	Total	43	93.5	100.0	
Missing	System	3	6.5		
Total		46	100.0		

q8f Pro Cert: Other specified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		36	78.3	78.3	78.3
	AIAG	1	2.2	2.2	80.4
	ASQ - CQIA Consider making this part of the WET-B.S. curriculum!	1	2.2	2.2	82.6
	ASQE Six Sigma Green Belt	1	2.2	2.2	84.8
	AWS CWI, AND ASNT LEVEL II	1	2.2	2.2	87.0
	C.W.S. thru the AWS	1	2.2	2.2	89.1
	CWI	1	2.2	2.2	91.3
	EXPIRED CWI, AND PROFESSIONAL TEACHING CERTIFICATION	1	2.2	2.2	93.5
	Jouneyman Carpenter	1	2.2	2.2	95.7
	State of Michigan Asbestos Contractor/Supervisor License	1	2.2	2.2	97.8
	vocational welding certification	1	2.2	2.2	100.0
	Total	46	100.0	100.0	

q9 Approximate annual salary

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than $50,000	4	8.7	8.9	8.9
	$50,000 - $59,999	5	10.9	11.1	20.0
	$60,000 - $69,999	6	13.0	13.3	33.3
	$70,000 - $79,999	5	10.9	11.1	44.4
	$80,000 or more	25	54.3	55.6	100.0
	Total	45	97.8	100.0	
Missing	System	1	2.2		
Total		46	100.0		

q10 Industry are you employed in

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Automotive related manufacturing	19	41.3	41.3	41.3
	Welding and/or automation equipment manufacturing/application	12	26.1	26.1	67.4
	Construction	2	4.3	4.3	71.7
	Other/general manufacturing	13	28.3	28.3	100.0
	Total	46	100.0	100.0	

q11 Job title

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Engineer	17	37.0	37.0	37.0
	Technician	1	2.2	2.2	39.1
	Management	13	28.3	28.3	67.4
	Sales	5	10.9	10.9	78.3
	Other	10	21.7	21.7	100.0
	Total	46	100.0	100.0	

q11a Job title: Other specified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		33	71.7	71.7	71.7
	ASSISTANT WELDING PROFESSOR	1	2.2	2.2	73.9
	District Sales Manager for Miller Electric in New England	1	2.2	2.2	76.1
	Estimator	1	2.2	2.2	78.3
	Maintenance Supervisor	1	2.2	2.2	80.4
	Manufacturing Engineer for GM. Bodyshop tooling for assembly plants.	1	2.2	2.2	82.6
	owner, weller welding & mfg. co. part-time instructor, welding & drafting	1	2.2	2.2	84.8
	Product Manager	1	2.2	2.2	87.0
	Quality Assurance Manager/Welding engineer/CWI	1	2.2	2.2	89.1
	Territory Sales Manager	1	2.2	2.2	91.3
	Vice President Procurement - Global Sourcing	1	2.2	2.2	93.5
	VP, Welding Operations	1	2.2	2.2	95.7
	Welding Instructor	1	2.2	2.2	97.8
	welding instructor Oakland technical center northeast (Pontiac Mi.	1	2.2	2.2	100.0
	Total	46	100.0	100.0	

q12 Currently enrolled in degree prog

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Master's of Science	3	6.5	6.7	6.7
	No	42	91.3	93.3	100.0
	Total	45	97.8	100.0	
Missing	System	1	2.2		
Total		46	100.0		

q13 Received degrees since FSU

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Bachelor's of Science	8	17.4	17.4	17.4
	Master's of Science	4	8.7	8.7	26.1
	No	34	73.9	73.9	100.0
	Total	46	100.0	100.0	

q14 Most valuable part of coursework

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		7	15.2	15.2	15.2
	Actual welding	1	2.2	2.2	17.4
	Balance of lecture and hands on	1	2.2	2.2	19.6
	Combined lecture/theory and hands-on, practical application of welding and technology-related coursework.	1	2.2	2.2	21.7
	EVERY COURSE IS EQUALLY VALUED, HOWEVER THE FERRIS DRAWING, FABRICATION, AND NDT WERE EXCEPTIONALLY WELL DONE.	1	2.2	2.2	23.9
	Exposure to many different area's. However, I think the hands-on experience was the most valuable. Ground floor knowledge is key.	1	2.2	2.2	26.1
	Focus, responsibility and time management	1	2.2	2.2	28.3
	Hands-on experience related to the labs	1	2.2	2.2	30.4
	Hands on labs and my internship	1	2.2	2.2	32.6
	Hands on makes you a real practical person. The labs were very beneficial. It's one thing to be able to tell someone how to do something. It's another to actually be able to show them if you have to!	1	2.2	2.2	34.8
	Hands on requirements, projects, lab time and real life examples.	1	2.2	2.2	37.0
	Hands on training and experimenting of why and how things work.	1	2.2	2.2	39.1
	Hands on welding and fabrication	1	2.2	2.2	41.3
	Handson learning	1	2.2	2.2	43.5
	Having instructors with real world knowledge and the required internship.	1	2.2	2.2	45.7
	I have designed my class around what I remember of my time studying in the AAS program at FSU.	1	2.2	2.2	47.8
	Interaction with peers. Small Class size. Professor(s) ability to work one on one with you. Real world experience of Professor(s). I feel that the WET program helped me to think methodically and clear. This is a practice that is needed in the real world. The hands on experience is like none other. FSU WET grads can typically gain acceptance in a manufacturing facility due to the fact that they can weld, but at the same time perform his or her management or engineering position with the utmost professionalism.	1	2.2	2.2	50.0
	Introduction to CAD, spreadsheet development, the requirement to think & conduct research.	1	2.2	2.2	52.2
	Knowledge about all welding processes and computer knowledge.	1	2.2	2.2	54.3
	Lab Time.	1	2.2	2.2	56.5
	Labs and engineering related topics.	1	2.2	2.2	58.7
	Learning the hand on portion of welding as well as the book work. Reading about welding is not the same as welding.	1	2.2	2.2	60.9
	NDE, Metalurgical Studies, Hands on applications, Report writing	1	2.2	2.2	63.0
	Professors that care. Creating a team environment out of the entire class was (and continues to be today in the workplace) hugely important to success. The internship.	1	2.2	2.2	65.2
	Program management with capital cost analysis (public speaking is also in-grained within). Manufacturing processes.	1	2.2	2.2	67.4
	Robotics and Automation classes	1	2.2	2.2	69.6
	The ability to think in a logical manor and look at the big picture when solving problems.	1	2.2	2.2	71.7
	The capability to work with industry standard welding processes "hands on education"	1	2.2	2.2	73.9
	The hands on experience in the lab is invaluable.	1	2.2	2.2	76.1

q14 Most valuable part of coursework

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	The hands on portion of the two year, and the automation, design, and economics of the four year portion.	1	2.2	2.2	78.3
	The hands on work in the shop.	1	2.2	2.2	80.4
	The robotics training and Project Management. This combined with the emphasis to keep everything professionally organized, written, and presented, no matter who the audience may be.	1	2.2	2.2	82.6
	The technical training I recieved greatly inhanced my ability to step into my new job and imidiately begin working.	1	2.2	2.2	84.8
	The WELD ### courses including class room and lab. I also found the technical writing classes to be beneficial.	1	2.2	2.2	87.0
	The welding courses in general. They alway strived to get the best out of the class.	1	2.2	2.2	89.1
	The welding design courses.	1	2.2	2.2	91.3
	TIME MANAGEMENT. ALL FSU GRADS NEEDED TO BE ABLE TO BALANCE GETTING COURSE WORK DONE AND ALL OF THE PARTYING THAT GOES ON AT THAT SCHOOL. IF YOU CAN JUGGLE THAT, YOU CAN PROBABLY JUGGLE A $600K BUDGET, FAMILY, AND OF COURSE - AN ACTIVE SOCIAL LIFE.	1	2.2	2.2	93.5
	Time spent in the welding lab was the most valuable.	1	2.2	2.2	95.7
	Welding Lab and Welding Lectures.	1	2.2	2.2	97.8
	Welding processes	1	2.2	2.2	100.0
	Total	46	100.0	100.0	

q15 Least valuable part of coursework

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		12	26.1	26.1	26.1
	A bunch of Mr. Kuks class work. To much enfacite on stuff we never ended up needing. More just a time management lesson with all the stuff.	1	2.2	2.2	28.3
	All classes not related to my major.	1	2.2	2.2	30.4
	All the Welding was good, some of the Resistance Welding could be updated. Everything is moving from Pnuematics to Servo Technology.	1	2.2	2.2	32.6
	Chemistry 101.	1	2.2	2.2	34.8
	Chemistry and various electives.	1	2.2	2.2	37.0
	Chemisty	1	2.2	2.2	39.1
	EEET - 301 I JUST REALLY DIDN'T LIKE THIS COURSE AND I'VE NEVER APPLIED ANY OF IT. I'M A METALLURGICAL ENGINEER AT AN OIL REFINERY.	1	2.2	2.2	41.3
	Elective courses	1	2.2	2.2	43.5
	Everything has been important. However the least relevant would have to be OAW welding/brazing	1	2.2	2.2	45.7
	Genral EDU	1	2.2	2.2	47.8
	Humanities	1	2.2	2.2	50.0
	Humanities courses	1	2.2	2.2	52.2
	I believe it was all valuable toward building my career from a well-rounded, overall exposure standpoint.	1	2.2	2.2	54.3

q15 Least valuable part of coursework

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I feel that I did not gain much from several of the gen ed courses that were required	1	2.2	2.2	56.5
	I found value in all of the course work. However more course work emphasis should be targeted towards metallurgical studies.	1	2.2	2.2	58.7
	I took some Humanities classes to get credits taken care of. I wish I would have taken foriegn language instead.	1	2.2	2.2	60.9
	I was least prepared for the HANDS ON resistance welding.	1	2.2	2.2	63.0
	Liberal arts	1	2.2	2.2	65.2
	Limited automation exposure. Not enough time on robots. not enough robots.	1	2.2	2.2	67.4
	NA	1	2.2	2.2	69.6
	Non welding related gen ed.	1	2.2	2.2	71.7
	none	1	2.2	2.2	73.9
	Physics class and cultural enrichments have shown to be the least valuable over time.	1	2.2	2.2	76.1
	Social Awareness. The Behavioral Modification classes was useless to my career.	1	2.2	2.2	78.3
	Sociology, IO Psychology	1	2.2	2.2	80.4
	Software training. There is so much software out there and it changes so fast that it is hard to keep up. Software is a tool that helps you do your job, but it does not replace knowledge.	1	2.2	2.2	82.6
	THE 2 CREDIT MACHINE TOOL COURSE COULD HAVE BEEN BETTER.	1	2.2	2.2	84.8
	The electronics courses were redundant	1	2.2	2.2	87.0
	The general humanities and behavorial science classes were basically revenue generators for the University, but a waste of time in the real world.	1	2.2	2.2	89.1
	The lack of a forced Spanish class. All that should be required is basic Spanish, just to barely understand Spanish speaking people.	1	2.2	2.2	91.3
	The Math and Chemistry.	1	2.2	2.2	93.5
	The resistance welding class should be revamped to insure proper knowledge of the topic.	1	2.2	2.2	95.7
	Theatre class?	1	2.2	2.2	97.8
	Unrelated coursework	1	2.2	2.2	100.0
	Total	46	100.0	100.0	

q16 Trends impacting program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		7	15.2	15.2	15.2
	1. Foreign Travel; The Global Economy & competition will play a big part. 2. Automotive sector is dropping; In the next [5] years I foresee a decline in attendance for Welding Engineering programs as students choose other careers that do not support automotive & manufacturing	1	2.2	2.2	17.4
	Absense of skilled welders/operators, Declining welding expertise, use of alloy/exotic materials (P91,P92,Aluminum,Copper/Nickel alloys,Titanium,etc), increased focus on automation, process development & adaptation of new or improved joining practices (efficiencies) such as EB, Laser, Hybrid processes, Globalization & language barriers (especially Spanish).	1	2.2	2.2	19.6
	Adhesives and weldable sealer products are being engineered into sheet metal assemblies. This is to improve wind noise, water leaks, and structural rigidity.	1	2.2	2.2	21.7
	AHSS applications	1	2.2	2.2	23.9
	automation	1	2.2	2.2	26.1
	Automation and robotics	1	2.2	2.2	28.3
	Continued growth in the welding market, with fewer qualified welding people.	1	2.2	2.2	30.4
	Controls and robots greatly affect the success of an organization. Up to date and comprehensive training is required.	1	2.2	2.2	32.6
	Cutting edge materials and processes, not even invented yet	1	2.2	2.2	34.8
	faster faster faster! Try to keep up with technology.	1	2.2	2.2	37.0
	For the automoive resistance welding a more focused section for servo welding and expulsion free welding. There is a lot of advances in the resistance welding world that was not covered in the one resistance welding course that is in the program.	1	2.2	2.2	39.1
	I believe the welding industry will become more automated, and more standardized. The ongoing challenges will be learning how to run more lean and efficient. It seems as though organziations lean themselves to what the bare operating requirements are, but then expect to become 20% leaner than that.	1	2.2	2.2	41.3
	I SEE FCAW REALLY TAKING OFF. HIGHER DEPOSITION RATES WILL BE IN STYLE FOR YEARS TO COME.	1	2.2	2.2	43.5
	Increased use of welding automation, welding of lighter/stronger materials, welding of coated materials, increased joining of disimilar materials	1	2.2	2.2	45.7
	Lack of qualified welders. The need for increased welding automation that works reliably in a large variety of applications. The ability of welding to be done as cost effectively as possible in order for the US to compete with foriegn competition (China). Increased awareness of health hazards. Lack of interest and awareness of the field in general. Decreasing value of the Dollar.	1	2.2	2.2	47.8
	Laser Welding, Hybrid Welding	1	2.2	2.2	50.0
	Many things happening in China. Automation continues to increase as labor rates increase. The job market is such that welding knowledge is hard to find.	1	2.2	2.2	52.2
	Materials are changing and improving. A qualified all around good Weld Engineer should have some practical expirience with the a "hands on welding education" along with the metallurgical knowledge to what impact this may have.	1	2.2	2.2	54.3
	Materials science related to process enhancements	1	2.2	2.2	56.5
	More automation and vision use!	1	2.2	2.2	58.7

q16 Trends impacting program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	More skilled welders	1	2.2	2.2	60.9
	Need to train more welders	1	2.2	2.2	63.0
	New welding Technology such as Twin Pulse, High speed MIG, synergic Welding equipment, specialized gas mixes that provide better performance and results, welding processes that do not require filler metal such as Plasma Welding are also gaining merrit.	1	2.2	2.2	65.2
	Same as Q15, plus, more computers and automation.	1	2.2	2.2	67.4
	Servo welding guns and the use of new self teching weld controllers for Resistance welding.	1	2.2	2.2	69.6
	Shift from Automotive to Heavy fabrication such as petrochem and Power Generation. Ferris needs to better prepare people for jobs that are more manual intensive but use complicated procedures and thick sections and exotic materials. Cladding, Flux Core, Sub Arc, etc. Also more discussions on Safety and Fume. Fume will have significant impact on the industry globally.	1	2.2	2.2	71.7
	Shift to nonferrous materials (aluminum,plastics,composites) Company outsourcing products	1	2.2	2.2	73.9
	Shrinking North American automotive industry.	1	2.2	2.2	76.1
	The cost of steel- more alloys will be used in the place of steel	1	2.2	2.2	78.3
	THE INCREASED USE OF AUTOMATION AND MORE STRINGENT CODE REQUIREMENTS.	1	2.2	2.2	80.4
	The lack of candidates	1	2.2	2.2	82.6
	The lack of jobs in Michigan & the increased use of plastics in the auto industry.	1	2.2	2.2	84.8
	The rapid change in technology. Advanced robotics, laser welding and cutting, and alternative joining processes.	1	2.2	2.2	87.0
	The shortage of qualified welders across the country is one of the issues that could impact how we train people in the industry. This issue could be more involved in lecture.	1	2.2	2.2	89.1
	The Weak American Dollar. The Lack of Welder/Operators in the field. We will be looking for better and faster ways to increase productivity. This may happen by means of new welding processes, and re-introduced older processes. Energy will be a major focus. Power plants will be on the rise. Wind Generation is already booming. Electricity will be the next big craze for the American Economy due to the future introduction of the Electric Automobile. We will need to ramp up Electricity production and the only way to do it is to build more means of generating electricity.	1	2.2	2.2	91.3
	The world market. also, the lack of people that really know what they are doing, and that are not afraid to make a decision. It is a must to have knowledge to make good decisions.	1	2.2	2.2	93.5
	Welding of high strength steelssuch as boron and dual phase steels.	1	2.2	2.2	95.7
	Welding quality control	1	2.2	2.2	97.8
	Working in the automotive Manufacturing Engineering bussiness I see a move to high strength steel for weight reduction in our vehicles. So any knoledge in this type of application would be very helpful.	1	2.2	2.2	100.0
	Total	46	100.0	100.0	

q17 Overall satisfaction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat	5	10.9	10.9	10.9
	To a Great Extent	41	89.1	89.1	100.0
	Total	46	100.0	100.0	

q18 Recommend program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	45	97.8	97.8	97.8
	No	1	2.2	2.2	100.0
	Total	46	100.0	100.0	

q19 Currently employ WELD grads

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	33	71.7	71.7	71.7
	No	13	28.3	28.3	100.0
	Total	46	100.0	100.0	

q20 Direct supervisor for FSU WELD grads

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	11	23.9	23.9	23.9
	No	35	76.1	76.1	100.0
	Total	46	100.0	100.0	

q21 Responsible for hiring

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	13	28.3	28.3	28.3
	No	33	71.7	71.7	100.0
	Total	46	100.0	100.0	

q22 Willing to do employer survey

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	12	26.1	35.3	35.3
	No	22	47.8	64.7	100.0
	Total	34	73.9	100.0	
Missing	System	12	26.1		
Total		46	100.0		

q23 Willing to be added to directory

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	13	28.3	40.6	40.6
	No	19	41.3	59.4	100.0
	Total	32	69.6	100.0	
Missing	System	14	30.4		
Total		46	100.0		

q24 Name, Address, e-mail

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		36	78.3	78.3	78.3
	Aaron Weller, Weller Welding & Mfg. 5520 cr 415 McMillan, MI 49853, aaron@wellerwelding.com	1	2.2	2.2	80.4
	Brent Williams, Miller Electric Mfg. Co, Appleton, WI bwilli@millerwelds.com	1	2.2	2.2	82.6
	d.bukoski@iroquoisind.com	1	2.2	2.2	84.8
	Harlon Neumann, 8900 Harrison Street, Davenport, IA 52806,563-445-5641,hneumann@genesis-systems.com	1	2.2	2.2	87.0
	John R. Nolan, SAS Global Corporation, 21601 Mullin Ave, Warren MI, 48089, jnolan@sasglobalcorp.com	1	2.2	2.2	89.1
	Joseph S. Dobrowolski, Superior Fabrication Company, 17499 S. Dolan Street, Kincheloe, MI., 49788, j	1	2.2	2.2	91.3
	Kurt Hofman,Roman Engineering Services,kurt@romaneng.com	1	2.2	2.2	93.5
	shorey_jacob@cat.com	1	2.2	2.2	95.7
	Steven Lane, Durkin & Company Contractors, Inc., 67250 Van Dyke Avenue, Washington, Michigan 48095,	1	2.2	2.2	97.8
	Steven W. Casselman, Johnson Controls, 76 Armstrong Road, Battle Creek, MI 49015	1	2.2	2.2	100.0
	Total	46	100.0	100.0	

2.B. – EMPLOYER FOLLOW-UP SURVEY: This activity is intended to aid in assessing the employers' experiences with graduates and their perceptions of the program itself. A mailed or e-mailed instrument should be used to conduct the survey; however, if justified, telephone or personal interviews may suffice.

FERRIS STATE UNIVERSITY

Welding APR - Employer

The Welding Department of Ferris State University is conducting a survey of employers of welders to be used in the continuing development and improvement of the Welding program. Thank you for taking the time to complete this survey. Your answers will be of great help in determining the future direction of the program.

Q1 Approximately how many employees work at this facility?

- ○ Less than 50
- ○ 50-100
- ○ 101-500
- ○ 501-1000
- ○ Over 1000

Q2 Approximately how many Welding Engineers work at this facility?

- ○ None
- ○ 1-2
- ○ 3-4
- ○ 5-8
- ○ 9-12
- ○ Over 12

Q3 What description best fits your company's primary activity? (Please select all that apply.)

- ☐ Welding Equipment
- ☐ Robotics & Automation
- ☐ Manufacturing & Fabrication
- ☐ Consulting
- ☐ Construction
- ☐ Automotive
- ☐ Agricultural/Construction Equipment
- ☐ Aerospace/Shipbuilding
- ☐ Other

Please Specify:

Q4 Does your company currently have one or more Ferris State University Welding Engineering Tech graduates on staff?

- ○ Yes
- ○ No
- ○ Unsure

Q5 If so, how well do you feel that the FSU graduate(s) was/were prepared to work for your company?

- ○ Very Unprepared
- ○ Somewhat Unprepared
- ○ Somewhat Prepared
- ○ Very Prepared

Q6 **To what extent does an employer require the course knowledge for each of the courses listed below.**

	Not at All	Very Little	Somewhat	To a Great Extent
Welding Processes 1 Lecture (WELD 111): Initial lecture environment for students enrolled in AAS prog in Welding Tech. Theory & techniques pertaining to shielded metal arc welding, oxy-fuel welding/cutting, brazing and soldering methods & applications are discussed. Equipmt & consumable requirements for specific welding processes & applications. Requirements for use of industrial welding codes to develop Welding Procedures & Welder Qualifications are discussed. Intro to gas metal welding process.	○	○	○	○
Welding Graphics (WELD 112): Print reading & drafting of common welded products; generating multiview drawings, interpreting welding drawings, calculating weld & part weights & an intro to welding symbols. Develop templates for optically guided cutting equipmt, calculate plate utilization and calculate bend allowance. Intro to CAD.	○	○	○	○
Welding Processes 1 Lab (WELD 113): Practical experience in the use & application of shielded metal arc welding on various joint configurations in all positions on plate. Oxyacetylene welding, brazing & cutting applications. Intro to the process of gas metal arc welding in the flat & horizontal positions. Destructive testing methods of weldments to develop Welding Procedure Qualification & Welder Certification records.	○	○	○	○
Welding Processes 2 Lecture (WELD 121): Theory & techniques in application of shielded metal arc welding (SMAW) out -of positions. Theory & techniques of gas metal arc wielding (GMAW) and flux cored arc welding out-of-position. Theory & techniques of gas tungsten arc welding of ferrous & non--ferrous alloys & material identification. Continued emphasis on qualification testing of the above process used in preparing certificate grads for entry into the welding field.	○	○	○	○
Welding Processes 2 Lab (WELD 123): Practical experience in the use & application of shielded metal arc welding. Practical experience in the use & application of gas metal arc welding in all positions. Practical experience in gas tungsten arc welding of ferrous & non-ferrous alloys & flux cored arc welding. Continuation of destructive testing methods of weldments to develop Welding Procedure Specification & Welder Qualification records.	○	○	○	○

Introduction to Material Science (MATL 240): Engineering materials: metals, polymers, & ceramics: atomic structure & bonding, properties selection, & testing of materials, failure modes, methods of production & fabrication, methods of changing properties including heat treatment of metals, alloying & surface treatments, mechanical working, composites & compound bonding. Common classification systems used to identify the various engineering materials.	○	○	○	○
Welding Fabrication 1 (WELD 211): Non -traditional or advanced welding & processing procedures. Resistance welding, plasma arc welding & cutting, submerged arc welding, automated shape cutting & stud welding. Design of a weldment, cost estimating of the design, material processing, welding procedure development, & fabrication of the design. Customer repairs w/ cost analysis.	○	○	○	○
Quality Testing (WELD 212): Non-destructive testing methods: magnetic particle (wet, dry & fluorescent), dye penetrant, eddy current, radiographic & ultrasonic testing in compliance w/ the flowing codes: A.W. S., D.1-1-91, A.P.I. 1104, & ASME section # IX. Much of the info necessary to satisfactorily complete the American Welding Society's certified welding inspectors test.	○	○	○	○
Welding Fabrication 2 (WELD 221): The capstone course in the AAS degree. Assorted construction projects, dealing w/ the realities of process selection, joint design, cost estimating, & design of welded products. Students will also complete a research paper dealing w/ various forms of welding & joining. Students will be required to complete 2 written semester projects, which will be entered in a national welding contest.	○	○	○	○
Introduction to Welding Automation (WELD 222): Welding automation used in manufacturing. Review of common justifications procedures & feasibility studies on basic weldments. Variations in joint design & filler materials, selection of optimum welding process & equipment. Lab: set-up & operation of basic automatic welding system w/ a study of the effects of welding parameters on weld outcomes.	○	○	○	○
Electrical Fundamentals (EEET 201): An introductory course covering the principles of electricity as applied to DC & AC circuits & operation of common electrical devices & apparatus. Topics are presented in lecture & practiced in hands-on lab activities. Basic measurements of current, voltage & power are presented. Course introduces magnetism, inductance, capacitance, generators, 3-phase power, power flow, power factor, transformers, motors & power supplies.	○	○	○	○

Manufacturing Processes (MFGT 150): A basic machine process course. The fundamental operations on machine tool equipment including engine lathe, band saw & horizontal & vertical milling machine. Measuring & inspection tools, drill press & surface plate.	○	○	○	○
Science: Introductory Physics (PHYS 211): Basic concepts & applications of motion, force, energy, fluids, heat & sound.	○	○	○	○
Math: Intermediate Algebra & Numerical Trig (MATH 116): Special factoring forms, exponents, roots & radicals, scientific notation, fractions, 1st & 2nd degree equations & inequalities, functions & graphs, logarithms & solutions of logarithmic & exponential equations, systems of equations up to 3x3 & Cramer's Rule, numerical trig including vectors, Law of Sines & Cosines & graphs of trigonometric function.	○	○	○	○
Cultural Enrichment (In General, 3 credits): (i.e.: HUMN, ARTS, HIST, SPAN, GERM...)	○	○	○	○
Social Awareness (In General, 3 credits): (i.e.: PSYC, SOCY, PLSC, SSCI, ECON...)	○	○	○	○

Q7 **To what extent does an employer require the course knowledge for each of the courses listed below.**

	Not at All	Very Little	Somewhat	To a Great Extent
Welding Automation & Robotics 1 (WELD 311): Advanced welding theory & practical applications. Emphasizes the economics, feasibility & fundamentals of welding automation. Fixturing, positioning, safety & adaptive control devices will be applied to various fixed, flexible & programmable automated welding processes. Students will be required to program, perform & analyze various automated welds.	○	○	○	○
Design of Weldments (WELD 312): The design, drawing, manufacturing engineering & cost considerations of creating weldments: engineering graphics, weld joint types & welding symbols, estimating welding costs, production considerations needed in designing & fabricating weldments, the use of tolerance dimensioning, geometric tolerancing, mechanical & section properties of materials; load & stress analysis & code requirement for welding.	○	○	○	○
Electrical Fundamentals (EEET 301): A 2nd course that builds on principles taught in EEET 201 & applies them to industrial automation systems. Sensor & actuator control elements are presented. Ladder diagrams & fluid power symbology emphasized. Solenoids, starters, timers, counters, relays, contactors, heaters, motors, 3-phase power, PLC's, other I/O devices are discussed & applied to manufacturing applications. Safety standards & other system integration issues are presented.	○	○	○	○
Welding Automation & Robotics 2 (WELD 321): Continuation of WELD 311 advanced theory & lab welding automation course. Emphasizes laser, plasma, robotic & fixed automated welding & cutting applications. Technical & economic feasibility studies are performed. Students will be required to set-up, program, operate & apply various welding automation hardware & software systems.	○	○	○	○
Advanced Resistance Welding (WELD 322): Resistance welding: set-up & operation of systems typically found in automotive, appliance & other sheet metal manufacturing industries. Written lab reports required.	○	○	○	○
Fluid Power with Controls (MECH 240): Lecture-lab course which introduces the student to fluid power. Emphasis is placed on hydraulics. Included are fluid power components, elementary controls, systems, trouble-shooting & fundamental fluid science principles.	○	○	○	○
Internship (WELD 393): Placement in an industrial setting for a minimum of 400 hours over a 10-wk period a combined effort of the training site, univ & student. Industrial projects & daily activities involved in the design, engineering & manufacturing of welded products.	○	○	○	○

Statistical Quality Control (MFGE 353): Fundamentals & applications of stats in the control of manufacturing quality. The construction & interpretation of histograms, Pareto, variable & attribute control charts. The calculation & interpretation of process capability, regression analysis, measurement error techniques, an overview of design of experiments & cause & effect diagrams.	○	○	○	○
Computer Aided Weldment Design (WELD 412): Application of computer aided drafting, material selection & finite element analysis software & hardware to facilitate the process of designing weldments. Mechanical & shape properties of materials utilized to determine & analyze weldment design functionality. Design approach methods & programs. Solve several weldment design problems.	○	○	○	○
Material Science (WELD 422): Exposure to the chemical composition, metallurgical aspects, applications, weldability & specific requirements for welding of several materials. The metallurgical response to heating & cooling during the welding cycle; proper welding techniques & requirements. Ferrous & non-ferrous alloys, along w/ non-metals.	○	○	○	○
Engineering Economics (MFGE 423): Engineering economic analysis. Money & time relationships in respect to capital purchases & equipment justification in detail.	○	○	○	○
Advanced Welding Processes (WELD 411): Welding processes, techniques & methods for joining materials not previously covered. Mechanical & chemical energy joining systems, high-energy electrical joining processes, adhesive bonding & mechanical fasteners. How to & why select a process for a specific application.	○	○	○	○
Project Engineering & Management (WELD 499): Capstone for the Welding Eng. Tech. program. Designing, engineering, manufacturing & managing a welding project. Design of welded structures & machine elements in terms of allowable stresses, joint configuration, material & process selection, welding procedures, equipment specification & purchasing, production forecasting, project supervision & resource management techniques.	○	○	○	○
Science: Introduction to Chemistry (CHEM 114): A survey course covering the major topics of general chemistry relevant for biological or allied health applications, including atomic structure, chemical bonding, interpretation of equations, solution chemistry & an intro to acids & bases. Concurrent lab sessions will include experiments illustrating the principles discussed in lecture.	○	○	○	○

Math: Algebra & Analytical Trig (MATH 126): Analytic trig & trigonometric equations, the j-operator, DeMoivre's Theorem, non-linear inequalities, applications of logarithmic & exponential equations & plane analytic geometry w/ polar sketching. Equations of higher degree including the remainder theorem, factor theorem, synthetic division, rational & irrational roots of polynomials.	○	○	○	○
Math: Applied Calculus (MATH 216): The derivative & applications of the derivative. Integration & applications of the integral: derivatives of the trigonometric, inverse trigonometric & transcendental functions, w/ applications of each. Techniques of integration, integration using tables & approximate integration.	○	○	○	○
Comm: Fundamentals of Public Speaking (COMM 121): Training & experience in preparation & delivery of short speeches w/ emphasis on the clear, concise, logical communication of ideas. Emphasis on informative & persuasive speaking.	○	○	○	○
Advanced Technical Writing (ENGL 311): Advanced course to train technical communicators: technical concepts, facts, data analysis & evaluation to both a scientific or technical audience; skills in editing, organization & development of technical articles for publication, abstracting, proposals, memorandum reports, project/progress reports, technical descriptions, professional & technical letters & the protocols of formal research reporting.	○	○	○	○
Cultural Enrichment (In General, 6 credits): (i.e.: HUMN, ARTS, HIST, SPAN, GERM...)	○	○	○	○
Social Awareness (In General, 6 credits): (i.e.: PSYC, SOCY, PLSC, SSCI, ECON...)	○	○	○	○

Q8 **For each item listed below, please choose the option that best represents your perception.**

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	Don't Know
WT/WET students are well prepared to enter the workforce.	○	○	○	○	○
Ferris State University WT/WET Programs prepare students to enter industry better than other schools.	○	○	○	○	○
WT/WET grads contribute as much as other grads in their first 6 months of employment.	○	○	○	○	○
WT/WET Programs provides a foundation for multiple career possibilities.	○	○	○	○	○
Adequate placement assistance is provided to graduates.	○	○	○	○	○

Q9 During the last year, has your company experienced difficulty in hiring qualified welding engineers?

- ○ Yes
- ○ No
- ○ Don't know/Not applicable

Q10 Please indicate your best estimate describing the growth potential for welding engineers at your company during the next year

- ○ Probable reduction in staff
- ○ Average/Steady
- ○ Probable increase in staff

Q11 Are you familiar with the differences between Engineering & Engineering Technology B.S. degree programs?

- ○ Yes
- ○ No

Q12 When hiring a new graduate for a welding engineer position, which type of degree do you prefer? (Please select only one.)

- ○ Engineering Technology
- ○ Engineering
- ○ No Preference

Q13 Are you familiar with ABET-TAC & ABET-EAC accreditation?

- ○ Yes
- ○ No

Q14 Please use this space to provide any additional comments or suggestions you have regarding the Welding programs at Ferris State University.

Q15 Please use this space to provide any additional general comments.

Thank you for your time and assistance.

WELD APR...Employer

Frequencies

Prepared by: Institutional Research & Testing, 02/08

Statistics

	N				
	Valid	Missing	Mean	Median	Std. Deviation
q1 Number of employees at this facility	32	0	3.38	3.00	1.408
q2 Number of Welding Engineers at this facility	32	0	3.84	4.00	1.868
q3a Primary activity: Welding Equipment	32	0	.16	.00	.369
q3b Primary activity: Robotics & Automation	32	0	.31	.00	.471
q3c Primary activity: Manufacturing & Fabrication	32	0	.47	.00	.507
q3d Primary activity: Consulting	32	0	.16	.00	.369
q3e Primary activity: Construction	32	0	.06	.00	.246
q3f Primary activity: Automotive	32	0	.16	.00	.369
q3g Primary activity: Agricultural/Construction Equipment	32	0	.09	.00	.296
q3h Primary activity: Aerospace/Shipbuilding	32	0	.06	.00	.246
q3i Primary activity: Other	32	0	.19	.00	.397
q3j Primary activity: Other specified	32	0			
q4 Currently have one or more FSU grads on staff	32	0	1.25	1.00	.440
q5 If so, how well prepared	27	5	3.52	4.00	.893
q6a Require: WELD 111	32	0	3.59	4.00	.798
q6b Require: WELD 112	32	0	3.53	4.00	.718
q6c Require: WELD 113	32	0	3.72	4.00	.634
q6d Require: WELD 121	32	0	3.75	4.00	.568
q6e Require: WELD 123	32	0	3.63	4.00	.660
q6f Require: MATL 240	32	0	3.63	4.00	.554
q6g Require: WELD 211	32	0	3.63	4.00	.660
q6h Require: WELD 212	31	1	3.32	3.00	.702
q6i Require: WELD 221	31	1	3.68	4.00	.475
q6j Require: WELD 222	32	0	3.84	4.00	.448
q6k Require: EEET 201	32	0	3.16	3.00	.847
q6l Require: MFGT 150	32	0	3.13	3.00	.833
q6m Require: PHYS 211	32	0	3.06	3.00	.878
q6n Require: MATH 116	32	0	3.09	3.00	.818
q6o Require: Cultural Enrichment, 3 cr.	30	2	2.33	2.00	.994
q6p Require: Social Awareness, 3 cr.	32	0	2.41	2.00	.875
q7a Require: WELD 311	32	0	3.69	4.00	.592
q7b Require: WELD 312	32	0	3.63	4.00	.751
q7c Require: EEET 301	31	1	3.23	3.00	.884
q7d Require: WELD 321	32	0	3.56	4.00	.759
q7e Require: WELD 322	32	0	2.81	3.00	1.091
q7f Require: MECH 240	31	1	2.68	3.00	1.013
q7g Require: WELD 393	32	0	3.44	4.00	.759
q7h Require: MFGE 353	32	0	3.13	3.00	.751
q7i Require: WELD 412	31	1	3.16	3.00	.860
q7j Require: WELD 422	32	0	3.56	4.00	.619
q7k Require: MFGE 423	32	0	3.16	3.00	.808
q7l Require: WELD 311	32	0	3.41	4.00	.798
q7m Require: WELD 411	32	0	3.38	3.00	.609
q7n Require: WELD 499	32	0	2.72	3.00	.958
q7o Require: CHEM 114	32	0	2.88	3.00	.751
q7p Require: MATH 126	32	0	2.75	3.00	.880
q7q Require: COMM 121	32	0	3.41	4.00	.712
q7r Require: ENGL 311	32	0	3.41	4.00	.756
q7s Require: Cultural Enrichment, 6 cr.	32	0	2.09	2.00	.856
q7t Require: Social Awareness, 6 cr.	31	1	2.19	2.00	.792
q8a Students are well prepared to enter workforce	32	0	3.81	4.00	.644
q8b Programs prepare students to enter industry better	31	1	3.48	3.00	.851

Statistics

	N		Mean	Median	Std. Deviation
	Valid	Missing			
q8c Grads contribute as much as other grads	32	0	3.84	4.00	.723
q8d Programs provides a foundation for multiple career possibilities	31	1	3.74	4.00	.631
q8e Adequate placement assistance is provided to grads.	31	1	3.94	4.00	.892
q9 Experienced difficulty hiring qualified welding engineers	32	0	1.50	1.00	.718
q10 Best estimate of growth potential	32	0	2.69	3.00	.471
q11 Differences between Engineering & Eng Technology programs	32	0	1.19	1.00	.397
q12 Degree you prefer when hiring	32	0	2.03	2.00	.933
q13 Familiar with ABET-TAC & ABET-EAC accreditation	32	0	1.50	1.50	.508
q14 Additional comments/suggestions	32	0			
q15 Additional general comments	32	0			

Frequency Table

q1 Number of employees at this facility

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Less than 50	4	12.5	12.5	12.5
	50-100	4	12.5	12.5	25.0
	101-500	11	34.4	34.4	59.4
	501-1000	2	6.3	6.3	65.6
	Over 1000	11	34.4	34.4	100.0
	Total	32	100.0	100.0	

q2 Number of Welding Engineers at this facility

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	None	4	12.5	12.5	12.5
	1-2	7	21.9	21.9	34.4
	3-4	2	6.3	6.3	40.6
	5-8	6	18.8	18.8	59.4
	9-12	3	9.4	9.4	68.8
	Over 12	10	31.3	31.3	100.0
	Total	32	100.0	100.0	

q3a Primary activity: Welding Equipment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	27	84.4	84.4	84.4
	Selected	5	15.6	15.6	100.0
	Total	32	100.0	100.0	

q3b Primary activity: Robotics & Automation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	22	68.8	68.8	68.8
	Selected	10	31.3	31.3	100.0
	Total	32	100.0	100.0	

q3c Primary activity: Manufacturing & Fabrication

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	17	53.1	53.1	53.1
	Selected	15	46.9	46.9	100.0
	Total	32	100.0	100.0	

q3d Primary activity: Consulting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	27	84.4	84.4	84.4
	Selected	5	15.6	15.6	100.0
	Total	32	100.0	100.0	

q3e Primary activity: Construction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	30	93.8	93.8	93.8
	Selected	2	6.3	6.3	100.0
	Total	32	100.0	100.0	

q3f Primary activity: Automotive

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	27	84.4	84.4	84.4
	Selected	5	15.6	15.6	100.0
	Total	32	100.0	100.0	

q3g Primary activity: Agricultural/Construction Equipment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	29	90.6	90.6	90.6
	Selected	3	9.4	9.4	100.0
	Total	32	100.0	100.0	

q3h Primary activity: Aerospace/Shipbuilding

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	30	93.8	93.8	93.8
	Selected	2	6.3	6.3	100.0
	Total	32	100.0	100.0	

q3i Primary activity: Other

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Selected	26	81.3	81.3	81.3
	Selected	6	18.8	18.8	100.0
	Total	32	100.0	100.0	

q3j Primary activity: Other specified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		24	75.0	75.0	75.0
	Distribution of Industrial and Medical Gases	1	3.1	3.1	78.1
	Engineering Recruiter for Manufacturing	1	3.1	3.1	81.3
	Filler Metals	1	3.1	3.1	84.4
	Manufacture of welding and cutting equipment and consumables	1	3.1	3.1	87.5
	Technical placement	1	3.1	3.1	90.6
	Technical staffing recruiter. I match and place your graduates in jobs with my clients at no charge to your graduates.	1	3.1	3.1	93.8
	We build construction equipment	1	3.1	3.1	96.9
	Welding Engineering, Consulting, Inspection, and Fabrication of Ultra-Deepwater petroleum production equipment and facilities.	1	3.1	3.1	100.0
	Total	32	100.0	100.0	

q4 Currently have one or more FSU grads on staff

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	24	75.0	75.0	75.0
	No	8	25.0	25.0	100.0
	Total	32	100.0	100.0	

q5 If so, how well prepared

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Unprepared	2	6.3	7.4	7.4
	Somewhat Unprepared	1	3.1	3.7	11.1
	Somewhat Prepared	5	15.6	18.5	29.6
	Very Prepared	19	59.4	70.4	100.0
	Total	27	84.4	100.0	
Missing	System	5	15.6		
Total		32	100.0		

q6a Require: WELD 111

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	1	3.1	3.1	3.1
	Very Little	3	9.4	9.4	12.5
	Somewhat	4	12.5	12.5	25.0
	To a Great Extent	24	75.0	75.0	100.0
	Total	32	100.0	100.0	

q6b Require: WELD 112

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	1	3.1	3.1	3.1
	Very Little	1	3.1	3.1	6.3
	Somewhat	10	31.3	31.3	37.5
	To a Great Extent	20	62.5	62.5	100.0
	Total	32	100.0	100.0	

q6c Require: WELD 113

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	3	9.4	9.4	9.4
	Somewhat	3	9.4	9.4	18.8
	To a Great Extent	26	81.3	81.3	100.0
	Total	32	100.0	100.0	

q6d Require: WELD 121

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	2	6.3	6.3	6.3
	Somewhat	4	12.5	12.5	18.8
	To a Great Extent	26	81.3	81.3	100.0
	Total	32	100.0	100.0	

q6e Require: WELD 123

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	3	9.4	9.4	9.4
	Somewhat	6	18.8	18.8	28.1
	To a Great Extent	23	71.9	71.9	100.0
	Total	32	100.0	100.0	

q6f Require: MATL 240

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	1	3.1	3.1	3.1
	Somewhat	10	31.3	31.3	34.4
	To a Great Extent	21	65.6	65.6	100.0
	Total	32	100.0	100.0	

q6g Require: WELD 211

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	3	9.4	9.4	9.4
	Somewhat	6	18.8	18.8	28.1
	To a Great Extent	23	71.9	71.9	100.0
	Total	32	100.0	100.0	

q6h Require: WELD 212

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	4	12.5	12.9	12.9
	Somewhat	13	40.6	41.9	54.8
	To a Great Extent	14	43.8	45.2	100.0
	Total	31	96.9	100.0	
Missing	System	1	3.1		
Total		32	100.0		

q6i Require: WELD 221

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat	10	31.3	32.3	32.3
	To a Great Extent	21	65.6	67.7	100.0
	Total	31	96.9	100.0	
Missing	System	1	3.1		
Total		32	100.0		

q6j Require: WELD 222

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	1	3.1	3.1	3.1
	Somewhat	3	9.4	9.4	12.5
	To a Great Extent	28	87.5	87.5	100.0
	Total	32	100.0	100.0	

q6k Require: EEET 201

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	1	3.1	3.1	3.1
	Very Little	6	18.8	18.8	21.9
	Somewhat	12	37.5	37.5	59.4
	To a Great Extent	13	40.6	40.6	100.0
	Total	32	100.0	100.0	

q6l Require: MFGT 150

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	1	3.1	3.1	3.1
	Very Little	6	18.8	18.8	21.9
	Somewhat	13	40.6	40.6	62.5
	To a Great Extent	12	37.5	37.5	100.0
	Total	32	100.0	100.0	

q6m Require: PHYS 211

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	2	6.3	6.3	6.3
	Very Little	5	15.6	15.6	21.9
	Somewhat	14	43.8	43.8	65.6
	To a Great Extent	11	34.4	34.4	100.0
	Total	32	100.0	100.0	

q6n Require: MATH 116

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	1	3.1	3.1	3.1
	Very Little	6	18.8	18.8	21.9
	Somewhat	14	43.8	43.8	65.6
	To a Great Extent	11	34.4	34.4	100.0
	Total	32	100.0	100.0	

q6o Require: Cultural Enrichment, 3 cr.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	7	21.9	23.3	23.3
	Very Little	10	31.3	33.3	56.7
	Somewhat	9	28.1	30.0	86.7
	To a Great Extent	4	12.5	13.3	100.0
	Total	30	93.8	100.0	
Missing	System	2	6.3		
Total		32	100.0		

q6p Require: Social Awareness, 3 cr.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	5	15.6	15.6	15.6
	Very Little	12	37.5	37.5	53.1
	Somewhat	12	37.5	37.5	90.6
	To a Great Extent	3	9.4	9.4	100.0
	Total	32	100.0	100.0	

q7a Require: WELD 311

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	2	6.3	6.3	6.3
	Somewhat	6	18.8	18.8	25.0
	To a Great Extent	24	75.0	75.0	100.0
	Total	32	100.0	100.0	

q7b Require: WELD 312

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	1	3.1	3.1	3.1
	Very Little	2	6.3	6.3	9.4
	Somewhat	5	15.6	15.6	25.0
	To a Great Extent	24	75.0	75.0	100.0
	Total	32	100.0	100.0	

q7c Require: EEET 301

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	1	3.1	3.2	3.2
	Very Little	6	18.8	19.4	22.6
	Somewhat	9	28.1	29.0	51.6
	To a Great Extent	15	46.9	48.4	100.0
	Total	31	96.9	100.0	
Missing	System	1	3.1		
Total		32	100.0		

q7d Require: WELD 321

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	1	3.1	3.1	3.1
	Very Little	2	6.3	6.3	9.4
	Somewhat	7	21.9	21.9	31.3
	To a Great Extent	22	68.8	68.8	100.0
	Total	32	100.0	100.0	

q7e Require: WELD 322

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	5	15.6	15.6	15.6
	Very Little	7	21.9	21.9	37.5
	Somewhat	9	28.1	28.1	65.6
	To a Great Extent	11	34.4	34.4	100.0
	Total	32	100.0	100.0	

q7f Require: MECH 240

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	5	15.6	16.1	16.1
	Very Little	7	21.9	22.6	38.7
	Somewhat	12	37.5	38.7	77.4
	To a Great Extent	7	21.9	22.6	100.0
	Total	31	96.9	100.0	
Missing	System	1	3.1		
Total		32	100.0		

q7g Require: WELD 393

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	5	15.6	15.6	15.6
	Somewhat	8	25.0	25.0	40.6
	To a Great Extent	19	59.4	59.4	100.0
	Total	32	100.0	100.0	

q7h Require: MFGE 353

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	1	3.1	3.1	3.1
	Very Little	4	12.5	12.5	15.6
	Somewhat	17	53.1	53.1	68.8
	To a Great Extent	10	31.3	31.3	100.0
	Total	32	100.0	100.0	

q7i Require: WELD 412

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	1	3.1	3.2	3.2
	Very Little	6	18.8	19.4	22.6
	Somewhat	11	34.4	35.5	58.1
	To a Great Extent	13	40.6	41.9	100.0
	Total	31	96.9	100.0	
Missing	System	1	3.1		
Total		32	100.0		

q7j Require: WELD 422

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	2	6.3	6.3	6.3
	Somewhat	10	31.3	31.3	37.5
	To a Great Extent	20	62.5	62.5	100.0
	Total	32	100.0	100.0	

q7k Require: MFGE 423

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	1	3.1	3.1	3.1
	Very Little	5	15.6	15.6	18.8
	Somewhat	14	43.8	43.8	62.5
	To a Great Extent	12	37.5	37.5	100.0
	Total	32	100.0	100.0	

q7l Require: WELD 311

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	6	18.8	18.8	18.8
	Somewhat	7	21.9	21.9	40.6
	To a Great Extent	19	59.4	59.4	100.0
	Total	32	100.0	100.0	

q7m Require: WELD 411

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	2	6.3	6.3	6.3
	Somewhat	16	50.0	50.0	56.3
	To a Great Extent	14	43.8	43.8	100.0
	Total	32	100.0	100.0	

q7n Require: WELD 499

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	3	9.4	9.4	9.4
	Very Little	11	34.4	34.4	43.8
	Somewhat	10	31.3	31.3	75.0
	To a Great Extent	8	25.0	25.0	100.0
	Total	32	100.0	100.0	

q7o Require: CHEM 114

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	1	3.1	3.1	3.1
	Very Little	8	25.0	25.0	28.1
	Somewhat	17	53.1	53.1	81.3
	To a Great Extent	6	18.8	18.8	100.0
	Total	32	100.0	100.0	

q7p Require: MATH 126

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	3	9.4	9.4	9.4
	Very Little	8	25.0	25.0	34.4
	Somewhat	15	46.9	46.9	81.3
	To a Great Extent	6	18.8	18.8	100.0
	Total	32	100.0	100.0	

q7q Require: COMM 121

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	4	12.5	12.5	12.5
	Somewhat	11	34.4	34.4	46.9
	To a Great Extent	17	53.1	53.1	100.0
	Total	32	100.0	100.0	

q7r Require: ENGL 311

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Little	5	15.6	15.6	15.6
	Somewhat	9	28.1	28.1	43.8
	To a Great Extent	18	56.3	56.3	100.0
	Total	32	100.0	100.0	

q7s Require: Cultural Enrichment, 6 cr.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	9	28.1	28.1	28.1
	Very Little	12	37.5	37.5	65.6
	Somewhat	10	31.3	31.3	96.9
	To a Great Extent	1	3.1	3.1	100.0
	Total	32	100.0	100.0	

q7t Require: Social Awareness, 6 cr.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not at All	6	18.8	19.4	19.4
	Very Little	14	43.8	45.2	64.5
	Somewhat	10	31.3	32.3	96.8
	To a Great Extent	1	3.1	3.2	100.0
	Total	31	96.9	100.0	
Missing	System	1	3.1		
Total		32	100.0		

q8a Students are well prepared to enter workforce

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	2	6.3	6.3	6.3
	Somewhat Agree	4	12.5	12.5	18.8
	Strongly Agree	24	75.0	75.0	93.8
	Don't Know	2	6.3	6.3	100.0
	Total	32	100.0	100.0	

q8b Programs prepare students to enter industry better

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	3.1	3.2	3.2
	Somewhat Disagree	1	3.1	3.2	6.5
	Somewhat Agree	14	43.8	45.2	51.6
	Strongly Agree	12	37.5	38.7	90.3
	Don't Know	3	9.4	9.7	100.0
	Total	31	96.9	100.0	
Missing	System	1	3.1		
Total		32	100.0		

q8c Grads contribute as much as other grads

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	3.1	3.1	3.1
	Somewhat Agree	8	25.0	25.0	28.1
	Strongly Agree	18	56.3	56.3	84.4
	Don't Know	5	15.6	15.6	100.0
	Total	32	100.0	100.0	

q8d Programs provides a foundation for multiple career possibilities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	3.1	3.2	3.2
	Somewhat Agree	8	25.0	25.8	29.0
	Strongly Agree	20	62.5	64.5	93.5
	Don't Know	2	6.3	6.5	100.0
	Total	31	96.9	100.0	
Missing	System	1	3.1		
Total		32	100.0		

q8e Adequate placement assistance is provided to grads.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	2	6.3	6.5	6.5
	Somewhat Agree	7	21.9	22.6	29.0
	Strongly Agree	13	40.6	41.9	71.0
	Don't Know	9	28.1	29.0	100.0
	Total	31	96.9	100.0	
Missing	System	1	3.1		
Total		32	100.0		

q9 Experienced difficulty hiring qualified welding engineers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	20	62.5	62.5	62.5
	No	8	25.0	25.0	87.5
	Don't know/Not applicable	4	12.5	12.5	100.0
	Total	32	100.0	100.0	

q10 Best estimate of growth potential

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Average/Steady	10	31.3	31.3	31.3
	Probable increase in staff	22	68.8	68.8	100.0
	Total	32	100.0	100.0	

q11 Differences between Engineering & Eng Technology programs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	26	81.3	81.3	81.3
	No	6	18.8	18.8	100.0
	Total	32	100.0	100.0	

q12 Degree you prefer when hiring

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Engineering Technology	13	40.6	40.6	40.6
	Engineering	5	15.6	15.6	56.3
	No Preference	14	43.8	43.8	100.0
	Total	32	100.0	100.0	

q13 Familiar with ABET-TAC & ABET-EAC accreditation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	16	50.0	50.0	50.0
	No	16	50.0	50.0	100.0
	Total	32	100.0	100.0	

q14 Additional comments/suggestions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		15	46.9	46.9	46.9
	A stonger emphasis on profesionalism may help the graduates adjust as they enter the workforce.	1	3.1	3.1	50.0
	Ferris is our best resource for Welding Engineers.	1	3.1	3.1	53.1
	Ferris State students hit the ground running. They are advanced compared to other colleges in their shop floor and overall welding knowledge.	1	3.1	3.1	56.3
	FSU is doing a good job of preparing students for the workforce. In my current role and previous company, I have been very pleased with the students that I have interacted. They have made an immediate impact on my business and I will continue to recruit at FSU.	1	3.1	3.1	59.4
	good welding program	1	3.1	3.1	62.5
	Graduates must fully understand that any good company today does Drug Testing and Background checks. Ferris should do a much better job in educating students in the WT / WET programs, prior to leaving for the workforce.	1	3.1	3.1	65.6
	Graduating Engineers with a Bachelors degree and internships or co-ops are very much in demand.	1	3.1	3.1	68.8
	Great program, outstanding faculty, students are always well prepared. Enrollment numbers need to increase....there are many job opportunities available in the marketplace but enrollment is restricted. We would like to see annual class enrollment in the 50-60 range. We would also like to see summer internship requirements after sophomore and junior yeasrs.	1	3.1	3.1	71.9
	I recently interviewd a student and his request 60K as a starting salary for young engineer shocked me. what is university telling the students to expect as a starting wage?	1	3.1	3.1	75.0
	In order for my clients to hire graduates, the grad must have some internship or co-op experience in a similar industry. Most of my clients are manufactures of hard goods, like appliances, automotive, HVAC sytems, etc. Submerged Arc Welding, robotics, automated and manual welding processes are required.	1	3.1	3.1	78.1
	Program needs to continue to focus on the strengths of the hands-on processes, but may be able to reduce some in the future to expand the program into other more technical classes. I would like to see even more advanced metallurgy and advanced study of high strength steels and welding exotic materials. Need to look at reviewing and understanding technical specifications like Military, Nuclear, Commercial, etc..	1	3.1	3.1	81.3
	Robotics welding knowledge is helpful.	1	3.1	3.1	84.4
	The best practical welding engineering program in the country.	1	3.1	3.1	87.5

q14 Additional comments/suggestions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	The FSU WET graduates we have hired have come into the company ready to go right to work. The robotics and GMAW training makes them a great fit. They are typically willing to go the extra mile and get dirty if needed.	*1*	*3.1*	*3.1*	*90.6*
	The WET graduates and interns we have hired from FSU are great and fitting candidates for our cutting-edge company advancing the science of Welding Engineering.	*1*	*3.1*	*3.1*	*93.8*
	There needs to be more emphasis on metal processing because welding is a single step in a whole manufacturing process. I find that Ferris grads do not have as much background as I would have expected in metal processing outside of welding, like: cutting, bending, pre and post fabrication machining, blasting, painting, plating and corrosion prevention.	*1*	*3.1*	*3.1*	*96.9*
	We live in the world of Excel. Provide advanced user training to include higher level formulas along with data interpretation and graphing.	*1*	*3.1*	*3.1*	*100.0*
	Total	*32*	*100.0*	*100.0*	

q15 Additional general comments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		23	71.9	71.9	71.9
	Gary Hoppes 1991, Greg Nehl 2005, and Brad Dial 2007 are a good as they get. The class of 2009 interns that are joining us this summer also appear to be fantastic prospects for our class of 2009 hiring plans. Keep up the good work.	1	3.1	3.1	75.0
	General communication/socialization skills are very important.	1	3.1	3.1	78.1
	I think that the Ferris State program does an excellent job of producing welding engineers that are very suited and prepared to move into industry and capable of being an important asset to their employer.	1	3.1	3.1	81.3
	In general, young Engineering people, not only from FSU, are not as professional and as well written as we would like in most situations. Keep up the emphasis on demanding the WET students present themselves in a professional manner. It does make a difference to the employer and thier customers' / suppliers.	1	3.1	3.1	84.4
	The FSU WET program is recognized throughout the industry as providing very process oriented talented students. I think a negative is the amount of class work and project work in material science. This is big for heavy indusry companies. Need to look to expand beyond the automotive industry and look at what heavy industry platforms need from grads. I think the program should continue to push for the ABET accreditation for more recognition of the program and to support advanced studies requirements of other Universities for graduate programs.	1	3.1	3.1	87.5
	The need to bridge the gap from theroy to practicla experiance is very important, I support your co-op program which gives the students an insite to industry.	1	3.1	3.1	90.6
	The Student Employment & Career Services group at FSU do a good job supporting the students and employers looking to hire them. Thanks.	1	3.1	3.1	93.8
	We will definitely continue to recruit Ferris WT/WET grads in the future.	1	3.1	3.1	96.9
	Would like to have contact information on your graduates each year. I have two openings at this time for Welding Engineers however my clients want 3 or more years post graduate experience.	1	3.1	3.1	100.0
	Total	32	100.0	100.0	

2.C. – GRADUATING STUDENT EXIT SURVEY: Graduating students are surveyed every year on an ongoing basis to obtain information regarding quality of instruction, relevance of courses, and satisfaction with program outcomes based on their own expectations. The survey must seek student suggestions on ways to improve the effectiveness of the program and to enhance the fulfillment of their expectations. This survey is mandatory for all program graduates.

FERRIS STATE UNIVERSITY

GRADUATE FOLLOW-UP SURVEY

Please take a few minutes to fill out this survey about your activities after your graduation from Ferris State University. Your responses will help us improve our quality as well as provide employment information to prospective students. Your answers will be kept confidential; only statistical averages will be reported. Please reply by August 27, 2008.

Q1 How well did Ferris State University prepare you for employment?

- ○ Very Poorly
- ○ Poorly
- ○ Fair
- ○ Well
- ○ Very Well

Q2 Do you plan on staying in/returning to the state of Michigan?

- ○ Yes **(Skip to Q4)**
- ○ No
- ○ Unsure at this time **(Skip to Q4)**

Q3 What is the *primary* reason you are planning to leave Michigan? *(Please select only one.)*

- ○ Occupational opportunities
- ○ Family/friends in another area
- ○ Other

Please Specify: _____

Q4 Which of the following options best represents your current employment status?

- ○ Part-time (Less than 30 hours per week)
- ○ Full-time (30 or more hours per week)
- ○ Military Service ***(Skip to Q16)***
- ○ Full-time Homemaker ***(Skip to Q16)***
- ○ Unemployed, Seeking Employment ***(Skip to Q16)***
- ○ Unemployed, Not Seeking Employment ***(Skip to Q16)***

Q5 To what extent is your position related to your program of study/degree?

- ○ Not Related at All
- ○ Somewhat Related
- ○ Highly Related

Q6 How long did it take for you to find your job?

- ○ Before graduation
- ○ 0-3 months after graduation
- ○ 4-6 months after graduation
- ○ 7-9 months after graduation
- ○ 10-12 months after graduation
- ○ More than 1 year after graduation
- ○ Still looking

Q7 How satisfied are you with your level of career development?

- ○ Very Dissatisfied
- ○ Somewhat Dissatisfied
- ○ Somewhat Satisfied
- ○ ***Very Satisfied***
- ○ Too Soon to Tell

Q8 How satisfied are you with your rate of advancement?

- ○ Very Dissatisfied
- ○ Somewhat Dissatisfied
- ○ Somewhat Satisfied
- ○ Very Satisfied
- ○ Too Soon to Tell

Q9 What is the title of your position?

Q10 What is the name of your employer/company?

Q11 Where is it? (Please give city and state)

Q12 Did you have an internship experience at the company where you are currently employed?

- Yes, I did do an internship at my current company
- No, I didn't do an internship
- Yes, I did do an internship, but not at my current company

Q13 Are you self-employed?

- Yes
- No

Q14 What is the size of your employer/company?

- Less than 25 employees
- 26-50 employees
- 51-75 employees
- 76-100 employees
- 101-500 employees
- More than 500 employees

Data regarding your salary is used for statistical averages only and will be kept confidential.

Q15 What is your annual gross salary (before taxes and deductions and also excluding overtime, bonuses, and consultant work)?

Q16 If you had the opportunity to start college over, would you still CHOOSE TO ATTEND FERRIS STATE UNIVERSITY?

- Definitely No
- Probably No
- Probably Yes
- Definitely Yes

Q17 If you had the opportunity to start college over, would you still CHOOSE THE SAME PROGRAM OF STUDY?

- Definitely No
- Probably No
- Probably Yes
- Definitely Yes

Q18 Since graduating from Ferris State University, have you attended another college OR returned to Ferris State University for additional classes?

- I have not attended college ***(Skip to Q24)***
- I have attended another institution ***(Skip to Q20)***
- I have attended Ferris State University

Q19 Why did you decide to return to Ferris State University to take additional courses? *(Please select only one and then skip to Question 21.)*

- Taking courses for personal enrichment
- Taking courses to gain/enhance skills to perform my current job
- Taking courses to gain skills to advance in my current job
- Taking courses to gain skills to find a job in the same field as my degree/certificate
- Taking course to gain skills to find a job in a field different from my degree/certificate
- Other

Please Specify

Q20 What institution have you most recently attended?

Q21 What is your program/area of study at this institution?

Q22 What is your approximate overall GPA? Please write out your GPA (e.g., 3.0)

- [ ] I have not yet completed any courses and have no GPA

Please Specify Number

Q23 What degree are you currently pursuing?

- ( ) None-not attending classes for a degree
- ( ) Certificate
- ( ) Associate's
- ( ) Bachelor's
- ( ) Master's
- ( ) Ph.D. or other terminal degree

Q24 Which of the following best represents your future educational plans?

- ( ) I have no plans to continue my education ***(Skip to Q28)***
- ( ) I plan to attend non-credit professional development courses/workshops/seminars ***(Skip to Q28)***
- ( ) I plan to attend a 2-year institution
- ( ) I plan to attend a 4-year institution

Q25 If you plan to continue your education, when do you think you will begin taking additional classes?

- ( ) In the next 6 months
- ( ) Within the next year
- ( ) Within the next 2-4 years
- ( ) Within the next 5 years

Q26 What institution do you think you will most likely attend?

Q27 When you decide to attend school again, what will be your likely area of study? Please specify.

Q28 Please utilize this space to share any additional comments or thoughts.

Thank you for your time and participation in this survey. Your input is appreciated.

Graduate Follow Up Survey...05/08 Grads...Kuk

Frequencies

Prepared by: Institutional Research & Testing, 05/08

Statistics

	N				
	Valid	Missing	Mean	Median	Std. Deviation
q1 How well FSU prepared for employment	29	0	4.41	4.00	.628
q2 Staying in/returning to MI	29	0	2.07	2.00	.799
q3 Primary reason leaving MI	11	18	1.09	1.00	.302
q3a Leaving: Other reason specified	29	0			
q4 Current employment status	29	0	2.38	2.00	1.083
q5 Extent position related to program	26	3	2.88	3.00	.431
q6 How long did it take for you to find your job	25	4	1.00	1.00	.000
q7 Satisfied: Level of career development	25	4	3.96	4.00	.735
q8 Satisfied: Rate of advancement	25	4	4.60	5.00	.577
q9 Title of your position	29	0			
q10 Name of your employer/company	29	0			
q11 City, state employer/company located	29	0			
q12 Internship experience	25	4	1.80	1.00	.957
q13 Self-employed	25	4	2.00	2.00	.000
q14 Size of your employer/company	25	4	5.08	5.00	1.077
q15 Annual gross salary (before taxes, etc.)	29	0			
q16 If started college over, still choose FSU	29	0	3.59	4.00	.501
q17 If started college over, choose same program	29	0	3.76	4.00	.435
q18 Attended another institution/returned to FSU	29	0	1.00	1.00	.000
q19 Why return to FSU	0	29			
q19a Return: Other reason specified	29	0			
q20 Institution most recently attended	29	0			
q21 Program/area of study at this institution	29	0			
q22 Have no GPA	0	29			
q22a Specify GPA (i.e., 3.0)	29	0			
q23 Degree are you currently pursuing	0	29			
q24 Future educational plans	28	1	2.86	3.00	1.208
q25 When start additional classes	18	11	2.44	3.00	.705
q26 Institution most likely attend	29	0			
q27 Likely area of study	29	0			
q28 Additional comments	29	0			

Frequency Table

q1 How well FSU prepared for employment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Fair	2	6.9	6.9	6.9
	Well	13	44.8	44.8	51.7
	Very Well	14	48.3	48.3	100.0
	Total	29	100.0	100.0	

q2 Staying in/returning to MI

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	8	27.6	27.6	27.6
	No	11	37.9	37.9	65.5
	Unsure at this time	10	34.5	34.5	100.0
	Total	29	100.0	100.0	

q3 Primary reason leaving MI

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Occupational opportunities	10	34.5	90.9	90.9
	Family/friends in another area	1	3.4	9.1	100.0
	Total	11	37.9	100.0	
Missing	System	18	62.1		
Total		29	100.0		

q3a Leaving: Other reason specified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		29	100.0	100.0	100.0

q4 Current employment status

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Part-time (Less than 30 hours per week)	1	3.4	3.4	3.4
	Full-time (30 or more hours per week)	24	82.8	82.8	86.2
	Unemployed, Seeking Employment	4	13.8	13.8	100.0
	Total	29	100.0	100.0	

q5 Extent position related to program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Not Related at All	1	3.4	3.8	3.8
	Somewhat Related	1	3.4	3.8	7.7
	Highly Related	24	82.8	92.3	100.0
	Total	26	89.7	100.0	
Missing	System	3	10.3		
Total		29	100.0		

q6 How long did it take for you to find your job

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Before graduation	25	86.2	100.0	100.0
Missing	System	4	13.8		
Total		29	100.0		

q7 Satisfied: Level of career development

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Dissatisfied	1	3.4	4.0	4.0
	Somewhat Satisfied	4	13.8	16.0	20.0
	Very Satisfied	15	51.7	60.0	80.0
	Too Soon to Tell	5	17.2	20.0	100.0
	Total	25	86.2	100.0	
Missing	System	4	13.8		
Total		29	100.0		

q8 Satisfied: Rate of advancement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Satisfied	1	3.4	4.0	4.0
	Very Satisfied	8	27.6	32.0	36.0
	Too Soon to Tell	16	55.2	64.0	100.0
	Total	25	86.2	100.0	
Missing	System	4	13.8		
Total		29	100.0		

q9 Title of your position

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		4	13.8	13.8	13.8
	Applications Engineer	1	3.4	3.4	17.2
	Field Engineer	1	3.4	3.4	20.7
	Manufacturing Engineer	3	10.3	10.3	31.0
	Product Engineer	1	3.4	3.4	34.5
	Project Engineer	2	6.9	6.9	41.4
	Welding Engineer	17	58.6	58.6	100.0
	Total	29	100.0	100.0	

q10 Name of your employer/company

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		4	13.8	13.8	13.8
	Altron Automation	1	3.4	3.4	17.2
	American Axle & Manufacturing	1	3.4	3.4	20.7
	CRC-Evans	2	6.9	6.9	27.6
	Edison Welding Institute	1	3.4	3.4	31.0
	Fusion Welding Solutions	1	3.4	3.4	34.5
	Genzink Steel	1	3.4	3.4	37.9
	Hobart Brothers	1	3.4	3.4	41.4
	J. Ray McDermott	1	3.4	3.4	44.8
	John Deere	3	10.3	10.3	55.2
	K&M Machine Fabrication	1	3.4	3.4	58.6
	Major Tool & Machine, Inc.	2	6.9	6.9	65.5
	Merrill Fabricators	1	3.4	3.4	69.0
	Miller Electric Manufacturing	3	10.3	10.3	79.3
	Northrop Grumman	1	3.4	3.4	82.8
	Preco, Inc.	1	3.4	3.4	86.2
	Roman Engineering Services	2	6.9	6.9	93.1
	S&C Electric Company	1	3.4	3.4	96.6
	Wolf Robotics	1	3.4	3.4	100.0
	Total	29	100.0	100.0	

q11 City, state employer/company located

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		4	13.8	13.8	13.8
	Alma, MI	1	3.4	3.4	17.2
	Appleton, WI	3	10.3	10.3	27.6
	Cassopolis, MI	1	3.4	3.4	31.0
	Chicago, IL	1	3.4	3.4	34.5
	Columbus, OH	1	3.4	3.4	37.9
	Detroit, MI	1	3.4	3.4	41.4
	Dubuque, IA	2	6.9	6.9	48.3
	East Moline, IL	1	3.4	3.4	51.7
	Fort Collins, CO	1	3.4	3.4	55.2
	Holland, MI	1	3.4	3.4	58.6
	Houston, TX	2	6.9	6.9	65.5
	Hudsonville, MI	1	3.4	3.4	69.0
	Indianapolis, IN	2	6.9	6.9	75.9
	Madison Heights, MI	2	6.9	6.9	82.8
	Morgan City, LA	1	3.4	3.4	86.2
	Newport News, VA	1	3.4	3.4	89.7
	Somerset, WI	1	3.4	3.4	93.1
	Sterling Heights, MI	1	3.4	3.4	96.6
	Troy, OH	1	3.4	3.4	100.0
	Total	29	100.0	100.0	

q12 Internship experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes, I did do an internship at my current company	14	48.3	56.0	56.0
	No, I didn't do an internship	2	6.9	8.0	64.0
	Yes, I did do an internship, but not at my current company	9	31.0	36.0	100.0
	Total	25	86.2	100.0	
Missing	System	4	13.8		
Total		29	100.0		

q13 Self-employed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	25	86.2	100.0	100.0
Missing	System	4	13.8		
Total		29	100.0		

q14 Size of your employer/company

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	26-50 employees	1	3.4	4.0	4.0
	51-75 employees	1	3.4	4.0	8.0
	76-100 employees	4	13.8	16.0	24.0
	101-500 employees	8	27.6	32.0	56.0
	More than 500 employees	11	37.9	44.0	100.0
	Total	25	86.2	100.0	
Missing	System	4	13.8		
Total		29	100.0		

q15 Annual gross salary (before taxes, etc.)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		7	24.1	24.1	24.1
	$48k	1	3.4	3.4	27.6
	$50k	1	3.4	3.4	31.0
	$54k	1	3.4	3.4	34.5
	$55k	3	10.3	10.3	44.8
	$56k	3	10.3	10.3	55.2
	$57,200	1	3.4	3.4	58.6
	$57,500	1	3.4	3.4	62.1
	$57k	1	3.4	3.4	65.5
	$58,500	1	3.4	3.4	69.0
	$60k	6	20.7	20.7	89.7
	$62,160	1	3.4	3.4	93.1
	$62,500	1	3.4	3.4	96.6
	$65k	1	3.4	3.4	100.0
	Total	29	100.0	100.0	

q16 If started college over, still choose FSU

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Probably Yes	12	41.4	41.4	41.4
	Definitely Yes	17	58.6	58.6	100.0
	Total	29	100.0	100.0	

q17 If started college over, choose same program

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Probably Yes	7	24.1	24.1	24.1
	Definitely Yes	22	75.9	75.9	100.0
	Total	29	100.0	100.0	

q18 Attended another institution/returned to FSU

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I have not attended any college since graduating	29	100.0	100.0	100.0

q19 Why return to FSU

		Frequency	Percent
Missing	System	29	100.0

q19a Return: Other reason specified

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		29	100.0	100.0	100.0

q20 Institution most recently attended

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		29	100.0	100.0	100.0

q21 Program/area of study at this institution

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		29	100.0	100.0	100.0

q22 Have no GPA

		Frequency	Percent
Missing	System	29	100.0

q22a Specify GPA (i.e., 3.0)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		29	100.0	100.0	100.0

q23 Degree are you currently pursuing

		Frequency	Percent
Missing	System	29	100.0

q24 Future educational plans

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	I have no plans to continue my education	6	20.7	21.4	21.4
	I plan to attend non-credit professional development courses	4	13.8	14.3	35.7
	I plan to attend a 2-year institution	6	20.7	21.4	57.1
	I plan to attend a 4-year institution	12	41.4	42.9	100.0
	Total	28	96.6	100.0	
Missi	System	1	3.4		
Total		29	100.0		

q25 When start additional classes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	In the next 6 months	2	6.9	11.1	11.1
	Within the next year	6	20.7	33.3	44.4
	Within the next 2-4 years	10	34.5	55.6	100.0
	Total	18	62.1	100.0	
Missing	System	11	37.9		
Total		29	100.0		

q26 Institution most likely attend

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		12	41.4	41.4	41.4
	FSU/CC	1	3.4	3.4	44.8
	IUPUI	1	3.4	3.4	48.3
	LSU	1	3.4	3.4	51.7
	Old Dominion Univ	1	3.4	3.4	55.2
	OSU	3	10.3	10.3	65.5
	St. Ambrose Univ, Western IL Univ, or online prog	1	3.4	3.4	69.0
	U of WI-Platteville	1	3.4	3.4	72.4
	U of WI	1	3.4	3.4	75.9
	Unsure	6	20.7	20.7	96.6
	Western	1	3.4	3.4	100.0
	Total	29	100.0	100.0	

q27 Likely area of study

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		11	37.9	37.9	37.9
	Engineering Mgmt	6	20.7	20.7	58.6
	Manufacturing Engineering	1	3.4	3.4	62.1
	MBA	3	10.3	10.3	72.4
	MBA or Electrical/Welding Engineering	1	3.4	3.4	75.9
	MBA or Engineering Mgmt	2	6.9	6.9	82.8
	Unsure	2	6.9	6.9	89.7
	Welding Engineering	3	10.3	10.3	100.0
	Total	29	100.0	100.0	

q28 Additional comments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		26	89.7	89.7	89.7
	Get rid of the liberal arts degrees that are not doing anything for this school or country!	1	3.4	3.4	93.1
	I would like to thank FSU for helping me realize my goals & helping me land a dream job.	1	3.4	3.4	96.6
	WET is a great program. Keep up the good work!	1	3.4	3.4	100.0
	Total	29	100.0	100.0	

2.D. – STUDENT PROGRAM EVALUATION: Current students are surveyed to obtain information regarding quality of instruction, relevance of courses, and satisfaction with program outcomes based on their own expectations. The survey must seek student suggestions on ways to improve the effectiveness of the program and to enhance the fulfillment of their expectations. This survey should be conducted during the year before the PRP report is submitted.

Welding Engineering Technology, Bachelor of Science degree students

Welding Technology, Associate in Applied Science degree students

Welding Engineering Technology
Program Evaluation - Student

Please complete the following questions by placing an "X" in the appropriate box, using the scale below. Your input is key to the continued success of the Welding Engineering Technology (WET) program at Ferris State University.

1=poor, 2=below expectations, 3= acceptable, 4= good, 5 = excellent, ?=do not know	1	2	3	4	5	?
1. WET courses are:						
Available and conveniently located						
Based on realistic prerequisites						
Available at a moderate cost						
2. Written objectives for WET courses:						
Are available to students						
Describe what you will learn in the course						
Are used by the instructor to keep you aware of your progress						
3. Teaching methods, procedures, and course content:						
Meet your needs, interests, and objectives						
Provide supervised practice for practical skills						
4. Related courses (such as English, Math, and Sciences) are:						
Pertinent to WET instruction						
Current and meaningful to you						
5. Practical work experience (lab) in the WET program is:						
Readily available during regular school hours						
Coordinated with classroom instruction						
Relevant to industry applications						
6. Career planning information:						
Meets your needs and interests						
Helps you plan your progress						
Helps you make career decisions and choices						
Helps you understand your rights and responsibilities as an employee						
Helps you evaluate job opportunities in relation to salary, benefits, and conditions of employment						
Is provided by knowledgeable, interested staff						
Explains non-traditional opportunities for both sexes						
7. Job success information of former students of the WET program:						
Is provided to help you make career decisions						
Indicates how many job opportunities are available						
Identifies where job opportunities are available						
Tells about job advancement opportunities						
8. Placement services are available to:						
Help you prepare resume and cover letter						
Helps you find employment opportunities						
Prepare you to apply for a job						
9. WET instructors						
Know the subject matter and industry requirements						
Are available to provide help when needed						
Provide instruction so it is interesting and understandable						
10. Instructional support services (IE: tutoring, lab assistance) are:						
Available to meet your learning needs						
Provided by knowledgeable, interested staff						

Welding Engineering Technology
Program Evaluation - Student

11. Instructional lecture and laboratory facilities:						
Provide adequate lighting, ventilation, heating, power, and other utilities						
Include enough workstations for the number of students enrolled						
Are safe, functional, and well maintained						
Are available on an equal basis for all students						
12. Instructional equipment is:						
Current and representative of industry						
In sufficient quantities to avoid long delays in use						
Safe and in good operating condition						
13. Instructional materials (IE: textbooks, reference books, supplies) are:						
Available for use						
Current and meaningful to the subject						
Not biased toward "traditional" sex roles						
Available at a moderate cost						

Comments:

Thank You!!

Welding Engineering Technology (BS)...Current Students

Frequencies

Prepared by: Institutional Research & Testing, 06/08

Statistics

	N				
	Valid	Missing	Mean	Median	Std. Deviation
q1a WET Courses: Available/conveniently located	55	0	4.64	5.00	.677
q1b WET Courses: Realistic prerequisites	55	0	4.65	5.00	.552
q1c WET Courses: Moderate cost	55	0	3.60	4.00	.993
q2a Obj: Available to students	55	0	4.62	5.00	.623
q2b Obj: Describe what learn in course	54	1	4.48	5.00	.606
q2c Obj: Keep track of progress	53	2	4.30	4.00	.696
q3a Tchg: Meet needs, interests, etc.	55	0	4.62	5.00	.490
q3b Tchg: Supervised practice	55	0	4.58	5.00	.567
q4a Related: Pertinent	53	2	3.60	4.00	.884
q4b Related: Current/meaningful	53	2	3.47	3.00	.973
q5a Practical: Available regular school hours	55	0	4.49	5.00	.717
q5b Practical: Coord w/ classroom	55	0	4.58	5.00	.498
q5c Practical: Relevant to industry	55	0	4.55	5.00	.603
q6a Career: Meets needs/interests	55	0	4.45	5.00	.662
q6b Career: Plan progress	55	0	4.40	4.00	.627
q6c Career: Help career decisions	55	0	4.44	5.00	.688
q6d Career: Understand rights	54	1	4.24	4.00	.823
q6e Career: Eval job opportunities	55	0	4.49	5.00	.690
q6f Career: Knowledgeable staff	55	0	4.71	5.00	.497
q6g Career: Non-trad opportunities	51	4	4.02	4.00	.990
q7a Former: Help make career decisions	53	2	4.43	5.00	.636
q7b Former: How many opportunities	53	2	4.60	5.00	.531
q7c Former: Where opportunities located	54	1	4.56	5.00	.634
q7d Former: Job advancement	53	2	4.15	4.00	.770
q8a Placemt: Prepare resume/cover letter	55	0	4.51	5.00	.663
q8b Placemt: Find employment	55	0	4.56	5.00	.631
q8c Placemt: Prepare for applying	55	0	4.49	5.00	.690
q9a WET Inst: Know subject	55	0	4.84	5.00	.373
q9b WET Inst: Available for help	55	0	4.69	5.00	.466
q9c WET Inst: Interesting instruction	55	0	4.67	5.00	.474
q10a Support: Available	53	2	4.04	4.00	.898
q10b Support: Knowledgeable staff	52	3	4.19	4.00	.793
q11a Lec/Lab: Adequate lighting, etc.	54	1	4.20	4.00	.855
q11b Lec/Lab: Enough workstations	54	1	3.72	4.00	1.156
q11c Lec/Lab: Safe, functional, etc.	54	1	4.30	4.00	.816
q11d Lec/Lab: Available on equal basis	54	1	4.26	4.00	.828
q12a Equip: Current/representative	53	2	4.30	4.00	.799
q12b Equip: Sufficient quantity	53	2	4.06	4.00	.842
q12c Equip: Safe/good operating condition	54	1	4.43	4.00	.602
q13a Mat'l: Available	54	1	4.37	4.00	.681
q13b Mat'l: Current/meaningful	54	1	4.54	5.00	.573
q13c Mat'l: Not biased	50	5	4.64	5.00	.525
q13d Mat'l: Reasonable cost	54	1	3.83	4.00	1.129
q14 Additional Comments	55	0			

Frequency Table

q1a WET Courses: Available/conveniently located

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	1	1.8	1.8	1.8
	Good	16	29.1	29.1	30.9
	Excellent	38	69.1	69.1	100.0
	Total	55	100.0	100.0	

q1b WET Courses: Realistic prerequisites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	2	3.6	3.6	3.6
	Good	15	27.3	27.3	30.9
	Excellent	38	69.1	69.1	100.0
	Total	55	100.0	100.0	

q1c WET Courses: Moderate cost

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	9	16.4	16.4	16.4
	Acceptable	15	27.3	27.3	43.6
	Good	20	36.4	36.4	80.0
	Excellent	11	20.0	20.0	100.0
	Total	55	100.0	100.0	

q2a Obj: Available to students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.8	1.8	1.8
	Acceptable	1	1.8	1.8	3.6
	Good	16	29.1	29.1	32.7
	Excellent	37	67.3	67.3	100.0
	Total	55	100.0	100.0	

q2b Obj: Describe what learn in course

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	3	5.5	5.6	5.6
	Good	22	40.0	40.7	46.3
	Excellent	29	52.7	53.7	100.0
	Total	54	98.2	100.0	
Missing	Do Not Know	1	1.8		
Total		55	100.0		

q2c Obj: Keep track of progress

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	7	12.7	13.2	13.2
	Good	23	41.8	43.4	56.6
	Excellent	23	41.8	43.4	100.0
	Total	53	96.4	100.0	
Missing	Do Not Know	2	3.6		
Total		55	100.0		

q3a Tchg: Meet needs, interests, etc.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	21	38.2	38.2	38.2
	Excellent	34	61.8	61.8	100.0
	Total	55	100.0	100.0	

q3b Tchg: Supervised practice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	2	3.6	3.6	3.6
	Good	19	34.5	34.5	38.2
	Excellent	34	61.8	61.8	100.0
	Total	55	100.0	100.0	

q4a Related: Pertinent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	1	1.8	1.9	1.9
	Below Expectations	3	5.5	5.7	7.5
	Acceptable	20	36.4	37.7	45.3
	Good	21	38.2	39.6	84.9
	Excellent	8	14.5	15.1	100.0
	Total	53	96.4	100.0	
Missing	System	2	3.6		
Total		55	100.0		

q4b Related: Current/meaningful

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	2	3.6	3.8	3.8
	Below Expectations	4	7.3	7.5	11.3
	Acceptable	22	40.0	41.5	52.8
	Good	17	30.9	32.1	84.9
	Excellent	8	14.5	15.1	100.0
	Total	53	96.4	100.0	
Missing	System	2	3.6		
Total		55	100.0		

q5a Practical: Available regular school hours

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	7	12.7	12.7	12.7
	Good	14	25.5	25.5	38.2
	Excellent	34	61.8	61.8	100.0
	Total	55	100.0	100.0	

q5b Practical: Coord w/ classroom

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	23	41.8	41.8	41.8
	Excellent	32	58.2	58.2	100.0
	Total	55	100.0	100.0	

q5c Practical: Relevant to industry

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	3	5.5	5.5	5.5
	Good	19	34.5	34.5	40.0
	Excellent	33	60.0	60.0	100.0
	Total	55	100.0	100.0	

q6a Career: Meets needs/interests

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	5	9.1	9.1	9.1
	Good	20	36.4	36.4	45.5
	Excellent	30	54.5	54.5	100.0
	Total	55	100.0	100.0	

q6b Career: Plan progress

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	4	7.3	7.3	7.3
	Good	25	45.5	45.5	52.7
	Excellent	26	47.3	47.3	100.0
	Total	55	100.0	100.0	

q6c Career: Help career decisions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	6	10.9	10.9	10.9
	Good	19	34.5	34.5	45.5
	Excellent	30	54.5	54.5	100.0
	Total	55	100.0	100.0	

q6d Career: Understand rights

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.8	1.9	1.9
	Acceptable	10	18.2	18.5	20.4
	Good	18	32.7	33.3	53.7
	Excellent	25	45.5	46.3	100.0
	Total	54	98.2	100.0	
Missing	Do Not Know	1	1.8		
Total		55	100.0		

q6e Career: Eval job opportunities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.8	1.8	1.8
	Acceptable	3	5.5	5.5	7.3
	Good	19	34.5	34.5	41.8
	Excellent	32	58.2	58.2	100.0
	Total	55	100.0	100.0	

q6f Career: Knowledgeable staff

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	1	1.8	1.8	1.8
	Good	14	25.5	25.5	27.3
	Excellent	40	72.7	72.7	100.0
	Total	55	100.0	100.0	

q6g Career: Non-trad opportunities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	1	1.8	2.0	2.0
	Below Expectations	3	5.5	5.9	7.8
	Acceptable	9	16.4	17.6	25.5
	Good	19	34.5	37.3	62.7
	Excellent	19	34.5	37.3	100.0
	Total	51	92.7	100.0	
Missing	Do Not Know	4	7.3		
Total		55	100.0		

q7a Former: Help make career decisions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	4	7.3	7.5	7.5
	Good	22	40.0	41.5	49.1
	Excellent	27	49.1	50.9	100.0
	Total	53	96.4	100.0	
Missing	Do Not Know	2	3.6		
Total		55	100.0		

q7b Former: How many opportunities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	1	1.8	1.9	1.9
	Good	19	34.5	35.8	37.7
	Excellent	33	60.0	62.3	100.0
	Total	53	96.4	100.0	
Missing	Do Not Know	2	3.6		
Total		55	100.0		

q7c Former: Where opportunities located

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	4	7.3	7.4	7.4
	Good	16	29.1	29.6	37.0
	Excellent	34	61.8	63.0	100.0
	Total	54	98.2	100.0	
Missing	Do Not Know	1	1.8		
Total		55	100.0		

q7d Former: Job advancement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.8	1.9	1.9
	Acceptable	9	16.4	17.0	18.9
	Good	24	43.6	45.3	64.2
	Excellent	19	34.5	35.8	100.0
	Total	53	96.4	100.0	
Missing	Do Not Know	2	3.6		
Total		55	100.0		

q8a Placemt: Prepare resume/cover letter

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.8	1.8	1.8
	Acceptable	2	3.6	3.6	5.5
	Good	20	36.4	36.4	41.8
	Excellent	32	58.2	58.2	100.0
	Total	55	100.0	100.0	

q8b Placemt: Find employment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	4	7.3	7.3	7.3
	Good	16	29.1	29.1	36.4
	Excellent	35	63.6	63.6	100.0
	Total	55	100.0	100.0	

q8c Placemt: Prepare for applying

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.8	1.8	1.8
	Acceptable	3	5.5	5.5	7.3
	Good	19	34.5	34.5	41.8
	Excellent	32	58.2	58.2	100.0
	Total	55	100.0	100.0	

q9a WET Inst: Know subject

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	9	16.4	16.4	16.4
	Excellent	46	83.6	83.6	100.0
	Total	55	100.0	100.0	

q9b WET Inst: Available for help

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	17	30.9	30.9	30.9
	Excellent	38	69.1	69.1	100.0
	Total	55	100.0	100.0	

q9c WET Inst: Interesting instruction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	18	32.7	32.7	32.7
	Excellent	37	67.3	67.3	100.0
	Total	55	100.0	100.0	

q10a Support: Available

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	3	5.5	5.7	5.7
	Acceptable	11	20.0	20.8	26.4
	Good	20	36.4	37.7	64.2
	Excellent	19	34.5	35.8	100.0
	Total	53	96.4	100.0	
Missing	Do Not Know	2	3.6		
Total		55	100.0		

q10b Support: Knowledgeable staff

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	2	3.6	3.8	3.8
	Acceptable	6	10.9	11.5	15.4
	Good	24	43.6	46.2	61.5
	Excellent	20	36.4	38.5	100.0
	Total	52	94.5	100.0	
Missing	Do Not Know	3	5.5		
Total		55	100.0		

q11a Lec/Lab: Adequate lighting, etc.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	2	3.6	3.7	3.7
	Acceptable	9	16.4	16.7	20.4
	Good	19	34.5	35.2	55.6
	Excellent	24	43.6	44.4	100.0
	Total	54	98.2	100.0	
Missing	Do Not Know	1	1.8		
Total		55	100.0		

q11b Lec/Lab: Enough workstations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	3	5.5	5.6	5.6
	Below Expectations	5	9.1	9.3	14.8
	Acceptable	12	21.8	22.2	37.0
	Good	18	32.7	33.3	70.4
	Excellent	16	29.1	29.6	100.0
	Total	54	98.2	100.0	
Missing	Do Not Know	1	1.8		
Total		55	100.0		

q11c Lec/Lab: Safe, functional, etc.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	1	1.8	1.9	1.9
	Acceptable	6	10.9	11.1	13.0
	Good	22	40.0	40.7	53.7
	Excellent	25	45.5	46.3	100.0
	Total	54	98.2	100.0	
Missing	Do Not Know	1	1.8		
Total		55	100.0		

q11d Lec/Lab: Available on equal basis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	2	3.6	3.7	3.7
	Acceptable	7	12.7	13.0	16.7
	Good	20	36.4	37.0	53.7
	Excellent	25	45.5	46.3	100.0
	Total	54	98.2	100.0	
Missing	Do Not Know	1	1.8		
Total		55	100.0		

q12a Equip: Current/representative

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.8	1.9	1.9
	Acceptable	8	14.5	15.1	17.0
	Good	18	32.7	34.0	50.9
	Excellent	26	47.3	49.1	100.0
	Total	53	96.4	100.0	
Missing	Do Not Know	2	3.6		
Total		55	100.0		

q12b Equip: Sufficient quantity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	2	3.6	3.8	3.8
	Acceptable	11	20.0	20.8	24.5
	Good	22	40.0	41.5	66.0
	Excellent	18	32.7	34.0	100.0
	Total	53	96.4	100.0	
Missing	Do Not Know	2	3.6		
Total		55	100.0		

q12c Equip: Safe/good operating condition

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	3	5.5	5.6	5.6
	Good	25	45.5	46.3	51.9
	Excellent	26	47.3	48.1	100.0
	Total	54	98.2	100.0	
Missing	Do Not Know	1	1.8		
Total		55	100.0		

q13a Mat'l: Available

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	6	10.9	11.1	11.1
	Good	22	40.0	40.7	51.9
	Excellent	26	47.3	48.1	100.0
	Total	54	98.2	100.0	
Missing	Do Not Know	1	1.8		
Total		55	100.0		

q13b Mat'l: Current/meaningful

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	2	3.6	3.7	3.7
	Good	21	38.2	38.9	42.6
	Excellent	31	56.4	57.4	100.0
	Total	54	98.2	100.0	
Missing	Do Not Know	1	1.8		
Total		55	100.0		

q13c Mat'l: Not biased

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	1	1.8	2.0	2.0
	Good	16	29.1	32.0	34.0
	Excellent	33	60.0	66.0	100.0
	Total	50	90.9	100.0	
Missing	Do Not Know	5	9.1		
Total		55	100.0		

q13d Mat'l: Reasonable cost

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	2	3.6	3.7	3.7
	Below Expectations	4	7.3	7.4	11.1
	Acceptable	15	27.3	27.8	38.9
	Good	13	23.6	24.1	63.0
	Excellent	20	36.4	37.0	100.0
	Total	54	98.2	100.0	
Missing	Do Not Know	1	1.8		
Total		55	100.0		

q14 Additional Comments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		41	74.5	74.5	74.5
	A few too many credits are needed in the program. The calc class doesn't seem practical.	1	1.8	1.8	76.4
	An excellent program w/ great future potential. Teachers are very supportive & knowledgeable.	1	1.8	1.8	78.2
	Classes in the middle of the day makes it impossible to work to pay for this.	1	1.8	1.8	80.0
	Excellent program, excellent faculty.	1	1.8	1.8	81.8
	Excellent program.	1	1.8	1.8	83.6
	Excellent so far. Feel prepared for a career.	1	1.8	1.8	85.5
	Good the way we are.	1	1.8	1.8	87.3
	Great program. I am satisfied with the facilities, instructors & material. The only class I felt was unnecessary was advanced technical writing. The class would be more beneficial if it was incorporated into some of the welding classes-and not taught by English majors.	1	1.8	1.8	89.1
	I'm a transfer student so the 2 yrs I've been here have been excellent instruction in welding. What needs to be improved is the supporting classes (Eng, etc.). If you could standardize those non-welding/engineering classes so that everyone receives the same education, that would be most beneficial to welding students.	1	1.8	1.8	90.9
	I just wish that there was more time in the day. So far it has been the best 4 yrs of my life.	1	1.8	1.8	92.7
	More pipe welding instruction would be beneficial.	1	1.8	1.8	94.5
	More pipe welding, another shear.	1	1.8	1.8	96.4
	The labs are great w/ enough equipment, the lecture rooms need more space. It's hard to have a lecture & take notes w/ a computer in the way or when you don't get a desk.	1	1.8	1.8	98.2
	This program could be better equipped w/ regard to mechanized & auto. welding equipment.	1	1.8	1.8	100.0
	Total	55	100.0	100.0	

Welding Technology
Program Evaluation - Student

Please complete the following questions by placing an "X" in the appropriate box, using the scale below. Your input is key to the continued success of the Welding Technology (WT) program at Ferris State University.

1=poor, 2=below expectations, 3= acceptable, 4= good, 5 = excellent, ?=do not know	1	2	3	4	5	?
Courses in your occupational program are:						
Available and conveniently located						
Based on realistic prerequisites						
Available at a moderate cost						
2. Written objectives for courses in your occupational program:						
Are available to students						
Describe what you will learn in the course						
Are used by the instructor to keep you aware of your progress						
3. Teaching methods, procedures, and course content:						
Meet your occupational needs, interests, and objectives						
Provide supervised practice for developing job skills						
4. Related courses (such as English, Math, and Sciences) are:						
Pertinent to occupational instruction						
Current and meaningful to you						
5. Practical work experience (or clinical experience) in your occupational program is:						
Readily available at convenient locations						
Readily available to both day and evening students						
Coordinated with classroom instruction						
Coordinated with employer supervision						
6. Career planning information:						
Meets your needs and interests						
Helps you plan your progress						
Helps you make career decisions and choices						
Helps you understand your rights and responsibilities as an employee						
Helps you evaluate job opportunities in relation to salary, benefits, and conditions of employment						
Is provided by knowledgeable, interested staff						
Explains non-traditional opportunities for both sexes						
7. Job success information of former students in your occupational program:						
Is provided to help you make career decisions						
Indicates how many job opportunities there are in your occupation						
Identifies where these job opportunities are located						
Tells about job advancement opportunities						
8. Placement services are available to:						
Helps you find employment opportunities						
Prepare you to apply for a job						
9. Occupational instructors						
Know the subject matter and occupational requirements						
Are available to provide help when you need it						
Provide instruction so it is interesting and understandable						
10. Instructional support services (such as tutoring, lab assistance) are:						
Available to meet your needs and interests						
Provided by knowledgeable, interested staff						

Welding Technology
Program Evaluation - Student

11. Instructional lecture and laboratory facilities:						
Provide adequate lighting, ventilation, heating, power, and other utilities						
Include enough workstations for the number of students enrolled						
Are safe, functional, and well maintained						
Are available on an equal basis for all students						
12. Instructional equipment is:						
Current and representative of industry						
In sufficient quantities to avoid long delays in use						
Safe and in good condition						
13. Instructional materials (e.g., textbooks, reference books, supplies) are:						
Available and conveniently located for use as needed						
Current and meaningful to the subject						
Not biased toward "traditional" sex roles						
Available at a reasonable cost						

Comments:

Thank You!!

Welding Technology (AAS)...Current Students

Frequencies

Prepared by: Institutional Research & Testing, 06/08

Statistics

	N				
	Valid	Missing	Mean	Median	Std. Deviation
q1a Courses: Available/conveniently located	78	0	4.41	5.00	.711
q1b Courses: Realistic prerequisites	77	1	4.48	5.00	.681
q1c Courses: Moderate cost	77	1	3.51	3.00	.968
q2a Obj: Available to students	77	1	4.35	4.00	.703
q2b Obj: Describe what learn in course	77	1	4.42	5.00	.656
q2c Obj: Keep track of progress	76	2	4.12	4.00	.864
q3a Tchg: Meet needs, interests, etc.	77	1	4.43	5.00	.677
q3b Tchg: Supervised practice	78	0	4.45	5.00	.696
q4a Related: Pertinent	78	0	3.77	4.00	.867
q4b Related: Current/meaningful	78	0	3.56	4.00	1.027
q5a Practical: Convenient locations	73	5	4.15	4.00	.828
q5b Practical: Day/eve students	67	11	3.94	4.00	.936
q5c Practical: Coord w/ classroom	71	7	4.18	4.00	.867
q5d Practical: Coord w/ empl supervision	63	15	4.13	4.00	.813
q6a Career: Meets needs/interests	75	3	4.32	4.00	.791
q6b Career: Plan progress	77	1	4.30	4.00	.779
q6c Career: Help career decisions	77	1	4.36	5.00	.742
q6d Career: Understand rights	74	4	4.08	4.00	.840
q6e Career: Eval job opportunities	74	4	4.27	4.00	.708
q6f Career: Knowledgeable staff	75	3	4.55	5.00	.664
q6g Career: Non-trad opps for both sexes	65	13	4.15	4.00	.870
q7a Former: Help make career decisions	76	2	4.43	5.00	.639
q7b Former: How many opportunities	77	1	4.47	5.00	.680
q7c Former: Where opportunities located	76	2	4.36	4.00	.725
q7d Former: Job advancement	75	3	4.35	5.00	.780
q8a Placemt: Find employment	71	7	4.41	4.00	.623
q8b Placemt: Prepare for applying	70	8	4.46	5.00	.606
q9a Occ Inst: Know subject	78	0	4.64	5.00	.509
q9b Occ Inst: Available for help	78	0	4.50	5.00	.619
q9c Occ Inst: Interesting instruction	78	0	4.54	5.00	.638
q10a Support: Available	77	1	4.22	4.00	.805
q10b Support: Knowledgeable staff	76	2	4.34	4.00	.722
q11a Lec/Lab: Adequate lighting, etc.	74	4	4.49	5.00	.726
q11b Lec/Lab: Enough workstations	75	3	4.23	4.00	.781
q11c Lec/Lab: Safe, functional, etc.	75	3	4.53	5.00	.664
q11d Lec/Lab: Available on equal basis	75	3	4.44	5.00	.740
q12a Equip: Current/representative	75	3	4.67	5.00	.502
q12b Equip: Sufficient quantity	75	3	4.36	5.00	.799
q12c Equip: Safe/good condition	75	3	4.67	5.00	.475
q13a Mat'l: Available/convenient location	75	3	4.43	5.00	.756
q13b Mat'l: Current/meaningful	75	3	4.49	5.00	.645
q13c Mat'l: Not biased	70	8	4.51	5.00	.631
q13d Mat'l: Reasonable cost	75	3	3.76	4.00	1.137
q14 Additional Comments	78	0			

Frequency Table

q1a Courses: Available/conveniently located

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.3	1.3	1.3
	Acceptable	7	9.0	9.0	10.3
	Good	29	37.2	37.2	47.4
	Excellent	41	52.6	52.6	100.0
	Total	78	100.0	100.0	

q1b Courses: Realistic prerequisites

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.3	1.3	1.3
	Acceptable	5	6.4	6.5	7.8
	Good	27	34.6	35.1	42.9
	Excellent	44	56.4	57.1	100.0
	Total	77	98.7	100.0	
Missing	System	1	1.3		
Total		78	100.0		

q1c Courses: Moderate cost

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	2	2.6	2.6	2.6
	Below Expectations	7	9.0	9.1	11.7
	Acceptable	31	39.7	40.3	51.9
	Good	24	30.8	31.2	83.1
	Excellent	13	16.7	16.9	100.0
	Total	77	98.7	100.0	
Missing	Do Not Know	1	1.3		
Total		78	100.0		

q2a Obj: Available to students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	10	12.8	13.0	13.0
	Good	30	38.5	39.0	51.9
	Excellent	37	47.4	48.1	100.0
	Total	77	98.7	100.0	
Missing	Do Not Know	1	1.3		
Total		78	100.0		

q2b Obj: Describe what learn in course

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	7	9.0	9.1	9.1
	Good	31	39.7	40.3	49.4
	Excellent	39	50.0	50.6	100.0
	Total	77	98.7	100.0	
Missing	Do Not Know	1	1.3		
Total		78	100.0		

q2c Obj: Keep track of progress

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	1	1.3	1.3	1.3
	Below Expectations	1	1.3	1.3	2.6
	Acceptable	15	19.2	19.7	22.4
	Good	30	38.5	39.5	61.8
	Excellent	29	37.2	38.2	100.0
	Total	76	97.4	100.0	
Missing	Do Not Know	2	2.6		
Total		78	100.0		

q3a Tchg: Meet needs, interests, etc.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.3	1.3	1.3
	Acceptable	5	6.4	6.5	7.8
	Good	31	39.7	40.3	48.1
	Excellent	40	51.3	51.9	100.0
	Total	77	98.7	100.0	
Missing	Do Not Know	1	1.3		
Total		78	100.0		

q3b Tchg: Supervised practice

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.3	1.3	1.3
	Acceptable	6	7.7	7.7	9.0
	Good	28	35.9	35.9	44.9
	Excellent	43	55.1	55.1	100.0
	Total	78	100.0	100.0	

q4a Related: Pertinent

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	6	7.7	7.7	7.7
	Acceptable	22	28.2	28.2	35.9
	Good	34	43.6	43.6	79.5
	Excellent	16	20.5	20.5	100.0
	Total	78	100.0	100.0	

q4b Related: Current/meaningful

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	3	3.8	3.8	3.8
	Below Expectations	9	11.5	11.5	15.4
	Acceptable	20	25.6	25.6	41.0
	Good	33	42.3	42.3	83.3
	Excellent	13	16.7	16.7	100.0
	Total	78	100.0	100.0	

q5a Practical: Convenient locations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	2	2.6	2.7	2.7
	Acceptable	14	17.9	19.2	21.9
	Good	28	35.9	38.4	60.3
	Excellent	29	37.2	39.7	100.0
	Total	73	93.6	100.0	
Missing	Do Not Know	5	6.4		
Total		78	100.0		

q5b Practical: Day/eve students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	1	1.3	1.5	1.5
	Below Expectations	2	2.6	3.0	4.5
	Acceptable	19	24.4	28.4	32.8
	Good	23	29.5	34.3	67.2
	Excellent	22	28.2	32.8	100.0
	Total	67	85.9	100.0	
Missing	Do Not Know	11	14.1		
Total		78	100.0		

q5c Practical: Coord w/ classroom

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	5	6.4	7.0	7.0
	Acceptable	6	7.7	8.5	15.5
	Good	31	39.7	43.7	59.2
	Excellent	29	37.2	40.8	100.0
	Total	71	91.0	100.0	
Missing	Do Not Know	7	9.0		
Total		78	100.0		

q5d Practical: Coord w/ empl supervision

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	2	2.6	3.2	3.2
	Acceptable	11	14.1	17.5	20.6
	Good	27	34.6	42.9	63.5
	Excellent	23	29.5	36.5	100.0
	Total	63	80.8	100.0	
Missing	Do Not Know	15	19.2		
Total		78	100.0		

q6a Career: Meets needs/interests

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	3	3.8	4.0	4.0
	Acceptable	6	7.7	8.0	12.0
	Good	30	38.5	40.0	52.0
	Excellent	36	46.2	48.0	100.0
	Total	75	96.2	100.0	
Missing	Do Not Know	3	3.8		
Total		78	100.0		

q6b Career: Plan progress

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	2	2.6	2.6	2.6
	Acceptable	9	11.5	11.7	14.3
	Good	30	38.5	39.0	53.2
	Excellent	36	46.2	46.8	100.0
	Total	77	98.7	100.0	
Missing	Do Not Know	1	1.3		
Total		78	100.0		

q6c Career: Help career decisions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	12	15.4	15.6	15.6
	Good	25	32.1	32.5	48.1
	Excellent	40	51.3	51.9	100.0
	Total	77	98.7	100.0	
Missing	Do Not Know	1	1.3		
Total		78	100.0		

q6d Career: Understand rights

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	2	2.6	2.7	2.7
	Acceptable	17	21.8	23.0	25.7
	Good	28	35.9	37.8	63.5
	Excellent	27	34.6	36.5	100.0
	Total	74	94.9	100.0	
Missing	Do Not Know	4	5.1		
Total		78	100.0		

q6e Career: Eval job opportunities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	11	14.1	14.9	14.9
	Good	32	41.0	43.2	58.1
	Excellent	31	39.7	41.9	100.0
	Total	74	94.9	100.0	
Missing	Do Not Know	4	5.1		
Total		78	100.0		

q6f Career: Knowledgeable staff

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	7	9.0	9.3	9.3
	Good	20	25.6	26.7	36.0
	Excellent	48	61.5	64.0	100.0
	Total	75	96.2	100.0	
Missing	Do Not Know	2	2.6		
	System	1	1.3		
	Total	3	3.8		
Total		78	100.0		

q6g Career: Non-trad opps for both sexes

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	3	3.8	4.6	4.6
	Acceptable	11	14.1	16.9	21.5
	Good	24	30.8	36.9	58.5
	Excellent	27	34.6	41.5	100.0
	Total	65	83.3	100.0	
Missing	Do Not Know	10	12.8		
	System	3	3.8		
	Total	13	16.7		
Total		78	100.0		

q7a Former: Help make career decisions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	6	7.7	7.9	7.9
	Good	31	39.7	40.8	48.7
	Excellent	39	50.0	51.3	100.0
	Total	76	97.4	100.0	
Missing	Do Not Know	2	2.6		
Total		78	100.0		

q7b Former: How many opportunities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.3	1.3	1.3
	Acceptable	5	6.4	6.5	7.8
	Good	28	35.9	36.4	44.2
	Excellent	43	55.1	55.8	100.0
	Total	77	98.7	100.0	
Missing	Do Not Know	1	1.3		
Total		78	100.0		

q7c Former: Where opportunities located

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	2	2.6	2.6	2.6
	Acceptable	5	6.4	6.6	9.2
	Good	33	42.3	43.4	52.6
	Excellent	36	46.2	47.4	100.0
	Total	76	97.4	100.0	
Missing	Do Not Know	2	2.6		
Total		78	100.0		

q7d Former: Job advancement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	2	2.6	2.7	2.7
	Acceptable	8	10.3	10.7	13.3
	Good	27	34.6	36.0	49.3
	Excellent	38	48.7	50.7	100.0
	Total	75	96.2	100.0	
Missing	Do Not Know	3	3.8		
Total		78	100.0		

q8a Placemt: Find employment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	5	6.4	7.0	7.0
	Good	32	41.0	45.1	52.1
	Excellent	34	43.6	47.9	100.0
	Total	71	91.0	100.0	
Missing	Do Not Know	7	9.0		
Total		78	100.0		

q8b Placemt: Prepare for applying

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	4	5.1	5.7	5.7
	Good	30	38.5	42.9	48.6
	Excellent	36	46.2	51.4	100.0
	Total	70	89.7	100.0	
Missing	Do Not Know	8	10.3		
Total		78	100.0		

q9a Occ Inst: Know subject

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	1	1.3	1.3	1.3
	Good	26	33.3	33.3	34.6
	Excellent	51	65.4	65.4	100.0
	Total	78	100.0	100.0	

q9b Occ Inst: Available for help

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.3	1.3	1.3
	Acceptable	2	2.6	2.6	3.8
	Good	32	41.0	41.0	44.9
	Excellent	43	55.1	55.1	100.0
	Total	78	100.0	100.0	

q9c Occ Inst: Interesting instruction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	6	7.7	7.7	7.7
	Good	24	30.8	30.8	38.5
	Excellent	48	61.5	61.5	100.0
	Total	78	100.0	100.0	

q10a Support: Available

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	2	2.6	2.6	2.6
	Acceptable	12	15.4	15.6	18.2
	Good	30	38.5	39.0	57.1
	Excellent	33	42.3	42.9	100.0
	Total	77	98.7	100.0	
Missing	Do Not Know	1	1.3		
Total		78	100.0		

q10b Support: Knowledgeable staff

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.3	1.3	1.3
	Acceptable	8	10.3	10.5	11.8
	Good	31	39.7	40.8	52.6
	Excellent	36	46.2	47.4	100.0
	Total	76	97.4	100.0	
Missing	Do Not Know	2	2.6		
Total		78	100.0		

q11a Lec/Lab: Adequate lighting, etc.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	2	2.6	2.7	2.7
	Acceptable	4	5.1	5.4	8.1
	Good	24	30.8	32.4	40.5
	Excellent	44	56.4	59.5	100.0
	Total	74	94.9	100.0	
Missing	Do Not Know	1	1.3		
	System	3	3.8		
	Total	4	5.1		
Total		78	100.0		

q11b Lec/Lab: Enough workstations

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	2	2.6	2.7	2.7
	Acceptable	10	12.8	13.3	16.0
	Good	32	41.0	42.7	58.7
	Excellent	31	39.7	41.3	100.0
	Total	75	96.2	100.0	
Missing	System	3	3.8		
Total		78	100.0		

q11c Lec/Lab: Safe, functional, etc.

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.3	1.3	1.3
	Acceptable	4	5.1	5.3	6.7
	Good	24	30.8	32.0	38.7
	Excellent	46	59.0	61.3	100.0
	Total	75	96.2	100.0	
Missing	System	3	3.8		
Total		78	100.0		

q11d Lec/Lab: Available on equal basis

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	2	2.6	2.7	2.7
	Acceptable	5	6.4	6.7	9.3
	Good	26	33.3	34.7	44.0
	Excellent	42	53.8	56.0	100.0
	Total	75	96.2	100.0	
Missing	System	3	3.8		
Total		78	100.0		

q12a Equip: Current/representative

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	1	1.3	1.3	1.3
	Good	23	29.5	30.7	32.0
	Excellent	51	65.4	68.0	100.0
	Total	75	96.2	100.0	
Missing	System	3	3.8		
Total		78	100.0		

q12b Equip: Sufficient quantity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	3	3.8	4.0	4.0
	Acceptable	6	7.7	8.0	12.0
	Good	27	34.6	36.0	48.0
	Excellent	39	50.0	52.0	100.0
	Total	75	96.2	100.0	
Missing	System	3	3.8		
Total		78	100.0		

q12c Equip: Safe/good condition

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	25	32.1	33.3	33.3
	Excellent	50	64.1	66.7	100.0
	Total	75	96.2	100.0	
Missing	System	3	3.8		
Total		78	100.0		

q13a Mat'l: Available/convenient location

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	1	1.3	1.3	1.3
	Acceptable	6	7.7	8.0	9.3
	Good	27	34.6	36.0	45.3
	Excellent	41	52.6	54.7	100.0
	Total	75	96.2	100.0	
Missing	System	3	3.8		
Total		78	100.0		

q13b Mat'l: Current/meaningful

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.3	1.3	1.3
	Acceptable	3	3.8	4.0	5.3
	Good	29	37.2	38.7	44.0
	Excellent	42	53.8	56.0	100.0
	Total	75	96.2	100.0	
Missing	System	3	3.8		
Total		78	100.0		

q13c Mat'l: Not biased

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	1.3	1.4	1.4
	Acceptable	2	2.6	2.9	4.3
	Good	27	34.6	38.6	42.9
	Excellent	40	51.3	57.1	100.0
	Total	70	89.7	100.0	
Missing	Do Not Know	5	6.4		
	System	3	3.8		
	Total	8	10.3		
Total		78	100.0		

q13d Mat'l: Reasonable cost

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	4	5.1	5.3	5.3
	Below Expectations	4	5.1	5.3	10.7
	Acceptable	23	29.5	30.7	41.3
	Good	19	24.4	25.3	66.7
	Excellent	25	32.1	33.3	100.0
	Total	75	96.2	100.0	
Missing	System	3	3.8		
Total		78	100.0		

q14 Additional Comments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		62	79.5	79.5	79.5
	Build a free parking lot.	1	1.3	1.3	80.8
	Class treat students like high schoolers not adults. Should have more freedom with attendance policies to help student learn.	1	1.3	1.3	82.1
	Good program.	2	2.6	2.6	84.6
	Have great welding equipmt & very interesting instructors.	1	1.3	1.3	85.9
	I like the course outline.	1	1.3	1.3	87.2
	Need to get better line burners. Cuts often made crooked.	1	1.3	1.3	88.5
	On section 11, the only thing I find unsafe & not functional are the exhaust hoods for the welding booths. It's hard to position them somewhere that they won't pose a problem. I also personally don't see the purpose in our English requirements.	1	1.3	1.3	89.7
	One complaint I have is that I wouldn't have had an time transferring into the WET dept if I got my Assoc degree elsewhere. I currently have sophomore status & find this semester's classes to be challenging & interesting. I think the material covered will be useful for the rest of my career. I'm extremely satisfied w/ the program thus far.	1	1.3	1.3	91.0
	Overall, I believe that this program is very good. The instructors are very knowledgeable & offer help whenever it's needed.	1	1.3	1.3	92.3
	Senior Brad is the man! All the profs are willing to help at all times.	1	1.3	1.3	93.6
	This is a great program & the grads from previous years are doing very, very well.	1	1.3	1.3	94.9
	This is my 1st yr at FSU & I would say that so far the WT prog is pretty good & that it's current & understandable & interests me.	1	1.3	1.3	96.2
	Welding is a very good program for most people, but as I go through it, I dislike it more & more, but that is just me. Some classes are very challenging, but if it wasn't, we probably won't learn anything.	1	1.3	1.3	97.4
	Welding is an excellent program.	1	1.3	1.3	98.7
	Well organized, up-to-date program.	1	1.3	1.3	100.0
	Total	78	100.0	100.0	

2.E. – FACULTY PERCEPTIONS: The purpose of this activity is to assess faculty perceptions regarding the following aspects of the program: curriculum, resources, admission standards, degree of commitment by the administration, processes and procedures used, and their overall feelings. Additional items that may be unique to the program can be incorporated in this survey.

Welding Engineering Technology
Department Evaluation - Faculty

Please complete the following questions by placing an "X" in the appropriate box, using the scale below. Your input is key to the continued success of the Welding Engineering Technology (WET) program at Ferris State University.

1=poor, 2=below expectations, 3= acceptable, 4= good, 5 = excellent, ?=do not know	1	2	3	4	5	?
Goals and Objectives:						
1. Participation in development of college occupational education program plan						
2. Program goals						
3. Course objectives						
4. Competency based performance objectives						
5. Use of competency based performance objectives						
6. Use of information on labor market needs						
7. Use of information on job performance requirements						
8. Use of profession/industry standards						
9. Use of student follow-up information						
Processes:						
10. Adaptation of instruction						
11. Relevance of supportive courses						
12. Coordination with other community agencies and educational programs						
13. Provision for work experience, cooperative education or clinical experience						
14. Program availability and accessibility						
15. Provision for the disadvantaged						
16. Provision for the handicapped						
17. Efforts to achieve sex equity						
18. Provision for program advisement						
19. Provision for career planning and guidance						
20. Adequacy of career planning and guidance						
21. Provision for employability information						
22. Placement effectiveness for students in program						
23. Student follow-up system						
24. Promotion of this program						
Resources:						
25. Provision for leadership and coordination						
26. Qualifications of administrators and supervisors						
27. Instructional staffing						
28. Qualifications of instructional staff						
29. Professional development opportunities						
30. Use of instructional support staff						
31. Use of clerical support staff						
32. Adequacy and availability of instructional equipment						
33. Maintenance and safety of instructional equipment						
34. Adequacy of instructional facilities						
35. Scheduling of instructional facilities						
36. Adequacy and availability of materials and supplies						
37. Adequacy and availability of learning resources						
38. Use of advisory committees						
39. Provisions in current operating budget						
40. Provisions for capital outlay budget for equipment						

Welding Engineering Technology
Department Evaluation - Faculty

Comments:

Thank You!!

Welding Engineering Technology...Faculty

Frequencies

Prepared by: Institutional Research & Testing, 06/08

Statistics

	N				
	Valid	Missing	Mean	Median	Std. Deviation
q1 Goals: Participation	5	0	3.80	4.00	1.095
q2 Goals: Program goals	5	0	4.60	5.00	.548
q3 Goals: Course objectives	5	0	4.20	4.00	.837
q4 Goals: Competency based	5	0	4.40	4.00	.548
q5 Goals: Use of comp based	5	0	4.40	4.00	.548
q6 Goals: Use of market needs	5	0	4.20	4.00	.837
q7 Goals: Use of job requirements	5	0	4.60	5.00	.548
q8 Goals: Use of profession standards	5	0	4.40	4.00	.548
q9 Goals: Use of student follow-up info	5	0	3.60	4.00	.548
q10 Process: Adaptation of instruction	5	0	4.00	4.00	1.000
q11 Process: Relevance of support courses	5	0	3.80	4.00	.837
q12 Process: Coordination w/ agencies	5	0	3.40	3.00	.894
q13 Process: Provision for outside experience	5	0	5.00	5.00	.000
q14 Process: Prog availability/accessibility	5	0	4.60	5.00	.548
q15 Process: Provision for disadvantaged	5	0	3.20	3.00	.447
q16 Process: Provision for handicapped	5	0	3.20	3.00	.447
q17 Process: Efforts in sex equity	5	0	3.40	3.00	.548
q18 Process: Advisement	5	0	4.80	5.00	.447
q19 Process: Career plan'g provision	5	0	4.80	5.00	.447
q20 Process: Career plan'g adequacy	5	0	4.80	5.00	.447
q21 Process: Employability info	5	0	5.00	5.00	.000
q22 Process: Placement effectiveness	5	0	5.00	5.00	.000
q23 Process: Student follow-up system	5	0	4.20	4.00	.837
q24 Process: Program promotion	5	0	4.80	5.00	.447
q25 Resources: Leadership/coordination	5	0	4.00	4.00	.707
q26 Resources: Admin/supervisor qualifications	5	0	3.80	4.00	1.095
q27 Resources: Instructional staffing	5	0	4.40	5.00	.894
q28 Resources: Inst. staff qualifications	5	0	4.80	5.00	.447
q29 Resources: Prof dev opportunities	5	0	4.80	5.00	.447
q30 Resources: Inst supp staff use	5	0	4.60	5.00	.548
q31 Resources: Clerical supp staff use	5	0	4.40	5.00	.894
q32 Resources: Equipmt adequacy/availability	5	0	4.40	4.00	.548
q33 Resources: Equipmt maintenance/safety	5	0	4.00	4.00	.707
q34 Resources: Facilities adequacy	5	0	3.60	4.00	.548
q35 Resources: Facilities scheduling	5	0	4.20	4.00	.447
q36 Resources: Mat'ls adequacy/availability	5	0	3.80	4.00	1.304
q37 Resources: Lrng resources adeq/avail	5	0	4.00	4.00	.000
q38 Resources: Use of advisory committees	5	0	5.00	5.00	.000
q39 Resources: Current operating budget	5	0	2.40	2.00	.894
q40 Resources: Capital outlay budget	5	0	1.20	1.00	.447
q41 Additional comments	5	0			

Frequency Table

q1 Goals: Participation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	20.0	20.0	20.0
	Good	3	60.0	60.0	80.0
	Excellent	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q2 Goals: Program goals

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	2	40.0	40.0	40.0
	Excellent	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q3 Goals: Course objectives

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	1	20.0	20.0	20.0
	Good	2	40.0	40.0	60.0
	Excellent	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q4 Goals: Competency based

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	3	60.0	60.0	60.0
	Excellent	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q5 Goals: Use of comp based

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	3	60.0	60.0	60.0
	Excellent	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q6 Goals: Use of market needs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	1	20.0	20.0	20.0
	Good	2	40.0	40.0	60.0
	Excellent	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q7 Goals: Use of job requirements

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	2	40.0	40.0	40.0
	Excellent	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q8 Goals: Use of profession standards

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	3	60.0	60.0	60.0
	Excellent	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q9 Goals: Use of student follow-up info

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	2	40.0	40.0	40.0
	Good	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q10 Process: Adaptation of instruction

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	2	40.0	40.0	40.0
	Good	1	20.0	20.0	60.0
	Excellent	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q11 Process: Relevance of support courses

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	2	40.0	40.0	40.0
	Good	2	40.0	40.0	80.0
	Excellent	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q12 Process: Coordination w/ agencies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	4	80.0	80.0	80.0
	Excellent	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q13 Process: Provision for outside experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	5	100.0	100.0	100.0

q14 Process: Prog availability/accessibility

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	2	40.0	40.0	40.0
	Excellent	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q15 Process: Provision for disadvantaged

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	4	80.0	80.0	80.0
	Good	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q16 Process: Provision for handicapped

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	4	80.0	80.0	80.0
	Good	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q17 Process: Efforts in sex equity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	3	60.0	60.0	60.0
	Good	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q18 Process: Advisement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	1	20.0	20.0	20.0
	Excellent	4	80.0	80.0	100.0
	Total	5	100.0	100.0	

q19 Process: Career plan'g provision

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	1	20.0	20.0	20.0
	Excellent	4	80.0	80.0	100.0
	Total	5	100.0	100.0	

q20 Process: Career plan'g adequacy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	1	20.0	20.0	20.0
	Excellent	4	80.0	80.0	100.0
	Total	5	100.0	100.0	

q21 Process: Employability info

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	5	100.0	100.0	100.0

q22 Process: Placement effectiveness

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	5	100.0	100.0	100.0

q23 Process: Student follow-up system

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	1	20.0	20.0	20.0
	Good	2	40.0	40.0	60.0
	Excellent	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q24 Process: Program promotion

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	1	20.0	20.0	20.0
	Excellent	4	80.0	80.0	100.0
	Total	5	100.0	100.0	

q25 Resources: Leadership/coordination

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	1	20.0	20.0	20.0
	Good	3	60.0	60.0	80.0
	Excellent	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q26 Resources: Admin/supervisor qualifications

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	20.0	20.0	20.0
	Good	3	60.0	60.0	80.0
	Excellent	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q27 Resources: Instructional staffing

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	1	20.0	20.0	20.0
	Good	1	20.0	20.0	40.0
	Excellent	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q28 Resources: Inst. staff qualifications

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	1	20.0	20.0	20.0
	Excellent	4	80.0	80.0	100.0
	Total	5	100.0	100.0	

q29 Resources: Prof dev opportunities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	1	20.0	20.0	20.0
	Excellent	4	80.0	80.0	100.0
	Total	5	100.0	100.0	

q30 Resources: Inst supp staff use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	2	40.0	40.0	40.0
	Excellent	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q31 Resources: Clerical supp staff use

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	1	20.0	20.0	20.0
	Good	1	20.0	20.0	40.0
	Excellent	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q32 Resources: Equipmt adequacy/availability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	3	60.0	60.0	60.0
	Excellent	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q33 Resources: Equipmt maintenance/safety

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	1	20.0	20.0	20.0
	Good	3	60.0	60.0	80.0
	Excellent	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q34 Resources: Facilities adequacy

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Acceptable	2	40.0	40.0	40.0
	Good	3	60.0	60.0	100.0
	Total	5	100.0	100.0	

q35 Resources: Facilities scheduling

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	4	80.0	80.0	80.0
	Excellent	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q36 Resources: Mat'ls adequacy/availability

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	1	20.0	20.0	20.0
	Acceptable	1	20.0	20.0	40.0
	Good	1	20.0	20.0	60.0
	Excellent	2	40.0	40.0	100.0
	Total	5	100.0	100.0	

q37 Resources: Lrng resources adeq/avail

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Good	5	100.0	100.0	100.0

q38 Resources: Use of advisory committees

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Excellent	5	100.0	100.0	100.0

q39 Resources: Current operating budget

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Below Expectations	4	80.0	80.0	80.0
	Good	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q40 Resources: Capital outlay budget

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Poor	4	80.0	80.0	80.0
	Below Expectations	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

q41 Additional comments

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		3	60.0	60.0	60.0
	Capital & operating budgets are huge challenge for the WET program. WET has done a very good job stretching its resources through industry partnerships. Continued financial support from the COT & university is critical.	1	20.0	20.0	80.0
	Lack of capital. Expenditure budget relies on industry generosity too much.	1	20.0	20.0	100.0
	Total	5	100.0	100.0	

2.F. – ADVISORY COMMITTEE PERCEPTIONS: The purpose of this survey is to obtain information from the members of the program advisory committee regarding curriculum, outcomes, facilities, equipment, graduates, micro- and megatrends that might affect job placement (both positively and adversely), and other relevant information. Recommendations for improvement must be sought from this group. In the event that a program does not have an advisory committee, a group of individuals may be identified to serve in that capacity on a temporary basis.

FERRIS STATE UNIVERSITY

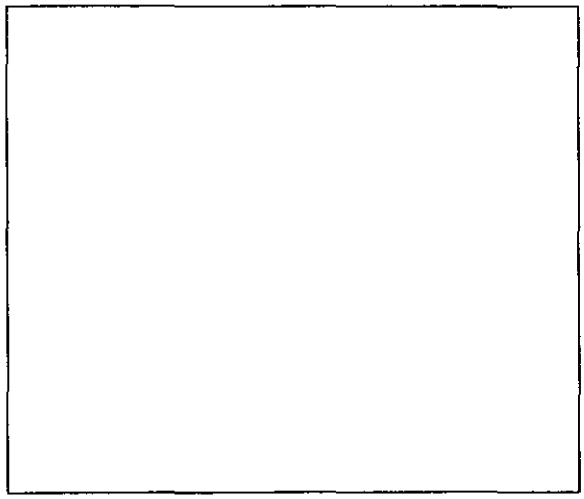
Welding APR Survey - Advisory Board

As part of the Academic Program Review (APR), the Welding/Welding Engineering Technology Program is asking advisory board members to take a few minutes to fill out this survey regarding the program.

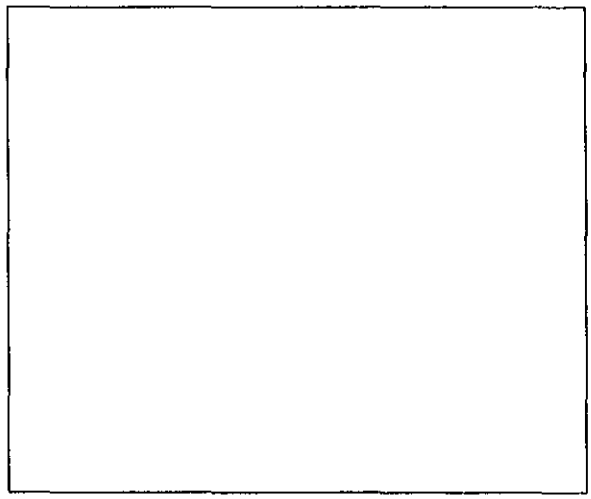
Q1 **For each item listed below, please choose the option that best represents your perception.**

	Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	Don't Know
WT/WET Programs are consistent with the mission of Ferris State University.	○	○	○	○	○
The programs are guided by an effective advisory board.	○	○	○	○	○
The quality of the WT/WET Programs at Ferris State University compare favorably with similar programs around the country.	○	○	○	○	○
Instructional content reflects what is needed to be successful in today's workplace.	○	○	○	○	○
Program faculty possesses knowledge of & teaches current practices.	○	○	○	○	○
Program faculty provides students with appropriate classroom activities.	○	○	○	○	○
Program faculty has good rapport with students.	○	○	○	○	○
Program faculty provides students with appropriate academic advising.	○	○	○	○	○
Program faculty provides students with appropriate advising about career planning & placement.	○	○	○	○	○
The Ferris State University administration supports the WT/WET Programs.	○	○	○	○	○
The current operating budget is sufficient to meet program needs.	○	○	○	○	○
The number of qualified tenure-track faculty is sufficient to meet program needs.	○	○	○	○	○
The program has adequate resources allocated for coordination & administration.	○	○	○	○	○
The department & university provide **program faculty sufficient opportunity &** support for professional development.	○	○	○	○	○
WT/WET students are well prepared to enter the workforce.	○	○	○	○	○
Ferris State University WT/WET Programs prepare students to enter industry better than other schools.	○	○	○	○	○
WT/WET grads contribute as much as other grads in their first 6 months of employment.	○	○	○	○	○
WT/WET Programs provides a foundation for multiple career possibilities.	○	○	○	○	○
Adequate placement assistance is provided to graduates.	○	○	○	○	○
There are a number of varied & high quality internships available to students.	○	○	○	○	○
There are job opportunities available to Ferris State University WT/WET graduates.	○	○	○	○	○

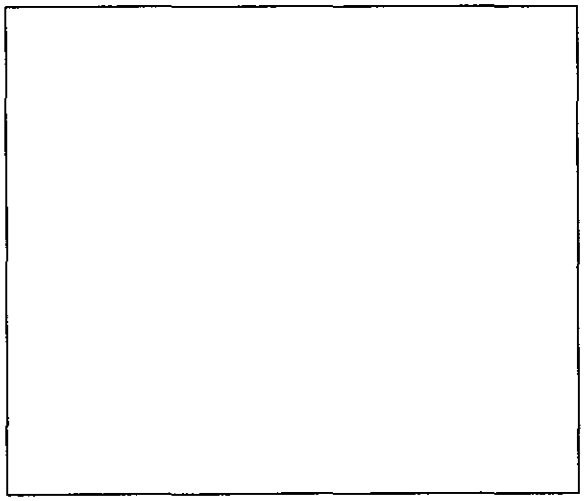
Q2 What qualities/skills (if any) do you feel are lacking in graduates of the Welding Programs?



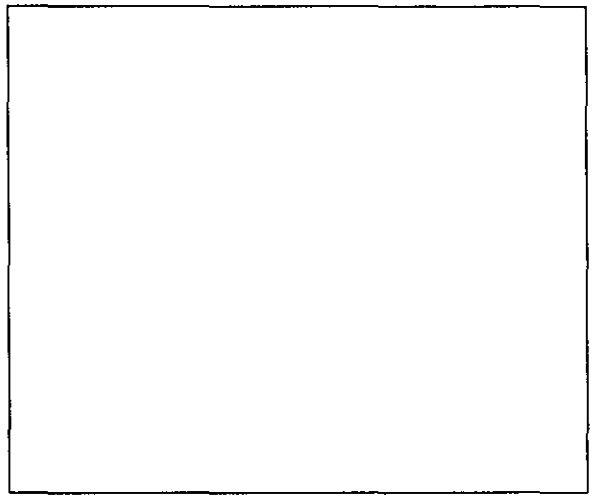
Q4 What do you see as areas needing improvement?



Q3 What do you see as the strengths of the Welding Programs?



Q5 Please provide comments & suggestions that would help to better prepare future graduates.



Thank you for your time and assistance.

2007 WELD APR...Advisory Board

Frequencies

Prepared by: Institutional Research & Testing, 01/08

Statistics

	N				
	Valid	Missing	Mean	Median	Std. Deviation
q1a Consistent with FSU mission	7	0	4.14	4.00	.378
q1b Guided by effective advisory board	7	0	4.00	4.00	.577
q1c Quality compares favorably	7	0	4.00	4.00	.000
q1d Content reflects skills needed	7	0	3.71	4.00	.756
q1e Fac: Knowledge of & teach current practices	7	0	3.71	4.00	.756
q1f Fac: Appropriate classroom activities	7	0	3.86	4.00	.378
q1g Fac: Good rapport with students	7	0	4.00	4.00	.000
q1h Fac: Appropriate academic advising	7	0	4.00	4.00	.000
q1i Fac: Appropriate advising-career planning & placement	7	0	3.86	4.00	.378
q1j Univ admin supports programs	7	0	3.71	4.00	.488
q1k Sufficient operating budget	7	0	3.57	3.00	1.512
q1l Sufficient number qualified tenure-track fac	7	0	4.14	4.00	.900
q1m Adequate resources	7	0	3.71	4.00	1.113
q1n Sufficient professional development	7	0	3.71	4.00	1.113
q1o Students well prepared to enter the workforce	7	0	3.57	4.00	.787
q1p Students better prepared than those from other schools	7	0	3.57	4.00	.535
q1q Grads contribute as much as others	7	0	4.00	4.00	.000
q1r Provides a foundation for multiple career possibilities	7	0	3.71	4.00	.756
q1s Adequate placement assistance	7	0	4.00	4.00	.577
q1t Number of varied & high quality internships	7	0	4.00	4.00	.000
q1u Job opportunities available to grads	7	0	4.00	4.00	.000
q2 Qualities/skills lacking	7	0			
q3 WELD prog strengths	7	0			
q4 Aresas need improvement	7	0			
q5 Comments/suggestions	7	0			

Frequency Table

q1a Consistent with FSU mission

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	6	85.7	85.7	85.7
	Don't Know	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

q1b Guided by effective advisory board

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	1	14.3	14.3	14.3
	Strongly Agree	5	71.4	71.4	85.7
	Don't Know	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

q1c Quality compares favorably

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	7	100.0	100.0	100.0

q1d Content reflects skills needed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	14.3	14.3	14.3
	Strongly Agree	6	85.7	85.7	100.0
	Total	7	100.0	100.0	

q1e Fac: Knowledge of & teach current practices

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	14.3	14.3	14.3
	Strongly Agree	6	85.7	85.7	100.0
	Total	7	100.0	100.0	

q1f Fac: Appropriate classroom activities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	1	14.3	14.3	14.3
	Strongly Agree	6	85.7	85.7	100.0
	Total	7	100.0	100.0	

q1g Fac: Good rapport with students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	7	100.0	100.0	100.0

q1h Fac: Appropriate academic advising

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	7	100.0	100.0	100.0

q1i Fac: Appropriate advising-career planning & placement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	1	14.3	14.3	14.3
	Strongly Agree	6	85.7	85.7	100.0
	Total	7	100.0	100.0	

q1j Univ admin supports programs

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	2	28.6	28.6	28.6
	Strongly Agree	5	71.4	71.4	100.0
	Total	7	100.0	100.0	

q1k Sufficient operating budget

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	14.3	14.3	14.3
	Somewhat Agree	3	42.9	42.9	57.1
	Don't Know	3	42.9	42.9	100.0
	Total	7	100.0	100.0	

q1l Sufficient number qualified tenure-track fac

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	2	28.6	28.6	28.6
	Strongly Agree	2	28.6	28.6	57.1
	Don't Know	3	42.9	42.9	100.0
	Total	7	100.0	100.0	

q1m Adequate resources

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	14.3	14.3	14.3
	Somewhat Agree	2	28.6	28.6	42.9
	Strongly Agree	2	28.6	28.6	71.4
	Don't Know	2	28.6	28.6	100.0
	Total	7	100.0	100.0	

q1n Sufficient professional development

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	14.3	14.3	14.3
	Somewhat Agree	2	28.6	28.6	42.9
	Strongly Agree	2	28.6	28.6	71.4
	Don't Know	2	28.6	28.6	100.0
	Total	7	100.0	100.0	

q1o Students well prepared to enter the workforce

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	14.3	14.3	14.3
	Somewhat Agree	1	14.3	14.3	28.6
	Strongly Agree	5	71.4	71.4	100.0
	Total	7	100.0	100.0	

q1p Students better prepared than those from other schools

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	3	42.9	42.9	42.9
	Strongly Agree	4	57.1	57.1	100.0
	Total	7	100.0	100.0	

q1q Grads contribute as much as others

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	7	100.0	100.0	100.0

q1r Provides a foundation for multiple career possibilities

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Disagree	1	14.3	14.3	14.3
	Strongly Agree	6	85.7	85.7	100.0
	Total	7	100.0	100.0	

q1s Adequate placement assistance

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Somewhat Agree	1	14.3	14.3	14.3
	Strongly Agree	5	71.4	71.4	85.7
	Don't Know	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

q1t Number of varied & high quality internships

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	7	100.0	100.0	100.0

q1u Job opportunities available to grads

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Agree	7	100.0	100.0	100.0

q2 Qualities/skills lacking

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		3	42.9	42.9	42.9
	Exposure to heavy industrial construction industries where piping is the key component being fabricated/welded. Exposure to ASME Sections IX and II Parts A, B, C, and D. Exposure to AWS D1.1.	1	14.3	14.3	57.1
	I believe there needs to be more push on communication/presentation skills.	1	14.3	14.3	71.4
	I think that there needs to be a continuing emphasis on directing students towards the importance of formal communication skills.	1	14.3	14.3	85.7
	Multiple Robotic arms.	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

q3 WELD prog strengths

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Applied/Hands on welding and metallurgy lab practices	1	14.3	14.3	14.3
	graduates in welding engineering are coveted in the job market.	1	14.3	14.3	28.6
	Great welding skills for real world performance.	1	14.3	14.3	42.9
	Hands on and lab skills	1	14.3	14.3	57.1
	One of the most obvious strengths of the welding program, which is reflected heavily within the graduates from the program, is that the students are very will prepared for industry. That is to say, they not only understand the theoretical concepts of welding engineering, but they are capable of applying the theory in practical hands on situations. This combination provides a very valuable asset to industry.	1	14.3	14.3	71.4
	The hands on teaching and learning approach allows the students to be very capable understanding the basics and be able to go out to the factory floor and make immediate improvement because of thier understanding of the process.	1	14.3	14.3	85.7
	The students are taught both the engineering side as well as the practical hands on side of welding.	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

q4 Areas need improvement

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		2	28.6	28.6	28.6
	Current welding techniques/technogolies, exposure to heavy industrial industries, piping, ASME Sections IX, and II.	1	14.3	14.3	42.9
	I believe the Welding Lab needs to be improved. More room, some updated equipment, and upgraded fume extraction systems.	1	14.3	14.3	57.1
	I feel there is opportunity for senior projects to be funded by industry and adding value to the student's knowledge while advancing industry intelligence. The recruiting efforts by Industry would be better served if the students would be more proactive in trying to obtain employment. The students need to get signed up for interviews prior to the career fair so the proper number of interviewers are present.	1	14.3	14.3	71.4
	I think that it would make some sense for a 4 year graduate to leave the University with an AWS Certification in Welding Inspection (CWI). It would seem that some agreement with the AWS could be arranged for graduate to sit there examinations possibly with some prep work up front. Having young Ferris State Grads working at my company and having to train them on our products and prepare them for industry it would be nice if they already had their CWI. Just a thought.	1	14.3	14.3	85.7
	Material science, automation, electrical	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

q5 Comments/suggestions

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid		3	42.9	42.9	42.9
	A. Require internships for sophomore and junior years. B. Consider adding American Welding Society-Certified Welding Inspector, Associate status as option to enhance job readiness.	1	14.3	14.3	57.1
	Continue to maintain a strong staff and a strong advisory board who can work together in order to continue to advance the program in the appropriate direction.	1	14.3	14.3	71.4
	My reccommendation is that the students be encouraged to learn a foreign language. With our global economy, international assignments are very likely.	1	14.3	14.3	85.7
	The senior projects could possibly be more varied in scope and tie more of the students learning to the expectations of future employers.	1	14.3	14.3	100.0
	Total	7	100.0	100.0	

Section #3: Program Profile

Programs: Welding Technology / Welding Engineering Technology
Degrees: Associate in Applied Science Degree in Welding Technology (WELT) and Bachelor of Science Degree in Welding Engineering Technology (WELE)
Department: Welding Engineering Technology
College: Technology

Section 3: Program Profile: *Include Administrative Program Review document in this section. Provide the number and percentage for the variable addresses for each of the years since inception (for new programs) or the last program review.*

3.A. PROFILE OF STUDENTS

3.A.1 – Student Demographic Profile.

3.A.1.a – Gender, race/ethnicity, age (use annual institutional data)

3.A.1.b – In-state and Out-of-state.

Comments: The proceeding pages contain the listed Ferris State Institutional Research & Testing documents:

- Pre-Welding Engineering Technology
  - Enrollment by Sex and Ethnicity
  - Enrollment by Residency, Age, FSU GPA, and ACT
- Pre-Welding Technology
  - Enrollment by Sex and Ethnicity
  - Enrollment by Residency, Age, FSU GPA, and ACT
- Welding Engineering Technology
  - Enrollment by Sex and Ethnicity
  - Enrollment by Residency, Age, FSU GPA, and ACT
- Welding Technology
  - Enrollment by Sex and Ethnicity
  - Enrollment by Residency, Age, FSU GPA, and ACT

Ferris State University
APR 03-07 Enrollment by Sex and Ethnicity

TE
Pre-Welding Engineering Technology
BS

		Gender			Ethnicity						Full/Part Time	
Term	Enrolled	Male	Female	Unknown	Black	Hispanic	Indian/Alaskan	Asian/Pac Islander	White	Foreign	Full Time	Part Time
200308	3	3	0	0	0	0	0	0	3	0	3	0
200408	3	3	0	0	0	0	0	0	3	0	3	0
200508	7	7	0	3	1	0	0	0	3	0	7	0
200608	2	2	0	1	0	0	0	0	1	0	2	0
200708	4	4	0	0	0	0	0	0	4	0	3	1

Ferris State University
APR 03-07 Enrollment by Residency, Age, FSU GPA, and ACT

TE
Pre-Welding Engineering Technology
BS

		Residency			Age	FSU GPA				ACT	
Term	Blank	Resident	Midwest Compact	Non-Resident	Avg. Age	Avg. GPA	Min. GPA	Max. GPA	Avg. ACT	Min. ACT	Max. ACT
200308	0	3	0	0	27	2.74	2.674	2.806	18.50	15	22
200408	0	3	0	0	25	2.86	2.766	2.956	18.33	15	21
200508	0	7	0	0	25	2.99	2.993	2.993	20.00	17	24
200608	0	2	0	0	23	3.30	2.590	4.000	25.50	22	29
200708	0	4	0	0	21	2.52	2.34	2.71	18.25	13	22

Ferris State University
APR 03-07 Enrollment by Sex and Ethnicity

TE
Welding Engineering Technology
BS

		Gender			Ethnicity						Full/Part Time	
Term	Enrolled	Male	Female	Unknown	Black	Hispanic	Indian/Alaskan	Asian/Pac Islander	White	Foreign	Full Time	Part Time
200308	54	54	0	1	0	2	0	0	51	0	53	1
200408	60	60	0	1	1	1	0	0	57	0	60	0
200508	64	64	0	1	1	0	0	0	62	0	62	2
200608	56	54	2	5	0	0	0	0	51	0	56	0
200708	54	52	2	0	0	1	1	0	52	0	52	2

Ferris State University
APR 03-07 Enrollment by Residency, Age, FSU GPA, and ACT

TE
Welding Engineering Technology
BS

		Residency			Age	FSU GPA				ACT	
Term	Blank	Resident	Midwest Compact	Non-Resident	Avg. Age	Avg. GPA	Min. GPA	Max. GPA	Avg. ACT	Min. ACT	Max. ACT
200308	0	47	4	3	27	3.17	1.492	3.942	19.35	14	27
200408	0	50	6	4	26	3.21	2.109	3.912	19.64	14	27
200508	0	54	8	2	24	3.24	2.115	3.827	19.96	14	25
200608	0	52	4	0	23	3.20	1.600	4.000	20.44	15	26
200708	0	50	4	0	22	3.17	2.44	4	21.63	17	29

Ferris State University
APR 03-07 Enrollment by Sex and Ethnicity

TE
Welding Technology
AAS

		Gender			Ethnicity						Full/Part Time	
Term	Enrolled	Male	Female	Unknown	Black	Hispanic	Indian/Alaskan	Asian/Pac Islander	White	Foreign	Full Time	Part Time
200308	75	72	3	2	1	0	0	1	71	0	73	2
200408	77	74	3	6	1	1	1	0	68	0	76	1
200508	74	68	6	6	1	0	1	1	65	0	73	1
200608	72	67	5	4	0	1	1	0	65	1	70	2
200708	92	87	5	0	1	2	1	2	85	1	89	3

Ferris State University
APR 03-07 Enrollment by Residency, Age, FSU GPA, and ACT

TE
Welding Technology
AAS

		Residency			Age	FSU GPA			ACT		
Term	Blank	Resident	Midwest Compact	Non-Resident	Avg. Age	Avg. GPA	Min. GPA	Max. GPA	Avg. ACT	Min. ACT	Max. ACT
200308	0	69	6	0	24	2.99	2.043	3.924	19.56	11	25
200408	0	74	3	0	23	3.04	1.912	4.000	20.10	14	26
200508	0	67	7	0	22	3.00	1.861	4.000	20.39	15	29
200608	0	63	8	1	21	2.64	1.640	3.600	20.95	12	30
200708	0	78	10	4	20	2.86	.79	3.99	21.06	12	30

Ferris State University
APR 03-07 Enrollment by Sex and Ethnicity

TE
Pre-Welding Technology
AAS

		Gender			Ethnicity						Full/Part Time	
Term	Enrolled	Male	Female	Unknown	Black	Hispanic	Indian/Alaskan	Asian/Pac Islander	White	Foreign	Full Time	Part Time
200408	1	0	1	0	1	0	0	0	0	0	1	0
200508	3	3	0	0	0	0	0	0	3	0	3	0
200608	3	3	0	1	0	0	0	0	2	0	3	0
200708	4	4	0	0	0	0	0	0	4	0	4	0

Ferris State University
APR 03-07 Enrollment by Residency, Age, FSU GPA, and ACT

TE
Pre-Welding Technology
AAS

		Residency			Age	FSU GPA			ACT		
Term	Blank	Resident	Midwest Compact	Non-Resident	Avg. Age	Avg. GPA	Min. GPA	Max. GPA	Avg. ACT	Min. ACT	Max. ACT
200408	0	1	0	0	21	.00	0	0	16.00	16	16
200508	0	3	0	0	22	2.79	2.491	3.081	18.00	16	21
200608	0	3	0	0	20	2.73	2.730	2.730	19.67	18	22
200708	0	4	0	0	19	1.30	1.3	1.3	20.00	18	23

3.A.1.c – Full-time and part-time.

Comments: All students currently enrolled in either the Welding Technology A.A.S. degree program or the Welding Engineering Technology B.S. degree program are full-time students.

3.A.1.d – Attend classes during the day, in evenings, and on weekends.

Comments: Courses are offered during the day and evening. No weekend classes are offered.

3.A.1.e – Enrolled in classes on- and off-campus.

Comments: All courses for Welding Technology A.A.S. degree program and Welding Engineering Technology B.S. degree program students are offered only at the Ferris State Big Rapids, MI campus.

3.A.1.f – Enrolled in 100% on-line and/or mixed delivery courses.

Comments: All courses for Welding Technology A.A.S. degree program and Welding Engineering Technology B.S. degree program students are offered only at the Ferris State Big Rapids, MI campus in a conventional "lecture-laboratory" format. No courses are offered on-line and/or mixed delivery.

3.A.1.g – Discuss how the information presented in (a) through (f) impacts the curriculum, scheduling, and/or delivery methods in the program.

Comments: Courses in the Ferris welding programs are typically held Monday through Friday, 8:00 AM to 6:00PM. The combination of this time schedule, and the fact the all welding students are full-time, the curriculum, course scheduling, and information delivery methods work very well.

3.A.2 – Quality of Students.

3.A.2.a – What is the range and average GPA of all students currently enrolled in the programs? ACT? Comment on this data.

Comments: Please see data pages supporting **3.A.1.a** and **3.A.1.b** for this information.

- Welding Engineering Technology
  - Average GPA and ACT
    - GPA Range – 1.743
    - ACT Range – 14

- Welding Technology
  - Average GPA and ACT
    - GPA Range – 1.837
    - ACT Range - 18

The data reflects the ability of the Ferris welding programs to attract a diverse student body with wide range of academics.

3.A.2.b – What are the range and average GPA's of students graduating from the programs? ACT? Comment on this data?

Comments: The proceeding page contains the listed Ferris State Institutional Research & Testing documents:

- Welding Engineering Technology
  - APR Graduated 2002-03 Through 2006-07
- Welding Technology
  - APR Graduated 2002-03 Through 2006-07

The following information was derived from the above mentioned Institutional Research and Testing documents:

- Welding Engineering Technology:
  - GPA Range – 1.560
  - ACT Range – 12
  -
- Welding Technology:
  - GPA Range – 3.200
  - ACT Range - 18

Ferris State University
APR Graduated 2002-03 Through 2006-07
Average GPA and ACT

TE
Welding Engineering Technology
BS

	FSU GPA			ACT		
Year	Average GPA	Min. GPA	Max. GPA	Average ACT	Min. ACT	Max. ACT
2002-2003	3.18	2.296	3.883	21.38	18	28
2003-2004	3.23	2.208	3.951	20.50	16	26
2004-2005	3.08	2.527	3.760	19.71	14	27
2005-2006	3.23	2.491	3.827	19.82	14	25
2006-2007	3.15	2.630	3.760	19.54	15	25

Ferris State University
APR Graduated 2002-03 Through 2006-07
Average GPA and ACT

TE
Welding Technology
AAS

	FSU GPA			ACT		
Year	Average GPA	Min. GPA	Max. GPA	Average ACT	Min. ACT	Max. ACT
2002-2003	2.92	1.828	3.860	19.38	14	27
2003-2004	3.24	2.188	3.869	18.12	11	22
2004-2005	3.19	2.163	3.900	20.07	15	25
2005-2006	3.27	2.357	4.000	20.80	16	26
2006-2007	3.05	2.480	3.910	20.90	16	29

3.A.2.c - In addition to ACT and GPA, identify and evaluate measures that are used to assess the quality of students entering the programs.

Comments: Students entering the FSU welding programs must also meet University and College of Technology entrance requirements.

3.A.2.d – Identify academic awards (e.g., scholarships or fellowships) have students in the program have earned? Comment on the significance of these awards to the program and students.

Comments:

- Since 1986, students in the Ferris welding programs have received approximately $725,000.00 in academic scholarship awards from various industry professional organizations.
- 30+ students have been recognized with endowed National Named Scholarships through the American Welding Society (AWS), including two students who have traveled to Japan as part of the AWS Matsuo Bridge Company Scholarship award – a priceless educational experience!

Recipients of these awards are selected by a panel of industry volunteers. The selection processes recognize the individual and the educational institution in which they attend. This combination of student performance and academic institution reputation plays a large role in process. To have Ferris welding students selected from applicants attending Big Ten, PAC, ACC and SEC schools demonstrates the respect and status a Ferris welding degree carries.

3.A.2.e – What scholarly/creative activities (e.g., symposium presentations, other presentations or awards) have students in the program participated in? Comment on the significance of these activities to the program and students.

Comments: Capstone courses for the department welding programs require academic work that is presented for public and professional review.

- The Welding Technology, A.A.S. capstone course is WELD 221 – Welding Fabrication II. Students enrolled in this course must complete a welded fabrication. The student must compile a written report that documents all aspects in the design and fabrication of the project. This report is then submitted to the James F. Lincoln Foundation Awards competition for comparison among the student's peers. The Ferris students have been competing in this event for more than 20 years under the direct supervision of Professor Dave Murray. Ferris students and Professor Murray have dominated the competition and have been rewarded with cash and prizes exceeding $70,000.00.

- The Welding Engineering Technology, B.S. degree capstone course is WELD 499 – Project Engineering and Management. Students enrolled in this course must complete a semester long team project. The project is a response to a challenge designed and developed by Professor

Kenneth Kuk. The project includes project management and engineering in the design and build of a fabricated assembly. The students must compile a written report that documents all aspects of the project. The report is then disseminated to attendees of the public presentation portion of the project. Attendees are encouraged to ask questions of the team at the conclusion of the presentation.

3.A.2.f – What are other accomplishments of students in the program? Comment on the significance of these accomplishments to the program and students.

Comments: The accomplishments of the American Welding Society Ferris State Registered Student Organization span all grade levels of the program. The AWS is the premier professional welding organization in the world and the Ferris students are highly respected within this organization.

3.A.3 – Employability of students.

3.A.3.a – How many graduates have become employed full-time in the field within one year of receiving their degree? Comment on this data.

Comments: 100%. The need for skilled welding personnel in virtually all industries is desperate. Please see the following sections within the report for information.

- Section 1.C PROGRAM RELEVANCE
- Section 2.B EMPLOYER FOLLOW-UP SURVEY
- WET 2007-2008 Recruiting

3.A.3.b – What is the average starting salary of graduates who become employed full-time in the field since the inception (for new programs) or the last program review? Compare with regional or national trends.

Comments:

- Welding Engineering Technology – 2007, $57,000.00 per year.
- Welding Technology – 2007. Graduates from this program are typically not "salaried" personnel, but compensated at an "hourly". The "hourly" rate is estimated to equate to $30,000.00 per year.

Academic Year	2003/04	2004/05	2005/06	2006/07	2007/08
B.S. Welding Engineering Tech					
Placement Rate	100%	100%	100%	100%	100%
Average Starting Salary	$55,000	$54,000	$54,000	$57,000	$57,400

#	Company Name	Contact	Hiring Interest			On Campus Recruiting			Other (email, web, fax...)	Results (Hires)	
			Interns	Grads	Either	Info Session	Interns	Grads		Interns	Grads
1	AZ Automotive			1	1				Email/CS		
1	NISSAN NORTH AMERICA, INC.	Justin Wolsker		1					Email/CS		
1	A. Moore & Associates			1					Email/CS		
1	ABICOR Binzel	Paul Pfingston			1				Email		
1	Acute Technological Services	John Bradley Mitchel	1	1			1	1	Email/Phone	3	
1	Aerotek, Inc.	Renata Scott		1	1			1	Email		
1	Alex Products	Brian Dobben/Kristine Liechty	1	1		1	1	1	Web/Email		
1	Altron Automation, Inc.	Ron McNees		1					Email		1
1	American Axle & Manufacturing	Brian Pawloski	1	1					Email		1
1	American Axle & Manufacturing	Richard Walpole/Brenda Pearrow	1	1					Job Fair		
1	AMI Recruiting of SC	Mark Moore, President			1				Email		
1	BAE Systems			1	1				CS		
1	Bechtel Corporation - Maryland			1		1	1	1	Email/Job Fair		
1	Bowling Green Metal Forming	Tom Fisher			1				Email		
1	Bristol Metal Products	John Tidlow		1	1				Email		
1	Bucyrus International Inc.			1				1	Email/CS		
1	Burke Group	Larry Pearl			1				Email		
1	Caterpillar - Aurora	Matt Wiske/Ron Taylor	1	1		1	1	1	Email/Job Fair	1	
1	Caterpillar - DeCatur	Rich Arundale	1	1	1				Email	1	
1	Caterpillar - East Moline	Rich Arundale		1					Phone/Visit	1	
1	CB&I	John Matthews		1	1				CS/Campus		
1	Center Manufacturing	Jacob Hewitt			1				Email		
1	Century Personnel Inc.	Ken Carlsen CPC		1	1				Email		
1	Challenge Manufacturing	Kurt Goodman							Email/CS		
1	Checker Motors	Marcia Koestner		1	1				Email		
1	Cianbro Corporation	Todd Gilley/Rapplh Shields		1					Job Fair		
1	Concurrent Technologies Corporation				1				Email/CS		
1	Contech, LLC	Jim Dybevik	1						Email		
1	Continental, Inc.	Jim Crockett			1				Email		
1	Cosma Engineering	Harish R.Mistry	1	1	1				Email		
1	Cox Recruiting (Texas position)	James Gilbert		1	1				Email		
1	CRC Evans	Ryan Fokens	1	1					Email/Phone		2
1	Dawson Professional	Megan Snares		1					Email		
1	Delfield Corp	Darrell Walker	1	1					Visit		
1	Delphi	Westphal, Dave	1	1	1				Email		
1	Dow Corning			1	1				CS		
1	Dowding Industries		1						Web		
1	DTE Energy	Lloyd Coles	1						Email/Phone	1	
1	Eberspaecher North America	Jeannie V. Stone		1	1				Email		
1	Edison Welding Institute	John Coffey		1			1	1	Email/CS		1
1	Emerson Process Management			1	1				Email/CS	2	
1	ESAB Welding & Cutting Products Inc.			1					Email/CS		
1	Fanuc Robotics America	Neil Dueweke		1					Email/AWS		
2	Fluor Corp	Matt Cox	1	1		1	1	1	Email/Job Fair	1	
1	Fluor Corporation	David A Stayshich	1						Email/Phone		
1	Ford Motor Company			1	1				Email/CS		
1	Fortune Pers. Cons. of Greensboro	Will Martin			1				Email		
1	Fronius Corp	Shaun Relyea							Email		
1	Fusion Welding	Tim Flannigan		1	1				Email		1
1	GBL Resources			1	1				CS		
1	GBL Resources			1	1				CS		
1	General Dynamics - Lima		1						Email	1	
1	General Motors	Pete Tropper		1					Email/Phone		
1	Genzink Steel	Bob Angeli/Debra Orchard	1	1					Email/Phone		1
1	Goldberg Associates	Jerry Glodberg			1				Email/Phone		
1	Hammers Industries	Sean Hammers							Email/Phone		

1	Hi-Tech Mold				1									
1	Hobart Brothers	Keith Packard		1	1						Email/Phone		1	
1	Holton Public Schools				1						CS			
1	Illinois Tool Works, Inc.				1					1	Email/CS			
1	Integrated Robotics	Heather M. Hinkel, Recruiter			1	1					Email			
1	Iosco Regional Educ Serv Agency				1					1	Web/Email			
1	ITW/Miller/Hobart	Stephen Lucas									Job Fair			
1	J. E. Johnson, Inc.	Daniel J. Ratell			1						Email			
1	J. Ray McDermott	Drake Trosclair		1	1			1	1	1	Job Fair		2	1
1	Jero Inc.	Dave Brann			1	1					Email			
1	JF Ahern	Tony Ahern		1		1					Email/Job Fair			
2	John Deere	Andy Pollard		1	1	1		1	1	1	Email/Job Fair		3	3
1	John Deere Staffing	Christine Minnaert		1	1	1					Email/AWS			
1	Johnson Controls Inc	Jason Carrol			1	1					Email			
1	Johnson Controls Inc (JCI - SETEX)	Dave Verhoff		1							Email			
1	K&M Fab	Wayne Petzke		1	1			1	1	1	Web/Email		1	1
2	Kiewit Offshore-Corpus Christi	Cory Severn			1			1		1	Web/Job Fair			
2	L&W Engineering	Jeff Pattison/Justin Schmidt			1	1					Email			
1	LCR Solutions	Lisa Wines				1					Email			
1	LeTourneau Technologies	Stacey Cook		1	1						Email			
1	Lincoln Electric	Dave Snider		1	1				1	1	Email			
1	Lindsay Corporation	Kim Paulsen, PHR		1							Email			
1	Magna - Multiplex	Julie Holmstrom			1						Email			
1	Major Tool	Mike Trosen		1	1						Email/Phone			2
1	Maverick Technologies	Thomas Pullen			1	1					Email			
1	Merrill Fabricators	Tom Ostrander		1	1						Email/Job Fair			1
1	Metaltek	John Rogers			1						Email/Phone			
1	Midway Products Group, Inc	Perry Tispis			1						Email/CS			
1	Miller Electric Manufacturing Co.	Various		1	1	1		1	1	1	Roadshow		4	3
1	MSX International	Mary Jo Whittiker				1					Email/Phone			
1	NDT Group	Kim VandeVooren			1	1					Email/Phone			
1	Noble Metal Processing, Inc.				1	1					Email/CS			
1	Nooter Corp	Mike Rice/Emily Ellerbush			1						Job Fair			
1	Northland Stainless Inc	Kelly Sullivan			1						Email/AWS			
1	Northrop Grumann Newport News	Ron Pietrowski/Jon Sweeney			1					1	Web/Email			2
1	Northrop Grumann Newport News	Marti Kuhns			1						Job Fair			
1	Northrop Grumann Newport News	Kevin Roossinck			2						Email/Phone			
1	Oshkosh Truck Corporation	Amy Bubolz				1					Email		1	
1	Panasonic F.A.	Dave Erbe		1	1						Email/Phone			
1	Powell Industries	LaTAsha Blair			1	1					Email			
1	Precision Wire Form	Craig Young			1	1					Email			
1	Preco Laser	Joel DeKock			1			1		1	Email/Job Fair			1
1	Pribbs Steel & Mfg., Inc.	Arnold Pribula			1						Email			
1	Pridgeon and Clay, Inc.	Joni M. LaHuis			1	1					Email			
1	Pro Search Staffing	Jesse Montalvo			1	1					Email			
1	Progressive Metal Manufacturing Co.	Craig A. Scott		1							Email			
1	QCI Technical Staffing									1	Web			
1	Reliance One, Inc.				1						Email/CS			
1	Rock Island Arsenal				1	1					CS			
1	Roman Engineering Services	Kurt Hofman		1					1		Email/Web		1	2
1	S&C Electric	Ron Sparks			1						Email/Visit			1
1	SAS Global	John R. Nolan			1						Email			
1	Search South, Inc.				1	1					Email/CS			
1	Siemens	Steve Douglas/Peter Kaup			1	1			1	1	Email/Visit			
1	Smiths Tubular Systems	Harlon Blanchard			1	1					Email			
1	Snelling Staffing	Shelly Moore			1	1					Email			
1	Solis & Structures	Bryan Mulcahy			1	1					Email			
1	Sterling Professional Search	Sheila Stokes			1	1					Email			

1	Superior Fabrication			1	1					Email/CS			
1	Temperform Corp.	AJ Bartolletto			1					Email			
1	Tenneco	Matthew Dawson		1						Email			
1	Terex Handlers	Tom Banse/Doug Sage	1							Email/Job Fair			
1	Total Maintenance Services	JR Skaggs		1	1					Email			
1	Tower Automotive	Jeremy Smith		1					1	Email			
1	Trillium Staffing Solutions-Lapeer			1	1					Email/CS			
1	TRW Automotive - Mesa, Arizona			1						Email/CS			
1	U-Haul International	Molly Silcox	1							Email	1		
1	Unistaff, Inc.	Karen Kelly		1						Email			
1	Vermeer Midwest	Dean Rieke		1						Job Fair			
1	Vincennes University			1	1					CS			
1	Vincennes University	Art Hasse		1	1					Email/Phone			
1	Wayne Wire Corp	Scott Swan		1	1					Email/Phone			
1	Welding Alloys Group	Travis Sands	1							Email/Phone			
1	Wellington Industries	Gary Sievert		1	1					Email			
1	Witzenman - USA			1	1					CS			
1	Wolf Robotics	Terry Merrifield	1	1						Email			1
1	Woods Equipment	Susan Swegle		1	1					Email			
	Chart Energy & Chemical	Greg Larson			1					Email			
137	Total Companies												
	TOTAL RECRUITING		57	103	63	10	13	21			25	26	

3.A.3.c – How many graduates have become employed as part-time or temporary workers in the field within one year of receiving their degree? Comment on this data.

Comments: Unknown. Typically program graduates are hired as full-time employees. No information has been provided to the department pertaining to part-time employment for program graduates.

3.A.3.d – Describe the career assistance available to the students. What is student perception of career assistance?

Comments: **CAREER GUIDANCE:** The welding faculty is contacted regularly by companies and individuals seeking future employees. Contact to the Department of Welding Engineering Technology office is either by telephone, facsimile, email and on-campus Career Fairs. This employment information is then disseminated to the faculty and students via email and a job posting board located in the welding computer lab. Students are fully aware of this process. Students will also contact the department office directly to inquire about available employment opportunities in a certain geographical area. Inquiries coming directly to the department are also forwarded to the Student Employment and Career Services Office to be posted electronically for current students and registered program alumni to view. As part of the recruiting process, companies will provide technical presentations to introduce students to their particular organization. Facilities for on-campus interviews are available and heavily utilized by visiting recruiting companies.

Career Guidance is done on an individual basis through a variety of mechanisms. The University support is through the Student Employment and Career Services Office. Information can be found at the web link below.

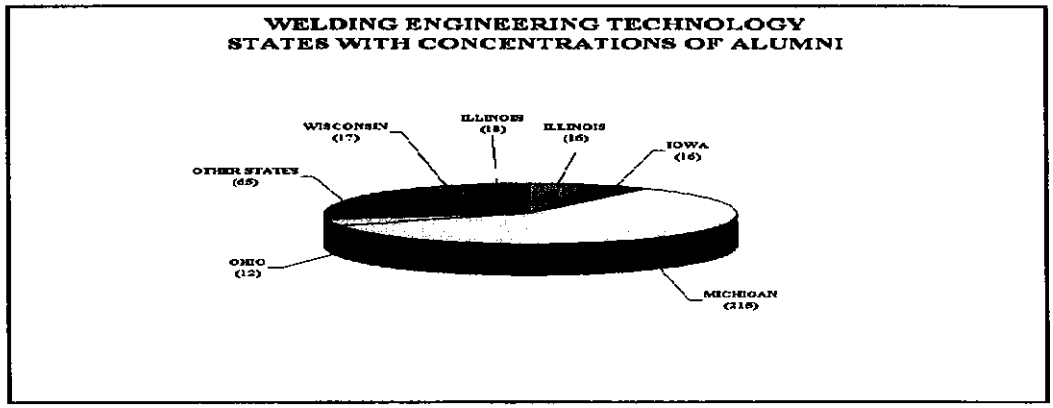
http://www.ferris.edu/htmls/othersrv/placement/

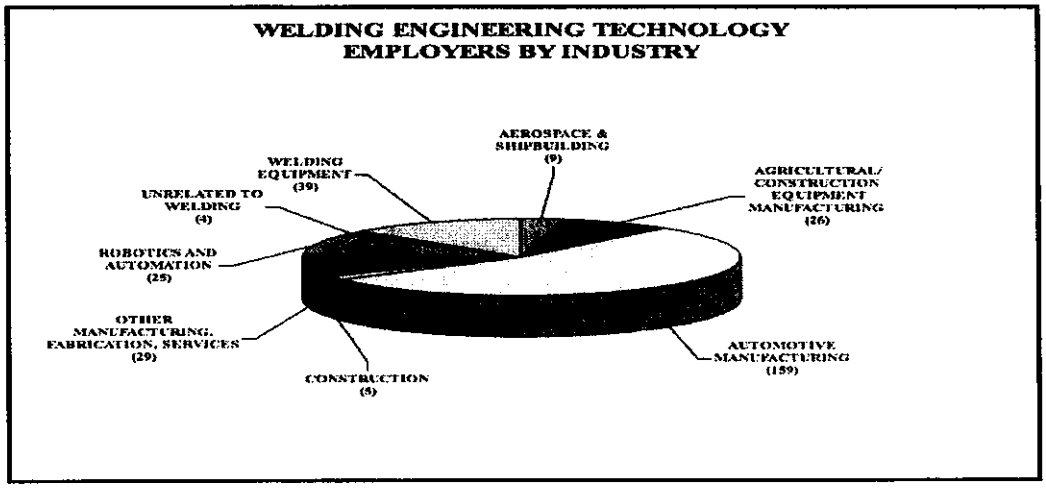
3.A.3.e – How many graduates continue to be employed in the field? Comment on this data.

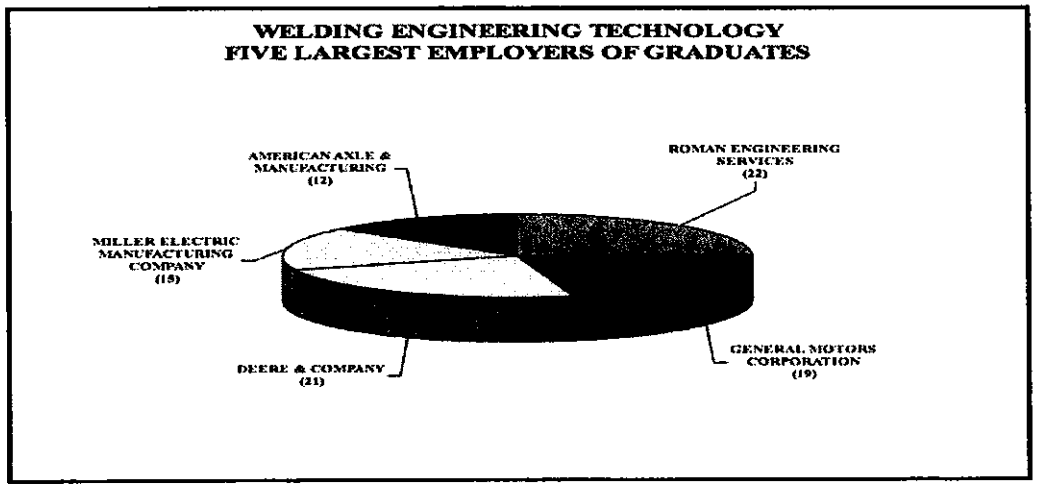
Comments: The data for this information has not been officially obtained. It is expected that program alumni remain employed in the welding industry in one capacity or another. The current demand for welding personnel makes it relatively easy for a skilled welding professional to change employment positions.

3.A.3.f – Describe and comment on the geographic distribution of employed graduates.

Comments: The charts below show "States with Concentrations of Welding Engineering Technology Graduates" , "Employers by Industry" and "Five Largest Employers".







3.A.3.g – How many students and/or graduates go on for additional educational training? (Give annual average.) Comment on this data.

Comments: It is estimated that approximately 10% of graduating Welding Engineering Technology students pursue a graduate degree.

3.A.3.h – Where do most students and/or graduates obtain their additional educational training? Comment on this data.

Comments: No data available for this.

3.B – ENROLLMENT

3.B.1 – What is the anticipated fall enrollment for the program?

Comments: Between 140 -150 total students

3.B.2 – Have enrollment and student credit hour (SCH) production increased or decreased since the last program review? Supply a table and comment on any enrollment trends.

Comments: Enrollment has continued to grow in the welding programs. The table below indicated the enrollment trends for the past five years.

Enrollment Trends for Past Five Academic Years

Source: FSU Institutional Research & Testing

	Year (03-04)	Year (04-05)	Year (05-06)	Year (06-07)	Year (07-08)
II. Full-time Students	118	130	135	124	137
Part-time Students	0	0	0	0	0
Student FTE[1]	118	130	135	124	137
Graduates	26	22	33	28	30

[1] FTE = Full-Time Equivalent

The proceeding page contains the listed Ferris State Institutional Research & Testing documents:

- Welding Engineering Technology
  - Student Credit Hours – On, Off, and Total
- Welding Technology
  - Student Credit Hours – On, Off, and Total
- Pre- Welding Engineering Technology
  - Student Credit Hours – On, Off, and Total
- Pre - Welding Technology
  - Student Credit Hours – On, Off, and Total

Ferris State University
Administrative Program Review 2007
SCH's

TE
Welding Engineering Technology
BS

Student Credit Hours - On, Off, and Total

Term	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot	1st Prof On	1st Profi Off	1st Prof Total	Mast On	Mast Off	Mast Tot
200308	0	0	0	0	0	0	286	0	286	589	0	589	0	0	0	0	0	0
200408	0	0	0	33	0	33	309	0	309	627	0	627	0	0	0	0	0	0
200508	0	0	0	14	0	14	331	0	331	663	0	663	0	0	0	0	0	0
200608	0	0	0	0	0	0	293	0	293	598	0	598	0	0	0	0	0	0
200708	0	0	0	0	0	0	117	0	117	735	0	735	0	0	0	0	0	0

Ferris State University
Administrative Program Review 2007
SCH's

TE
Welding Technology
AAS

Student Credit Hours - On, Off, and Total

Term	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot	1st Prof On	1st Profi Off	1st Prof Total	Mast On	Mast Off	Mast Tot
200308	514	0	514	482	0	482	127	0	127	53	0	53	0	0	0	0	0	0
200408	572	0	572	475	0	475	145	0	145	26	0	26	0	0	0	0	0	0
200508	426	0	426	569	0	569	160	0	160	25	0	25	0	0	0	0	0	0
200608	449	0	449	371	0	371	247	0	247	47	0	47	0	0	0	0	0	0
200708	555	0	555	489	0	489	315	0	315	52	0	52	0	0	0	0	0	0

Ferris State University
Administrative Program Review 2007
SCH's

TE
Pre-Welding Engineering Technology
BS

Student Credit Hours - On, Off, and Total

Term	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot	1st Prof On	1st Profl Off	1st Prof Total	Mast On	Mast Off	Mast Tot
200308	0	0	0	0	0	0	25	0	25	14	0	14	0	0	0	0	0	0
200408	0	0	0	0	0	0	0	0	0	42	0	42	0	0	0	0	0	0
200508	0	0	0	0	0	0	57	0	57	41	0	41	0	0	0	0	0	0
200608	0	0	0	0	0	0	14	0	14	14	0	14	0	0	0	0	0	0
200708	0	0	0	0	0	0	35	0	35	17	0	17	0	0	0	0	0	0

Ferris State University
Administrative Program Review 2007
SCH's

TE
Pre-Welding Technology
AAS

Student Credit Hours - On, Off, and Total

Term	Fresh On	Fresh Off	Fresh Tot	Soph On	Soph Off	Soph Tot	Junior On	Junior Off	Junior Tot	Senior On	Senior Off	Senior Tot	1st Prof On	1st Profl Off	1st Prof Total	Mast On	Mast Off	Mast Tot
200408	14	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
200508	18	0	18	13	0	13	13	0	13	0	0	0	0	0	0	0	0	0
200608	28	0	28	0	0	0	12	0	12	0	0	0	0	0	0	0	0	0
200708	54	0	54	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

3.B.3 – Since the last program review, how many students apply to the program annually?

Comments:

- Welding Technology – 91 (average)
- Welding Engineering Technology - 29 (40)*

3.B.4 – Of those who apply, how many and what percentage are admitted?

Comments:

- Welding Technology – 59% (average)
- Welding Engineering Technology – 31% (73%)*

3.B.5 – Of those who are admitted, how many and what percentage enroll?

Comments:

- Welding Technology – 70%
- Welding Engineering Technology – 522 % (100%)*

NOTE: The Department of WET data for the WELE Welding Engineering Technology degree varies greatly from the FSU Institutional Research & Testing (IR&T) data below. Questions 3.B.3, 3.B.4 and 3.B.5 above and the table below contain both IR&T and Department of WET data. Information is expressed in the following format:

IR&T data (Dept. of WET data)*

Apply, Admit, Enroll Data – Fall 2003 – 2007*

WELT Welding Technology

	New Students			Transfers			Re-Admits			Sub-Total			Continue	Total
Year	Apply	Admit	Enroll	Apply	Admit	Enroll	Apply	Admit	Enroll	Apply	Admit	Enroll	Enroll	Enroll
Fall 2003	98	49	28	10	9	5	4	4	3	112	62	36	39	75
Fall 2004	79	37	29	14	12	11	1	1		94	50	40	37	77
Fall 2005	82	36	20	24	17	10				106	53	30	44	74
Fall 2006	44	32	22	18	16		3	2		65	50	36	36	72
Fall 2007	51	31		25	19	17	2	2	2	78	52	45	47	92

WELE Welding Engineering Technology

	New Students			Transfers			Re-Admits			Sub-Total*			Continue	Total
Year	Apply	Admit	Enroll	Apply	Admit	Enroll	Apply	Admit	Enroll	Apply	Admit	Enroll	Enroll	Enroll
Fall 2003	2	2		20	12	10	1	1	1	23 (39)*	13 (27)*	13 (27)*	43	54
Fall 2004	2			21	12	12	1	1	1	24 (38)*	13 (31)*	13 (31)*	47	60
Fall 2005	10			55	8	6	1	1	1	33 (41)*	9 (30)*	9 (30)*	57	64
Fall 2006	12	1		14	1					26 (44)*	2 (30)*	2 (30)*	*56	*56
Fall 2007	11	1		24	6	7	4	3	2	39 (36)*	10 (27)*	10 (27)*	45	54

** Continuing data not tracked in F06 or F07 & not included in sub-total.*

Source G:/../Weekly Stat Report/all 4th day reports/Fall 7th-4th weekly enrl rpt/WELE-WELT appl admit enrolled.xls

3.B.6 – What are the program's current enrollment goals, strategy, and efforts to maintain/increase/decrease the number of students in the program? Please explain.

Comments: Maintain an annual department enrollment of 120 students in the major. (70 AAS & 50 BS program). Below are some department recruiting and marketing activities.

- Maintain department web site: This is the best way for potential students, parents and employers to find information about the program.

- Annually attend the AWS National Exposition: This event allows Ferris to be seen by both program alumni and industry.

- Annually promote and attend FSU COT Dawg Days: The WET Department participates in this University activity.

- Annually host the FSU Secondary Welding Competition for high school students and instructors: Our most successful marketing/recruiting activity. The 7th annual event is scheduled for May, 2009.

- Continue recruiting visits to secondary educational institutions: Activity is ongoing and will be continued in the 2007/08 academic year

- Obtain ABET Accreditation: The Welding Engineering Technology program will be submitting the Self-Study documentation July 1. A fall ABET visit is expected.

3.C – PROGRAM CAPACITY

3.C.1 – What is the appropriate program enrollment capacity, given the available faculty, physical resources, funding, accreditation requirements, state and federal regulations, and other factors? Which of these items limits the program enrollment capacity? Please explain any differences between capacity and current enrollment?

Comments:

- Welding Engineering Technology, B. S. degree
  - Capacity – 50 students
- Welding Technology, A.A.S. degree
  - Capacity – 70 students

The major items limiting enrollment growth are number of faculty, physical facilities, funding, and capital equipment.

The department has consistently operated one, or both, programs over capacity since 2003/04.

Academic Year	2003/04	2004/05	2005/06	2006/07	2007/08	Average
Majors in Technical Sequence						
Freshman (WELD 111)	39	42	34	34	46	39
Sophomores (WELD 211)	28	31	42	34	34	33.8
Juniors (WELD 311)	27	31	30	30	27	29
Seniors (WELD 411)	24	26	29	26	30	27
Total Full-Time Majors in Sequence	118	130	135	124	137	128.8

3.D – RETENTION AND GRADUATION

3.D.1 – Give the annual attrition rate (number and percent of students) in the program.

Academic Year	2003/04	2004/05	2005/06	2006/07	2007/08	Average
Retention to Graduation (two yrs)						
A.A.S. Welding Technology	84%	72%	57%	71%		57%
B.S. Welding Engineering Tech.	100%	81%	106%	93%		76%

3.D.2 – What are the program's current goals, strategy and efforts to retain students in the program?

Comments:

The Welding Engineering Technology program strives to continuously assess whether the educational objectives of the program are well-aligned with the needs of industry and students are progressing. Assessment is done by staying in constant dialog with students, alumni and employers with regard to the program.

The Welding Engineering Technology program uses a three-pronged approach to achieve this assessment:

1. **Industrial Advisory Board:** The WET Industry Advisory Board is a group of employers and alumni that meets at least once a year to discuss the program as well as trends in the industry that will affect graduates in the future. Performance of graduates in key areas is reviewed to determine whether educational objectives are being met.
2. **American Welding Society Welding Exposition:** The WET department actively participates in the AWS Welding Exposition to further interact with industry to assess future industry trends and obtain feedback from alumni on how well program educational objectives are being met.
3. **Surveys:** The WET department surveys students, faculty, employers, alumni and advisory board members every six years as part of the Academic Program Review cycle. These surveys are used to sample an even wider cross section of industry for the purpose of assessing whether educational objectives are being met. Please see the Survey Instrument, Frequency Statistics and Comments at the back of this section for each constituent group list above.

   These measures allow the WET program to assess whether program objectives are in line with industry needs and if graduates are well-prepared to successfully meet these objectives.

3.D.3 – Describe and assess trends in the number of degrees awarded in the program.

Comments: The table below shows the department degrees conferred.

Academic Year Cycle	2003/04	2004/05	2005/06	2006/07	2007/08
B.S. Welding Engineering Tech.	26	22	33	28	30
A.A.S. Welding Tech.	26	28	24	24	30

3.D.4 – How many students who enroll in the program graduate from it within the prescribed time? Comment on any trends.

Comments: The table below shows the department degrees retention to graduations rates.

Academic Year Cycle	2002/03	2003/04	2004/05	2005/06	2006/07
B.S. Welding Engineering Tech.	80%	100%	81%	106%	93%
A.A.S. Welding Tech.	70%	84%	72%	57%	71%

3.D.5 – On average, how long does it take a students to graduate from the program? Please comment.

Comments:

- Welding Technology A.A.S. degree: 2.5 years
- Welding Engineering Technology B.S. degree; 4.5 years

These time durations are estimates based on the fact that many factors are involved. A student may attend Ferris and take general education and/or remedial courses prior to entering the program. Transfer students enter Ferris with courses already completed. The best indicator of student degree obtainment could be realized from Retention to Graduation Rates found in 3.D.4.

3.E – ACCESS

3.E.1 – Describe and assess the program's actions to make itself accessible to students. Use examples such as off-site courses, accelerated courses or other types of flexible learning, use of summer courses, multiple program entry points, e-learning, mixed delivery courses, scheduling.

Comments: Delivery modes used by this program are a combination of conventional lecture and laboratory courses offered Monday through Friday typically 8:00 AM until 6:00 PM. Various courses have an element of "web-based" content as created by the particular faculty teaching the course and the use of the Ferris State "FerrisCONNECT" web tool. All courses are taught on the Ferris State University Big Rapids, MI campus. Currently no off-campus or distance education opportunities are available. WELD courses are available in Fall or Spring semester only. The only "off-site" instruction provided by this department is for Manufacturing Engineering Technology students in Grand Rapids, MI every other year.

3.E.2 – Describe what effects the action's described in (1) have had on the program. Use examples such as program visibility, market share, enrollment, faculty load, computer and other resources.

Comments: The "off-site" instruction provided by this department for Manufacturing Engineering Technology students in Grand

Rapids, MI every other year is built in to the faculty load model and compensation comes from the College of Technology Dean's Office.

3.E.3 – How do the actions described in (1) advance or hinder program goals and priorities.

Comments: No effect.

3.F – CURRICULUM. The curriculum review section must also contain appropriate check sheets and example syllabi, which may be attached as an appendix.

3.F.1 – Program requirements. Describe and assess the program-related courses required for graduation.

Comments:

The educational objectives of the Welding Technology A.A.S degree and Welding Engineering Technology B.S. degree programs align themselves very well with the newly developed University Mission Statement. As the world continues to move toward a "global society", it is imperative that students graduating from Ferris are well-prepared to encounter the ever-changing environment of business and industry. The curriculum of the department programs, in conjunction with the University General Education policy, insures graduates are ready to meet the challenges the world will offer.

Information pertaining to the curriculum of the department program can be found in the pages at the end of this section. A list of the curriculum materials included is stated below and can be found in this section.

- Programmatic marketing brochure
- Welding Engineering Technology Bachelor of Science degree Curriculum Guide Sheet
- Welding Engineering Technology Bachelor of Science degree Technical Sequence Course Descriptions
- Welding Technology Associate in Applied Science degree Curriculum Guide Sheet
- Welding Technology Associate in Applied Science degree Technical Sequence Course Descriptions
- Ferris State Graduation Check Sheet for General Education Requirements

Welding Technology and Welding Engineering Technology

FERRIS STATE UNIVERSITY

COLLEGE OF TECHNOLOGY

Welding is an exciting field which offers opportunities across the nation and around the world. One of every two products that are produced contains a weld, and this creates a wide variety of opportunities for those individuals who understand the welding process and how to apply it. Welding touches virtually every segment of the economy including construction, automotive, agricultural and construction equipment, energy production and distribution, welding equipment manufacture, robotics and automation. Opportunities to apply welding technology are plentiful considering that the American Welding Society, an industry group, predicts that by 2010, demand for skilled welders may outstrip supply by more than 200,000.

The Welding Technology Associate in Applied Science Degree program at Ferris State University has been producing welding technicians for more than 30 years. Students receive extensive hands-on laboratory experience in various welding processes, metallurgy, mechanical testing, inspection and fabrication of weldments. This training allows the welding technician to optimize welding applications through the selection of proper welding equipment and materials, quality control procedures, destructive and non-destructive testing methods, and training of welding personnel to insure the quality and reliability of welded assemblies. A wide variety of employment opportunities for welding technicians are found in the manufacturing and construction industries.

Established in 1984, the nationally-recognized Welding Engineering Technology Bachelor of Science Degree program is the largest of its kind in the United States. The program is designed to produce engineers who are involved in the concept, design, engineering, manufacturing and testing of welded products. Students gain extensive knowledge of various welding processes and how best to implement them. They also learn how to approach product design and manufacturing with welding in mind. This overall knowledge of weldments, and the ability to engineer welding and joining systems, produces graduates who are in high demand and receive excellent compensation.

Under the guidance of industry-experienced educators, students will develop skills in the following areas:

- Fabrication
- Design
- Material Science
- Tooling
- Non-Destructive Testing
- Robotics and Automation
- Project Management
- Industrial Engineering
- Advanced Welding Processes
- Statistical Quality Control

Industry recognizes the value of Ferris State Welding Engineering Technology Department graduates. The Ferris State welding laboratories are equipped with more than $500,000 worth of state-of-the-art welding equipment and supplies from various industry partners. This ensures that students are working with up-to-date equipment and can immediately contribute upon graduation. Industry also supports Welding Engineering Technology students through participation in a paid internship program. Students must obtain an internship between their junior and senior years that will require them to apply their education to "real world" challenges.

PROGRAM STRENGTHS

- Curriculum designed with input from welding industry leaders
- Intensive hands-on curriculum utilizing the latest laboratory welding equipment technology which is updated on an annual basis
- 98%+ graduate placement rate
- Average starting salary is consistently near the top of the National Association of Colleges and Employers salary survey for engineering and engineering technology graduates
- All courses are taught by professional faculty with substantial industry and teaching experience

PROGRAM OFFERINGS

The Ferris State University College of Technology offers two educational programs designed to meet the needs of individual students who plan a career in the welding industry.

1. **ASSOCIATE IN APPLIED SCIENCE DEGREE - WELDING TECHNOLOGY**

   The AAS program prepares students to enter the workforce as a welding technician. However, the majority of AAS graduates go on to the Bachelor's program in Welding Engineering Technology.

2. **BACHELOR OF SCIENCE DEGREE - WELDING ENGINEERING TECHNOLOGY**

   The Bachelor's program builds on the AAS program with advanced courses in:

   - Welding Automation and Robotics
   - Design of Weldments
   - Controls for Automation
   - Advanced Resistance Welding
   - Statistical Quality Control
   - Advanced Welding Processes
   - Welding Metallurgy
   - Project Engineering and Management

GRADUATE OPTIONS

Graduates of the Welding Engineering Technology Bachelor of Science Degree program accept positions with a wide variety of titles including welding engineer, manufacturing engineer, application engineer, sales engineer and project engineer/manager in companies from various sectors of the economy. Graduates have found employment in more than 30 states across the country and around the world.

PROGRAM RECOGNITION

- Awarded the American Welding Society's 2005 National Public Image of Welding Award for Educational Facilities
- Since 1986, students in the Ferris State welding programs have received over $800,000 in academic scholarship awards from various industry and professional organizations
- More than 50 students have been recognized with endowed National Scholarships through such industry leading organizations as the American Welding Society (AWS), and Resistance Welder Manufacturers' Alliance (RWMA)
- Many welding faculty members have been recognized by the AWS on the district and national level for outstanding teaching activities
- Graduates are sought by such industry leaders as Boeing, Caterpillar, Fluor, General Motors, John Deere, Lincoln Electric, Miller Electric, Northrop-Grumman, RoMan Engineering Services and others

PROGRAM ENROLLMENT

- To apply via the internet go to: www.ferris.edu/admissions/application
- Further information can be obtained by calling the Department of Welding Engineering Technology Office at 231-591-2511
- Or email weldingdepartment@ferris.edu

FERRIS STATE UNIVERSITY
Imagine More

Bachelor of Science Degree

Welding Engineering Technology

Program Academic Requirements

Student:				Code	Location	Crs
email:		ID:			Ferris	
Advisor:		Ph:		1	Transfer	

Entry Criteria:

1. Application for admission submitted by February 15 prior to Fall term requested.
2. Associate in Welding Technology. / A minimum 3.0 GPA overall.
3. Satisfy all preprequisites to enter MATH 126 (MATH 116) and EEET 301 (EEET 201)
4. FSU PHYS 211 - Introductory Physics I or equivalent transfer course.
5. FSU ETEC 140 - Engineering Graphics Comprehensive or equivalent transfer course.
6. FSU MATL 240 - Introduction to Material Science or equivalent transfer course.

		MAJOR	Cr	Gr	Pts	S	Yr	Code	Notes
WELD	212	Quality Testing (Transfer Students only)	4						
WELD	311	Welding Automation & Robotics 1 (JR Status)	4						
WELD	312	Design of Weldments (JR Status)	3						
WELD	321	Welding Automation & Robotics 2 (WELD 311, 312)	4						
WELD	322	Advanced Resistance Welding (WELD 311, 312)	3						
WELD	393	Internship (WELD 321,322)	4						
WELD	411	Advanced Welding Processes (WELD 393)	3						
WELD	412	Computer Aided Weldment Design (WELD 393)	4						
WELD	422	Material Science (WELD 411, 412)	3						
WELD	499	Project Engineering and Management (WELD 411, 412)	3						
		TECHNICAL RELATED							
EEET	301	Computers for Automation (EEET 201)	3						
MECH	250	Fluid Power with Controls (MATH 116)	2						
MFGE	353	Statistical Quality Control (MATH 116)	3						
		COMMUNICATIONS COMPETENCE							
COMM	121	Fundamentals of Public Speaking	3						
ENGL	311	Advanced Technical Writing (ENGL 250 or 211)	3						
		QUANTITATIVE SKILLS							
MATH	126	Algebra & Analytical Trigonometry (MATH 116 or ACT 24)	4						
MATH	216	Applied Calculus (MATH 126 or ACT 26)	4						
		SCIENTIFIC UNDERSTANDING							
CHEM	114	Intro to General Chemistry (CHEM 103 or H/S chemistry, MATH 110)	4						
		CULTURAL ENRICHMENT							
		Cultural Enrichment Elective	3						
		Cultural Enrichment Elective (200 level or above)	3						
		SOCIAL AWARENESS							
		Social Awareness Elective	3						
		Social Awareness Elective (200 level or above)	3						

Unofficial Statistics

Major: Total Crs / Earned Crs / Honor Points	35
Degree: Total Crs / Earned Crs / Honor Points	73
GPA Major:	-
GPA Degree:	-

Bachelor of Science General Education Requirements:

One Global Consciousness Course (3cr), One Race - Ethnicity - Gender(REG) Course (3cr), and One Foundation Course(3cr) – Multiple requirements may be satisfied by a single course.

Cultural Enrichment – 9 credits (3 credits in course > 200 level); Social Awareness - 9credits (3 credits in course > 200 level)

Students must complete 40 credits at or above the 300.

Reference: http://www.ferris.edu/htmls/academics/gened/gen_edspecific.html

Contact the Department of Welding Engineering Technology for more information
Phone: 231-591-2511
Email:weldingdepartment@ferris.edu
www.ferris.edu/welding

6/6/2008

FERRIS STATE UNIVERSITY
Imagine More

Bachelor of Science Degree

Welding Engineering Technology

Course Sequence Guide

Student:			
Email:		ID:	
Advisor:		Ph:	

YEAR 3 - FALL SEMESTER			Crs	Gr
WELD	212	Quality Testing (Transfer Students only)	4	
WELD	311	Welding Automation & Robotics 1 (JR Status)	4	
WELD	312	Design of Weldments (JR Status)	3	
EEET	301	Computers for Automation (EEET 201)	3	
MATH	126	Algebra & Analytical Trigonometry (MATH 116 or ACT 24)	4	
CHEM	114	Intro to General Chemistry (CHEM 103 or H/S chemistry, MATH 110)	4	
		Total	**22**	

YEAR 3 - SPRING SEMESTER			Crs	Gr
WELD	321	Welding Automation & Robotics 2 (WELD 311, 312)	4	
WELD	322	Advanced Resistance Welding (WELD 311, 312)	3	
MECH	250	Fluid Power with Controls (MATH 116)	2	
ENGL	311	Advanced Technical Writing (ENGL 250 or 211)	3	
MATH	216	Applied Calculus (MATH 126 or ACT 26)	4	
		Total	**16**	

Submit Application for Graduation.

YEAR 3 - SUMMER SEMESTER			Crs	Gr
WELD	393	Internship (WELD 321,322)	4	
		Total	**4**	

YEAR 4 - FALL SEMESTER			Crs	Gr
WELD	411	Advanced Welding Processes (WELD 393)	3	
WELD	412	Computer Aided Weldment Design (WELD 393)	4	
MFGE	353	Statistical Quality Control (MATH 116)	3	
COMM	121	Fundamentals of Public Speaking	3	
		Social Awareness Elective	3	
		Total	**16**	

YEAR 4 - SPRING SEMESTER			Crs	Gr
WELD	422	Material Science (WELD 411, 412)	3	
WELD	499	Project Engineering and Management (WELD 411, 412)	3	
		Cultural Enrichment Elective	3	
		Cultural Enrichment Elective (200 level or above)	3	
		Social Awareness Elective (200 level or above)	3	
		Total	**15**	

Contact the Department of Welding Engineering Technology for more information
Phone: 231-591-2511
Email:weldingdepartment@ferris.edu
www.ferris.edu/welding

6/6/2008

Bachelor of Science Degree

Welding Engineering Technology

Technical Sequence Course Descriptions

WELD 311 Welding Automation and Robotics 1
Advanced welding theory and practical applications. Economics, feasibility and fundamentals of welding automation. Fixturing, positioning, safety, and adaptive control devices applied to various fixed, flexible, and programmable automated welding processes. Program, perform, and analyze various automated welds. Prerequisites: Junior status in the Welding Engineering Technology program. 4 credits.

WELD 312 Design of Weldments
The design, drawing, manufacturing engineering, and cost considerations of creating weldments: engineering graphics, weld joint types and welding symbols, estimating welding costs, production considerations needed in designing and fabricating weldments, the use of tolerance dimensioning, geometric tolerancing, mechanical and section properties of materials; load and stress analysis and code requirement for welding. Prerequisites: Prerequisite: Junior status in the Welding Engineering Technology program. 3 credits.

EEET 301 Controls for Automation
A second course that builds on principles taught in EEET 201 and applies them to industrial automation systems. Sensor and actuator control elements are presented. Ladder diagrams and fluid power symbology emphasized. Solenoids, starters, timers, counters, relays, contactors, heaters, motors, 3-phase power, PLC's, other I/O devices are discussed and applied to manufacturing applications. Safety standards, and other system integration issues are presented.
Prerequisites: EEET 201. 3 credits.

WELD 321 Welding Automation and Robotics 2
Continuation of WELD 311 advanced theory and laboratory welding automation course. Emphasizes laser, plasma, robotic and fixed automated welding and cutting applications. Technical and economic feasibility studies are performed. Students will be required to set-up, program, operate, and apply various welding automation hardware and software systems. Prerequisite: WELD 311. 4 credits.

WELD 322 Advanced Resistance Welding
Resistance welding: set-up and operation of systems typically found in automotive, appliance, and other sheet metal manufacturing industries. Written laboratory reports required. Prerequisites: junior status in welding program. Prerequisite: Junior status in the Welding Engineering Technology program. 3 credits.

MECH 250 Fluid Power with Controls
Mechanics: Lecture-lab course which introduces the student to fluid power. Emphasis is placed on hydraulics. Included are fluid power components, elementary controls, systems, trouble-shooting, and fundamental fluid science principles. Prerequisites: MATH 116 or a minimum score of 24 on ACT or 560 on SAT. 2 credits.

WELD 393 Internship in Welding Engineering Technology
Placement in an industrial setting for a minimum of 400 hours over a ten-week period a combined effort of the training site, university and student. Industrial projects and daily activities of a product designer for employer. Prerequisite: WELD 321, WELD 322. 4 credits.

MFGE 353 Statistical Quality Control
Fundamentals and applications of statistics in the control of manufacturing quality. The construction and interpretation of histograms, Pareto, variable and attribute control charts. The calculation and interpretation of process capability, regression analysis, measurement error techniques, an overview of design of experiments and cause and effect diagrams. Prerequisites: MATH 116 or equivalent. 3 credits.

WELD 411 Advanced Welding Processes
Welding processes, techniques, and methods for joining materials not previously covered. Mechanical and chemical energy joining systems, high energy electrical joining processes, adhesive bonding, and mechanical fasteners. How to and why select a process for a specific application. Prerequisites: A.A.S. degree in Welding Technology, WELD 393. 3 credits.

WELD 412 Computer Aided Weldment Design
Application of computer aided drafting, material selection, and finite element analysis software and hardware to facilitate the process of designing weldments. Mechanical and shape properties of materials utilized to determine and analyze weldment design functionality. Design approached methods and programs are addressed. Engineering economic methods are applied to weldment design and processes selection. Students will be required to solve several weldment design problems. Prerequisites: MECH 340, WELD 312, WELD 393. 3 credits.

WELD 422 Material Science
Exposure to the chemical composition, metallurgical aspects, applications, weldability, and specific requirements for welding of several materials. The metallurgical response to heating and cooling during the welding cycle, proper welding techniques and requirements. Ferrous and nonferrous alloys, along with non-metals. Prerequisites: A.A.S. degree in Welding Technology, WELD 393. 3 credits.

WELD 499 Welding Project Engineering and Management
Capstone course for the Welding Engineering Technology program. Designing, engineering, manufacturing and managing a welding project. Design of welded structures and machine elements in terms of allowable stresses, joint configuration, material and process selection, welding procedures, equipment specification and purchasing, production forecasting, project supervision, and resource management techniques. Prerequisite: WELD 412. 3 credits.

Ferris State University
Welding Engineering Technology Department
915 Campus Drive, Swan 108
Big Rapids, MI 49307
231/591-2511

FERRIS STATE UNIVERSITY
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Associate in Applied Science Degree

Welding Technology

Program Academic Requirements

Student:				Code	Location	Crs
email:		ID:			Ferris	
Advisor:		Ph:		1	Transfer	

Entry Criteria:

1. Meet University admission standards.
2. Meet College of Technology admission standards.
3. MATH 116 placement (19 MATH ACT).
4. ENGL 150 placement (14 ENGL ACT).

		MAJOR	Cr	Gr	Pts	S	Yr	Code	Notes
WELD	111	Welding Processes 1 Lecture (Admit to WT)	3						
WELD	112	Welding Graphics (Admit to WT)	3						
WELD	113	Welding Processes 1 Lab (Admit to WT)	4						
WELD	121	Welding Processes 2 Lecture (WELD 111 & 113)	3						
WELD	123	Welding Processes 2 Lab (WELD 111 & 113)	4						
WELD	211	Welding Fabrication 1 (WELD 121 & 123)	4						
WELD	212	Quality Testing (WELD 121 & 123)	4						
WELD	221	Welding Fabrication 2 (WELD 211 & 212 & ENGL 250)	4						
WELD	222	Introduction to Welding Automation (WELD 211 & 212)	3						
		TECHNICAL RELATED							
EEET	201	Electrical Fundamentals (ACT 24 or MATH 116)	3						
MATL	240	Introduction to Material Science	4						
MFGT	150	Manufacturing Processes	2						
		COMMUNICATIONS COMPETENCE							
ENGL	150	English 1 (ACT 14 or ENGL 074)	3						
ENGL	250	English 2 (ENGL 150)	3						
		QUANTITATIVE SKILLS							
MATH	116	Intermediate Algebra & Numerical Trig (ACT19 or MATH 110)	4						
		SCIENTIFIC UNDERSTANDING							
PHYS	211	Introductory Physics (MATH 116 or 120 or 26 ACT)	3						
		CULTURAL ENRICHMENT							
		Cultural Enrichment Elective	3						
		SOCIAL AWARENESS							
		Social Awareness Elective	3						
		FRESHMEN SEMINAR							
FSUS	100	Freshmen Seminar	1						

Unofficial Statistics

Major: Total Crs / Earned Crs / Honor Points	32
Degree: Total Crs / Earned Crs / Honor Points	61
GPA Major:	-
GPA Degree:	-

AAS Minimum General Education Requirements:
Cultural Enrichment (CE) – 3 credits; Social Awareness (SA) - 3 credits; Communications - 6 credits;
Scientific Understanding - 3/4 credits;
Reference: http://www.ferris.edu/htmls/academics/gened/gen_edspecific.htm

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6/6/2008

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Associate in Applied Science Degree

Welding Technology

Course Sequence Guide

Student:			
Email:		ID:	
Advisor:		Ph:	

YEAR 1 - FALL SEMESTER			Crs	Gr
WELD	111	Welding Processes 1 Lecture (Admit to WT)	3	
WELD	112	Welding Graphics (Admit to WT)	2	
WELD	113	Welding Processes 1 Lab (Admit to WT)	4	
ENGL	150	English 1 (ACT 14 or ENGL 074)	3	
		Cultural Enrichment Elective	3	
FSUS	100	Freshmen Seminar	1	
		Total	**16**	

YEAR 1 - SPRING SEMESTER			Crs	Gr
WELD	121	Welding Processes 2 Lecture (WELD 111 & 113)	3	
WELD	123	Welding Processes 2 Lab (WELD 111 & 113)	4	
MATL	240	Introduction to Material Science	4	
MATH	116	Intermediate Algebra & Numerical Trig (ACT19 or MATH 110)	4	
		Total	**15**	

YEAR 2 - FALL SEMESTER			Crs	Gr
WELD	211	Welding Fabrication 1 (WELD 121 & 123)	5	
WELD	212	Quality Testing (WELD 121 & 123)	4	
ENGL	250	English 2 (ENGL 150)	3	
PHYS	211	Introductory Physics (MATH 116 or 120 or 26 ACT)	3	
		Total	**15**	

YEAR 2 - SPRING SEMESTER			Crs	Gr
WELD	221	Welding Fabrication 2 (WELD 211 & 212 & ENGL 250)	4	
WELD	222	Introduction to Welding Automation (WELD 211 & 212)	3	
EEET	201	Electrical Fundamentals (ACT 24 or MATH 116)	3	
MFGT	150	Manufacturing Processes	2	
		Social Awareness Elective	3	
		Total	**15**	

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Associate in Applied Science Degree

Welding Technology

Technical Sequence Course Descriptions

WELD 111 Welding Processes 1 Lecture
Initial lecture environment for students enrolled in associate degree program in Welding Technology. Theory and techniques pertaining to shielded metal arc welding, oxy-fuel welding/cutting, brazing and soldering methods and applications are discussed. Equipment and consumable requirements for specific welding processes and applications. Requirements for use of industrial welding codes to develop Welding Procedures and Welder Qualifications are discussed. Introduction to gas metal welding process. 3 credits.

WELD 112 Welding Graphics
Print reading and drafting of common welded products; generating multiview drawings, interpreting welding drawings, calculating weld and part weights and an introduction to welding symbols. Develop templates for optically guided cutting equipment, calculate plate utilization, and calculate bend allowance. Exposure to the creating and reading of engineering drawings: lettering, line types, drafting instruments, geometric construction, pictorial representation, orthographic projection, auxiliary views, sectional views, dimensioning and tolerancing. Prerequisites: enrolled in welding technology. 3 credits.

WELD 113 Welding Processes 1 Laboratory
Practical experience in the use and application of shielded metal arc welding on various joint configurations in all positions on plate. Oxyacetylene welding, brazing and cutting applications. oduction to the process of gas metal arc welding in the flat J horizontal positions. Destructive testing methods of weldments to develop Welding Procedure Qualification and Welder Certification records. 4 credits

WELD 121 Welding Processes 2 Lecture
Theory and techniques in application of shielded metal arc welding out-of positions. Theory and techniques of gas metal arc welding and flux cored arc welding out-of-position. Theory and techniques of gas tungsten arc welding of ferrous and non-ferrous alloys and material identification. Continued emphasis on qualification testing of the above process used in preparing certificate graduates for entry into the welding field. Prerequisites: WELD 111. 3 credits.

WELD 123 Welding Processes 2 Laboratory
Practical experience in the use and application of out-of-position shielded metal arc welding. Practical experience in the use and application of gas metal arc welding in all positions. Practical experience in gas tungsten arc welding of ferrous and non-ferrous alloys and flux cored arc welding. Continuation of destructive testing methods of weldments to develop Welding Procedure Specification and Welder Qualification records. Prerequisites: WELD 111, WELD 113. 4 credits

MATL 240 Introduction to Material Science
Engineering materials: metals, polymers, and ceramics: atomic structure and bonding, properties selection, and testing of materials, failure modes, methods of production and fabrication, methods of changing properties including heat treatment of als, alloying and surface treatments, mechanical working, nposites and compound bonding. Common classification systems used to identify the various engineering materials.
4 credits.

WELD 211 Welding Fabrication 1
Non-traditional or advanced welding and processing procedures. Resistance welding, plasma arc welding and cutting, submerged arc welding, automated shape cutting and stud welding. Design of a weldment, cost estimating of the design, material processing, welding procedure development, and fabrication of the design. Customer repairs with cost analysis. Prerequisites: WELD 121. 5 credits.

WELD 212 Quality Testing
Non-destructive testing methods: magnetic particle (wet, dry, and fluorescent), dye penetrant, eddy current, radiographic, and ultrasonic testing in compliance with the following codes: A.W.S., D.1-1-91, A.P.I. 1104, and ASME Section #IX. Much of the information necessary to satisfactorily complete the American Welding Society's certified welding inspectors test. Prerequisites: WELD 121, WELD 123. 4 credits.

WELD 221 Welding Fabrication 2
The capstone course in the two year A.A.S. degree. Assorted construction projects, dealing with the realities of process selection, joint design, cost estimating, and design of welded projects. Students will also complete a research paper dealing with various forms of welding and joining. Students will be required to complete two written semester projects which will be entered in a national welding contest. Prerequisites: WELD 211, 212, ENGL 250. 4 credits.

WELD 222 Introduction to Welding Automation
Welding automation used in manufacturing. Review of common justifications procedures and feasibility studies on basic weldments. Variations in joint design and filler materials, selection of optimum welding process and equipment. Laboratory: set-up and operation of basic automatic welding system with a study of the effects of welding parameters on weld outcomes. Prerequisites: WELD 211, 212. 3 credits.

EEET 201 Electrical Fundamentals
An introductory course covering the principles of electricity as applied to DC and AC circuits and operation of common electrical devices and apparatus. Topics are presented in lecture and practiced in hands-on lab activities. Basic measurements of current, voltage, and power are presented. Course introduces magnetism, inductance, capacitance, generators, 3-phase power, power flow, power factor, transformers, motors and power supplies. 3 credits.

MFGT 150 Manufacturing Processes
A basic machine process course. The fundamental operations on machine tool equipment including engine lathe, band saw, and horizontal and vertical milling machine. Measuring and inspection tools, drill press, and surface plate. 2 credits.

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Ferris State University
Graduation Check Sheet for General Education Requirements

Associate in Applied Science (A.A.S.) – Welding Technology

		Course	Credit Hours
I. Communication Competence (6 credit hours):			
A. ENGL 150	( )	ENGL 150	3
B. ENGL 250 or ENGL 211	( )	ENGL 250	3
II. Scientific Understanding (3 credit hours):			
Choose one general education course with a lab:			
ASTR, BIOL (except BIOL 207, 307, CHEM (except CHEM 307), GEOG 111, GEOG 121, GEOL, PHSC, PHYS.	( )	PHYS 211	4
III. Quantitative Skills			
Complete one of the following options:			
A. Pass MATH 110 or higher.	( )	MATH 116	4
B. Pass a course proficiency exam for MATH 110 or higher; or	( )	_____	____
C. Submit an ACT math subtest score of 19 or higher + 2 years of high school algebra with grades of C- or better.	( )	_____	____
D. Submit an ACT math subtest score of 24 or higher + 1 year high school trig. with a grade of C- or better.	( )	_____	____
IV. Cultural Enrichment (3 credit hours):			
Choose one general education approved course:			
ARCH 244, ARTH, ARTS, COMM 231 ENGL 322, FREN, GERM, HIST, HUMN, LITR, MUSI, PHOT 101, SPAN, THTR.	( )	_____	3
V. Social Awareness (3 credit hours):			
Choose one general education approved course:			
ANTH, ECON, PLSC, PSYC, SOCY, GEOG (except GEOG 111, 121 and 421), SSCI.	F ( )	_____	3

Bachelor of Science (B.S.) – Welding Engineering Technology

I. Communication Competence (12 credit hours):			
A. English and speech communication:			
1. ENGL 150	( )	ENGL 150	3
2. ENGL 250 or ENGL 211	( )	ENGL 250	3
B. Choose one: COMM 105, COMM 121, COMM 221 or COMM 251	( )	COMM 121	3
C. Advanced ENGL, WIC, COMM, complete one of the following options:			
1. ENGL 311, 321, 323 or 325	( )	ENGL 311	3
2. Two "Writing-Intensive Courses" (WIC) plus one COMM course at the 200 level or higher.			
3. Three WIC courses.			
See WIC course definition and listing in "Courses Meeting General Education Category Requirements."			
II. Scientific Understanding (7 credit hours):			
Choose two general education approved courses, one with a lab:	( )	PHYS 211	4
ASTR, BIOL (except BIOL 207, 307), CHEM (except CHEM 307), GEOG 111, GEOG 121, GEOL, PHSC, PHYS.	( )	CHEM 114	5
III. Quantitative Skills:			
Complete one of the following options:			
A. Pass MATH 115 or higher;	( )	MATH 116	4
B. Pass a course proficiency exam for MATH 115 or higher; or	( )	MATH 126	4
C. Submit an ACT math subtest score of 26 or higher +1 year of high school Calc. with a grade of C- or better.	( )	MATH 216	4
IV. Cultural Enrichment (9 credit hours): * **SEE SECTION VI GLOBAL CONSCIOUSNESS**			
Choose three general education approved courses with at least one course at the 200 level or higher; no more than 5 credit	( )	_____	3
hours in music activities or theater activities courses: ARCH 244, ARTH, ARTS, COMM 231, ENGL 322, FREN, GERM,	G ( )	_____	3
HIST, HUMN, LITR, MUSI, PHOT 101, SPAN, THTR. (200+)	( )	_____	3
V. Social Awareness (9 credit hours): *			
Choose three general education approved courses in at least two different subject areas, one social awareness foundation	F ( )	_____	3
course, one course dealing with issues of race/ethnicity and/or gender, and one course at the 200 level or higher: ANTH,	( )	_____	3
ECON, PLS, PSYC, SOCY, GEOG (except GEOG 111, 121 and 421), SSCI. (200+)	R ( )	_____	3

VI. Global Consciousness *

Each student must complete one course from the global consciousness group that may also count toward fulfilling the cultural, languages, and societies outside North America or with contemporary Native American culture and civilization: Please consult the university catalog for a listing of courses that meet the requirement.

***Mark the course number with (F) for Social Awareness Foundation, (R) for Race/Ethnicity and/or Gender, (G) for Global Consciousness.**

Note: Zero-level courses (010, etc.) do not count either as credit toward graduation or for general education requirements.

Table 5-1: Prerequisite Chart

Prerequisite Number	Academic Semester	Course Prefix	Course Title	Required Prerequisite
1	**1st Year Fall**	WELD 111	Welding Processes I - Lecture	
2	1st Year Fall	WELD 113	Welding Processes I - Lab	
3	1st Year Fall	WELD 112	Welding Graphics	
4	1st Year Fall	ENGL 150	English 1	ACT ENGL 14
5	1st Year Fall	Cultural Enrichment	General Education Elective	
6	**1st Year Spring**	WELD 121	Welding Processes II - Lecture	1, 2
7	1st Year Spring	WELD 123	Welding Processes - II - Lab	1, 2
8	1st Year Spring	MATL 240	Introduction to Material Science	
9	1st Year Spring	MATH 116	Inter. Algebra & Num. Trigonometry	ACT MATH 19
10	**2nd Year Fall**	WELD 211	Welding Fabrication I	6, 7
11	2nd Year Fall	WELD 212	Quality Testing	6, 7
12	2nd Year Fall	PHYS 211	Introductory Physics I	9
13	2nd Year Fall	ENGL 250	English 2	4
14	**2nd Year Spring**	WELD 221	Welding Fabrication II	2, 10, 11
15	2nd Year Spring	WELD 222	Introduction to Welding Automation	10, 11
16	2nd Year Spring	EEET 201	Electrical Fundamentals	
17	2nd Year Spring	MFGT 150	Manufacturing Processes	
18	2nd Year Spring	Social Awareness	General Education Elective	
19			Welding Technology A.A.S. Degree	4, 5, 8, 12, 13, 14, 15, 16, 18
20	**3rd Year Fall**	WELD 311	Welding Automation & Robotics I	19
21	3rd Year Fall	WELD 312	Design of Weldments	19
22	3rd Year Fall	EEET 301	Controls for Automation	16
23	3rd Year Fall	MATH 126	Algebra & Analytical Trigonometry	9
24	3rd Year Fall	CHEM 114	Introduction to General Chemistry	
25	**3rd Year Spring**	WELD 321	Welding Automation & Robotics II	20
26	3rd Year Spring	WELD 322	Advanced Resistance Welding	19
27	3rd Year Spring	MATH 216	Applied Calculus	23
28	3rd Year Spring	MECH 250	Fluid Power with Controls	9
29	3rd Year Spring	ENGL 311	Advanced Technical Writing	13
30	**3rd Year Summer**	WELD 393	Internship in Weld. Eng. Tech.	21, 25, 26
31	**4th Year Fall**	WELD 411	Advanced Welding Processes	30
32	4th Year Fall	WELD 412	Computer Aided Weldment Design	30
33	4th Year Fall	MFGE 353	Statistical Quality Control	9
34	4th Year Fall	COMM 121	Fundamentals of Public Speaking	
35	4th Year Fall	Social Awareness	General Education Elective	
36	**4th Year Spring**	WELD 422	Material Science	31, 32
37	4th Year Spring	WELD 499	Weld. Project Eng. & Management	31, 32
38	4th Year Spring	Social Awareness	General Education Elective (200 level or higher)	
39	4th Year Spring	Cultural Enrichment	General Education Elective	
40	4th Year Spring	Cultural Enrichment	General Education Elective (200 level or higher)	
41			Welding Engineering Technology B.S. Degree	19, 24, 27, 29, 34, 35, 36, 37, 38, 39, 40

Table 5-2 Curriculum

Welding Technology and Welding Engineering Technology
"2+2" academic configuration

Year; Semester or Quarter	Course (Department, Number, Title)	Communications	Math & Sciences	Technical Content	Social Sciences & Humanities
1st , Fall	WET, WELD 111, Weld. Proc. I – Lec			3	
1st , Fall	WET, WELD 112, Weld. Graphics			3	
1st , Fall	WET, WELD 113, Weld. Proc. I – Lab			4	
1st , Fall	A&S, ENGL 150, English I	3			
1st , Fall	A&S, Cultural Enrichment, Elective				3
1st , Spring	WET, WELD 121, Weld. Proc. II – Lec			3	
1st , Spring	WET, WELD 123, Weld. Proc. II – Lab			4	
1st , Spring	MET, MATL 240, Intro. to Matl. Science			4	
1st , Spring	A&S, MATH 116, Int. Alg. & Num. Trig.		4		
2nd , Fall	WET, WELD 211, Weld. Fab. I			5	
2nd , Fall	WET, WELD 212, Quality Testing			4	
2nd , Fall	A&S, PHYS 211, Intro. Physics		4		
2nd , Fall	A&S, ENGL 250, English II	3			
2nd, Spring	WET, WELD 221, Weld. Fab. II			4	
2nd, Spring	WET, WELD 222, Intro. To Weld. Auto.			3	
2nd, Spring	EET, EEET 201, Elec. Fundamentals			3	
2nd, Spring	MET, MFGT 150, Manuf. Processes			2	
2nd, Spring	A&S, Social Awareness, Elective				3
3rd, Fall	WET, WELD 311, Weld. Auto. & Rob. I			4	
3rd, Fall	WET, WELD 312, Weldment Design			3	
3rd, Fall	EET, EEET 301, Cont. for Automation			3	
3rd, Fall	A&S, MATH 126, Alg. & Anal. Trig.		4		
3rd, Fall	A&S, CHEM 114, Intro. To Gen. Chem.		4		
3rd, Spring	WET, WELD 321, Weld. Auto. & Rob. II			4	
3rd, Spring	WET, WELD 322, Adv. Resistance Weld.			3	
3rd, Spring	A&S, MATH 216, Applied Calculus		4		
3rd, Spring	MET, MECH 250, Fluid Power w/Cont.			2	
3rd, Spring	A&S, ENGL 311, Adv. Tech. Writing	3			
3rd, Summer	WET, WELD 393, Internship			4	
4th, Fall	WET, WELD 411, Adv. Weld. Processes			3	
4th, Fall	WET, WELD 412, Comp. Aided Weld. Dsg.			4	
4th, Fall	MET, MFGE 353, Stats. Quality Cont.			3	
4th, Fall	A&S, COMM 121, Fund. Pub. Speaking	3			
4th, Fall	A&S, Social Awareness, Elective				3
4th, Spring	WET, WELD 422, Material Science			3	
4th, Spring	WET, WELD 499, Proj. Eng. & Mgt.			3	
4th, Spring	A&S, Social Awareness (200+ Level), Elec.				3
4th, Spring	A&S, Cultural Enrichment, Elective				3
4th, Spring	A&S, Cultural Enrichment (200+ level), Elec.				3
TOTALS		12	20	81	18
Total Credit Hours Required for Completion of the Program			131		

Table 5-3. Course and Section Size Summary

Welding Technology and Welding Engineering Technology
"2+2" academic configuration
(Data is from the 2007/08 academic year)

Course No.	Title	Responsible Faculty Member	No. of Sections Offered in Current Year	Avg. Section Enrollment	Lecture[1]	Laboratory[1]	Other[1]
WELD 111	Welding Processes I – Lecture	Carney	1	46	100%	0	
WELD 112	Welding Graphics	Kuk	2	26	40%	60%	
WELD 113	Welding Processes I - Lab	Brew	2	22	0%	100%	
WELD 121	Welding Processes II – Lecture	Carney	1	41	100%	0%	
WELD 123	Welding Processes II – Lab	Brew	2	21	0%	100%	
WELD 211	Welding Fabrication I	Murray	2	16	33%	66%	
WELD 212	Quality Testing	Brew	3	10	50%	50%	
WELD 221	Welding Fabrication II	Murray	2	16	10%	90%	
WELD 222	Introduction to Welding Automation	Kuk	3	12	40%	60%	
WELD 311	Welding Automation & Robotics I	Hardesty	3	10	50%	50%	
WELD 312	Design of Weldments	Kuk	2	14	40%	60%	
WELD 321	Welding Automation & Robotics II	Hardesty	3	10	50%	50%	
WELD 322	Advanced Resistance Welding	Murray	2	13	40%	60%	
WELD 393	Internship in Weld. Eng. Tech.	Various	1	30	0	0	Weekly report review
WELD 411	Advanced Welding Processes	Hardesty	1	31	100%	0	
WELD 412	Computer Aided Weldment Design	Kuk	1	30	100%	0	
WELD 422	Material Science	Danley	1	31	100%	0	
WELD 499	Project Eng. and Management	Kuk	2	15	40%	60%	
CHEM 114	Intro. to General Chemistry	Various Dept. faculty	Multiple	24	60%	40%	

COMM 121	Fundamentals of Public Speaking	Various Dept. faculty	Multiple	27	100%	0	
EEET 201	Electrical Fundamentals	Various Dept. faculty	Multiple	16	50%	50%	
EEET 301	Controls for Automation	Various Dept. faculty	Multiple	10	50%	50%	
ENGL 150	English I	Various Dept. faculty	Multiple	23	100%	0	
ENGL 250	English II	Various Dept. faculty	Multiple	23	100%	0	
ENGL 311	Advanced Technical Writing	Various Dept. faculty	Multiple	23	100%	0	
MATH 116	Int. Algebra & Numerical Trig	Various Dept. faculty	Multiple	25	100%	0	
MATH 126	Algebra & Analytical Trig.	Various Dept. faculty	Multiple	33	100%	0	
MATH 216	Applied Calculus	Various Dept. faculty	Multiple	31	100%	0	
MATL 240	Introduction to Material Science	Various Dept. faculty	Multiple	15	60%	40%	
MECH 250	Fluid Power with Controls	Various Dept. faculty	Multiple	13	33%	66%	
MFGE 353	Statistical Quality Control	Various Dept. faculty	Multiple	26	100%	0	
MFGT 150	Manufacturing Processes	Various Dept. faculty	Multiple	15	25%	75%	
PHYS 211	Introductory Physics	Various Dept. faculty	Multiple	24	50%	50%	
Social Awareness	Elective (General Education)	Various Dept. faculty	Multiple	Various	100%	0	
Cultural Enrichment	Elective (General Education)	Various Dept. faculty	Multiple	Various	100%	0	

[1] Enter the appropriate percent for each type of class for each course (e.g., 75% lecture, 25% laboratory).

Welding Engineering Technology Department Course Syllabus

Course: Weld 499 – Welding Project Engineering and Management

INSTRUCTOR: K. Kuk **SEMESTER:** Fall

COURSE DESCRIPTION: A lecture and Laboratory course emphasizing the design, engineering, manufacturing, and management of a welded product. Design of welded structures and machine elements in terms of allowable stresses, joint configuration, material and process selection, equipment specification and purchasing, production forecasting, project supervision, and resource management techniques and project control methods are addressed. The student will be required to concept, design, engineer, develop and manage a welded product.

CREDIT HOURS: 3 Semester Hours

CONTACT HOURS: Lecture 2 hours per week
Laboratory 3 hours per week

PREREQUISITES: Weld 412 and completion of all 300 level Welding courses

REQUIRED COURSE FOR PROGRAM: Yes

TEXTBOOKS REQUIRED: Design of Weldments, by Blodgett & Project Management, by Meredith

UNITS OF INSTRUCTION AND STUDENT LEARNING OUTCOMES FOR EACH UNIT:

I. Introduction
- A. Know the course content, goals, and objectives
- B. Know the course attendance and grading policy
- C. Know instructional managers office locations and telephone numbers

II. Oral Report Presentation
- A. Know the objective of a technical oral report
- B. Know the presentation environment and audience
- C. Apply attention overview, information, and review techniques in a technical report

III. Weldment Design Concept
- A. Identify the problem and function of the product
- B. Conduct a review of literature related to the problem.

IV. Weldment Stress Analysis
- A. Identify all service conditions and determine types and amount of loading
- B. Determine allowable stress, strain, deflection, deformation, factor of safety
- C. Analyze and determine allowable design geometry and weld size

V. Weldment Detail and Assembly Drawings
- A. Know and apply the stages of the design process
- B. Produce weldment detail and assembly drawings

VI. Welding Procedure Specifications
- A. Understand the role of weldment testing in welding procedure specifications
- B. Perform welding procedure specifications, procedure qualification records, welder performance qualifications

VII. Project Scheduling and Management
- A. Know the role of time vs. resource management
- B. Apply the program evaluation review technique
- C. Perform a Gantt chart evaluation

VIII. Project Supervision
- A. Know what situational leadership is
- B. Specify the level of performance required by the worker
- C. Determine the development level of the person on the task
- D. Analyze leadership style required
- E. Perform a situational leadership analysis

IX. Equipment Specification and Purchasing
- A. Identify the equipment application
- B. Determine the prime contractor type
- C. Perform an equipment performance specification

X. Production Forecasting
- A. Know the definition of forecasting
- B. Understand level, trend, seasonal, and random forecasting methods
- C. Analysis model fitting and validation techniques
- D. Perform a weldment forecast based on historical data

XI. Problem Solving Techniques
- A. Develop problem statements, processing methods, and determining solutions
- B. Experience team building exercises
- C. Develop training methods and designs
- D. Apply critical thinking reasoning elements and traits
- E. Perform a handling conflict self assessment

XII. Project Initiation
- A. Know the definition of a project
- B. Understand the project manager's roll
- C. Know and apply project organizational methods
- D. Understand the project life cycle.

XIII. Project Evaluation and Selection
- A. Know the criteria for project selection models
- B. Understand the project selection model types

XIV. Project Manager, Organization, and planning
- A. Know functional vs. project organization designs
- B. Understand the unique demands of a project manager
- C. Know the common characteristics of effective team members
- D. Apply the project planning phases and elements

XV. Project Control and Termination
- A. Know the elements of project control
- B. Know the purpose and components of a project audit
- C. Know project termination type and the transition items

XVI. Creativity and Idea Generation
- A. Know risk vs. reward
- B. Know creativity management
- C. Understand techniques for free thinking

XVII. Perform oral project presentations to students, faculty and administration

VIII. Examination: One(1)

ATTENDANCE POLICY:
Full attendance required. More than one (1) unexcused absence or tardiness will result in a lowered final grade. NOTE" Unexcused late work will result in no grade or a lower grade on an individual basis.

GRADING POLICY: Final grade will be calculated as follows:

Tests:	1	200 points	200
Post Test:	1	135 points	135
Quizzes:	7	10 points each	70
Labs:	9	50 points each	450
Oral Presentations:	2	100 points each	200
Project Documentation	10	10 points each	100
Summary Report	1	200 points	200

GRADING SCALE:

93%	A	83%	B	73%	C	63%	D
90%	A-	80%	B-	70%	C-	60%	D-
87%	B+	77%	C+	67%	D+	BELOW 60%	F

Relationship of course to Program Outcomes: 1, 2, 3, 4, 5, 6, 7, 8

Welding Engineering Technology Department Course Syllabus

Course: Weld 221 – Welding Fabrication II

PREPARED BY: D. Murray **SEMESTER:** Fall

COURSE DESCRIPTION: The capstone course in the two-year Associate in Applied Science Degree. Students will work on assorted construction projects, dealing with the realities of process selection, joint design, cost estimating, and design of welded products. Students will complete a customers based fabrication project and perform a welding research project to be submitted in a written national welding contest. Concurrently with the above welding activities students will engage in press brake operation, layout, inspection, measurement, design and product improvement of welded assemblies.

CREDIT HOURS: Four Semester Hours

CONTACT HOURS: Lecture 1 Hour per week
Lab 9 Hours per week

PREREQUISITES: WELD 112, WELD 211, ENGL 250

REQUIRED COURSE FOR PROGRAM: Yes

TEXTBOOKS REQUIRED: Procedure Handbook of Arc Welding, Lincoln,
Principles of Industrial Welding, Lincoln, & Press Brake Manual, Faculty

UNITS OF INSTRUCTION AND LEARNING GOALS FOR EACH UNIT:

I. **Introduction, Objectives, and Term Assignments**
- A. Explain Course objectives and summary sheets
- B. Identify term assignments
- C. Review procedures and policies

II. **Term Fabrication Project**
- A. Construct project from blue print designed by the student.
- B. Select the optimum welding process for fabrication project
- C. Select optimum filler material for fabrication project
- D. Develop all welding procedures needed to complete project.
- E. Complete order forms for all materials needed to complete project.
- F. Operate safely all welding and manufacturing equipment needed to complete the project.
- G. Perform trimming and finishing of product
- H. Estimate cost of project prior to fabricating
- I. Calculate the exact cost including labor and materials from students own records
- J. Photograph the progression and manufacturing steps of the project.
- K. Complete a written report and submit national technical paper contest.

III. **Repair Week**
- A. Evaluate, identity, prepare and perform the necessary welding repairs as needed for customer supplied products

IV. **Welding Technology Post-test**
- A. Complete Welding Technology Post Test with at least a 65% Score

MINIMUM REQUIRED STUDENT LAB ACTIVITIES DEFINED:
Complete a customer fabrication project approved by the instructor.
Complete welding repairs as requested by the instructor.

ATTENDANCE POLICY: Students receive 1 free absence from lab and lecture, no questions asked. All additional absences will receive a 10-point deduction per day missed. Make-up will not be allowed. Citizenship grade will be based on cooperation with the instructor and classmates, the quality of workmanship and commitment to completing the class project. *Attendance 50%-Citizenship 50%.

Grading policy:

Requirement	Points	Due date	Completed
Fabrication project subject	10		
Fabrication application form	20		
Material order list	20		
Bill of materials	20		
Photo schedule	20		
Fabrication Introduction	20		
Fabrication equipment lists	20		
Fabrication sequencing	20		
Fabrication drawings	50		
Fabrication summary	20		
Fabrication completed	100		
Final Fabrication report	100		
Completed log book	30		
Repair week	30		
Final exam	30		
Attendance & citizenship*	225		
Total possible	735		

A	735-719	C+	625– 602	D-	505 – 482
A-	718 – 696	C	601 – 578	F	481>
B+	695 – 673	C-	577 – 554		
B	672 – 659	D+	553 – 530		
B-	658 – 626	D	529 - 506		

Relationship of Course to Program Outcomes: Outcomes 1, 2, 4, 6, and 8

3.F.1.a – As part of the graduation requirements of the current program, list directed electives and directed General Education courses. Provide the rationale for these selections.

Comments: The table below indicates the "directed General Education" and "directed electives" courses.

Course	Credits	Rationale
Directed General Education		
CHEM 114 - Intro. To General Chemistry	4	Basic, fundamental science
COMM 121 - Fundamental of Public Speaking	3	Critical professional skill
ENGL 150 - English I	3	Critical professional skill
ENGL 250 - English II	3	Critical professional skill
ENGL 311 - Advanced Technical Writing	3	Critical professional skill
MATH 116 - Int. Algebra & Numerical Trigonometry	4	Professional necessity
MATH 126 - Algebra & Analytical Trigonometry	4	Dominate industry math skills
MATH 216 - Applied Calculus	4	Math course beyond expected proficiency
PHYS 211 - Introductory Physics I	4	Critical to understanding design aspect of weldments
Directed Electives		
EEET 201 - Electrical Fundamentals	3	Welding is electrically focused
EEET 301 - Controls for Automation	3	Understanding and troubleshooting automated equipment
MATL 240 - Introduction to Material Science	4	Basic, fundamental science
MECH 250 - Fluid Power with Controls	2	Understanding and troubleshooting automated equipment
MFGE 353 - Statistical Quality Control	3	Industry expectation
MFGT 150 - Manufacturing Processes	2	General knowledge

3.F.1.b – Indicate any hidden prerequisites (instances where, in order to take a program required course, the student has to take an additional course. Do not include extra courses taken for remedial purposes.)

Comments: No hidden prerequisite courses exist. All course requirements are clearly stated on the program check sheets.

3.F.2 – Has the program been significantly revised since the last review, and if so, how?

Comments: The table below details curriculum changes that have gone through the University Curriculum Committee since the last review.

Year	Proposal Summary	Reasoning
2008	Reduce WELD 113 and WELD 123 laboratory courses from five (5) credits to four (4) credits (Reduce from 15 contact hours to 12 contact hours); Increase WELD 112 credit hours from 2 to 3. Changes incorporate one common lecture with two lab sections; Remove ETEC 140 from Welding Technology program.	Improve student course scheduling, improve faculty productivity, improve physical facility utilization and reduce WT academic program credit hours.
2008	Removal of MECH 340 – Statics and Strength of Materials and addition of MECH 250 – Fluid Power reduces the credits for graduation by one (1), while providing the WET students with knowledge in an technical area deemed by our Industrial Advisory Board and WET program alumni as necessary. Also, course information regarding mechanics of materials and assemblies have been, and will continue to be, incorporated as part of the WELD 312 – Design of Weldments and WELD 412 – Computer Aided Weldment Design.	Improve student course scheduling, improve faculty productivity, improve physical facility utilization and reduce WET academic program credit hours.
2005	Require that applicants to the Welding Engineering Technology program meet the following entrance requirements: Transfer Students: application submitted prior to February 15 of fall semester requested; Associate Degree in Welding Technology; minimum overall 3.0 honor point average; transfer students must satisfy prerequisites to enter FSU MATH 126 (MATH 116); satisfy prerequisites to enter FSU EEET 301 (EEET 201); satisfy prerequisites to enter FSU MECH 340 (PHYS 211); FSU ETEC 140 - Engineering Graphics Comprehensive or equivalent transfer; FSU MATL 240 - Introduction to Materials Science or equivalent transfer course.	Insures that all students beginning the WET degree program sequence are academically prepared.
2005	Incoming transfer students take WELD 212 - Quality Testing. WELD 212, included in the FSU WT AAS degree curriculum, is a course that is critical for all FSU WET students.	Insures that all students beginning the WET degree program sequence are academically prepared.
2005	Require that applicants to the Welding Technology program meet the following entrance requirements: meet University admission standards; MATH 116 placement (Math ACT 19) or CLEP; ENGL 150 placement (English ACT 14) or CLEP	Insures that all students beginning the WT degree program sequence are academically prepared.
2005	Removal of PSYC 326 course from Welding Engineering Technology curriculum. Student will be able to take any course which fulfills Social Awareness requirement for General Education.	Improve student course scheduling opportunities and academic course options.
2005	Removal of PSYC 150 course from Welding Technology curriculum. Student will be able to take any course which fulfills Social Awareness requirement for General Education.	Improve student course scheduling opportunities and academic course options.

2004	Change WELD 499 from 3+0 to 2+3. This format change will create dedicated welding laboratory time for the WET program capstone course. This course requires students to design, engineer, manufacturer, and manage a welded product, in a team environment, using FSU welding lab equipment. The lecture only format (3+0) limits student access to the welding lab facility to when other courses are in session, resulting in over crowding and disruption of scheduled course activities. This change will result in an additional 5 faculty contact hours.	Add laboratory component to WET Capstone course. Designated welding laboratory facility time allows more efficient and safe use of the facilities for completion of course assignments.

3.F.3 – Are there any curricular or program changes currently in the review process? If so, what are they?

Comments: No

3.F.4 – Are there plans to revise the current program within the next three to five years? If so, what plans are envisioned and why?

Comments: The department programs are constantly under review by the welding faculty in response to the needs of the program constituents.

A curriculum change that is under consideration is the addition of a laboratory component to WELD 422 – Material Science. Currently this course is a 3+0. The discussion of making this course a 3+3 or 2+3 configuration is focused around the need for seniors to perform metallurgical lab experiments. An experimental course is being discussed for Spring 2009.

3.G – QUALITY OF INSTRUCTION

3.G.1 – Discuss student and alumni perceptions of the quality of instruction.

Comments: Surveys contained in Section 2 indicate that the quality perception of faculty and students as to the quality of instruction is excellent. Various questions on the surveys are related to this topic.

3.G.2 – Discuss advisory committee and employer perceptions of the quality of instruction.

Comments: Surveys contained in Section 2 indicate that the quality perception of faculty and students as to the quality of instruction is excellent. Various questions on the surveys are related to this topic.

3.G.3 – What departmental and individual efforts have been made to improve the learning environment, add and use appropriate technology, train and increase the number of undergraduate and graduate assistants, etc.?

Comments: The faculty is constantly striving to improve the quality of instruction. As technology has been implemented in to the available instructional spaces on campus, the department faculty has adapted their teaching styles and methods. Faculty is actively using the FerrisCONNECT system.

The department does not utilize undergraduate or graduate assistants. All courses are taught by tenure-track or highly qualified adjuncts. Student lab tutors are used regularly throughout the curriculum and are funded by the Academic Support Center.

3.G.4 – Describe the types of professional development have faculty participated in, in efforts to enhance the learning environment (e.g., Writing Across the Curriculum; Center for Teaching and Learning, etc.).

Comments: The faculty is very diligent in professional development activities. Please reference faculty resumes in Section 5 for a list of activities.

3.G.5 – What efforts have been made to increase the interaction of students with faculty and peers? Include such items as developmental activities, seminars, workshops, guest lectures, special events, and student participation in the Honors Program Symposium.

Comments: Below is a list of items done of an annual basis to promote interaction between the faculty and students.

- **American Welding Society annual Welding Show Exhibition:** The annual event is the largest welding and fabrication industry show in the United States. The department funds booth space to promote the welding programs and to interact with industry professional and program alumni. The FSU RSO AWS Student Chapter sponsors a bus for approximately 50 students to attend one day of the show.

- **The annual College of Technology Student Welcome Picnic:** This event is where the faculty serves the students. Music, food and prizes are distributed by faculty to the attending students.

- **State Secondary Welding Competition:** This event has been held annually for six years by the department for recruiting purposes. The assistance of current department welding students is critical to the success of this event. Approximately 20 students help with this day-long event. Many current students were participants in this very event.

- **Informal Lunch Cookouts:** Approximately 5 or 6 times per year the student chapter will sponsor a student cookout. Bruce Hammond, Department Technician, works with the students on this. The idea is for all COT students to come and enjoy a free meal and meet other students.

- **AWS West Michigan Ferris State Meeting:** Each March the AWS WM Section holds their meeting on the campus of Ferris State. The topic is Student Internship Presentations. This meeting draws student, faculty, University community people and industry professionals.

- **Corporate Presentations:** The department works in conjunction with the Career Service & Employment Office to bring potential employers to campus for Informational Sessions. Typically these sessions are held in the evening, with food and refreshments being served. The objective is to introduce the students to the employment opportunities and scope of work done by a particular corporate organization.

3.G.6 – Discuss the extent to which current research and practice regarding inclusive pedagogy and curriculum infuse teaching and learning in this program.

Comments: The current group of department faculty has a combined 95+ years of teaching experience in the Ferris welding programs. Each faculty member has their own unique teaching styles and strategies. A students' perception of learning depends directly on their interest, pedagogical affect, and their learning performance and indirectly on the student–instructor interaction, the instructor's responsiveness, course organization, the instructor's likeability/concern, and the student's learning performance. Likeability/concern indirectly affects student interest by influencing learning performance. The results yield recommendations for schools, department heads, and university administrators.

3.G.7 – What effects have actions described in (5) and (6) had on the quality of teaching and learning in the program?

Comments: Students receive a diverse educational experience by being exposed to all members of the department faculty at one point or another throughout their time at Ferris. This diversity in teaching styles requires students to adapt to the particular course, much like they must adapt to a particular leadership style they may encounter in business & industry.

3.H – COMPOSITION AND QUALITY OF FACULTY. Describe and assess the composition of the faculty teaching courses in the program.

Please reference faculty resumes in Section 5 for complete faculty information.

3.H.1 – List the names of all tenured and tenure-track faculty by rank.

Comments:

- **Professor:**
  - Kenneth Kuk
- **Associate Professor:**
  - Jeffrey Carney
  - David Murray
- **Assistant Professor:**
  - Bradley Brew
  - Jeffrey Hardesty

3.H.1.a – Identify their rank and qualification.

Comments:

Bradley Brew, Assistant Professor (retired May, 2008)
Jeffrey Carney, Department Chair/Associate Professor
Jeffrey Hardesty, Assistant Professor
Kenneth Kuk, Professor
Davis Murray, Associate Professor

3.H.1.b – Indicate the number of promotions or merit awards received by program faculty since the last program review.

Comments: 4

3.H.1.c – Summarize the professional activities of program faculty since inception or the last program review (attendance at professional meetings, poster or platform presentations, responsibilities in professional organizations, etc.).

Comments: The department faculty is very active with professional activities. The major benefactor of the department faculty efforts is the American Welding Society. Involvement includes attending monthly section meetings, annual district meetings, and technical committees.

Department faculty members Carney, Kuk and Murray have served as Section Chairman of the AWS Western Michigan Section located in Grand Rapids.

Please reference faculty resumes in Section 5 for complete list of faculty professional activities.

3.H.2 – Workload

3.H.2.a – What is the normal, annualized teaching load in the program or department? Indicate the basis of what determines a "normal" load. On a semester-by—semester basis, how many faculty have accepted an overload assignment?

Comments: The table below indicates a semester-by-semester basis the overloads, adjuncts and outside department faculty that have taught WELD courses. Please see appendix B for complete details of faculty teaching loads.

Academic Year Cycle	2003/04	2004/05	2005/06	2006/07	2007/08
Dept Faculty Accepting Overloads (Fall/Spring)	3 / 2	4 / 1	5 / 5	4 / 4	5 / 4
Adjunct (Fall/Spring Contact Load)	0	15 / 15	0	0	0 / 15
Outside Dept. Faculty Teaching WELD Course (Winter Contact Load)	3	3	3	3	3

The Faculty Workload is determined by the Vice President of Academic Affairs policy letter below.

ANNUALIZED WORKLOAD
FOR INSTRUCTIONAL FACULTY:
July 25, 2007

98:1 REVISED

1. All examples will be based on a standard workload of 24 semester hours per academic year, excluding Summer (recognizing the differences between colleges and between departments within colleges, 24 hours shall neither be a minimum nor a maximum).

2. No more than two-thirds (2/3) of an annual workload will be assigned in any one semester unless the member agrees. On a semester hour basis, where 24 hours is the standard workload, sixteen (16) semester hours would be two-thirds (2/3) of an annualized load.

3. A member with a full workload, including released time, may teach a maximum of five (5) overload credit hours per semester under this policy.

4. If the department head/chair can document to the dean that a faculty member in his or her college will be assigned and has agreed to teach an overload in the fall semester and will have a full load or an overload in the spring semester, the fall overload will be paid during the fall semester.

3.H.2.b – List the activities for which faculty receive release time.

Comments: The department chair is receives 75% release time to perform duties. The amount of release time is established by the College of Technology Dean's Office.

3.H.3 – Recruitment

3.H.3.a – What is the normal recruiting process for new faculty?

Comments: Advertisement in professional and local publication publications. The two most valuable recruiting tools are the American Welding Society Welding Exposition and "word-of-mouth" by industry and alumni.

3.H.3.b – What qualification (academic and experiential) are typically required for new faculty?

Comments:

Bachelor of Science degree in Welding Engineering, Welding Engineering Technology, or a closely-related field. Five (5) years of welding-related experience in a welding application, design, educational, procedure or research environment. The candidates will be required to demonstrate proficiency in GMAW, SMAW, GTAW, OFW, OFC, PAC, SAW, FCAW and RSW. Additional requirements include knowledge of pipe welding and experience in welding graphics, welding fabrication, destructive and non-destructive weldment evaluation, mechanical testing, and personal computer applications.

The successful candidate will have either a Master's degree upon hiring or will be required to obtain such a degree within four years of hiring.

3.H.3.c – What are the program's diversity goals for both gender and race/ethnicity in the faculty?

Comments: The department has not established a set of goals for these areas.

3.H.3.d – Describe and assess the efforts being made to attain goals in (c).

Comments: The hiring process of a new faculty is designed to provide the department with the most qualified candidate regardless of gender, race and ethnicity.

3.H.4 – Orientation. Describe and assess the orientation process for new faculty.

Comments: A new faculty member in the department has constant guidance from the department tenure-track faculty. A department faculty is assigned as a mentor for the new hire to consult with on a

regular basis. The department has established a list of academic topics that are discussed with the new hire during their first year. No student advisees are assigned to the new hire during the first academic year. The new hire is also expected to participate in University sponsored events for new faculty.

3.H.5 – Reward Structure: e.g., salary, professional development funds, travel funds, UCEL and FSUGR incentive money.

3.H.5.a – Describe the reward structure in the program/department/college as it relates to program faculty. Indicate the type of reward and eligibility criteria.

Comments: Financial compensation to the faculty abides by the College of Technology, University and/or Ferris Faculty Association guidelines.

3.H.5.b - Does the existing salary structure have an impact on the program's ability to recruit and retain quality faculty?

Comments: The existing salary structure certainly plays a significant role in the hiring process. Many applicants are interested in a faculty position until they become aware of the compensation package. With that being considered, the department has very successful in obtaining quality faculty members.

3.H.5.c – Is the reward structure currently in place adequate to support faculty productivity in teaching, research, and service? If not, what recommendations would you make to correct the situation?

Comments: Yes.

3.H.5.d – Is enhancing diversity and inclusion a component of the reward structure? Please explain.

Comments: No.

3.H.6 – Graduate Instructions (if applicable)

Comments: The Welding Engineering Technology Department does not offer, nor teach any, graduate level academic courses. Thus, section 3.H.6 is not applicable.

3.H.7 – Non-Tenure and Adjunct Faculty.

3.H.7.a – Please provide a list for the last academic year of full-time non-tenure-track and adjunct faculty who taught courses in the program. For full-time non-tenure-track faculty, indicate the length of their appointments and the number of years of service at the University. Comment on the program's ability to retain non-tenure-track faculty.

Comments: Assistant Professor Jeffrey Hardesty is the only tenure-track faculty in the department. 2007/08 was his 4th year.

The department's past experience is that one out of every two tenure-track faculty members does not attain tenure. The reasons could be many, but the deciding factor in that the faculty does not recommend reappointment during one of the tenure-track years due to faculty performance.

3.H.7.b – What percentage of program courses is taught by the faculty in (a)? What courses are they teaching? Please comment.

Comments: Professor Hardesty teaching information for 2007/08 is below.

- Percentage of program courses:
  - 21% of total credits
  - 20% of total contact hours

- Course taught are listed below.

Fall		Spring	
Course	Credits	Course	Credits
WELD 311	4	WELD 146	2
WELD 311	1	WELD 146	1
WELD 311	1	WELD 321	4
WELD 116	3	WELD 321	1
FSUS 100	1	WELD 321	1
FSUS 100	1		

3.H.7.c. – Describe the required qualifications (academic and experiential) for the faculty listed in (a). Indicate if all faculty have met the criteria, and if not, what is being done to resolve the situation?

Comments: All faculty meet required qualifications.

3.H.7.d – Does the program consider the current use of non-tenure-track faculty to be appropriate? Why or why not?

Comments: Yes. The use of non-tenure-track faculty certain fulfills a need at the University. A program that experiences a "blip" in enrollment may be able to serve the students with the use of a non-tenure-track member. The department does not support the ongoing use of non-tenure-track faculty to support a program with a long, sustained track record of enrollment requiring additional faculty.

If the program is accredited, what position if any does the accreditation body have regarding the use of non-tenured and adjunct faculty?

Comments: At this time the programs do not have any external accreditations at this time.

We are currently in the process of completing an ABET Self-Study document with an anticipated site visit in the fall.

3.I – SERVICE TO NON-MAJORS. ***Describe and assess the impact that delivery of service courses offered by the program or the department has on the program.***

3.I.a – Identify and describe the General Education service courses provided by the program faculty for other department at FSU.

Comments: FSUS 100 is the only General Education course taught by department faculty.

3.I.b – Identify and describe and non-General Education service courses or courses required for other programs. Comment on your interaction with the departments or programs for which the courses are provided.

Comments:

- WELD 116 – Combined Weld-Auto Body Repair.
  - University Curriculum process has resulted in the elimination of Ferris Auto Body program.
  - Automotive Department has not expressed any indication on needing additional WELD courses for students.
  - This class has been discontinued.

- WELD 146 – Welding for Heavy Equipment
  - Course continues to be well populated with targeted student population.
  - Expected to continue as needed by the Ferris Heavy Equipment Service Engineering Technology program.

- WELD 416 – Production Welding Processes
  - Course provide to Manufacturing Department students. Offered annually at Ferris Big Rapids campus and every-other year at Ferris Grand Rapids Campus
  - Course future uncertain due to potential Manufacturing Department program changes.

3.I.c – Discuss the impact of the provision of the General Education and non-General Education courses has on the program.

Comments: The impact of department faculty providing General Education and non-General Education courses is minimal. The only General Education course taught is two (2) sections of FSUS 100 in the fall semester. The non-General Education courses are WELD 146 – Welding for Heavy Equipment and WELD 416 – Production Welding Processes.

The lecture/lab times for WELD 146 are scheduled in the late afternoon and early evening to best utilize the Big Rapids campus lab facilities and to fit the schedule of the student and teaching faculty. The course configuration is 1+3, with a common lecture and two lab sections to accommodate up to forty (40) Heavy Equipment Service Engineering Technology students. The course is offered each spring academic semester.

WELD 416 is a course offered for Manufacturing Engineering Technology majors as an introduction to welding processes for manufacturing. This course is a 2+0 configuration and is taught on the Big Rapids campus each fall semester and at the Ferris Grand Rapids facility every other year to accommodate non-traditional manufacturing students. As stated in 3.I.b the future of this course is uncertain at this time.

3.I.d – Does the program plan to increase, decrease, or keep constant its level of service courses? Explain.

Comments: The department will continue to meet the needs of the campus community as needed.

3.J – DEGREE PROGRAM COST AND PRODUCTIVITY DATA. ***Submit Institutional Research and Testing data. Comment on the data.***

Comments: FSU Institutional Research & Testing data can be found on the following pages for:

- Degree Program Costing 2003-04 (Summer, Fall, and Winter)
  - Welding Engineering Technology BS (Yrs 3 & 4)
- Degree Program Costing 2003-04 (Summer, Fall, and Winter)
  - Welding Technology AAS (Yrs 1 & 2)
- Degree Program Costing – Alpha Listing of Programs – 2003/04
- Table V – Instructor Cost Per SCH for Courses – Alpha by Course – 2003-04
- Average Instructor, Department and Dean's Cost Per SCH for Degree Programs – Welding Department – 2003-2004 Data
- Degree Program Costing – Total Program Cost Ranked High to Low – 2003/04
  - The department programs are very competitive when compared to other FSU programs based on this measure
- Faculty Load Report
  - Data for each faculty in the department

Comments: College of Technology Faculty Load Sheets

- College of Technology Faculty Load documents
  - 2007-08
  - 2006-07
  - 2005-06
- 2007-08 Faculty Work Load Summary sheets

Ferris State University
Degree Program Costing 2003- 2004 (Summer, Fall, and Winter)

College : Technology
Department : Welding

Program Name: Welding Engineering Technology BS (Yrs 3 & 4)

Program Credits Required (Total credits to graduate) **72**

*Instructor Cost per Student Credit Hour(SCH) (Average for program)	$135.46
**Department Cost per Student Credit Hour	$35.23
***Dean's Cost per Student Credit Hour	$15.33
Total Cost per Student Credit Hour (Average for program)	**$186.02**
Total Program Instructor Cost (Assumes a student will complete program in one year)	$9,753.42
Total Program Department Cost	$2,536.22
Total Program Dean's Cost	$1,103.49
Total Program Cost (Assumes a student will complete program in one year)	**$13,393.12**

Course ID	Level	Instructor Cost	Dept Cost	Dean's Cost	SCH's Produced	Instructor Cost/SCH	Dept Cost/SCH	Dean's Cost/SCH	Credits Required	Program Instructor Cost	Program Dept Cost	Program Dean's Cost
CHEM121	L	$163,093	$54,651	$15,085	2535	$64	$22	$6	5	$322	$108	$30
COMM121	L	$289,865	$55,999	$21,422	3600	$81	$16	$6	3	$242	$47	$18
CULTELE	E	$2,095,711	$340,667	$132,576	21581	$97	$16	$6	6	$583	$95	$37
EEET301	U	$30,599	$14,717	$5,874	264	$116	$56	$22	3	$348	$167	$67
ENGL311	U	$129,279	$14,032	$6,070	1020	$127	$14	$6	3	$380	$41	$18
MATH126	L	$125,940	$7,155	$7,736	1300	$97	$6	$6	4	$388	$22	$24
MATH216	L	$59,303	$2,840	$3,070	516	$115	$6	$6	4	$460	$22	$24
MECH340	U	$60,645	$19,738	$15,041	676	$90	$29	$22	4	$359	$117	$89
MFGE353	U	$41,370	$16,525	$6,608	297	$139	$56	$22	3	$418	$167	$67
PSYC326	U	$24,866	$7,291	$2,410	405	$61	$18	$6	3	$184	$54	$18
SOCAELE	E	$1,789,828	$451,271	$190,004	24281	$74	$19	$8	3	$221	$56	$23
WELD311	U	$19,770	$5,717	$2,403	108	$183	$53	$22	4	$732	$212	$89
WELD312	U	$14,324	$4,288	$1,802	81	$177	$53	$22	3	$531	$159	$67
WELD321	U	$37,393	$5,929	$2,492	112	$334	$53	$22	4	$1,335	$212	$89
WELD322	U	$18,420	$4,288	$1,802	81	$227	$53	$22	3	$682	$159	$67
WELD393	U	$13,300	$5,294	$2,225	100	$133	$53	$22	4	$532	$212	$89
WELD411	U	$14,719	$3,811	$1,602	72	$204	$53	$22	3	$613	$159	$67
WELD412	U	$14,324	$5,082	$2,136	96	$149	$53	$22	4	$597	$212	$89
WELD422	U	$7,469	$3,653	$1,535	69	$108	$53	$22	3	$325	$159	$67
WELD499	U	$11,569	$3,653	$1,535	69	$168	$53	$22	3	$503	$159	$67

* Instructor Cost - ***Salary & Fringe*** - the actual cost to teach a course
** Depatment Cost - ***Departmental Level Non Instructor Compensation, Supplies and Equipment*** - departmental average applied to all course prefixes within a department
*** Dean's Cost - ***Dean's Level Non Instructor Compensation, Supplies and Equipment*** - college average applied to all course prefixes within a college

Source: Office of Institutional Research, g:\...\progcost\0304\progcost.rsl

Ferris State University
Degree Program Costing 2003- 2004 (Summer, Fall, and Winter)

College : Technology
Department : Welding

Program Name: Welding Technology AAS

Program Credits Required (Total credits to graduate) 66

*Instructor Cost per Student Credit Hour(SCH) (Average for program)	$167.95
**Department Cost per Student Credit Hour	$40.62
***Dean's Cost per Student Credit Hour	$17.32
Total Cost per Student Credit Hour (Average for program)	**$225.88**
Total Program Instructor Cost (Assumes a student will complete program in one year)	$11,084.51
Total Program Department Cost	$2,680.67
Total Program Dean's Cost	$1,143.08

Total Program Cost (Assumes a student will complete program in one year) $14,908.26

Course ID	Level	Instructor Cost	Dept Cost	Dean's Cost	SCH's Produced	Instructor Cost/SCH	Dept Cost/SCH	Dean's Cost/SCH	Credits Required	Program Instructor Cost	Program Dept Cost	Program Dean's Cost
CULTELE	E	$2,095,711	$340,667	$132,576	21581	$97	$16	$6	3	$291	$47	$18
EEET201	L	$40,141	$27,426	$10,947	492	$82	$56	$22	3	$245	$167	$67
ENGL150	L	$668,824	$93,436	$40,416	6792	$98	$14	$6	3	$295	$41	$18
ENGL250	L	$499,521	$71,315	$30,848	5184	$96	$14	$6	3	$289	$41	$18
ETEC140	L	$55,082	$12,614	$9,612	432	$128	$29	$22	3	$383	$88	$67
MATH116	L	$163,415	$10,589	$11,449	1924	$85	$6	$6	4	$340	$22	$24
MATL240	L	$78,006	$36,722	$14,685	660	$118	$56	$22	4	$473	$223	$89
MFGT150	L	$59,317	$14,577	$5,829	262	$226	$56	$22	2	$453	$111	$44
PHYS211	L	$176,318	$36,391	$10,045	1688	$104	$22	$6	4	$418	$86	$24
PSYC150	L	$266,229	$83,283	$27,527	4626	$58	$18	$6	3	$173	$54	$18
WELD111	L	$13,901	$6,194	$2,603	117	$119	$53	$22	3	$356	$159	$67
WELD112	L	$14,324	$4,129	$1,735	78	$184	$53	$22	2	$367	$106	$44
WELD113	L	$48,719	$9,793	$4,116	185	$263	$53	$22	5	$1,317	$265	$111
D121	L	$17,243	$5,400	$2,269	102	$169	$53	$22	3	$507	$159	$67
WELD123	L	$61,686	$8,735	$3,671	165	$374	$53	$22	5	$1,869	$265	$111
WELD211	L	$24,532	$7,411	$3,115	140	$175	$53	$22	5	$876	$265	$111
WELD212	L	$13,264	$5,929	$2,492	112	$118	$53	$22	4	$474	$212	$89
WELD221	L	$23,876	$5,082	$2,136	96	$249	$53	$22	4	$995	$212	$89
WELD222	L	$23,139	$3,811	$1,602	72	$321	$53	$22	3	$964	$159	$67

* Instructor Cost - ***Salary & Fringe*** - the actual cost to teach a course
** Depatment Cost - ***Departmental Level Non Instructor Compensation, Supplies and Equipment*** - departmental average applied to all course prefixes within a department
*** Dean's Cost - ***Dean's Level Non Instructor Compensation, Supplies and Equipment*** - college average applied to all course prefixes within a college

Source: Office of Institutional Research, g:\...\progcost\0304\progcost.rsl

Table I

Degree Program Costing Summary
Alpha Listing of Programs
2003-04

Program Name	Prog Crs Req	Total Instructor Cost*	Total Dept Cost**	Total Dean's Cost***	Total Program Cost	Instructor Cost Per SCH	Dept Cost Per SCH	Dean's Cost Per SCH	Total Cost Per SCH
[illegible] Work BSW	128	$14,295.44	$2,445.94	$900.34	$17,641.72	$111.68	$19.11	$7.03	[illegible]
Sociology BA	126	$13,635.70	$2,855.55	$1,390.14	$17,881.39	$108.22	$22.66	$11.03	$141.92
Surveying Engineering BS	138	$24,826.46	$12,060.51	$2,204.21	$39,091.19	$179.90	$87.40	[illegible].97	$283.27
Surveying Technology [illegible]	60	$10,026.55	$4,231.37	$902.61	$15,160.53	$167.11	[illegible]	$15.04	$252.68
Tech & Professional Comm (Automotive Writing	121	$17,298.34	$3,007.37	$1,299.71	$21,605.43	$142.[illegible]	$24.85	$10.74	$178.56
Tech & Professional Comm (Computer [illegible] Writ	121	$17,997.32	$2,860.09	$1,248.35	$22,105.76	[illegible].74	$23.64	$10.32	$182.69
Tech & Professional Comm (Multimedia Writing	121	$17,458.76	$2,906.28	$1,291.37	$21,[illegible].41	$144.29	$24.02	$10.67	$178.98
Tech & Professional Comm (Publication Mgmt T	12[illegible]	$20,615.08	$3,707.03	$1,316.62	$25,638.72	$170.37	$30.64	$10.88	$211.89
Tech & Professional Comm (Sci & Medical Writi	121	$16,[illegible].52	$2,747.10	$1,[illegible].27	$20,936.90	$140.44	$22.70	$9.89	$173.03
Tech & Professional Comm (Technical Journalis	121	$16,887.14	$2,578.87	$1,073.79	$20,539.80	$139.56	$21.31	$8.87	$169.75
Technical and Professional Communication BS	121	$16,602.43	[illegible].16	$999.62	$20,075.22	$137.21	$20.44	$8.26	$165.91
Technical Education BS (Yrs 3 & 4)	89	$9,402.[illegible]	$2,770.18	[illegible].99	$13,520.46	$105.64	$31.13	$15.15	$151.92
Technical Writing Certificate	12	[illegible],277.97	$236.25	$115.[illegible]	$4,629.79	$356.50	$19.69	$9.63	$385.82
Television and Digital Media Production BS	[illegible]	$15,734.98	$7,033.12	$2,026.49	$2[illegible].59	$126.90	$56.72	$16.34	$199.96
Training in Business and Industry BS (Yrs [illegible]	88	$9,597.16	$2,301.99	$1,095.87	$12,995.[illegible]	$109.06	$26.16	$12.45	$147.67
University College Program AA	60	$6,339.68	$1,589.03	$2,764.82	$10,693.52	$10[illegible]	$26.48	$46.08	$178.23
Visual Communication - M[illegible]edia Design Foc	120	$21,176.23	$2,072.50	$2,153.96	$25,402.70	$176.47	$[illegible].27	$17.95	$211.69
Visual Communic[illegible] Print Media Focus BFA	120	$16,425.22	$2,064.82	$2,153.96	$20,644.01	$136.88	$17.[illegible]	$17.95	$172.03
Visual Des[illegible]nd Web Media AAS	61	$7,498.82	$2,080.57	$777.76	$10,357.15	$122.93	$34.11	$[illegible]	$169.79
[illegible]Design and Web Media BS (Yrs 3 & 4)	63	$11,891.95	$2,415.08	$940.58	$15,247.60	$188.76	$38.33	$14.93	[illegible].03
[illegible]									
Welding Engineering Technology BS (Yrs 3 & 4	72	$9,753.42	$2,536.22	$1,103.49	$13,393.12	$135.46	$35.23	$15.33	$186.02
Welding Technology AAS	66	$11,084.51	$2,680.67	$1,143.08	$14,908.26	$167.95	$40.62	$17.32	$225.88

* Instructor Cost - ***Salary & Fringe***
Depatment Cost - ***Departmental Level Non Instructor Compensation, Supplies and Equipment***
* Dean's Cost - ***Dean's Level Non Instructor Compensation, Supplies and Equipment***

Source: Office of Institutional Research, g:\...\progcost\0304\alphaprg.rsl

Table V

Instructor Cost Per SCH for Courses
Alpha by Course
2003-04

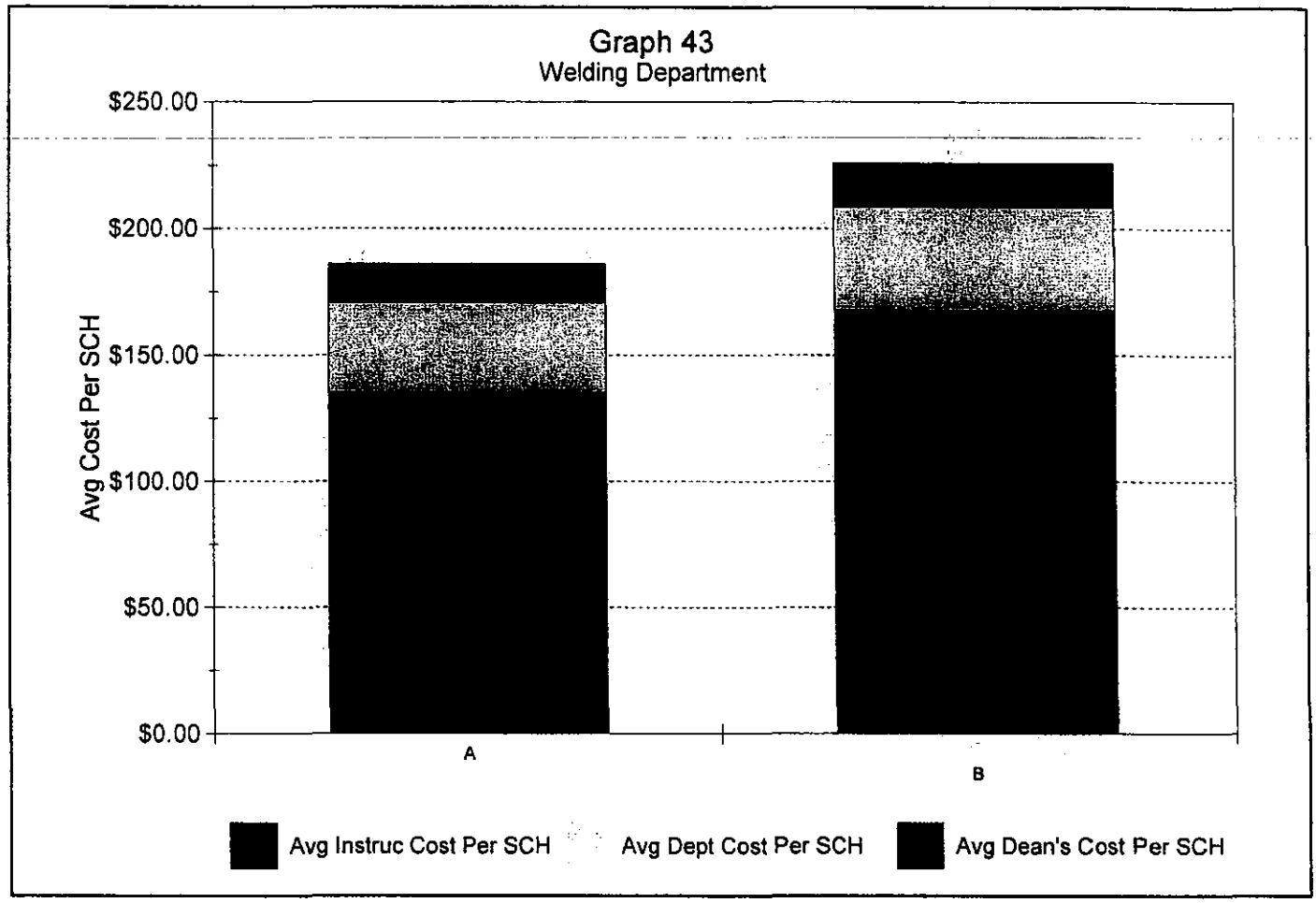
Course	Level	Course Description	Instructor Cost* Per SCH
[illegible]310	U	Visual Design and WEB Media	$258.6[illegible]
VISD312	U	Visual Design and WEB Media	[illegible]273.26
VISD316	[illegible]	Visual Design and WEB Media	$136.67
VISD320	U	[illegible]Design and WEB Media	$258.69
VISD326	U	Visual Desi[illegible]nd WEB Media	$273.26
VISD328	U	Visual Design and [illegible]edia	$157.69
VISD410	U	Visual Desi[illegible]nd WEB Media	$228.26
VISD412	U	Visu[illegible]Design and WEB Media	$469.37
VISD414	U	Visual Design and WEB Media	$241.11
VISD420	U	Visual Design and WEB Media	$242.53
[illegible]422	U	Visual Design and WEB Media	$2[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
WELD111	L	Welding Engineering Technology	$118.81
WELD112	L	Welding Engineering Technology	$183.64
WELD113	L	Welding Engineering Technology	$263.35
WELD116	L	Welding Engineering Technology	$151.50
WELD121	L	Welding Engineering Technology	$169.05
WELD123	L	Welding Engineering Technology	$373.85
WELD146	L	Welding Engineering Technology	$177.15
WELD211	L	Welding Engineering Technology	$175.23
WELD212	L	Welding Engineering Technology	$118.43
WELD221	L	Welding Engineering Technology	$248.70
WELD222	L	Welding Engineering Technology	$321.37
WELD311	U	Welding Engineering Technology	$183.06
WELD312	U	Welding Engineering Technology	$176.84
WELD321	U	Welding Engineering Technology	$333.87
WELD322	U	Welding Engineering Technology	$227.40
WELD393	U	Welding Engineering Technology	$133.00
WELD411	U	Welding Engineering Technology	$204.43
WELD412	U	Welding Engineering Technology	$149.21
WELD416	U	Welding Engineering Technology	$108.49
WELD422	U	Welding Engineering Technology	$108.24
WELD499	U	Welding Engineering Technology	$167.67

* Instructor Cost - ***Salary & Fringe***

Source: Office of Institutional Research, g:\...\progcost\0304\alphapre.rsl

Ferris State University

Average Instructor, Department and Dean's Cost Per SCH for Degree Programs
Welding Department
2003 - 2004 Data



	Programs	Avg Instructor Cost/SCH	Avg Dept Cost/SCH	Avg Dean's Cost/SCH	Total Avg Cost/SCH
A	Welding Engineering Technology BS (Yrs 3 & 4)	$135.46	$35.23	$15.33	$186.02
B	Welding Technology AAS	$167.95	$40.62	$17.32	$225.88

Source: Office of Institutional Research, g:\...\progcost\0304\avgp7w.rsl

Table II

Degree Program Costing
Total Program Cost Ranked High to Low
2003-04

Program Name	Program Credits Required	Total Instructor Cost*	Total Dept Cost**	Total Dean's Cost***	Total Program Cost
Social Studies Education BS (Yrs 3 & 4)	127	$12,388.57	$3,609.26	$1,760.05	**$17,757.88**
Social Work BSW	128	$14,295.44	$2,445.94	$900.34	**$17,641.72**
Applied Biology (Pre-Physical Therapy Track) BS	127	$13,926.34	$2,800.83	$881.43	**$17,608.61**
Applied Biology BS	127	$13,618.90	$2,901.81	$896.93	**$17,417.64**
Psychology BS	124	$13,288.06	$2,783.07	$1,304.68	**$17,375.81**
Master in Business Administration MBA	48	$11,977.21	$4,493.98	$871.41	**$17,342.59**
Medical Laboratory Technology AAS	79	$12,726.96	$2,708.66	$1,672.29	**$17,107.90**
Respiratory Care AAS	79	$11,951.40	$2,982.72	$1,883.66	**$16,817.77**
Rubber Engineering Technology BS (Yrs 3 & 4)	66	$11,865.52	$3,371.58	$1,200.47	**$16,437.57**
Architectural Technology AAS	[illegible]	$11,069.24	$4,038.14	$1,137.76	**$16,245.14**
Elementary Education BS	120	$11,284.62	$3,159.78	$1,500.52	**$15,944.91**
Automotive Service Technology AAS	68	$11,[illegible].49	$2,510.31	$1,252.77	**$15,581.57**
CAD Drafting and Tool Design AAS	66	$12,573.14	$1,807.62	$1,099.80	**$15,480.56**
HVACR Engineering Technology BS (Yrs 3 & 4)	64	$10,702.14	$3,693.30	$1,076.67	**$15,472.12**
Plastics Technology AAS	69	$11,285.80	$3,137.56	$1,003.56	**$15,426.93**
Visual Design and Web Media BS (Yrs 3 & 4)	63	$11,891.95	$2,415.08	$940.58	**$15,247.60**
Surveying Technology AAS	60	$10,026.55	$4,231.37	$902.[illegible]	**$15,160.53**
Nursing AAS	80	$8,786.87	$4,362.06	$1,948.27	**$15,097.21**
Restaurant and Food Industry Management AAS	69	$12,430.98	$1,689.13	$963.65	**$15,083.76**
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Welding Technology AAS	66	$11,084.51	$2,680.67	$1,143.08	**$14,908.26**
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Facility Management BS (Yrs 3 & 4)	68	$10,154.95	$3,328.12	$1,155.06	**$14,638.14**
CJ/Law Enforcement Option BS (Yrs 3 & 4)	72	$10,468.05	$2,506.12	$1,394.80	**$14,368.97**
Elect/Electron Engr Tech (Indust Auto) BS (Yrs 3 & 4)	68	$10,866.10	$2,426.81	$1,036.41	**$14,329.32**
Industrial Electronics Technology AAS	67	$10,479.[illegible]	$2,712.93	$1,105.75	**$14,296.94**
Nursing BSN (Yrs 3 & 4)	80	$9,705.51	$3,047.02	$1,489.32	**$14,241.85**
HVACR Technology AAS	67	$9,024.39	$3,998.01	$1,123.55	**$14,145.94**
Information Systems Management MS	33	$10,[illegible].25	$3,258.04	$591.55	**$14,070.84**
Technical Education BS (Yrs 3 & 4)	89	$9,402.29	$2,770.18	$1,347.99	**$13,520.46**
Allied Health Education BS (Yrs 3 & 4)	89	$9,402.29	$2,770.18	$1,347.99	**$13,520.46**
Wage Earning Home Economics Education BS (Yrs 3 &	89	$9,402.29	$2,770.18	$1,347.99	**$13,520.46**
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Welding Engineering Technology BS (Yrs 3 & 4)	72	$9,753.42	$2,536.22	$1,103.49	**$13,393.12**
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

* Instructor Cost - ***Salary & Fringe***
** Depatment Cost - ***Departmental Level Non Instructor Compensation, Supplies and Equipment***
*** Dean's Cost - ***Dean's Level Non Instructor Compensation, Supplies and Equipment***

Source: Office of Institutional Research, g:\...\progcost\0304\tpcrank.rsl

Ferris State University
Faculty Load Report
Total University

Brew, Bradley O	Faculty - Technology	FTE:	1.00

College Of Technology

Welding

	Course				Faculty				
ID	Cr Hr	Activity Type	Activity Cr Hr	Numb Stu	% Taught	Activity Cr Hr	Cont Hr	Total SCH's	Student Cont Hr
WELD113302	5	LAB	5	17	100	5	15	85	255
WELD212212	4	LEC	3	20	100	3	3	60	60
WELD212214	4	LAB	1	9	100	1	3	9	27
Totals						9	21	154	342
Overload				*Adj Fac - Ranked Fac Overload*				*FTE*	*0.66*
WELD212211	4	LAB	1	12	100	1	3	12	36
WELD212211	4	LEC	3	12	100	3	3	36	36
WELD212212	4	LAB	1	11	100	1	3	11	33

Ferris State University
Faculty Load Report
Total University

Carney, Jeffrey N	Adj Fac - Ranked Fac Overload	FTE:	0.50

College Of Technology

Welding

	Course				Faculty				
ID	Cr Hr	Activity Type	Activity Cr Hr	Numb Stu	% Taught	Activity Cr Hr	Cont Hr	Total SCH's	Student Cont Hr
Overload				*Adj Fac - Ranked Fac Overload*				*FTE*	*0.50*
WELD111001	3	LEC	3	34	100	3	3	102	102
WELD113301	5	LAB	5	15	100	5	15	75	225

Released Time *Department Coordinator* FTE: 0.00

Ferris State University
Faculty Load Report
Total University

Hardesty, Jeffrey B	Faculty - Technology	FTE:	1.00

College Of Technology

Welding

	Course				Faculty				
ID	Cr Hr	Activity Type	Activity Cr Hr	Numb Stu	% Taught	Activity Cr Hr	Cont Hr	Total SCH's	Student Cont Hr
WELD116211	3	LAB	1	11	100	1	3	11	33
WELD116211	3	LEC	2	11	100	2	2	22	22
WELD311211	4	LAB	1	10	100	1	3	10	30
WELD311211	4	LEC	3	30	100	3	3	90	90
WELD311212	4	LAB	1	10	100	1	3	10	30
WELD311213	4	LAB	1	10	100	1	3	10	30
Totals						9	17	153	235

Ferris State University
Faculty Load Report
Total University

Kuk, Kenneth A	Faculty - Technology	FTE:	1.00

College Of Technology

Welding

	Course				Faculty				
ID	Cr Hr	Activity Type	Activity Cr Hr	Numb Stu	% Taught	Activity Cr Hr	Cont Hr	Total SCH's	Student Cont Hr
WELD112211	2	LAB	1	21	100	1	3	21	63
WELD112211	2	LEC	1	21	100	1	1	21	21
WELD112221	2	LAB	1	20	100	1	3	20	60
WELD112221	2	LEC	1	20	100	1	1	20	20
WELD312211	3	LAB	1	15	100	1	3	15	45
WELD312211	3	LEC	2	30	100	2	2	60	60
WELD312212	3	LAB	1	15	100	1	3	15	45
Totals						8	16	172	314
Overload			*Adj Fac - Ranked Fac Overload*					*FTE*	*0.06*
WELD412001	4	LEC	4	26	100	4	4	104	104

Ferris State University
Faculty Load Report
Total University

Kuk, Kenneth A	Adj Fac - Ranked Fac Overload	FTE:	0.06

College Of Technology

Welding

	Course				Faculty				
ID	Cr Hr	Activity Type	Activity Cr Hr	Numb Stu	% Taught	Activity Cr Hr	Cont Hr	Total SCH's	Student Cont Hr
Overload				*Adj Fac - Ranked Fac Overload*				*FTE*	*0.06*
FSUS100087	1	SEM	1	21	100	1	1	21	21

Ferris State University
Faculty Load Report
Total University

Murray, David H	Faculty - Technology	FTE:	1.00

College Of Technology

Welding

	Course				Faculty				
ID	Cr Hr	Activity Type	Activity Cr Hr	Numb Stu	% Taught	Activity Cr Hr	Cont Hr	Total SCH's	Student Cont Hr
WELD211211	5	LAB	2	17	100	2	6	34	102
WELD211211	5	LEC	3	33	100	3	3	99	99
WELD211212	5	LAB	2	16	100	2	6	32	96
WELD416001	2	LEC	2	14	100	2	2	28	28
Totals						9	17	193	325

Overload *Adj Fac - Ranked Fac Overload* *FTE* *0.50*

WELD411001	3	LEC	3	26	100	3	3	78	78

Faculty Loads

Academic Year FALL 2007 & SPRING 2008

Prepared (Revised): August, 2007

PROGRAMS: Welding Technology, Welding Engineering Technology

	NO CURRICULUM CHANGES						CURRICLUM CHANGES						
Name	**Fall Semester Assignments:**						**Winter Semester Assignments:**						**Academic Year Totals:**
	Course	**Credits**	**Configuration**			**Notes**	**Course**	**Credits**	**Configuration**			**Notes**	
			Lec	**Lab**	**Contacts**				**Lec**	**Lab**	**Contacts**		**Credits** / **Contacts**
Brew	WELD 113	5	0	15	15		WELD 123	4	0	12	12		
	WELD 212	4	3	3	6	Overload 3+3	WELD 123	4	0	12	12	Overload 0+6	
	WELD 212	1	0	3	3						0		
	WELD 212	1	0	3	3	Overload 0+3					0		
	WELD 212	1	0	3	3	Overload 0+3					0		
					0						0		
		12	**3**	**27**	**30**			**8**	**0**	**24**	**24**		**20** / **54**
Carney	WELD 111	3	3	0	3		WELD 121	3	3	0	3		
											0		
					0						0		
					0						0		
					0						0		
		3	**3**	**0**	**3**			**3**	**3**	**0**	**3**		**6** / **6**
Hardesty	WELD 311	4	3	3	6		WELD 146	2	1	3	4		
	WELD 311	1	0	3	3		WELD 146	1	0	3	3		
	WELD 311	1	0	3	3		WELD 321	4	3	3	6	Overload 1+0	
	WELD 116	3	2	3	5		WELD 321	1	0	3	3		
	FSUS 100	1	1	0	1	Overload 1+0	WELD 321	1	0	3	3		
	FSUS 100	1	1	0	1						0		
		11	**7**	**12**	**19**			**9**	**4**	**15**	**19**		**20** / **38**
K							WELD 222	3	2	3	5	Overload 1+0	
							WELD 222	1	0	3	3		
	WELD 112	2	1	3	4	Overload 1+0	WELD 499	3	2	3	5		
	WELD 112	2	1	3	4	Overload 1+0	WELD 499	1	0	3	3		
	WELD 312	3	2	3	5		WELD 222	1	0	3	3		
	WELD 312	1	0	3	3								
	WELD 412	4	4	0	4						0		
		12	**8**	**12**	**20**			**9**	**4**	**15**	**19**		**21** / **39**
Murray	WELD 211	5	3	6	9		WELD 221	4	1	9	10	Overload 1+3	
	WELD 211	2	0	6	6		WELD 221	3	0	9	9		
	WELD 411	3	3	0	3		WELD 322	3	2	3	5	Overload 2+3	
	WELD 416 AGA	2	2	0	2	Overload 2+0	WELD 322	1	0	3	3		
	WELD 416	2	2	0	2	Overload 2+0					0		
					0						0		
		14	**10**	**12**	**22**			**11**	**3**	**24**	**27**		**25** / **49**
					0						0		
Danley					0		WELD 422	3	3	0	3		
		0	**0**	**0**	**0**			**3**	**3**	**0**	**3**		**3** / **3**
Adjunct	WELD 113	5	0	15	15						0		
					109			**TOTALS**					**95** / **189**
					18			**CONTACTS/FTEF**					**36**
					6.06			**# OF DEPARTMENT LOADS**					**5.25**

DEPARTMENT: Welding Engineering Technology
Department Loads
Academic Year FALL 2007 & SPRING 2007

Prepared (Revised): August, 2007

Note: Loads are expressed as credit hours/contact hours, i.e. 12/18

PROGRAMS: Welding Technology, Welding Engineering Technology

Name	FALL		WINTER		TOTALS		Overload Semester	Overload Location	Overload Course	Overload Configuration		Overload Cost	Adjunct or Temporary Cost	Reason
	Credits	Contacts	Credits	Contacts	Credits	Contacts				Lec	Lab	$ 65.00 / $ 32.50		
Brew	12	30	8	24	**20**	**54**	Fall	FSU	Weld 212	3	9	$7,313		Student Load
							Winter	FSU	Weld 123	0	6	$2,925		Student Load
Carney	3	3	3	3	**6**	**6**				0	0	$0		No Overload
Grogan (Adjunct)							Fall	FSU	Weld 113		0	$0	$8,100	Dept Chair/Student Load
Hardesty	11	19	9	19	**20**	**38**	Fall	FSU	FSUS 100	1	0	$975		Student Load
							Winter	FSU	WELD 321	1	0	$975		Student Load
Ik	12	20	9	19	**21**	**39**	Fall	FSU	WELD 112	2	0	$1,950		Student Load
							Winter	FSU	WELD 222	1	0	$975		Student Load
Murray	14	22	11	27	**25**	**49**	Fall	AGA	Weld 416	2	0	$1,950		Student Load
							Fall	FSU	Weld 416	2	0	$1,950		Student Load
							Winter	FSU	Weld 221	1	3	$2,438		Student Load
							Winter	FSU	Weld 322	2	3	$3,413		Student Load
Danley	0	0	3	3	**3**	**3**								
TOTAL					**95**	**189**				**15**	**21**	**$24,863**	**$8,100**	

Faculty Loads
Academic Year FALL 2006 & SPRING 2007

Prepared: November, 2006 - REVISION

PROGRAMS: Welding Technology, Welding Engineering Technology

Name	Fall Semester Assignments:						Winter Semester Assignments:						Academic Year Totals:	
	Course	Credits	Configuration			Notes	Course	Credits	Configuration			Notes		
			Lec	Lab	Contacts				Lec	Lab	Contacts		Credits	Contacts
Brew	WELD 113	5	0	15	15		WELD 123	5	0	15	15			
	WELD 212	4	3	3	6	Overload 3+3	WELD 123	5	0	15	15	Overload 0+12		
	WELD 212	1	0	3	3						0			
	WELD 212	1	0	3	3	Overload 0+3					0			
	WELD 212		0		0						0			
					0						0			
		11	3	24	27			10	0	30	30		21	57
Carney	WELD 111	3	3	0	3	Overload 3+0	WELD 121	3	3	0	3	Overload 3+0		
	WELD 113	5	0	15	15	Overload 0+6					0			
					0	Chair Duties					0	Chair Duties		
					0						0			
					0						0			
		8	3	15	18			3	3	0	3		11	21
Hardesty	WELD 311	4	3	3	6		WELD 146	2	1	3	4			
	WELD 311	1	0	3	3		WELD 146	1	0	3	3			
	WELD 311	1	0	3	3		WELD 321	4	3	3	6			
	WELD 116	3	2	3	5		WELD 321	1	0	3	3			
							WELD 321	1	0	3	3			
											0			
		9	5	12	17			9	4	15	19		18	36
Ku	FSUS 100	0	0	0	0		WELD 222	3	2	3	5	Overload 1+0		
	FSUS 100	1	1	0	1	Overload 1+0	WELD 222	1	0	3	3			
	WELD 112	2	1	3	4		WELD 499	3	2	3	5			
	WELD 112	2	1	3	4		WELD 499	1	0	3	3			
	WELD 312	3	2	3	5		WELD 222	1	0	3	3			
	WELD 312	1	0	3	3									
	WELD 412	4	4	0	4	Overload 2+0					0			
		13	9	12	21			9	4	15	19		22	40
Murray	WELD 211	5	3	6	9		WELD 221	4	1	9	10	Overload 1+3		
	WELD 211	2	0	6	6		WELD 221	3	0	9	9			
	WELD 411	3	3	0	3	Overload 2+0	WELD 322	3	2	3	5	Overload 2+3		
	WELD 416	2	2	0	2		WELD 322	1	0	3	3			
				0	0						0			
					0						0			
		12	8	12	20			11	3	24	27		23	47
					0						0			
Danley					0		WELD 422	3	3	0	3			
		0	0	0	0			3	3	0	3		3	3
					103			TOTALS					98	204
					18			CONTACTS/FTEF						36
					5.72			# OF DEPARTMENT LOADS						5.67

DEPARTMENT: Welding Engineering Technology
Department Loads
Academic Year FALL & SPRING 2007

Prepared: November, 2006 - REVISION

Note: Loads are expressed as credit hours/contact hours, i.e. 12/18

PROGRAMS: Welding Technology, Welding Engineering Technology

Name	FALL		WINTER		TOTALS		Overload Semester	Overload Location	Overload Course	Overload Configuration		Overload Cost	Adjunct or Temporary Cost	Reason
	Credits	Contacts	Credits	Contacts	Credits	Contacts				Lec	Lab	$ 60.00		
												$ 30.00		
Brew	11	27	10	30	21	57	Fall	FSU	Weld 212	3	6	$5,400		Student Load
												$0		
							Winter	FSU	Weld 123	0	12	$5,400		Student Load
Carney	8	18	3	3	11	21	Fall	FSU	Weld 111	3	0	$2,700		Dept Chair/Student Load
	0	0	0	0	0	0	Fall	FSU	Weld 113	0	6	$2,700		Dept Chair/Student Load
							Winter	FSU	Weld 121	3	0	$2,700		Dept Chair/Student Load
Hardesty	9	17	9	19	18	36								
Kirk	13	21	9	19	22	40	Fall	FSU	FSUS 100	1	0	$900		Student Load
							Fall	FSU	Weld 412	2	0	$1,800		Student Load
							Spring	FSU	Weld 222	1	0	$900		Student Load
Murray	12	20	11	27	23	47	Fall	FSU	Weld 411	2	0	$1,800		Student Load
							Winter	FSU	Weld 221	1	3	$2,250		Student Load
							Winter	FSU	Weld 322	2	3	$3,150		Student Load
Danley	0	0	3	3	3	3								
TOTAL					**98**	**204**				**18**	**30**	**$29,700**	**$0**	

Faculty Loads
Academic Year FALL 2005 & WINTER 2006

Prepared: December, 2005

PROGRAMS: Welding Technology, Welding Engineering Technology

Name	Fall Semester Assignments:						Winter Semester Assignments:						Academic Year Totals:	
	Course	Credits	Configuration Lec	Lab	Contacts	Notes	Course	Credits	Configuration Lec	Lab	Contacts	Notes	Credits	Contacts
Brew	WELD 113	5	0	15	15		WELD 123	5	0	15	15			
	WELD 212	4	3	3	6	Overload 3+3	WELD 123	5	0	15	15	Overload 0+12		
	WELD 212	1	0	3	3						0			
	WELD 212	1	0	3	3	Overload 0+3					0			
			0		0						0			
					0						0			
		11	3	24	27			10	0	30	30		21	57
Carney	WELD 111	3	3	0	3	Overload 3+0	WELD 121	3	3	0	3	Overload 3+0		
	WELD 113	5	0	15	15	Overload 0+6					0			
					0	**Chair Duties**					0	**Chair Duties**		
					0						0			
					0						0			
		8	3	15	18			3	3	0	3		11	21
Hardesty	WELD 311	4	3	3	6	Overload 2+0	WELD 146	2	1	3	4	Overload 1+0		
	WELD 311	1	0	3	3		WELD 146	1	0	3	3			
	WELD 311	1	0	3	3		WELD 321	4	3	3	6			
	WELD 116	3	2	3	5		WELD 321	1	0	3	3			
	WELD 116	1	0	3	3		WELD 321	1	0	3	3			
											0			
		10	5	15	20			9	4	15	19		19	39
K	FSUS 100	1	1	0	1	Overload 1+0	WELD 222	3	2	3	5	Overload 1+0		
				0	0		WELD 222	1	0	3	3			
	WELD 112	2	1	3	4		WELD 499	3	2	3	5			
	WELD 112	2	1	3	4		WELD 499	1	0	3	3			
	WELD 312	3	2	3	5		WELD 222	1	0	3	3			
	WELD 312	1	0	3	3									
	WELD 412	4	4	0	4	Overload 2+0					0			
		13	9	12	21			9	4	15	19		22	40
Murray	WELD 211	5	3	6	9		WELD 221	4	1	9	10	Overload 1+3		
	WELD 211	2	0	6	6		WELD 221	3	0	9	9			
	WELD 411	3	3	0	3	Overload 2+0	WELD 322	3	2	3	5	Overload 2+3		
	WELD 416	2	2	0	2		WELD 322	1	0	3	3			
	WELD 416	2	2	0	2	OL 2+0 AGA					0			
					0						0			
		14	10	12	22			11	3	24	27		25	49
					0						0			
Danley					0		WELD 422	3	3	0	3			
		0	0	0	0			3	3	0	3		3	3
					108			TOTALS					101	209
					18			CONTACTS/FTEF						36
					6.00			# OF DEPARTMENT LOADS						5.81

DEPARTMENT: Welding Engineering Technology
Department Loads
Academic Year FAL 05 & WINTER 2006

Prepared: December, 2005

Note: Loads are expressed as credit hours/contact hours, i.e. 12/18

PROGRAMS: Welding Technology, Welding Engineering Technology

Name	FALL		WINTER		TOTALS		Overload Semester	Overload Location	Overload Course	Overload Configuration		Overload Cost	Adjunct or Temporary	Reason
	Credits	Contacts	Credits	Contacts	Credits	Contacts				Lec	Lab	$ 55.00	Cost	
												$ 27.50		
Brew	11	27	10	30	21	57	Fall	FSU	Weld 212	3	3	$3,713		Student Load
							Fall	FSU	Weld 212	0	3	$1,238		Student Load
							Winter	FSU	Weld 123	0	12	$4,950		Student Load
Carney	8	18	3	3	11	21	Fall	FSU	Weld 111	3	0	$2,475		Dept Chair/Student Load
	0	0	0	0	0	0	Fall	FSU	Weld 113	0	6	$2,475		Dept Chair/Student Load
							Winter	FSU	Weld 121	3	0	$2,475		Dept Chair/Student Load
Hardesty	10	20	9	19	19	39	Fall	FSU	Weld 311	2	0	$1,650		Student Load
							Winter	FSU	Weld 146	1	0	$825		Student Load
Kuk	13	21	9	19	22	40	Fall	FSU	FSUS 100	1	0	$825		Student Load
							Fall	FSU	WELD 412	2	0	$1,650		
							Winter	FSU	WELD 222	1	0	$825		
Murray	14	22	11	27	25	49	Fall	FSU	Weld 411	2	0	$1,650		Student Load
							Winter	FSU	Weld 221	1	3	$2,063		Student Load
							Winter	FSU	Weld 322	2	3	$2,888		Student Load
							Fall	AGA	Weld 416	2	0	$1,650		FSU GR
Danley	0	0	3	3	3	3								
TOTAL					101	209				23	30	$31,350	$0	

Faculty Workload Summary

Welding Technology and Welding Engineering Technology
"2+2" academic configuration
Data is from the 2007/08 academic year and includes all courses taught by the 4.25 department faculty

Faculty Member (name)	FT or PT[4]	Classes Taught (Course No./Credit Hrs.) Term and Year[1]	Total Activity Distribution[2]		
			Teaching	Consulting	Other[3]
Bradley Brew	FT	Fall 2007: Weld 113 (5), WELD 212 (7)	100%		
		Spring 2008: WELD 123 (10)	100%		
Jeffrey Carney	FT	Fall 2007: WELD 111 (3)	25%		75% (Dept Chair)
		Spring 2008: WELD 121	25%		75% (Dept Chair)
Jeffrey Hardesty	FT	Fall 2007: WELD 311 (6), WELD 116 (3), FSUS 100 (2)	100%		
		Spring 2008: WELD 146 (3), WELD 321 (6)	100%		
Kenneth Kuk	FT	Fall 2007: WELD 112 (4); WELD 312 (4), WELD 412 (4)	100%		
		Spring 2008: WELD 222 (5), WELD 499 (4)	100%		
David Murray	FT	Fall 2007: WELD 211 (7), WELD 411 (3), WLD 416 (4)	100%		
		Spring 2008: WELD 221 (7), WELD 322 (4)	100%		
Blaine Danley	FT	Spring 2008: WELD 422	100%		
Adjunct	PT	Fall 200: WELD 113 (5)	100%		

[1] Indicate Term and Year for which data apply.
[2] Activity distribution should be in percent of effort. Members' activities should total 100%.
[3] Indicate sabbatical leave, etc., under "Other."
[4] FT = Full Time Faculty PT = Part Time Faculty

Faculty Workload Summary

Welding Technology and Welding Engineering Technology
"2+2" academic configuration
Data is from the 2007/08 academic year, includes only the 4.25 FT department faculty, and is an average of the fall and spring academic semesters

	Range	Average
Credit Hours	6 to 25	11.2
Contact Hours Per Week	3 to 30	22.1
Laboratory Size	7 to 26	14.7
Class Size	17 to 51	31.9
Advisees		

Indicate the number of credit and contact hours per week that is considered a normal full teaching load, and explain how a full-time load is determined.

Credit Hours 8 Contact Hours 18

A semester full-time teaching load is considered to be 8 credits hours or 18 contacts hours

3.K – ASSESSMENT AND EVALUATION. ***Describe and evaluate the program's assessment mechanisms.***

All department information pertaining to assessment and evaluation may be found in the following pages.

3.K.1 – List and describe what variables are tracked and why when assessing the effectiveness of the program (e.g., mastery of essentials of subject area, graduation rates, employment rates, pass rates on professional exams).

Comments:

3.K.2 – Provide trend data for the variables listed in (1). Compare the data to accreditation benchmark standards if applicable, or provide some other type of assessment of the data.

3.K.3 – Describe how the trend data in (2) is used to assess the rigor, breadth, and currency of the degree requirements and curriculum.

3.K.4 – Describe how the trend data in (2) is used to assess the extent to which program goals are being met.

- **Assessment of Program Educational Objectives**

The Welding Engineering Technology program strives to continuously assess whether the educational objectives of the program are well aligned with the needs of industry and are being achieved by graduates. Assessment can only be done by staying in constant dialog with alumni and employers with regard to the program. The Welding Engineering Technology program uses a three pronged approach to achieve this assessment:

4. **Industrial Advisory Board:** The WET Industry Advisory Board is a group of employers and alumni that meets at least once a year to discuss the program as well as trends in the industry that will affect graduates in the future. Performance of graduates in key areas is reviewed to determine whether educational objectives are being met.
5. **American Welding Society Welding Exposition:** The WET department actively participates in the AWS Welding Exposition to further interact with industry to assess future industry trends and obtain feedback from alumni on how well program educational objectives are being met.
6. **Surveys:** The WET department surveys students, faculty, employers, alumni and advisory board members every six years as part of the Academic Program Review cycle. These surveys are used to sample an even wider cross section of industry for the purpose of assessing whether educational objectives are being met. Please see the Survey Instrument,

These three measures allow the WET program to assess whether program objectives are in line with industry needs and if graduates are well-prepared to successfully meet these objectives.

- **Evaluation of Program Educational Objectives**

  As a result of evaluating the program educational objectives, the following program changes have been implemented:

  1. Industrial Advisory Board members indicated that some program graduates did not possess strong written communication skills despite having passed two English composition courses. As a result of not meeting this objective, rigorous laboratory write-ups were implemented into WELD 311 and 321 with the students being required to utilize the FSU Writing Center for the first several reports.
  2. Feedback during the AWS Welding Exposition indicated that some WET department equipment was no longer state-of-the-art. The WET department used contacts from the Welding Exposition to initiate consignment agreements that eliminate large capital expenditures and keep department equipment updated on a regular basis.
  3. Survey results of students, faculty, employers, alumni and advisory board members can be found at the end of this section.

- **Assessment of Program Outcomes**

  The Welding Engineering Technology program strives to continuously assess whether the program outcomes are well-aligned with the needs of industry and are being achieved by graduates. Assessment of program outcomes requires monitoring student progress and performance. The Welding Engineering Technology program uses three different indicators to conduct this assessment:

  - Student Retention and Graduation Rates
  - Pre/Post Testing Instrument
  - Job Placement

- **Evaluation of Program Outcomes**

1. **Student Retention and Graduation Rates:** The Welding Engineering Technology program monitors student retention rates to verify that students are making satisfactory progress towards a degree and are satisfied with the education that they are receiving. Please see the table for supporting data.

Source: FSU Institutional Research & Testing

Academic Year	2003/04	2004/05	2005/06	2006/07	2007/08	Average
Majors in Technical Sequence						
Freshman (WELD 111)	39	42	34	34	46	39
Sophomores (WELD 211)	28	31	42	34	34	33.8
Juniors (WELD 311)	27	31	30	30	27	29
Seniors (WELD 411)	24	26	29	26	30	27
Total Full-Time Majors in Sequence	118	130	135	124	137	128.8
Degrees Conferred						
A.A.S. Welding Technology	26	28	24	24	30	20.4
B.S. Welding Engineering Tech.	26	22	33	28	30	21.8
Total A.A.S & B.S. Degrees Conferred	52	50	57	52	60	42.2

	2002/03	2003/04	2004/05	2005/06	2006/07	Average
Retention to Graduation (two yrs)						
A.A.S. Welding Technology	70%	84%	72%	57%	71%	71%
B.S. Welding Engineering Tech.	88%	100%	81%	106%	93%	94%

2. **Pre/Post Testing:** The Department of Welding Engineering Technology utilizes a pre-test and post-test mechanism to monitor that students are developing the subject matter mastery set forth in the program outcomes. The following chart shows the results of pre/post-testing for the last five graduating classes from the department degree offerings.

Source: FSU Institutional Research & Testing

Academic Year Cycle	2002/04	2003/05	2004/06	2005/07	2006/08
A.A.S. Welding Technology					
Pre-Test Average	41%	42%	38%	39%	40%
Post-Test Average	82%	66%	62%	60%	65%
Percent Gain	100%	57%	63%	54%	63%
Note:	*Post-test required for course grade*				
A.A.S. Welding Technology					
Pre-Test Average	35%	45%	42%	45%	46%

Post-Test Average	70%	65%	65%	61%	53%
Percent Gain	100%	44%	53%	36%	15%

Note: Post-test not required for course grade until 2007

3. **Job Placement:** The Welding Engineering Technology program uses job placement of its graduates as a gauge of how well students are achieving program outcomes. If students are not getting jobs, then clearly, industry feels that they do not have the skills required. The following chart gives placement rates and salaries for the last 5 years.
   Source: Professor Kenneth A. Kuk, Ferris State

Academic Year	2002/03	2003/04	2004/05	2005/06	2006/07
B.S. Welding Engineering Tech.					
Placement Rate	100%	100%	100%	100%	100%
Average Starting Salary	$54,000	$55,000	$54,000	$54,000	$57,000

These three measures allow the WET program to assess whether program outcomes are in line with industry needs and if graduates are successfully meeting these outcomes.

3.L – ADMINISTRATION EFFECTIVENESS

3.L.1 – Discuss the adequacy of administration and clerical support for the program.

Comments: The support of the department programs by the university community is acceptable to achieve the program educational objectives and outcomes.

3.L.2 – Are the program and/or department run in an efficient manner? Please explain.

Comments: Yes. The department makes every effort to be responsible stewards of the provided University funds. The programs are operated to the highest standards within the scope of the available financial resources.

3.L.3 – Are class and teaching schedules effectively and efficiently prepared? Please comment.

Comments: The department course schedules are created and modified by the faculty in conjunction with University policy. Course scheduling decisions take in to consideration the need for students and faculty to operate effectively and efficiently.

Section #4: Facilities and Equipment

Programs: Welding Technology / Welding Engineering Technology
Degrees: Associate in Applied Science Degree in Welding Technology (WELT) and Bachelor of Science Degree in Welding Engineering Technology (WELE)
Department: Welding Engineering Technology
College: Technology

Section 4: Facilities and equipment

4.A. INSTRUCTIONAL ENVIRONMENT

4.A.1 – Are current classrooms, labs, and technology (both on-campus and off-site locations) adequate? Please explain.

Comments:

The Department of Welding Engineering Technology has access to classroom facilities campus-wide, as does every academic program, although particular programs do have first-rights to various academic spaces. We currently have first access to the following teaching spaces:

- **Swan Building Room 104:** Renovation in to a "Smart Classroom" was completed in Phase Two of the Classroom Renovation project headed by the Vice President of Academic Affairs Office. Description of the project can be found in the following pages of this report. Room has a capacity of 24 students and contains 24 personal computer stations, enhanced instructional technology, and three white board spaces.

- **Swan Building Room 106:** Location has partial instructional technology and conventional chair/desk student space. This space is a candidate for the VPAA Classroom Renovation project in the future.

- **SWAN Building Room 116:** This facility is the department welding laboratories. A description of the spaces can be found below:

description of the initiative is on the following pages. Completion date has not been finalized as of this writing.

- **Swan 304 Lecture Room** - This space has been included with the Vice President of Academic Affairs initiative entitled "Classroom Renovation: Learner-Centered Design". The description of the initiative is on the following pages. Expected completion date is August 30, 2008.

Classroom Renovation: Learner-Centered Design

In response to the president's initiative to create a learning-centered campus, Academic Affairs has collaborated with the Physical Plant to renovate a variety of classrooms around the concept of learner-centered design.

In such a classroom, the faculty aims to create an environment where students are active participants in learning, develop themselves independently and collaborate in ways that support the learning efforts of others. There is a body of empirical research to support both the efficacy of such environments as well as the specific criteria that foster the creation of such an environment.

In Academic Affairs, we studied the literature on classroom environments and relied on that research as well as extensive surveys of students and faculty to guide our decision-making on the project. Some of the key elements that we tried to achieve through the renovations are as follows:

- **Flexibility:** used furniture that allowed for various configurations of the classroom fostering small group, large group, or seminar capacity in one setting.

- **Technology:** developed a campus standard for technology enhanced classrooms (computer, projector, document camera, smart sympodium, DVD player) in order to maximize the learning potential in the classroom, fostering experimentation with technology enhanced pedagogy.

- **Color and comfort:** The importance of comfort should not be diminished in relation to the creation of learning-centered spaces. We added vibrant colors that have been well-received by the students, as well as carpeting and chairs that are ergonomically supportive.

- **Sound:** The addition of carpet and, in some cases, the replacement of ceiling tiles, has reduced unnecessary and distracting sound in the classrooms.

4.A.5 – Describe how proposed changes or improvements to facilities would enhance program delivery.

Comments: The Ventilation System project will provide our students with a learning-centered environment that is healthy and safe. The classroom renovations will allow the department faculty to utilize the latest available instructional technology and resources.

4.B. COMPUTER ACCESS AND AVAILABLITY

4.B.1 – Outside of computers in faculty and staff offices, identify the computing resources (hardware and software) that are allocated to the program.

Comments: The information below details the computer resources assigned to the department.

Ferris State University
Welding Lab Equipment as of 6/4/2008
SWN-104
SWN-104 OPTIPLEX GX260 2.40 512.00 40.00
SWN-104 OPTIPLEX GX260 2.40 512.00 40.00
SWN-104 OPTIPLEX GX260 2.40 512.00 40.00
SWN-104 OPTIPLEX GX260 2.40 512.00 40.00
SWN-104 OPTIPLEX GX260 2.40 512.00 40.00
SWN-104 OPTIPLEX GX260 2.40 512.00 40.00
SWN-104 OPTIPLEX GX260 2.40 512.00 40.00
SWN-104 OPTIPLEX GX260 2.40 512.00 40.00
SWN-104 OPTIPLEX GX260 2.40 512.00 40.00
SWN-104 OPTIPLEX GX260 2.40 512.00 40.00
SWN-104 OPTIPLEX GX260 2.40 256.00 40.00
SWN-104 OPTIPLEX GX260 2.53 512.00 80.00
SWN-104 OPTIPLEX GX260 2.53 512.00 40.00
SWN-104 OPTIPLEX GX260 2.53 512.00 40.00
SWN-104 OPTIPLEX GX260 2.80 1,024.00 40.00
SWN-104 OPTIPLEX GX260 2.80 1,024.00 40.00
SWN-104 OPTIPLEX GX260 2.80 1,024.00 40.00
SWN-104 OPTIPLEX GX260 2.80 1,024.00 40.00
SWN-104 OPTIPLEX GX260 2.80 1,024.00 40.00
SWN-104 OPTIPLEX GX260 2.00 384.00 40.00
SWN-104 OPTIPLEX GX260 2.40 512.00 40.00
Number of PC's **21**
SWN-106
SWN-106 OPTIPLEX GX620 3.40 1,024.00 160.00
Number of PC's **1**
SWN-116B
SWN-116B OPTIPLEX GX400 1.70 256.00 20.00
Number of PC's **1**
SWN-116F
SWN-116F OPTIPLEX GX400 1.70 256.00 20.00
SWN-116F OPTIPLEX GX400 1.70 256.00 20.00
Number of PC's **2**
SWN-119
SWN-119 OPTIPLEX GX400 1.70 256.00 20.00
Number of PC's **1**

4.B.2 – Discuss how these resources are used.

Comments: The computer resources are used in lecture and laboratory courses for both in class assignments and student homework. Students have access to computers in SWN 104 when classes are not scheduled.

4.B.3 – Discuss the adequacy of those resources and identify needed additional resources.

Comments: The computer resources are adequate.

4.B.4 – Does an acquisition plan to address these needs currently exist? Describe the plan. Has it been included in the department or college's planning documents?

Comments: The department does not have a computer acquisition plan. Past computer upgrades have occurred as computer resources inadequate for other academic areas have become available.

4.B.5 – Discuss the efficacy of online services (including WebCT) available to the program.

Comments: FerrisCONNECT is used by the department faculty. Each faculty uses this resource as a course supplement to varying degrees.

4.B.6 – Discuss the adequacy of computer support, including the support for on-line instruction if applicable.

Comments: The computer resources are adequate.

Lincoln Electric 2007-08 Consignment Equipment

Major Laboratory

#	Equipment Mfg	FSU Service Date	Part #	Model	Type	Serial Number	Ownership	Returned	List Price** (see note)	Annual Value
1	Lincoln	Mar-06	K1826-1	Precision TIG 275	CC - SMAW/GTAW	U1060206240	Lincoln		$3,079.00	$492.64
2	Lincoln	Mar-06	K1826-1	Precision TIG 275	CC - SMAW/GTAW	U1060206238	Lincoln		$3,079.00	$492.64
3	Lincoln	Mar-06	K1833-1	Precision TIG 375	CC - SMAW/GTAW	U1060118561	Lincoln		$4,900.00	$784.00
4	Lincoln	Mar-06	K1833-1	Precision TIG 375	CC - SMAW/GTAW	U1060122649	Lincoln		$4,900.00	$784.00
5	Lincoln	Jun-07	K1826-1	Precision TIG 375	CC - SMAW/GTAW	U1070516793	Lincoln		$4,900.00	$784.00
6	Lincoln	Jun-07	K1833-1	Precision TIG 375	CC - SMAW/GTAW	U1070306403	Lincoln		$4,900.00	$784.00
5	Lincoln	Jun-07	K2230-1	Powerfeed 10M	Single Wire Feeder	U1070412640	Lincoln		$3,281.00	$524.96
6	Lincoln	Jun-07	K2230-1	Powerfeed 10M	Single Wire Feeder	U1070600845	Lincoln		$3,281.00	$524.96
7	Lincoln	Jun-07	K2230-1	Powerfeed 10M	Single Wire Feeder	U1070600857	Lincoln		$3,281.00	$524.96
8	Lincoln	Jun-07	K2234-1	Dual Powerfeed 10M	Wire Feeder	U1070414246	Lincoln		$5,197.00	$831.52
8	Lincoln	Jun-07	K2368-1	Powerwave 355M	CC-CV Power Source	U1070502860	Lincoln		$4,038.00	$646.08
9	Lincoln	Jun-07	K2368-1	Powerwave 355M	CC-CV Power Source	U1070502861	Lincoln		$4,038.00	$646.08
10	Lincoln	Jun-07	K2368-1	Powerwave 355M	CC-CV Power Source	U1070404406	Lincoln		$4,038.00	$646.08
11	Lincoln	Jun-07	K2368-1	Powerwave 355M	CC-CV Power Source	U1070404408	Lincoln		$4,038.00	$646.08
12	Lincoln	Jun-07	K1728-7	Invertec V350 Pro	CC-CV Power Source	U1070415343	Lincoln		$4,768.00	$762.88
15	Lincoln	Jun-07	K2403-1	Power MIG 350MP	CC-CV Power Source	U1070517079	Lincoln		$4,421.00	$707.36
16	Lincoln	Jun-07	K2403-1	Power MIG 350MP	CC-CV Power Source	U1070601478	Lincoln		$4,421.00	$707.36
17	Lincoln	Jun-07	K2403-1	Power MIG 350MP	CC-CV Power Source	U1070517082	Lincoln		$4,421.00	$707.36
18	Lincoln	Jun-07	K2403-1	Power MIG 350MP	CC-CV Power Source	U1070517076	Lincoln		$4,421.00	$707.36
19	Lincoln	Jun-07	K2403-1	Power MIG 350MP	CC-CV Power Source	U1070517077	Lincoln		$4,421.00	$707.36
20	Lincoln	Jun-07	K1346-13	CV-400	CV Power Source	U1070514865	Lincoln	May-08	$0.00	$0.00
21	Lincoln	Jun-07	K2327-2	LF-72	Wire Feeder	U1070516606	Lincoln	May-08	$0.00	$0.00

**Note: Prices taken from Lincoln Electric website

$83,823.00 **$13,411.68 at 16.4%/Yr.**

Miller Welding Equipment
2006-2008 Academic Year

#	Equipment Mfg.	FSU Service Date	Return to Vendor	Model	Type	Serial Number	Ownership	Ret'd	List Price** (see note)	Annual Value	Comments	Replacement Model (Tentative)
Major Lab												
1	Miller	Aug-04	TBD	Aerowave	GTAW	LE250252	Consignment		$9,086.00	$1,490.10		
2	Miller	Aug-04	TBD	Syncrowave 350LX	GTAW	LE276302	Consignment		$4,100.00	$672.40		
3	Miller	Aug-04	TBD	Syncrowave 350LX	GTAW	LE276311	Consignment		$4,100.00	$672.40		
4	Miller	Aug-04	TBD	Axcess Wirefeeder	Wire Feeder	LE267529	Consignment		$2,643.00	$433.45	195182	
5	Miller	Aug-04	TBD	Axcess Wirefeeder	Wire Feeder	LE267536	Consignment		$2,643.00	$433.45	195182	
6	Miller	Aug-04	TBD	Axcess Wirefeeder	Wire Feeder	LE267538	Consignment		$2,643.00	$433.45	195182	
7	Miller	Aug-04	TBD	Axcess Wirefeeder	Wire Feeder	LE267528	Consignment		$2,643.00	$433.45	195182	
8	Miller	Aug-04	TBD	Control Cable	5' for Axcess		Consignment		$230.00	$37.72	195240	
9	Miller	Aug-04	TBD	Control Cable	5' for Axcess		Consignment		$230.00	$37.72	195240	
10	Miller	Aug-04	TBD	Control Cable	5' for Axcess		Consignment		$230.00	$37.72	195240	
11	Miller	Aug-04	TBD	Control Cable	5' for Axcess		Consignment		$230.00	$37.72	195240	
12	Miller	Aug-04	TBD	Dimension 452	GMAW/FCAW	LE149046	Consignment		$3,658.00	$599.91		
13	Miller	Aug-04	TBD	D-74DX	Wire Feeder	LE244965	Consignment		$3,814.00	$625.50		
14	Miller	Aug-04	TBD	Axcess 300	GMAW	LE280588	Consignment		$3,957.00	$648.95	907150	
15	Miller	Aug-04	TBD	Axcess 300	GMAW	LE280589	Consignment		$3,957.00	$648.95	907150	
16	Miller	Aug-04	TBD	Axcess 300	GMAW	LE309212	Consignment		$3,957.00	$648.95	907150	
17	Miller	Aug-04	TBD	Axcess 300	GMAW	LE309213	Consignment		$3,957.00	$648.95	907150	
18	Miller	Jul-07	TBD	Dynasty 200	GTAW	LH2501194L	Consignment		$3,470.00	$569.08	907099011	
19	Miller	Jul-07	TBD	Dynasty 350 TIG Runner	GTAW	LH250757L	Consignment		$8,295.00	$1,360.38	907204011	
20	Miller	Jul-07	TBD	Dynasty 350 TIG Runner	GTAW	LH250758L	Consignment		$8,295.00	$1,360.38	907204011	
21	Miller	Jul-07	TBD	Dynasty 700 TIG Runner	GTAW	LH260371L	Consignment		$13,326.00	$2,185.46	907101011	
22	Miller	Jul-07	TBD	Dynasty 700 TIG Runner	GTAW	LH260374L	Consignment		$13,326.00	$2,185.46	907101011	
Automation Lab		Aug-04	TBD									
23	Miller	Aug-04	TBD	Dynasty 300DX TIGrun	GTAW	LE291442	Consignment		$6,694.00	$1,097.82		
24	Miller	Aug-04	TBD	Dynasty 300DX TIGrun	GTAW	LE291439	Consignment		$6,694.00	$1,097.82		
25	Miller	Aug-04	TBD	Dynasty 300DX TIGrun	GTAW	LE291440	Consignment		$6,694.00	$1,097.82		
26	Miller	Aug-04	TBD	Auto Axcess 450	GMAW	LE140367	Consignment		$10,143.00	$1,663.45	907153011	
27	Miller	Aug-04	TBD	Wfeed Motor Kit 40v	50' Cont cable		Consignment		$1,755.00	$287.82	195248	
28	Miller	Aug-04	TBD	Adapter Kit	Universal		Consignment		$200.00	$32.80	195002	
29	Miller	Aug-04	TBD	Adapter Kit	FANUC		Consignment		$555.00	$91.02	194791	
Related Lab												
30	Miller		TBD	Millermatic 350P	GMAW	LG-052245B	Consignment		$3,680.00	$603.52		
31	Miller		TBD	XR A Python	25' Gun	LF354247	Consignment		$1,795.00	$294.38	195373	
32	Miller	Aug-04	TBD	Kit	Wire Drive & Accs		Consignment		$49.00	$8.04		
33	Miller	Aug-04	TBD	Spectrum 3080	PAC w/25' Tch	LE273322	Consignment		$3,460.00	$567.44		
34	Miller	Aug-04	TBD	XMT 350	CC/CV	LE230736	Consignment		$4,046.00	$663.54		
35	Miller	Aug-04	Oct-07	XMT 350	CC/CV	LE230741	Consignment		$4,046.00	$663.54		
36	Miller	Aug-04	TBD	XMT 350	CC/CV	LE230742	Consignment		$4,046.00	$663.54		
37	Miller	Aug-04	TBD	XMT 350	CC/CV	LE230756	Consignment		$4,046.00	$663.54		
38	Miller	Aug-04	TBD	S-74D	Wire Feeder	LE298902	Consignment		$1,899.00	$311.44		
39	Miller	Aug-04	TBD	S-74D	Wire Feeder	LE298903	Consignment		$1,899.00	$311.44		
40	Miller	Aug-04	TBD	S-74D	Wire Feeder	LE298905	Consignment		$1,899.00	$311.44		
41	Miller	Aug-04	TBD	S-74D	Wire Feeder	LE298909	Consignment		$1,899.00	$311.44		
37	Miller	Sep-06	TBD	Shopmate 300DX	CC/CV power Source	LG321466B	Consignment				907316	
38	Miller	Sep-06	TBD	22A Wire Feeder	Wire Feeder	LG300724W	Consignment				193066	
									$164,289.00	**$26,943.40**		
										at 16.4%/Yr.		

**Note: List prices taken from Miller Electric website.

ESAB Consignment Equipment
FY 07

#	Equip	FSU Service Date	Part #	Model	Type	Serial Number	Returned	List Price** (see note)	Annual Value
1	ESAB	September-06	0558001521	Multimaster 260 12ft 230-575 1ph 50/60Hz Argon	CC/CV	MMJ633039		$3,282.00	$538.25
2	ESAB	September-06	0558001521	Multimaster 260 12ft 230-575 1ph 50/60Hz Argon	CC/CV	MMJ606029		$3,282.00	$538.25
3	ESAB	September-06	0558001521	Multimaster 260 12ft 230-575 1ph 50/60Hz Argon	CC/CV	MMJ6060292	Oct-06	$3,282.00	$538.25
4	ESAB	September-06	0459230884	AristoMig 500, 460V 60Hz	CV	524-541-7099		$6,920.00	$1,134.88
5	ESAB	September-06	0459230884	AristoMig 500, 460V 60Hz	CV	304-320-3304		$6,920.00	$1,134.88
6	ESAB	September-06	0456290981	Aristo Pendant U8 Kit	Accessory	317-326-3085		$3,133.00	$513.81
7	ESAB	September-06	0456290981	Aristo Pendant U8 Kit	Accessory			$3,133.00	$513.81
8	ESAB	September-06	0458805881	AristoFeed 30-4 M0 OPEN	Accessory	451-607-4474		$1,499.00	$245.84
9	ESAB	September-06	0458805881	AristoFeed 30-4 M0 OPEN	Accessory	249-405-8725		$1,499.00	$245.84
10	ESAB	September-06	0458530880	Trolley	Accessory			$346.50	$56.83
11	ESAB	September-06	0458530880	Trolley	Accessory			$346.50	$56.83
12	ESAB	September-06	0456528880	Connection Set X 1.7M	Accessory			$379.00	$62.16
13	ESAB	September-06	0456528880	Connection Set X 1.7M	Accessory			$379.00	$62.16
14	ESAB			Powercut 1250	PAC	PA-J314039			$0.00
15	ESAB			Powercut 1250	PAC	PA-J304010			$0.00
16	ESAB			Powercut 1500	PAC	PB-J326016			$0.00
17	ESAB			Heliarc 252	GTAW	TP-J601004			$0.00
18	ESAB			Heliarc 252	GTAW	TP-J601003			$0.00
19	ESAB	March-07	998947	CM-79 PKG W/C 58 Torch	OFC			$2,935.03	$481.34
20	ESAB	September-06	459199885	Caddttig 150 TIG PKG 230V 1PH	GTAW	3284363092		$2,082.21	$341.48
21	ESAB	September-06	459199885	Caddttig 150 TIG PKG 230V 1PH	GTAW	3284363088		$2,082.21	$341.48
22	ESAB	September-06	459199885	Caddttig 150 TIG PKG 230V 1PH	GTAW	3284511082		$2,082.21	$341.48
23	ESAB	September-06	459199885	Caddttig 150 TIG PKG 230V 1PH	GTAW	3284511083		$2,082.21	$341.48
24	ESAB	September-06	459199885	Caddttig 150 TIG PKG 230V 1PH	GTAW	3284363086		$2,082.21	$341.48
25	ESAB	September-06	459199885	Caddttig 150 TIG PKG 230V 1PH	GTAW	3284511111		$2,082.21	$341.48
26	ESAB	September-06	459199885	Caddttig 150 TIG PKG 230V 1PH	GTAW	2384405375		$2,082.21	$341.48
27	ESAB	September-06	459199885	Caddttig 150 TIG PKG 230V 1PH	GTAW	2384405380		$2,082.21	$341.48
								$53,993.71	$8,854.97

**Provided by ESAB in email dated 8/30/06

Permanent Tag	Origination Tag	Asset Description	Primary Asset Tag	Sub typ	Status Sys	Status Usr	Cond code	Custodian	Locn	Orgn	Cost
24385	T00005152	Machine Shear Squaring			I	R	GD	Hammond, Bruce	SWN	39200	10,865.00
33265	T00005265	Machine Testing Torsio			I	R	GD	Hammond, Bruce	SWN	38700	5,345.00
39769	T00005211	Lathe Metal Working			I	R	GD	Hammond, Bruce	SWN	38700	7,853.00
45009	T00005356	Grinder Surface Floor			I	R	GD	Hammond, Bruce	SWN	38700	7,310.00
45038	T00005195	Mill Horizontalcincinn			I	R	GD	Hammond, Bruce	SWN	38700	12,450.00
59925	T00005143	Welding Machine			I	R	GD	Hammond, Bruce	SWN	39200	7,150.00
60227	T00005202	Forklift			I	R	GD	Hammond, Bruce	SWN	38700	8,000.00
62385	T00005428	Weld Control Pertron T			I	R		Hammond, Bruce	SWN	38700	5,990.00
66060	T00005636	Demostrator Astro-Phys			I	R		Hammond, Bruce	SWN	31000	12,042.26
74366	T00006149	Tester Tensile			I	R		Hammond, Bruce	SWN	38700	47,767.58
75327	T00006224	Processor Afp-Mini X-R			I	R		Hammond, Bruce	SWN	38700	6,150.00
78032	T00006528	Bandsaw			I	R		Hammond, Bruce	SWN	31000	8,277.90
78034	T00006530	Mill With Accessories			I	R		Hammond, Bruce	SWN	38700	9,284.40
78047	T00006543	Cutting System Plasma			I	R		Hammond, Bruce	SWN	39200	33,487.00
78060	T00006689	Plasma Cutting Syste C			I	R		Hammond, Bruce	SWN	39200	50,685.00
78178	T00006805	Atmosphere Furnace Tre			I	R		Hammond, Bruce	SWN	31000	9,783.00
78183	T00006810	Tester Microindentatio			I	R		Hammond, Bruce	SWN	31000	11,220.62
78184	T00006811	Camera Digital Microsc			I	R		Hammond, Bruce	SWN	31000	5,555.16
78185	T00006812	Camera Digital Microsc			I	R		Hammond, Bruce	SWN	31000	5,555.15
78186	T00006813	Fatigue Machine Rotati			I	R		Hammond, Bruce	SWN	31000	10,016.59
78190	T00006817	Weld Controller Resist			I	R		Hammond, Bruce	SWN	39200	6,460.00
78193	T00006823	Inverted Metallurgic M			I	R		Hammond, Bruce	SWN	31000	16,648.91
78332	T00006969	Furnace			I	R		Hammond, Bruce	SWN	38700	9,000.00
78403	T00007049	Machine - Sectioning M			I	R		Hammond, Bruce	SWN	31000	13,809.14
78412	T00007058	Testing Machine			I	R		Hammond, Bruce	SWN	31000	74,835.00
78686	T00003079	Ropfin DC020 Diffusion			I			Hammond, Bruce	SWN	39200	135,196.00
	T00003398	Alloy Analyzer-Final P	78755	A	I			Carney, Jeffrey	SWN	39200	20,000.00
78759	T00003393	Stud Welding System-Ne			G			Carney, Jeffrey	SWN	39200	31,100.00
78894	T00003779	Weld Gun Assembly W/St			G	G		Carney, Jeffrey	SWN	39200	30,000.00

4.C. OTHER INSTRUCTIONAL TECHNOLOGY

4.C.1 – Identify other types of instructional technology resources that are allocated or available to the program.

Comments: The welding laboratory facilities are described below.

Laboratory Facilities

The Welding Engineering Technology department at Ferris State University maintains four special purpose laboratories totaling 8,000 square feet of instructional space to serve 120 majors and 110 technology students from other disciplines.

Major Laboratory
Designed for 100 and 200 Level Course Instruction Featuring:

- 3,000 Square Feet of Instructional Space
- 28 Welding Stations, including:
- Oxygen Fuel Welding and Line Burners
- Shielded Metal Arc Welding
- Gas Tungsten Arc Welding with Pulsation
- Gas Metal Arc Welding with Pulsation
- Flux Cored Arc Welding with Gas Shielding
- Plasma Arc Welding and Cutting
- Submerged Arc Welding
- Stud Welding
- Grinding Room

Automation Laboratory
Designed for 200 and 300 Level Course Instruction Featuring:

- 2,200 Square Feet of Instructional Space
- 15 Automated Welding Stations, including:
- Robotic Welding Work Cells
- Laser Welding and Cutting Work Cells
- Gas Tungsten Arc Welding Work Cells with Pulsation
- Resistance Welding Work Stations

• Submerged Arc Welding Work Station	
Testing Laboratory Designed for 200, 300, and 400 Level Course Instruction Featuring: • 350 Square Feet of Instructional Space • 8 Testing Stations, including: • Tensile and Guided Bend Testing Equipment • Ultrasonic Equipment • Radiography Equipment	
Related Laboratory Designed for 100 and 200 level and Technical Related Course Instruction Featuring: • 4,900 Square Feet of Instructional Space • 18 Welding Stations, including: • Oxygen Fuel Welding and Cutting • Shield Metal Arc Welding • Gas Metal Arc Welding with Pulsation • Shear, Band Saw, and Press Brake • Fabrication Area	

4.C.2 – Discuss how these resources are used.

Comments: The items are used on a daily basis for student class activities. This is the major learning environment for Welding Technology and Welding Engineering Technology students.

4.C.3 – Discuss the adequacy of these resources and identify needed additional resources.

Comments: The welding laboratory facilities are equipped with the latest welding technology form the leading industry manufacturers. A complete list of laboratory equipment can be found at the end of this section.

4.C.4 – Does an acquisition plan to address these needs currently exist? Describe the plan. Has it been included in the department or college's planning documents?

Comments: The facilities within the Department of Welding Engineering Technology are first rate. The level of equipment present in the welding lab facilities is primarily a result of the faculty relationship with industry. Industry leaders have recognized the long-term benefit of students learning on their equipment prior to entering the workforce. Equipment has been obtained by a variety of resources, including:

- **Industrial Consignment Agreements:** The welding programs have received tremendous support from industry for many years. Formal consignment agreements insure that both the University and the consigning company receive the proper recognition and benefits from this relationship. Equipment is generally replaced on an annual basis by the manufacturer. Manufacturers support the installed equipment through warranty service, technical documentation, and practical demonstrations and seminars.

- **University Funding:** Funding for department level capital equipment purchases through university resources is available. These opportunities are in the form of either "One-Time" funding or Perkins Grant funding. Both of these funding opportunities are available annually. One-Time funding is a College of Technology opportunity. Departments submit requests to the College of Technology Dean's Office with justification and reasoning for the purchase request. Funding decisions are made out of the Dean's Office after department level conversations. The Perkins Funding opportunities work much in the same way as "One-Time" funding, but are coordinated out of the Vice President of Academic Affairs Office and are campus wide. The Department of Welding Engineering has benefited from both of these funding mechanisms.

- **Department Funding:** The Department of Welding Engineering Technology has purchased required equipment from the annual Supply & Expenditure (S&E) Budget and the department "Local Fund". The S&E funds are received from the College of Technology Dean's Office and are targeted for the annual operation of the department programs. It has been necessary in past academic years to purchase equipment from this fund in order to continue operation of a course in progress. These have typically been relatively small dollar amount items less than $5,000.00. Purchases from this fund are subjected to strict University policies. The department "Local Fund" is available for the department to spend at their discretion. Although this fund is also mandated by University policy, the department has more flexibility regarding purchases. This fund has supported the department programs as well.

- **"Future Planning Fund":** The department faculty recognizes the need for alternative financial resources as the university and State of

Michigan funding policies continue to be unpredictable. The goal of the fund, started in June 2007, is to create an endowment in which the department may draw from in the event that university funding becomes insufficient. The fund must reach $25,000.00 before an endowment can be created. Currently the fund balance is approximately $10,500.00. A portion of all income to the department through private donations, corporate donations, and scrap metal sales is deposited into this fund.

- **Donations:** Equipment has also been "gifted" to the department. These become property of the University and are typically tax-deductible to the donor.

4.D. LIBRARY RESOURCES

4.D.1 – Discuss the adequacy of the print and electronic and other resources available through FLITE for the program.

Comments: FLITE has both general and specific resources to support the Welding programs at FSU. These include:

Databases: FLITE's database holdings include a broad general database with full-text coverage of many technology and business titles (Gale General Onefile); a premiere business database with full-text coverage of all aspects of business and industry (ABI Inform); and a standard science and technology index and abstract service (Applied Science & Technology Abstracts.)

Serials: FLITE maintains subscriptions to key welding journals and provides online access to many more titles which contain content that is specifically relevant to the welding programs. In addition, FLITE provides electronic access to over 2000 titles related to aspects of engineering and technology, including almost all journal titles from Elsevier, Springer, Wiley, Blackwell and Sage Publications.

Books and other Materials: FLITE has print editions of key welding standards, as well as almost 400 books that deal specifically with different aspects of welding.

FLITE's Information Commons and other computer areas provide welding students with productivity software, such as Microsoft Office, along with access to FLITE electronic resources and to the Internet. A group of designated computers are loaded with software that is specifically useful for students in the Colleges of Business and Technology. Welding students can use FLITE's study rooms for individual and group projects.

The simple search result below of the "FerrisNet ONLINE CATALOG" using the keyword "welding" returned 435 results. This is an indication that the FLITE has excellent resources related to welding.

FerrisNet
ONLINE CATALOG

Main Menu | Modify Search | Another Search | Search MeLCat

(Search History)

Search history function requires JavaScript

WORD | w elding | Ferris State University

System Sorted | Search

435 results found. Sorted by **relevance** | date | title .
Result page: **1** 2 3 4 5 6 7 8 9 10 11 ... 37 Next

Save Marked Records | Save All On Page

WORDS (1-12 of 435)

Most relevant titles entries 1-310

1 **Structural welding code--sheet steel** c2008

Miami, FL : American Welding Society, c2008.

LOCATION	CALL #	STATUS
FSU Main Stacks 3rd Floor	TS227 .S87 2008	AVAILABLE

2 **Welding essentials : questions & answers** 2007

Galvery, William L.
New York : Industrial Press, 2007.

LOCATION	CALL #	STATUS
FSU Main Stacks 3rd Floor	TS227 .G25 2007	AVAILABLE

3 **Welding print reading** c2007

Walker, John R., 1924-
Tinley Park, Ill. : Goodheart-Willcox, c2007.

LOCATION	CALL #	STATUS
FSU Main Stacks 3rd Floor	T379 .W28 2007	AVAILABLE

4 **Penton's welding magazine.** c2007-

Cleveland, Ohio : Penton Media, Inc., c2007-

LOCATION	CALL #	STATUS
FSU Internet Resources	ONLINE	ONLINE
FSU Current Periodicals	Shelved By Title v.81 no.1 Jan 2008	LIB USE ONLY
FSU Current Periodicals	Shelved By Title v.81 no.2 Feb 2008	LIB USE ONLY

There are additional copies/volumes of this item

5 **Structural welding code--stainless steel** c2007
American Welding Society. Structural Welding Committee.
Miami, Fla. : American Welding Society, c2007.

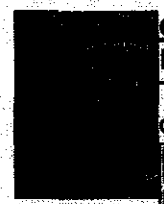
LOCATION	CALL #	STATUS
FSU Main Stacks 3rd Floor	TS227 .S72 2007	AVAILABLE

6 **Welding design & fabrication.** 2006

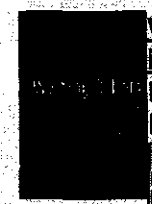
[Cleveland, Ohio : Industrial Pub., 1959-[2006].

LOCATION	CALL #	STATUS
FSU Internet Resources	ONLINE	ONLINE
FSU Periodicals Microfilm	Shelved By Title v.32 1959	LIB USE ONLY
FSU Periodicals Microfilm	Shelved By Title v.33 1960	LIB USE ONLY

There are additional copies/volumes of this item

7  **Gas tungsten arc welding handbook** c2006
Minnick, William H.
Tinley Park, Ill. : Goodheart-Willcox Co., c2006.

LOCATION	CALL #	STATUS
FSU Main Stacks 3rd Floor	TK4660 .M53 2006	AVAILABLE

8  **Welding robots : technology, system issues and applications** c2006
Pires, J. Norberto.
London : Springer, c2006.

LOCATION	CALL #	STATUS
FSU Main Stacks 3rd Floor	TS227.2 .P55 2006	AVAILABLE

9 

Resistance welding : fundamentals and applications 2006
Zhang, Hongyan, 1962-

Boca Raton, FL : CRC/Taylor & Francis, 2006.

LOCATION	CALL #	STATUS
FSU Main Stacks 3rd Floor	TK4660 .Z43 2006	AVAILABLE

10 **Welding technology for engineers** c2006

New Delhi, India : Narosa Publishing House, c2006.

LOCATION	CALL #	STATUS
FSU Main Stacks 3rd Floor	TS227 .W4153 2006	AVAILABLE

11 **Structural welding code--seismic supplement** c2006

American Welding Society. Structural Welding Committee.
Miami, Fla. : American Welding Society, c2006.

LOCATION	CALL #	STATUS
FSU Main Stacks 3rd Floor	TS227 .A533 2004, Suppl.	AVAILABLE

12 **Welding : principles & practices** 2005

Sacks, Raymond J.
Boston : McGraw-Hill, 2005.

LOCATION	CALL #	STATUS
FSU Main Stacks 3rd Floor	TS227 .S22 2005	AVAILABLE

Save Marked Records | Save All On Page

Locate In Results 435

Result page: **1** 2 3 4 5 6 7 8 9 10 11 ... 37 Next

Main Menu | Modify Search | Another Search | Search McLCat

(Search History)

4.D.2 – Discuss the service and instructional availability provided by the Library faculty and staff with respect to the needs of the program.

Comments: Fran Rosen, FSU COT FLITE Liaison, has supported the department programs very effectively.

4.D.3 – Discuss the impact of the budget allocation provided by FLITE to your program. Is the budget allocation adequate? Explain.

Comments: Budget allocations are sufficient to support the department programs needs.

Section #5: Conclusions

Programs: Welding Technology / Welding Engineering Technology
Degrees: Associate in Applied Science Degree in Welding Technology (WELT) and Bachelor of Science Degree in Welding Engineering Technology (WELE)
Department: Welding Engineering Technology
College: Technology

Section 5: Conclusions based on data analysis derived from Sections 2-4 and on the collective wisdom and judgment of the PRP. In arriving at these conclusions, the PRP should summarize the relationship of the program to each of the following specific categories it deems appropriate.

5.A. RELATIONSHIP TO FSU MISSION – *Please see Section 1.A.*

Comments: The Ferris State University Mission Statement is below.

The nationally recognized Ferris welding program are compatible with the University mission by providing hands-on, laboratory based career education and training. ***(Please see Statement of Mission on the opening page of Section 1)***

The strategic plan of the WET Department programs is outlined annually in the Unit Action Planning process. The WET Department strives to insure that our future plans align with the overall plans of the college and division.

Mission Statement - *adopted March, 2008*

Ferris State University prepares students for successful careers, responsible citizenship, and lifelong learning. Through its many partnerships and its career-oriented, broad-based education, Ferris serves our rapidly changing global economy and society.

5.B. PROGRAM VISIBILITY AND DISTINCTIVENESS - *Please see Section 1.B.*

Comments: The WELE degree program at Ferris is the only four-year Welding Engineering Technology program in the state of Michigan. Ferris State is one of only six (6) educational institutions in the United States to offer a four-year degree with an emphasis on welding.

Program & Student Recognition

- Since 1986, students in the Ferris welding programs have received approximately $725,000.00 in academic scholarship awards from various industry professional organizations.

- 30+ students have been recognized with endowed National Named Scholarships through the American Welding Society (AWS), including two students who have traveled to Japan as part of the AWS Matsuo Bridge Company Scholarship award – a priceless educational experience!

- The Resistance Welder Manufacturers' Association has awarded 21 National Scholarships to FSU WET students since 1995.

- WET faculty members Joseph Mikols (retired), Kenneth Kuk, and David Murray, awarded Adams Memorial Membership through the AWS as recognition for outstanding teaching activities in their undergraduate and postgraduate institutions.

- Latest laboratory welding equipment technology for student use.

- Awarded the American Welding Society national Image of Welding "Educational Facility" in 2005

5.C. PROGRAM VALUE – *Please see Section 1.D.3.*

Comments: The Welding Technology A.A.S. degree and the Welding Engineering Technology B.S. degree programs have been providing qualified welding graduates to various facets of the welding and fabrication industry for many years. The demand for Ferris welding graduates has increased annually. The shortage of welding personnel facing industry has created a job market for graduate's unseen prior.

Since August 1, 2007 more than 140 companies and/or individuals have contact the Department of Welding Engineering Technology inquiring about candidates for their employment opportunities. A complete Labor Market Analysis is included in this section.

This industry demand has resulted in steady enrollment growth. This enrollment growth benefits all aspects of the University as students are required to take courses outside of the department and College of Technology to complete their academic degree requirements.

Section 3 contains detailed enrollment data to support this response.

5.D. ENROLLMENT - *Please see Section 3.*

Comments: Enrollment has continued to grow in the welding programs. The table below indicated the enrollment trends for the past five years.

Enrollment Trends for Past Five Academic Years
Source: FSU Institutional Research & Testing

	Year (03-04)	Year (04-05)	Year (05-06)	Year (06-07)	Year (07-08)
II. Full-time Students	118	130	135	124	137
Part-time Students	0	0	0	0	0
Student FTE[1]	118	130	135	124	137
Graduates	26	22	33	28	30

[1] FTE = Full-Time Equivalent

5.E. CHARACTERISTICS, QUALITY AND EMPLOYABILITY OF STUDENTS - *Please see Section 3.A.3.*

Comments: The employability of Welding Technology and Welding Engineering Technology program graduates is excellent. The American Welding Society projects that by 2010 a shortage of 200,000 skilled welding personnel will exist. By 2014 the number is expected to exceed 450,000.

5.F. QUALITY OF CURRICULUM AND INSTRUCTION

Comments:

Information pertaining to the curriculum of the department program can be found in Appendix A. A list of the curriculum materials included is stated below.

- Programmatic marketing brochure
- Welding Engineering Technology Bachelor of Science degree Curriculum Guide Sheet
- Welding Engineering Technology Bachelor of Science degree Technical Sequence Course Descriptions
- Welding Technology Associate in Applied Science degree Curriculum Guide Sheet
- Welding Technology Associate in Applied Science degree Technical Sequence Course Descriptions
- Ferris State Graduation Check Sheet for General Education Requirements
- Table 5-1: Prerequisite Chart. This chart illustrates prerequisite requirements for all program courses.
- Table 5-2: Curriculum. This table illustrates the number of program credit hours dedicated to various educational categories.
- Table 5-3: Course and Section Size Summary. This table illustrates the frequency and student enrollment in program courses.

5.G. COMPOSITION AND QUALITY OF THE FACULTY

Comments: The Department of Welding Engineering technology faculty are highly qualified to teach in the department programs. Their dedication and concern for the students is tremendous. The loyalty to the University and program by the faculty is clearly illustrated by their more than 95+ years of combined teaching of welding course at Ferris State.

Faculty resumes are included in this section. Each faculty resume is preceded by the personnel information displayed on the department web site.

Department of Welding Engineering Technology Faculty

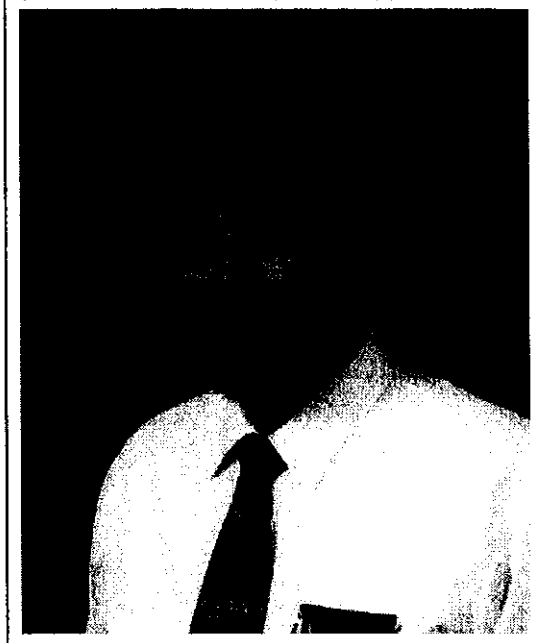
Bradley O. Brew
Assistant Professor 1981

College - College of Technology
Department - Welding Engineering Technology

Contact Information:
JOH-215 (location)
231-591-2639 (office)
brewb@ferris.edu

Education:
B.S. Education, Ferris State University.
A.A.S. Welding Technology, Ferris State University.

Areas of Expertise: X-Radiation & Ultrasonic Testing, and Fabrication.



Bradley Brew
11670 190th Ave, Big Rapids, MI 49307
(231) 796-7043
e-mail: brewb@ferris.edu

EDUCATION:

- 1986 – Bachelor of Science degree, Technical Education, Ferris State University
- 1979 – Associates in Applied Science, Welding Technology, Ferris State University (Outstanding Student Award recipient)
- 1976 – Associates in Applied Science, Electronics – United States Air Force
- 1971 – Norway High School, Norway, Michigan

CREDIT AND NON-CREDIT CLASSES:

- GMF Robotics Training, Ferris State University
- Computer Training classes, Ferris State University
- Auto-CAD 143, Ferris State University
- Lincoln Welding Classes, Lincoln Electric, Grand Rapids, MI
- Miller Welding Classes, Miller Electric, Appleton, WI
- American Welding Society Seminars, Detroit, MI

AREAS OF EXPERTISE:

- Ultrasonic testing
- Radiography – State certified for cathode ray tube
- AWS Code D1.1, Api 1104 ASME Section #9
- Dye Penetrant, Magnetic Particle, Eddy Current
- Destructive testing
- Welding processes SMAW, GMAW, GTAW, FCAW, Oxy-Fuel, GMAW-P, RW, SAW.
- Weld cost analysis and controlling weld distortion.
- Equipment set-up and trouble-shooting
- Blueprint reading.

EMPLOYMENT:

1981 – Present: Assistant Professor, Welding Engineering Technology, Ferris State University.

- In charge of the non-destructive portion of the welding program, purchasing of X-ray equipment, UT Equipment, X-ray safety for the students, quality control of film badges and calibration of the X-ray Machines.
- Responsible for all textbooks, lesson plans and syllabi for all the different classes taught in my area.
- Travel to Upper Peninsula and Lower Peninsula high schools, career centers and community colleges to recruit students.
- Responsible for the pick-up and delivery of all scrap steel donations.
- Responsible for the purchase of new equipment and consumables and repair and upkeep of equipment.
- Work with faculty in the coordination of new and used donations to the welding lab.

- Set up and give tours throughout the welding program.
- Involved in student activities, student trips and AWS shows, pig roasts, high school visits, organize student trip for VICA.
- Aid in the set-up and layout of the welding during three remodeling projects.
- Active in the placement of the graduating students from the welding program.
- Active in advising students for the correct course while in the welding program.
- Worked with the department of transportation for the State of Michigan to conduct welder certification test at the FSU lab.
- Rewrite courses as needed to keep up with technology.

1987 – Present: Owner – K & B Welding
- General fabrication and repair – mostly done during summer months.

1979-1981: Welding Engineer, Clarage Fan Company, Kalamazoo, MI
- Responsible for all welder and procedure qualifications for all the welders on the floor – approximately 185 welders total on three shifts.
- Responsible for all equipment to be purchased, maintained and cost justification.
- Check all blueprints for proper weld symbols and welding processes before production began.
- Responsible for the non-destructive testing done on the fan wheels.
- Filled in for shop supervisors when they were on vacation or sick.
- Overseen the quality control personnel in the welding area.

February 1979 – December 1979: Welding Engineer – Welder's Supplies & Gases, Kalamazoo, MI
- Work with different businesses to help in training, equipment purchases, and set-up.
- Train businesses of the new welding technologies and equipment updates.
- Work with different companies with weld problems, distortion problems, etc.

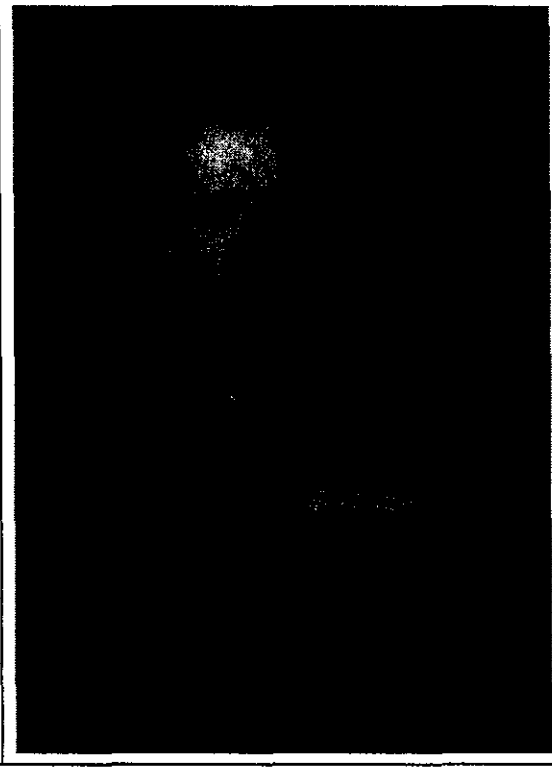
1972 – 1976: Electrical Specialist – United States Air Force

ACTIVITIES:
- American Welding Society – Silver Member
- Mecosta-Osceola Career Center – Faculty Advisor
- Eagles Club, Big Rapids, MI – Member - 25 years
- Elks Club, Big Rapids, MI – member - 25 years
- AmVets, Big Rapids, MI – member - 12 years
- Mecosta Motorcycle Association – member - six years
- Antique Tractor Pullers Association – Member - five years

REFERENCES: Both employment and personal references furnished upon request.

Jeffrey N. Carney
Associate Professor/Department Chair 1996
College - College of Technology
Department - Welding Engineering Technology
Contact Information:
SWN 107 (location)
231-591-2952 (office)
carneyj@ferris.edu

Education:
M.S. Career & Technical Education, Ferris State University
B.S. Welding Engineering Technology, Ferris State University
A.A.S. Welding Technology, Ferris State University
Certified Welding Inspector, American Welding Society
Areas of Expertise: Welding Automation, Fixture Design, Arc Welding Process Selection, Project Implementation.



Jeffrey N. Carney

Department Chair, Associate Professor – Ferris State University

ACADEMIC TEACHING EXPERIENCE

Ferris State University, Big Rapids, MI 49307; Department Chair/Associate Professor, Department of Welding Engineering Technology **August 2003 to present**

Ferris State University, Big Rapids, MI 49307; Associate Professor, Welding Engineering Technology Department **August 2002 to present**

Ferris State University, Big Rapids, MI 49307; Assistant Professor, Welding Engineering Technology Department **August 1996 to August 2002**

Ferris State teaching responsibilities have included laboratory and lecture content of various courses at the freshman, sophomore and junior levels within the Welding Technology and Welding Engineering Technology programs.

Montcalm Community College, Sidney, MI 48885-9723; Adjunct Faculty **June 2001**

Davenport University, Grand Rapids, MI 49503; Adjunct Faculty **September 2000**

EDUCATION & ACADEMIC HONORS

Master of Science Degree in Career and Technical Education **August, 1999**
Ferris State University, Big Rapids, MI 49307

Bachelor of Science Degree in Welding Engineering Technology **May, 1987**
Ferris State University, Big Rapids, MI 49307

Associate in Applied Science in Welding Technology **May, 1985**
Ferris State University, Big Rapids, MI 49307

COMMITTEE ACTIVITIES

University Committees on Discipline and Appeals Board (2004 to present)
Co-Chairman, 2000 Ferris State University Self Study, North Central Accreditation of Colleges and Schools,
FSU Sabbatical Committee (2003 to present)
FSU Scholarship Committee (2002 to present)
FSU COT Dawg Days Event (multiple dates)
FSU COT Logo Committee
FSU COT Associate Dean's Search Committee – Winter
2006 FSU Futures Conference
FSU Michigan Manufacturing Technology Team
FSU COT Promotion Committee
Chairmen of Academic Program Review committee for Welding Technology and Welding Engineering Technology programs 2003 & 2009
Coordinator of Annual State Secondary Welding Competition hosted by the WET Department
Coordinator of Ferris State WET Department application for American Welding Society "Image of Welding-Educational Award". Award was received in May, 2005
Ferris State "Chain Gang" for home football games
Faculty Advisor, American Welding Society, FSU Student Chapter
Advisory Committee to Welding Technology program at Muskegon Career Tech Center
Advisory Committee to Welding Technology program at Mecosta-Osceola Intermediate School District
Northern Michigan Welding Educators Group
American Welding Society, National Scholarship Committee, LeJuene, FL
American Welding Society, District 11 Committee Meeting - Annually
Advisory Committee to Welding Technology program at Oakland Technical Center – Southeast Campus
Advisory Committee to Welding Technology program at Oakland Community College

INDUSTRIAL EXPERIENCE

ABB Flexible Automation Inc. - Welding Systems Division, Auburn Hills, MI. *Manager of Automotive Weld Center,* Responsible for sales of arc welding robotic systems to OEM automotive accounts, supervision of Applications Specialists for customer programs, welding lab operations, and interface with customer product engineering for development of manufacturing processes. **August 1994 to August 1996**

Robotic Production Technology, Madison Heights, MI. *Welding Engineer – Technical Sales,* Integrator of turn-key robotic manufacturing systems. Responsibilities included sales, customer liaison, systems proposals, work cell and tooling concepts, cost justification, cycle-time analysis, installation supervision and customer post-installation follow-up. **May 1990 to August 1994**

Welding & Engineering Products Company, Madison Heights, MI. *Welding Engineer – Technical Sales,* Supplier of welding hardware and consumables. Duties included technical support for customers and sales staff, equipment/product demonstration, development of welding procedures, product training for customers, outside sales. **May 1987 to May 1990**

Doorman Manufacturing Company, Auburn Hills, MI. *Welder/Fitter,* Supplier of door assemblies for industrial and nuclear facilities. Duties included inventory of stock, blueprint reading, welding and fabrication of door panel details, field installation. **April 1980 to August 1983,**

PROFESSIONAL AFFILIATION AND HONORS

Member of the American Welding Society Educational Scholarship Committee **2005, 2006, 2007, 2008**
Nominee for American Welding Society "Adams Memorial Membership" **October 2006**
Competition Judge, James F. Lincoln Arc Welding Foundation student project competition **July 2005, 2006, 2007, 2008**
Question Author and Presenter, American Welding Society District 11 "Quiz The Experts" **2000 to present**
COT Engineering and Technology Exploration Academy **June 2003, 2004, 2005, 2006, 2007, 2008**
Chairman, American Welding Society Western Michigan Section **2000 to 2002**
Educational Representative, American Welding Society Western Michigan Section **1999/2000 to present**
Member, American Welding Society, B5C Committee on the Certification of Welding Engineers **1998 to present**
Member, American Welding Society **1987 to present**
Advisor, Ferris State University Student Chapter of the American Welding Society **1996 to present**
Advisor, SkillsUSA 1999 Overall Gold medal winner in post-Secondary Welding and 2000 **July 1999**
Advisor, SkillsUSA Ferris State University Chapter **July 1999**
Member, Revision Committee for Welding, National Occupational Competency Testing Institute (NOCTI) **October 1996**
Certified Welding Inspector (Former), American Welding Society

PROFESSIONAL DEVELOPMENT

Michigan Department of Labor & Economic Growth, Participant in 2006 Welding Focus Group **July 2006**
Ferris State University, 1st Faculty Writing Institute – Faculty Center for Teaching and Learning **May 2006**
Ferris State University, Learner-Centered Teaching Faculty Learning Community **January-April 2006**
FABTECH International & AWS Welding Show, "Brazing and Soldering Commercial Session" **November 2005**
Ferris State University, "Tenure and Promotion Guidelines as a Vehicle for Change" **July 2005**
Ferris State University Seminars, Human Resources Policies; Helping Emotionally Distressed Students; Conversations with Customers; Scheduling & Planning Tools: Beyond PDA's Difficult **August 2005**
Cronatron Welding Systems Inc., Hardfacing Seminar **December 2004**
American Welding Society, Welding Inspection Seminar **March 2003**
Ferris State University, WebCT: Preparing for your First Semester **May – June 2002**
Genesis System Group, Robotic Workcell Training **August 1998**
Miller Electric Manufacturing Company, Pulsed Gas Metal Arc Welding – Parameter Development **July 1998**
Lincoln Electric Company, Pulsed Gas Metal Arc Welding – Equipment Training **July 1998**
Ferris State University, 2nd Faculty Summer Institute **May 1997**
University of Michigan, Automotive Laser Applications Workshop **March 1996**
ABB Flexible Automation Inc., IRB S4 Robot Programming Training **November 1994**
Lincoln Electric Company, Flagship Distributor Equipment Training **May 1989**
Harris Calorific Corporation, Oxy-Fuel Torch and Regulator Application Training **April 1988**

CONSULTING & TRAINING

Skilled Trades Training for 21 maintenance employees of Yoplait-Colombo, Inc. Primary area of content was welding, forming and fabrication of stainless steel, Ferris State, Big Rapids, MI **May-June 2005**
Advanced Maintenance Welding Training for five (5) Michigan Department of Transportation employees. Ferris State, Big Rapids, MI **June 2004**
Mechanical Systems Refresher Training for maintenance employees of Yoplait-Colombo, Inc welding processes and sheet metal fabrication. Based on original Yoplait Mechanical Systems test. Yoplait-Colombo, Reed City, MI **June, 2003**
Basic Welding Theory for ten (10) production employees. Primary focus was GTAW and GMAW processes. Beverlyn Mfg., Grand Rapids, MI **January 2003**
Basic Welding Theory & Practice for eight (8) maintenance employees, IMC Potash Hersey, Inc., Hersey, MI **January 2003**
Basic Welding Theory & Practice for seven (7) maintenance employees, IMC Potash Hersey, Inc., Hersey, MI **December 2002**
Basic Welding Training for Electrolux Home Products production and skilled trades employees. Electrolux, Inc., Greenville, MI **December 2002**

Welder Certification for three (3) welder/fabricators in Gas Metal Arc Welding (GMAW) of steel, stainless steel and aluminum for all position operation, JD Metalworks, Clare, MI **August 2001**

Maintenance Welding for five (5) Michigan Department of Transportation employees. Ferris State University, Big Rapids, MI **July 2001**

Welder Certification for three (3) welder/fabricators in Gas Metal Arc Welding (GMAW) and Shielded Metal Arc Welding (SMAW) for all position operation, Hydaker-Wheatlake Company, Reed City, MI **January, 2001**

Basic Theory and Hands-On Welding for 32 Production Welders, Fitters and Project Engineers. JD Metalworks, Clare, MI **June 2001**

Review of Welding Text Book draft, Glencoe/McGraw-Hill, Columbus, OH **March 2001**

Welder Certification for three (3) welder/fabricators in Gas Metal Arc Welding (GMAW) and Shielded Metal Arc Welding (SMAW) for all position operation, Hydaker-Wheatlake Company, Reed City, MI **January 2001**

Journeyman Testing review and test development for 15 Yoplait-Columbo Employees, Reed City, MI **November 2000**

Maintenance Welding for 25 union Millwrights, Pipe fitters, Electricians and Laborers. Frigidaire Incorporated, Greenville, MI **September 2000**

Maintenance Welding for six (6) Michigan Department of Transportation employees. Ferris State University, Big Rapids, MI **July 2000**

Welding Standards and Inspection for 17 Product Engineers and Production Supervisors. Morbark Incorporated, Winn, MI **October 1999**

Basic Theory and Hands-On Welding for 26 Production Welders and Product Engineers. Morbark Incorporated, Winn, MI **September 1999**

Coordinator of Electronic Welding Helmet Feedback Experiment at Ferris State University. Supervised twelve (12) students during experiment and documented results. Impact Engineering, Jackson, MI **March 1999**

Basic Theory and Hands-On Welding for 23 Production Welders and Product Engineers. Morbark Incorporated, Winn, MI **January 1999**

Basic Theory and Hands-On Welding for 25 Production Welders and Product Engineers, Morbark Incorporated, Winn, MI **September 1998**

Basic Hands-On Welding for six (6) Welder/Fabricators, Brown Machine Corporation, Beaverton, MI **June 1997**

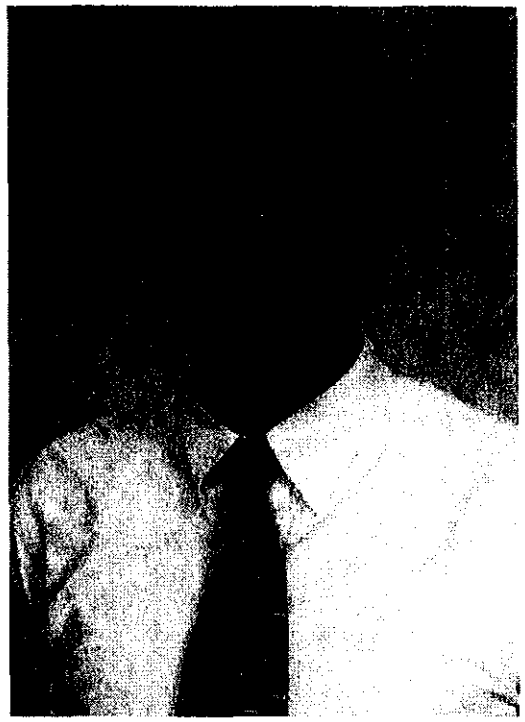
Jeffrey B. Hardesty
Assistant Professor 2004

College - College of Technology
Department- Welding Engineering Technology

Contact Information: JOH-207 (location)
231-591-5291 (office)

MS Welding Engineering, Ohio State University
Certificate-Manufacturing & Systems Engineering, Ohio State University
BS Welding Engineering
Ohio State University
Licensed Professional Welding Engineer - State of Ohio
Certified Welding Engineer, AWS
Certified International Welding Engineer-International Institute of Welding

Areas of Expertise: Welding Automation, Robotics, and Fixture Design, Work Cell Development



Jeffrey B. Hardesty, P.E., C.W.Eng.
Assistant Professor- Welding Engineering Technology
915 Campus Drive, JOH 219, Big Rapids, MI 49307
Phone: 1-231-591-3496, email: hardesj@ferris.edu

ACADEMIC TEACHING EXPERIENCE

Assistant Professor of Welding Engineering Technology, Ferris State University, Big Rapids, MI 49307.
August 2004 to present- Specific courses written and/or taught to date are as follows:

FSUS 100	Ferris State University Seminar- Lecture
WELD 116	Combined Welding for Auto Body Repair- Lecture and Laboratory
WELD 146	Welding for Heavy Equipment- Lecture and Laboratory
WELD 311	Welding Automation and Robotics I- Lecture and Laboratory
WELD 321	Welding Automation and Robotics II- Lecture and Laboratory
WELD 393	Internship in Welding Engineering Technology- Practicum
WELD 411	Advanced Welding Processes- Lecture

Graduate Teaching Associate in Welding Engineering, Ohio State University, Columbus, OH, 43210.
September 1993 to June 1994- Specific courses written and/or taught were as follows:

WELD 656	Welding Robotics- Laboratory
WELD 657	Advanced Welding Robotics- Laboratory

COMMITTEE ACTIVITIES

University:
Student Leadership and Activities Advisory Council. March 2006 – May 2007
University Emergency Situations Committee. October 2007 – December 2007
University Graduate and Professional Council. October 2007 - present
College of Technology:
Departmental Marketing Consolidation. October 2006 – January 2008
Engineering Graphics (ETEC) Committee. January 2007 – May 2007
COT Sabattical Committee. September 2007 - present
Welding Engineering Technology Department:
State Secondary Welding Competition Committee. September 2004 - present
Laser Procurement Committee. October 2005 – December 2006
WELD 150 Development Committee. September 2007 - present
Welding Engineering Technology APR Committee. September 2007 - present
New Faculty Search Committee. October 2007 - April 2008

INDUSTRIAL EXPERIENCE

July 1994-August 2004: Senior Manufacturing/ Welding Engineer, Delphi Corporation- Flint, MI.
April 1991-January 1992: Assembly Plant Welding Engineer, Ford Motor Company- Kansas City, MO.
June 1989-April 1991: Welding Engineer, Ford Motor Company- Dearborn, MI.
September 1992-June 1994: Graduate Research Associate, Ohio State University- Columbus, OH.

EDUCATION & ACADEMIC HONORS

Master of Science degree in Welding Engineering **1994**
The Ohio State University, Columbus, OH.
Manufacturing and Systems Engineering Certificate **1994**
The Ohio State University, Columbus, OH.
Candidate for Master of Science degree in Career and Technical Education **2010 est.**
Ferris State University, Big Rapids, MI.
Bachelor of Science degree in Welding Engineering **1989**
The Ohio State University, Columbus, OH.

PROFESSIONAL CERTIFICATION

Licensed Professional Welding Engineer (Serial #60187) – State of Ohio
Certified Welding Engineer (Certificate #00014ENG)– American Welding Society
Certified International Welding Engineer (Diploma #USA-IWE0001) – International Institute of Welding
Robust Engineering Practitioner- ASI Consulting Group
7 United States Patents:

- Patent No.: US 6,438,839 *"Method of Manufacturing a Catalytic Converter by Induction Welding"*
- Patent No.: US 6,454,317 *"Versatile End Plate Converter Design Using Powder Metal"*
- Patent No.: US 6,643,928 B2 *"Method of Manufacturing an Exhaust Emission Control Device"*
- Patent No.: US 7,047,641 *"Exhaust Emission Control Device Manufacturing Method"*
- Patent No.: US 7,217,905 *"Weld Filler Metal that Reduces Residual Stress and Distortion"*
- Patent No.: US 7,241,426 *"Exhaust Manifold with Catalytic Converter Shell Tube"*
- Patent No.: US 7,279,140 *"Catalytic Converter with Integral Oxygen Sensor"*

PROFESSIONAL AFFILIATION AND HONORS

Member - American Welding Society since 1989
Committee Member, American Welding Society D8.8M Committee: *Specification for Automotive and Light Truck Steel Components Weld Quality – Arc Welding*
Committee Member (Corresponding), Robotics Industries Association R15.06-199X Committee: *American National Standard for Industrial Robots and Robot Systems- Safety Requirements*

PROFESSIONAL DEVELOPMENT

Laser Safety Officer: Rockwell Laser Industries- Cleveland, OH August 2006
Laser Welding : Equipment and Process Validation: University of Wisconsin- Madison- Madison, WI June 2005
Lilly Conference on College and University Teaching-West: California State Polytechnic University- Pomona- Pomona, CA March 2005
Robust Engineering Practitioner Training: ASI Consulting- Flint, MI May 2004
Shainin Red X Strategies: Shainin Consulting LLC- Livonia, MI June 2004
Solid Edge User Training: CAD Potential Inc.- Flint, MI October 2003
Trends in Welding Research Conference: American Welding Society- Pine Mountain GA April 2002

CONSULTING & TRAINING

Robotic Welding Programmer Training: Stryker Medical, Kalamazoo, MI. July 2005-August 2006.
Effects of Thinner Sheet Metal on Weld Quality: Delphi Corporation, Milwaukee, WI. July-August 2005.
Welding Specification Evaluation. Delphi Corporation, Flint, MI. June-July 2006.
Design for Manufacturing. Delphi Corporation, Flint, MI. June-July 2006.
Weld Defect Evaluation. Delphi Corporation, Flint, MI September 2007.

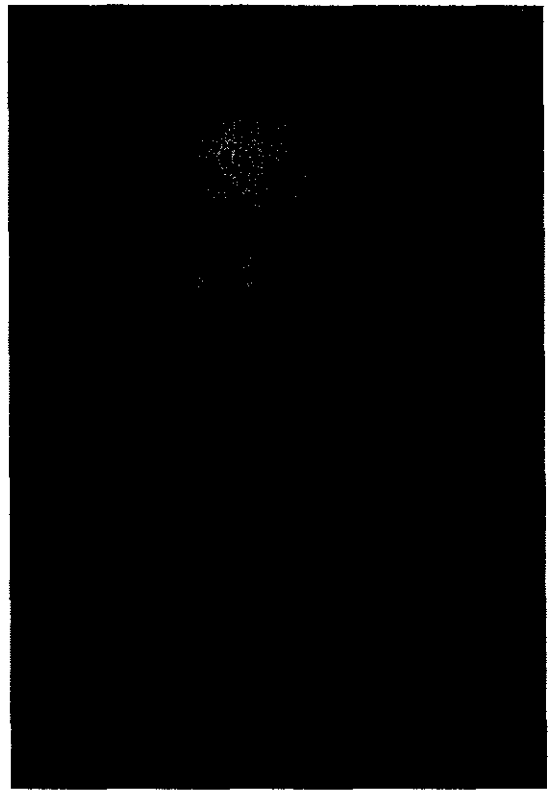
TIME ALLOCATION

Program: 100% of teaching load is within the Welding Engineering Department.
Teaching: 47.5% of time allocated to direct classroom/laboratory activities.
Research/Scholarly Activites: 52.5% of time available for preparation, research and scholarly activites.

Kenneth A. Kuk
Professor/Program Coordinator 1986
Former Interim Assistant Dean (1 year), Former Dept. Chair(9 years)
College - College of Technology
Department - Welding Engineering Technology
Contact Information:
JOH-205 (location)
231-591-5287 (office)
kukk@ferris.edu

Education:
M.S Engineering Management, Western Michigan University
M.S. Occupational Education, Ferris State University
BET Manufacturing Eng. Tech., Wayne State University
A.A.S. Welding Technology, Ferris State University
Certified Manufacturing Engineer, Society of Mfg.Engineers
Certified Welding Inspector, American Welding Society

Areas of Expertise: Project Management, Welding Automation & Design, Welding Economics.



KENNETH A. KUK, CMFGE, CWI,
Professor Welding Engineering Technology
Ferris State University Service Date: March 1985

TEACHING AND ADMINISTRATIVE EXPERIENCE:

Ferris State University AUGUST 2003 to Present

Tenured Professor of Welding Engineering Technology. Responsibilities include classroom and laboratory instruction of 100- 400 level Engineering Technology courses. program development, program admissions coordination, student advisement, automated welding and computer applications laboratory coordination.

MARCH 2000 to AUGUST 2003

Tenured Professor/Department Chair of the Welding Engineering Technology department. Responsibilities included classroom and laboratory instruction in 100-400 level courses, faculty and student schedule design, industrial advisory board moderator, budget formulation, classroom and laboratory physical plant coordination, supervision of office staff, and project management.

AUGUST 2001 to MAY 2002

Interim Assistant Dean of the College of Technology. Responsibilities included oversight of academic program review and administrative program review cycles, faculty workload, equipment priorities, curriculum committee, department income and expense analysis, targeted recruiting and marketing plans, and business/technology computer consortium.

AUGUST 1999 to MARCH 2000

Tenured Associate Professor of Welding Engineering Technology, Responsibilities listed above.

APRIL 1996 to AUGUST 1999

Tenured Professor, Faculty Coordinator of the Manufacturing Tooling Technology, Welding Technology, and Welding Engineering Technology Programs in the Design, Manufacturing, and Graphic Arts Department. Responsibilities listed above.

AUGUST 1994 to APRIL 1996

Tenured Associate Professor, Faculty Coordinator of the Mechanical Engineering Technology, Product Design Engineering Technology, and Technical Drafting and Tool Design Technology programs in the Manufacturing Engineering Technologies Department. Responsibilities listed above.

APRIL 1990 to AUGUST 1994

Tenured Associate Professor of Welding Engineering Technology, Teaching responsibilities listed above.

MARCH 1985 to APRIL 1990

Assistant Professor of Welding Engineering Technology, Teaching responsibilities listed above.

COMMITTEE ACTIVITIES:

University:
Strategic Planning and Resource Council
Judicial Services, Student Discipline
Transfer Student Processes
Programmatic Marketing
Career Services Advisory Board
Dean Search, Dean College of Technology (2)
Student Outcomes Assessment
Dean Search, Dean of Enrollment Services
Presidential Search
Ombudsmen Review
Long Range Strategic Planning
Environmental Scanning
Program Review, Office Automation, Automotive Body, Chair

College of Technology:
Accreditation and Assessment
Budget Work Group
State Secondary Welding Competition
New Faculty Mentor
Computer Technician Search, Chair
Mission Statement, Chair
Engineering Graphics Review, Chair
Internship Review, Chair
Industrial Department Focus
Department Head Search
Program Director Search, Chair
Faculty Tenure (5)
Bachelor of Science Recruiting Strategy

INDUSTRIAL EXPERIENCE:

SEPTEMBER 1983 TO MARCH 1985

Product and Application Engineer, GMF Robotics Corporation, Troy, Michigan 48098.

SEPTEMBER 1982 TO SEPTEMBER 1983

Manufacturing Engineer, National Element Incorporated, Troy, Michigan 48084.

APRIL 1981 TO AUGUST 1982Project Engineer, Wall Colmonoy Corporation, Detroit, Michigan 48203.

EDUCATION:

Master of Science degree in Engineering Management, 1994
Western Michigan University, Kalamazoo, Michigan 49008
Master of Science degree in Occupational Education, 1988
Ferris State University, Big Rapids, Michigan 49307
Bachelor's degree in Manufacturing/Industrial Engineering Technology, 1982
Wayne State University, Detroit, Michigan 48202
Associate in Applied Science degree in Welding Technology, 1980
Ferris State University, Big Rapids, Michigan 49307
Electrical Engineering Major, 1977
Western Michigan University, Kalamazoo, MI 49008

ACADEMIC HONORS:

Graduated with Highest Distinction from the Master of Science program in Occupational Education, Ferris State University. Recipient of the American Welding Society Scholarship, Detroit chapter to Wayne State University.

PROFESSIONAL CERTIFICATION, AFFILIATIONS, AND HONORS:

SME, Certified Manufacturing Engineer (Robotics), Certification Number 1921156
AWS, Certified Welding Inspector, Certification Number 06080921
Member of the American Welding Society, Since 1981
District 11 Educator of the Year, 2006
Vice-Chairman, National Named Scholarship Committee, 1996-2001
Recipient of the Adams Memorial Award, in recognition as the outstanding
National Welding Educator, 1994
Western Michigan Scholarship Coordinator 2000-Present
Western Michigan Section Chairman, 1989-1990
Western Michigan Section Executive Board Member, 1986-1990
Western Michigan Section Certification Chairman, 1986-1988
Member of the American Society of Engineering Educators, Since 1999

PROFESSIONAL DEVELOPMENT

Ferris Connect Training Seminar
Ferris State University 2008
Weld Cracking VI Seminar
American Welding Society 2007
Welding Inspection Seminar
American Welding Society 2006
Faculty Workshop Outcomes Assessment 2.0
ABET 2005
Design of Weldments
The Lincoln Electric Company 2002
Aluminum Welding Technology Theory and Practice
AlcoTec Wire Corporation 2001
Rock Climbing Instructor Training
Ferris State University 1999
Robotic Work Cell Operations
Genesis Systems Group 1998
Ropes Course Facilitator Training
Ferris State University 1998
Experiential Activities for Teachers
Ferris State University 1998
Miller Power Supply Training
Miller Electric Manufacturing Company 1996
Algor Finite Element Analysis Training
Algor, Incorporated 1995
AutoCAD Applications Training
Autodesk Incorporated 1995
Automotive Laser Applications Workshop
University of Michigan 1994
Robotics Programming
Miller Electric Manufacturing Company 1992
Industrial Laser Safety
Rockwell Laser Industries 1992
Laser Applications
Society of Manufacturing Engineers 1992
Laser Operations
Laser Machining Incorporated 1991
Sheet Metal Welding Conference
American Welding Society 1990
Laser Technology
Society of Manufacturing Engineers 1990
Sheet Metal Welding Conference
American Welding Society 1988
Experimental Design
Solutions Specialists 1988
Operations Al -32 Robot Controllers
Automatix Corporation 1985
Machine Vision Automotive Applications
Society of Manufacturing Engineers 1985
484 Programmable Controllers
Gould Modicon Corporation 1984
Programming R Model C Robot Controllers
GMF Robotics Corporation 1983

CONSULTING & TRAINING:

Certified Welding Inspector Training, Genzink Steel Company, Holland, Michigan, July 2007
Weld Blueprint Reading Training, Genzink Steel Company, Holland, Michigan, July 2007
Fundamentals of Weldment Design Training, Herman Miller Company, Zeeland, Michigan, June 2007
Weld Blueprint Reading Training, Genzink Steel Company, Holland, Michigan, August 2006
Weldment Design and Training, Genzink Steel Company, Holland, Michigan, July 2006
Weld Design and Process Training, Century Specialties Incorporated, Traverse City, Michigan, March 2000
Academic Review of the Welding and Welding Technology Programs at Northern Michigan University, Marquette, Michigan, January 2000
Designing Welds and Weld Processes for Manufacturing,Society of Manufacturing Engineers, Springfield, Massachusetts, May 1997
Weld Design and Process Training, Brown Company, Beaverton, Michigan, January 1997
Fundamentals of Weldment Design and Process Implementation, Society of Manufacturing Engineers, Nashville, Tennessee, November 1996
Fundamentals of Weldment Design and Process Implementation, Society of Manufacturing Engineers, Grand Rapids, Michigan, September 1996
Fundamentals of Weldment Design and Process Implementation, Society of Manufacturing Engineers, Dearborn, Michigan, June 1996
Weld Design and Process Training, Moiron Incorporated, Sparta, Michigan, February 1995
Weld Design and Process Training, Moiron Incorporated, Gladwin, Michigan, July 1994
Laser Processing Laminated Dies, Michigan Department of Commerce, State Research Foundation Grant Grand Rapids, Michigan, December 1993
Robotic Arc Welding Workshop, Industrial Technology Institute, Ann Arbor, Michigan, October 1992
Robotic Arc Welding Workshop, Industrial Technology Institute, Ann Arbor, Michigan, July 1992
Evaluation of Gas Metal Arc Welding Shielding Gas, Environmental Planning Group Limited, Lansing, Michigan, September 1992
Weldment Design Training, APV Baker Incorporated, Grand Rapids, Michigan, March 1991
Industrial Robotic Training Seminar, Country of Costa Rica, May 1990
Weld Design and Process Training, Moiron Incorporated, Sparta, Michigan, June 1989
Technological Summer Program, Career exploration in Welding Engineering Technology, July 1986
Robotic Welding Seminar, General Motors Corporation, Fisher Guide Division, Flint, Michigan, July 1986
Heat Treating Furnace Element Design, National Element Incorporated, Troy, Michigan, January 1985
Plasma Transferred Arc Automated Hardsurfacing Applications, Wall Colmonoy Corporation, Detroit, Michigan, April 1983

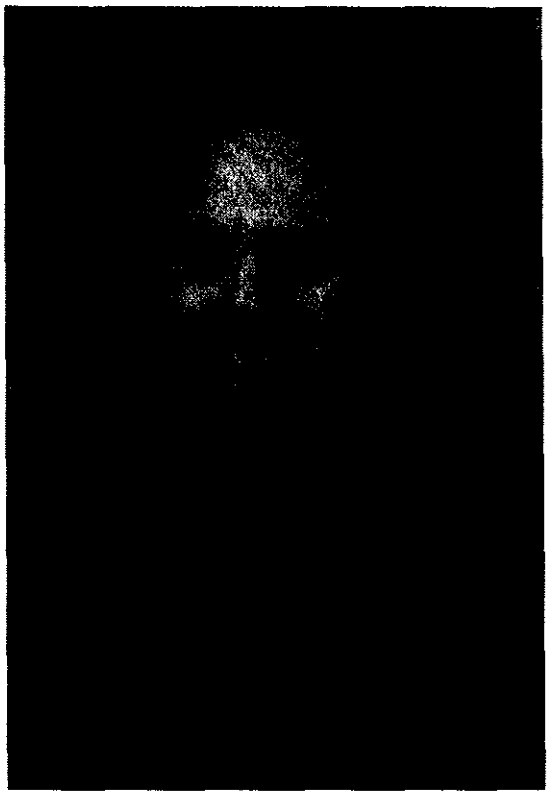
David Murray
Associate Professor Former Faculty Coordinator(6 years)
1981

College - College of Technology
Department - Welding Engineering Technology

Contact Information:
JOH-213 (location)
231-591-2646 (office)
murrayd@ferris.edu

Education:
M.S. Career & Technical Education, Ferris State University
B.S Technical Education, Ferris State University
A.A.S. Welding Technology, Ferris State University
Certified Welding Inspector, American Welding Society

Areas of Expertise: Resistance Welding, Welding Procedure Development, ASME Codes.



RESUME

David H. Murray C.R.I. C.W. I.
18191 Arthur Road Big Rapids, Michigan 49307 (231) 796-1490

EDUCATION:

Certified Radiographic Interpreter, American Welding Society, Miami, Florida: 2008
Certified Welding Inspector, American Welding Society, Miami, Florida: 2005
Master of Science in Career and Technical Education, Ferris State University, Big Rapids, Michigan 2003
Bachelors of Science in Trade-Technical Education, Ferris State College, Big Rapids, Michigan 1986
Certificate in Resistance Welding, Resistance Welding School, RWMA, Chicago, Illinois 1985
Associate of Applied Science in Welding Technology, Ferris State College, Big Rapids, Michigan 1978

WORK EXPERIENCE:

Ferris State University, Big Rapids, Michigan Technical Instructor (1981) Assistant Professor (1986) Associate Professor (1996) merit (2004)
Grand Rapids Community College, Grand Rapids, Michigan Adjunct Instructor
Ferris State University, Big Rapids, Michigan Manufacturing Department Coordinator (1991 – 1996)
Welders Supplies and Gases, Kalamazoo, Michigan, Sales Engineer, 1978-1981
Kalamazoo Valley Community College, Kalamazoo, Michigan, Adjunct Welding Instructor

CONSULTING EXPERIENCE:

Matco Tool Co., Jamestown, New York Resistance Welding Training-June 2008, 2004
Brown Corporation, Ionia, Michigan Resistance Welding-August 2007and August 2002
Blackmer, Grand Rapids, Michigan Welding Procedure Development-January 2007
Genzink Steel, Holland, Michigan Welder and C.W.I Preparatory Training-2001, 2006, 2007
Ventura Manufacturing, Zeeland, Michigan Resistance welding troubleshooting-July 2006
StageRight, Clare, Michigan Welder and Engineering Training and Welder Qualifications-2003, 2004, 2006
Gerref Industries, Inc Belding, Michigan, Welder Training-May 2006
Ulrich Planfiling, Lakewood, New York, Resistance Welding Training-August 2005
Yoplait, Reed City, Michigan, Maintenance Welding Training-June 2005
Cadillac Manufacturing Consortium, Cadillac, Michigan, Maintenance Welding Training-December 2004
Ibis Tek, Butler, Pennsylvania, Procedure and Specification Development-January 2004
Modern Machinery, Beaverton, Michigan Welder Training-March 2003
Allied Machine, Newaygo, Michigan Welder Training-May 2002
Lear Corporation, Grandville, Michigan Quality Testing-August 2001
Brown Corporation, Ionia, Michigan, Resistance Welding and Pulsed Gas Metal Arc Welding Training-2000
TruHeat Corporation, Allegan, Michigan Product Development-August 2000
Lear Corp, Grand Rapids, Michigan, Welder Skill Training-December 1999
Avon Automotive, Cadillac, Michigan,Welding Maintenance Training and Qualification-2000, 1999
Brown Machinery, Beaverton, Michigan Welder Qualification-November 1999
PPG Industries, Evart, Michigan Welder Qualification-July 1999
Impact Engineering, Jackson, Michigan Experimental Welding Helmet Data collection-March 1999
Steelcase, Grand Rapids, Michigan, GMAW-P Robotic Welding Troubleshooting-August 1998
Knoll Group, Muskegon, Michigan, Development of Plasma Arc Welding-November 1996
Michcon, Big Rapids, Michigan, Welder Skill Training-August 1996

Evart Products, Evart, Michigan, Maintenance Welding Training-May 1996
Simpson Industries, Gladwin, Michigan Trouble Shooting a Projection Welding-August 1994
Quincy L.P., Jonesville and North Adams, Michigan, Resistance Welding Quality, Set-up-July 1994.
Newell Manufacturing Company, Lowell, Michigan, raining in Welding Practices- April 1992
Dake Incorporated, Grand Haven, Michigan, Training in Weld Quality Procedure Development-1994, 1992
AC - Flint, Michigan, Training in Resistance Welding June 1991
D & M Manufacturing, Grand Rapids, Michigan, Training in Resistance and Sheet Metal Welding-May 1991
Alofs Manufacturing, Grand Rapids, Michigan Review Resistance Welding Practices-May 1991
A.P.V. Baker, Grand Rapids, Michigan, Weld Quality Update- April 1991

LEGAL CONSULTATIONS:

DeNardis, McCandless, Miller & Brennam PLC, Mt. Clemens, Michigan-Expert witness
Dickinson Wright PLLC Grand Rapids, Michigan-Expert witness
William, Brinks, Olds, Hofer, Gilson, & Lione Chicago, Illinois- Expert witness
Schenk, Boncher and Prasher FirmGrand Rapids, Michigan-Expert witness

Certified Welding Inspector CWI- American Welding Society No. 03120121
Certified Radiographic Interpreter CRI -American Welding Society No.0803006N

ACTIVITIES:
1999-2008 College Curriculum Committee
2007-2009 Executive Board Ferris Faculty Association
1995-1996 Strategic Planning Committee
1991-1993 "1993" All University Committee
1987-1989 Executive Board, FSU Academic Senate
1986-1989 Ferris State University Academic Senate
1981-1982 Executive Board American Welding Society
1983-1984 First Vice Chairman, American Welding Society
1984-1985 Chairman, American Welding Society
1982-1993 Advisory Committee, Mecosta-Osceola Career Center
1997-2008 Advisory Committee, Newaygo Area Career Center
2003-2008 Advisory Committee, Mecosta-Osceola Career Center
2004-2008 Advisory Committee, Grand Rapids Community College

REFERENCES:

References and student evaluations are available on request.

Appendix A

Programs: Welding Technology / Welding Engineering Technology
Degrees: Associate in Applied Science Degree in Welding Technology and Bachelor of Science Degree in Welding Engineering Technology
Department: Welding Engineering Technology
College: Technology

Academic Program Review Calendar

Academic Program Review Calendar
2008-2009 Cycle

Action	Due Date	*Guide* Section
PRP formed; Chair appointed	Tu 04 Sep 2007	III-B
PRP begins to meet	M 17 Sep 2007	III-D
Evaluation Plan & Budget due	**F 05 Oct 2007**	**III-E, III-C**
Chairs of APRC and PRP revise plan (if needed)		
Revised Plan due	**F 19 Oct 2007**	**III-E**
Surveys sent out	Nov 2007-Feb 2008	III-D
Administrative program review data available	December 2007	III-G
Data analyzed and reports written	Mar-May 2008	III-H
Initial report due to APRC Chair	**M 16 June 2008**	**III-I**
Report revision time	July 2007	
Multiple corrected copies due	**F 15 August 2008**	**III-I**
APRC meets with PRPs	Sep-Oct 2008	III-J
APRC meets with VPAA and Senate Exec. Comm.	Tu 4 Nov 2008	
APRC recommendations to Senate	W 5 Nov 2008	III-K
Senate recommendations to VPAA	Tu 11 Nov 2008	III-M
VPAA discussion with Senate Exec. Comm.	M 24 Nov 2008	III-N
VPAA recommendations to Pres.	M 1 Dec 2008	III-N
Pres. recommendations to Senate	M 8 Dec 2008	III-O
Conference committee formed (if needed)	M 15 Dec 2008	III-O
Action plans prepared (if needed)	January 2009	III-P
APR cycle update and review	Jan-May 2009	III-Q

Appendix B

Programs: Welding Technology / Welding Engineering Technology
Degrees: Associate in Applied Science Degree in Welding Technology and Bachelor of Science Degree in Welding Engineering Technology
Department: Welding Engineering Technology
College: Technology

Program Evaluation Plan

Yearly Administrative Review *(December 11, 2006)*

Proposed Budget

2008-2009 Unit Action Plan

Program Evaluation Plan
Welding Engineering Technology Department
College of Technology

Degrees Awarded: Welding Technology, Associate in Applied Science
Welding Engineering Technology, Bachelor of Science

Program Review Panel:

Chair:

Associate Professor Jeffrey Carney

Program Faculty Membership:

Assistant Professor Bradley Brew
Assistant Professor Jeffrey Hardesty
Professor Kenneth Kuk
Associate Professor David Murray

Individuals with Special Interest Outside of Program:

Dr. Katherine Manley,
Professor, Ferris State University, College of Education and Human Services

Jon Sweeney,
Welding Engineering Supervisor, Northop Grumman Newport News

Purpose: To conduct a study of the Welding Technology and Welding Engineering Technology degree programs to evaluate their needs and effectiveness so the University can make informed decisions about resource allocations.

Data Collection Techniques:

1. Comprehensive survey of Welding Technology graduates, Welding Engineering Technology graduates, employers of Welding Engineering Technology graduates and Advisory Board members to the Welding Engineering Technology Department.
2. Survey current WT and WET Students
3. Survey reflecting faculty perceptions of the program and facilities
4. Labor Market Analysis
5. Curriculum Evaluation

Schedule of Events:

Activity	Leader	Target Date
Graduate Survey	Carney	November 1
Employer Survey	Carney	November 1
Advisory Board Survey	Hardesty	November 1
Student Survey	Carney	December 1
Faculty Perceptions	Murray	December 1
Labor Market Analysis	Rosen	December 1
Curriculum Evaluation	Kuk	December 1

Administrative Program Review Program(s) Welding Technology and Welding Engineering Technology

Purpose of Administrative Program Review

1. to facilitate a process led by the deans and department heads/chairs to assess and evaluate programs under their supervision
2. to facilitate long term planning and recommendations to the VPAA
3. to collect and analyze information that will be useful in the University's accreditation efforts; Academic Program Review deliberation; and assessment.

Instructions: Please prepare a report following the outline below.

I. Summary of Modifications since last report

Pre and Posttest Documents:

The Welding Engineering Technology Department faculty and staff have continuously strived to improve our assessment practices. In an effort to acquire usable data, the Welding Technology (WT) program and Welding Engineering Technology (WET) program pretest and posttest documents were placed on WebCT. At the start of the fall 2005 and fall 2006 semesters, current WT freshman and WET juniors were the first two groups to take the web based examination. Current WT sophomores and WET seniors will take the web based posttest examination in May, 2007.

Programmatic Entry Modifications:

Effective for the Fall 2006 academic semester, the entry requirements for the Welding Technology and Welding Engineering Technology program were modified as listed below. These changes were implemented after careful analysis of program history and are specifically designed to improve preparation and retention rates of the students in the Ferris State welding programs. The initial results have been very positive.

Welding Technology (AAS) program admission requirements:

Effective fall 2006 semester:

1. Meet University admission standards
2. MATH 116 placement (Math ACT 19) or CLEP
3. ENGL 150 placement (English ACT 14) or CLEP

Welding Engineering Technology (BS) program admission requirements:

Effective fall 2006 semester:

1. Application for admission submitted by February 15 prior to Fall term requested
2. Associate in Welding Technology
3. A minimum 3.0 honor point average overall
4. Satisfy all prerequisites to enter MATH 126 (MATH 116) ***Note: Prerequisites to enter MATH 216 preferred***
5. Satisfy all prerequisites to enter EEET 301 (EEET 201)
6. FSU PHYS 211 – Introductory Physics I or equivalent transfer course
7. FSU ETEC 140 – Engineering Graphics Comprehensive or equivalent transfer course
8. FSU MATL 240 – Introduction to Material Science or equivalent transfer course

II. Program Assessment/Assessment of Student Learning

a) What are the program's learning outcomes?

To assess student success in meeting the expectations of the Welding Engineering Technology Department course work. To include long-term retention and demonstrated ability to apply program subject matter. Various expected learning outcomes are described below:

- *Theoretical and practical application of various welding, cutting and joining processes.*
- *Theoretical and practical applications of related course content, including comprehensive engineering graphics, introductory metallurgy, introductory physics, electrical fundamentals and machine tool processes.*
- *Demonstrate use of General Education course content, including English and mathematics.*

b) What assessment measures are used, both direct and indirect?

- *Incoming freshman students take a curriculum pretest in order to baseline their knowledge, comprehension, and skill prior to starting the Welding Technology program.*
- *Sophomores take a curriculum posttest in the WELD 221 course to measure the knowledge, comprehension, and skill level that was obtained and retained. This is a graded test instrument.*
- *Incoming junior students will take a curriculum pretest in order to baseline their knowledge, comprehension, and skill prior to starting the Welding Engineering Technology program.*
- *Seniors will take a curriculum posttest in the WELD 499 course to measure the knowledge, comprehension, and skill level that was obtained and retained.*
- *Welding Fabrication 2 – WELD 221, capstone course for the Welding Technology AAS degree, requires the students to work on assorted construction projects, dealing with the realities of process selection, joint design, cost estimating, and design of welded products. Students will complete a customers based fabrication project and perform a welding research project to be submitted in a written national welding contest. Concurrently with the above welding activities students will engage in press brake operation, layout, inspection, measurement, design and product improvement of welded assemblies.*
- *Project Engineering & Management – WELD 499, capstone course for the Welding Engineering Technology BS degree, is a lecture course emphasizing the design, engineering, manufacturing, and management of a welded product. Design of welded structures and machine elements in terms of allowable stresses, joint configuration, material and process selection, equipment specification and purchasing, production forecasting, project supervision, and resource management techniques and project control methods are addressed. The student will be required to concept, design,*

engineer, develop and manage a welded product. The welded project is then summarized in a oral presentation.

- *Industrial Advisory Board members participate in an annual meeting held on the Ferris State Big Rapids campus. This meeting is an opportunity for the faculty to present the current and future academic program plans. Advisory Board members are solicited for input to the proposed academic plans and feedback from interfacing with department alumni.*

c) What is the assessment cycle for the program? *Yearly*

d) What assessment data were collected in the past year? *Pretest and Posttest data as described in Ib.*

e) How have assessment data been used for programmatic or curricular change? *Areas of indicated weakness in student performance on the posttest instrument have resulted in continuous improvements in course content and teaching methodology as appropriate.*

Course Outcomes Assessment

a) Do all multi-sectioned courses have common outcomes?
Yes, common exams and lab projects

b) If not, how do you plan to address discrepancies?

c) How do individual course outcomes meet programmatic goals?

III. Program Features

1. Advisory Board

a) Does the program have a board/committee? *Yes*
When did it last meet? *March 13, 2006*
When were new members last appointed? *February, 2005*
What is the composition of the committee (how many alumni, workplace representatives, academic representatives, etc.) *6 Alumni, 10 Workplace representatives, 2 Academic representatives*

b) If no advisory board exists, please explain by what means faculty receives advice from employers and outside professionals to inform decisions within the program.

c) Has feedback from the Advisory Board affected programmatic or curricular change? *Yes*

2. Internships/Cooperative or Experiential Learning

a) Is an internship required or recommended? *Required*

b) If the internship is only recommended, what percentage of majors elects the internship option?

c) What challenges does the program face in regard to internships? What is being done to address these concerns? *1c) Funding to make site visits to each student internship location; Budgeting throughout the academic year. 2c) Repeat industry sites from year to year; Close communication with industry connections regarding interviewing and scheduled on-campus visits.*

d) Do you seek feedback from internship supervisors? *Yes*

If so, does that feedback affect pedagogical or curricular change? *Yes*

3. On-Line Courses

a) Please list the web-based courses, both partial internet and fully online, offered last year. *None*
b) What challenges and/or opportunities has web-based instruction created? *N/A*
c) What faculty development opportunities have been encouraged/required in order to enhance web-based learning within the program? *None*
d) How has student feed-back been used to enhance course delivery? *N/A*
e) Is there any plan to offer this program on-line? If yes, what rationale is there to offer this program online?" (emerging market opportunity?, expand enrollment?, demand for niche program offering?, etc.) *Not at this time.*

4. Accreditation *(Please see Future Goals, Goal #4)*

a) Is the program accredited or certified? *No*
b) By whom?
c) When is the next review?
d) When is the self-study due?
e) How has the most recent accreditation review affected the program?

5. Student/Faculty Recognition

a) Have students within the program received any special recognition or achievement?
   - *Over $725,000 in private student scholarships since 1986*
   - *Top five placement record of all Ferris programs since 1986*
   - *Since 1996, over 55 students have been awarded AWS National Named Scholarships and/or RMWA National Scholarships*
   - *Sophomores in the Welding Technology program annually participate in the James F. Lincoln Arc Welding Foundation Awards Program as a curriculum requirement of the Welding Technology Degree capstone course WELD 222 – Welding Fabrication II. This course is taught by Associate Professor Dave Murray. Consistently, Ferris State welding students are consistently recognized as the top competition competitors.*
   - *American Welding Society Ferris State Student Chapter has been very active with community issues, including Big Rapids Riverwalk Sponsorship, Hurricane Katrina donation, Card Wildlife donation and Salvation Army Bell Ringing & Angel Tree projects*

b) Have faculty within the program received any special recognition or achievement?
Kenneth A. Kuk
1993/1994 American Welding Society
Adams Memorial Membership: Recognizes educators for outstanding teaching activities in their undergraduate and postgraduate institutions.
Society of Manufacturing Engineers, Certified Manufacturing Engineer, March 2004

David H. Murray
1995/1996 American Welding Society
Adams Memorial Membership: Recognizes educators for outstanding teaching activities in their undergraduate and postgraduate institutions.
American Welding Society – Certified Welding Inspector, 2003
James F. Lincoln Arc Welding Foundation Awards coordinator for Ferris State Welding Technology students

Jeffrey N. Carney
American Welding Society – Certified Welding Inspector, 2003
American Welding Society – District 11 Educator Award - 2005

Jeffrey B. Hardesty
Licensed Professional Engineer – State of Ohio
American Welding Society - Certified Welding Engineer
International Institute of Welding – Certified International Welding Engineer

6. Student Engagement

a) Is volunteerism and student engagement a structured part of the program? *No. Students are involved in various activities through the American Welding Society, FSU Student Chapter.*

b) Does the program utilize service learning in the curriculum? *No*

c) Does the program participate in the American Democracy Project? *No*

Areas of Strength:

Recruiting and Marketing via Ferris State Secondary Welding Contest

The fourth year of the competition had 67 students (57 in 2003, 71 in 2004, 84 in 2004) from 16 educational institutions (13 in 2003, 16 in 2004, 18 in 2004). Students participating were 10th, 11th and 12th grades. Since the inaugural event in 2003, the number of competition participants that have enrolled at Ferris State in the Welding Technology program is twenty-eight (28).

These twenty-eight students have generated approximately ***$950,000.00*** *in tuition, room & board and "other expenses" since they have enrolled. The success of the competition has been heavily promoted to the secondary educational community by the schools and instructors that have participated. The continued University support is critical to this success!*

The results of the previous competitions can be viewed at the Welding Engineering Technology Department website link below:

http://www.ferris.edu/cot/accounts/welding/htdocs/SecondaryWeldingCompetition.htm

Revenues

The FSU Welding programs have received national attention as the result of tremendous scholarship funding from various industry associations. Scholarships at the section, district, and national levels from the American Welding Society (AWS) and the Resistance Welding Manufacturers Association (RWMA) have resulted in excess of $725,000.00 in student support since 1986. This influx of industry confidence to the program is part of more than $170,000.00 of In-kind and scholarship gifts received in FY 2005. A total of eight (8) companies, organizations, or individuals supporting FSU welding programs, are now members of the Ferris State University Phoenix Society.

100% Placement of Graduates and Interns

The welding, manufacturing and fabrication industries have supported our graduates tremendously! Companies consistently hire 100% of the available graduates at high starting salary levels ($54,000.00 FY 2006). Also, companies continue to support the learning of FSU welding students through valuable, paid internship experiences.

Procurement of Equipment Consignment Relationships

Industry continues to support the welding programs through equipment consignment programs. These agreements keep the FSU welding labs up to date with the latest equipment technology for improved student learning. Typically this support is a direct result of past graduates, now in positions of management, contributing back to the FSU welding programs.

Ongoing Relationship with Past Program Graduates

The Welding Engineering Technology Department values the advice and input from past program graduates regarding the quality and effectiveness of the welding programs. Alumni have been very cooperative in responding to data gathering mailings. This participation has allowed the department to accurately track and document graduates activities and contributions back to the program,

as well as industry. Information regarding salaries, job titles/responsibilities and location of employment provide us with valuable data for program improvement plans.

Faculty Recruiting

WET Department faculty members have met with many secondary students face-to-face this academic year. These visits have either been the students coming to FSU or the faculty visiting a home school or vocational center. These visits are key in maintaining our relationship with the secondary welding instructors. The WET Annual Report is a critical informational, marketing and recruiting instrument. Approximately 800 – 1000 documents are published and distributed. The distribution list includes selected Ferris administration, staff and faculty, as well as various industry & educational contacts. This document is the basis for the WET Department website. Daily the faculty and staff in the WET Department reference individuals contacting Ferris to this site. http://www.ferris.edu/cot/accounts/welding/htdocs/ The website and the Annual Report are marketing tools that industry uses to promote our program. The alumni and "friends" of the program constantly request and use these resources for our benefit!

Areas of Concern (and proposed actions to address them)

Program expansion

The programs have utilized overloads and adjuncts for the past nine years to service the coursework of the students. The expansion of department programs has been considered. Expansion of the department curriculums would depend upon a great many factors, including, but not limited to, faculty position(s), physical teaching spaces, physical teaching equipment, financial resources, continued student enrollment and an industry economy that continues to demonstrate a demand for department internship candidates and graduates.

Lack of capital equipment budget

Discuss with FSU administration regarding the establishment of an annual capital equipment budget that will allow for the purchase of up to date industry equipment on an annual basis. Recommendation by the APRC dated November 21, 2002, stated that "The administration of the College of Technology should consider establishing an annual capital equipment budget for these programs". To date no action has been taken on this APRC recommendation by the College of Technology administration.

Supply & Expenditure budget levels

S&E budget allocations have been "frozen" at the current level for many years. Department enrollment and program supply prices have both increased over the years, without any increase in funding.

Future Goals:

Welding Engineering Technology Department three-year plan 2003-2006

Goal 1: *Perform Longitudinal Student Outcomes Assessment.*

Objectives:

- *Administer annual Welding Technology and Welding Engineering Technology Pre/Post Test to measure student outcomes*
    - **Obtained and is an annual activity.**

Goal 2: *Maintain an annual department enrollment of 120 students in the major. (70 AAS & 50 BS program)*

Objectives:

- *Annually produce and distribute 800-1000 total copies of the department annual report internally and externally to Ferris State*
    - **Report "overview" produced instead of complete document due to budget constraints.**
- *Annually attend the AWS National Exposition*
    - **Attend Chicago show 2005.**
- *Annually promote and attend FSU COT Dawg Days*
    - **The WET Department participates in this University activity.**
- *Annually host the FSU Secondary Welding Competition for high school students and instructors*
    - **Our most successful marketing/recruiting activity is scheduled for May 4, 2007.**
- *Continue recruiting visits to secondary educational institutions*
    - **Activity is ongoing and will be continued in the spring 2007 semester.**

Goal 3: *Establish new, and continued development of existing, industry relationships for program support*

Objectives:

- *Industry contacts for capital equipment consignments and donations*
- *Industry contacts for classroom consumable materials*
- *Industry contacts for technical information to be used in classrooms*
    - **The relationship between the WET Department and industry continues to grow to better the educational experience for our students.**

Goal 4: *Investigate Accreditation Board for Engineering & Technology (ABET) accreditation for the Welding Engineering Technology program.*

Objectives:

- *Attend ABET conducted seminars to determine current status and gather information regarding process and requirements*
- *Provide WET Industrial Advisory Board with information regarding the ABET process, and status, for the WET program*
- *Obtain funding for investigative purposes and preparation process*
    - **The process of ABET accreditation is ongoing and support by the FSU College of Technology Dean's Office.**

Other Recommendations:

Jeffrey N. Carney	December 11, 2006
Department Chair	Date

Academic Program Review - Proposed Budget
Welding Engineering Technology Department
College of Technology

To: Mr. Doug Haneline, Chair, Academic Program Review Council

From: Jeffrey Carney, WET Department PRP Chair

Subject: Proposed budget for Welding Engineering Technology Department academic program review process.

Date: August 31, 2007

Below please find documentation itemizing the anticipated costs to conduct the academic program review process of the programs in the Welding Engineering Technology Department. If you have any questions, please do not hesitate to contact me at 231-591-2952.

Printed Off-Campus Surveys - Graduate (350), Employer (40), Advisory Board (14)	
Copying Costs	$ 90.00
Mailing Costs	228.00
Return Envelop Printing	32.00
Return Mailing Costs	164.00
Student Surveys (150)	
Copying Costs	33.75
Faculty Surveys (6)	
Copying Costs	1.35
Student Wage Support	
40 Hours @ $ 7.15/hr	286.00
Phone Expenses	125.00
Final Document Copying Costs	265.40
TOTAL	**$ 1,225.50**

FERRIS STATE UNIVERSITY

2008-2009 Unit Action Plan

Division: Academic Affairs

College/Unit: Technology

Department: Welding Engineering Technology

Significant Areas of Success:

1. **Recruiting and Marketing via FSU Secondary Welding Competition**
   The fifth year of the competition was the most successful competition since the inaugural event in 2003. The table below shows the steady growth of the competition. Based on feedback from the welding instructors who attended in 2007, the reduction in participation for the 2006 event was due to funding uncertainties in secondary education. The number of competition participants that have enrolled at Ferris State in the Welding Technology program is thirty-eight (38).

	Educational Institutions	Competitors	Enrolled in FSU WT the Following Fall Semester
2003	13	57	8
2004	16	71	7
2005	18	84	9
2006	16	67	4
2007	26	103	10

These thirty-eight students have generated approximately $1,300,000.00 in tuition, room and board and "other expenses" since they have enrolled. The success of the competition has been heavily promoted to the secondary educational community by the schools and instructors that have participated. The continued support of the university is critical to this success!

The results of the previous competitions can be viewed at the Welding Engineering Technology Department website link below:

http://www.ferris.edu/cot/accounts/welding/htdocs/SecondaryWeldingCompetition.htm

Last year alone, twenty-three (23) companies and individuals contributed more than $32,000.00 in cash, scholarships, supplies, and equipment to support the effort. This event will occur again on May 9, 2008.

2. **Revenues**
   The FSU Welding programs have received national attention as the result of tremendous scholarship funding from various industry associations. Scholarships at the section, district, and national levels from the American Welding Society (AWS) and the Resistance Welding Manufacturers Association (RWMA) have resulted in excess of $775,000.00 in student support since 1986. This influx of industry confidence to the program is part of more than $164,000.00 of In-Kind and scholarship gifts received in FY 2007. A total of eight (8) companies, organizations, and individuals supporting FSU welding programs, are now members of the Ferris State University Phoenix Society.

3. **100% Placement of Graduates and Interns**
   The welding, manufacturing and fabrication industries have supported our graduates tremendously! Companies consistently hire 100% of the available graduates at high starting salary levels ($57,200.00 FY 2007). The diversity of industries that are recruiting FSU WET program graduates continues to expand. While program graduates continue to find employment within the Michigan automotive industry, other industries including oil and gas, construction, defense, heavy fabrication, agriculture, heavy equipment, equipment manufactures and ship building have provided tremendous employment opportunities. Also, companies continue to support the learning of FSU welding students through valuable, paid internship experiences.

4. **Procurement of Equipment Consignment Relationships**
   Industry continues to support the welding programs through equipment consignment programs. These agreements keep the FSU welding labs up-to-date with the latest equipment technology for improved student learning. Typically this support is a direct result of past graduates, now in positions of management, contributing back to the FSU welding programs. The product recognition that students gain from using a manufacturer's equipment in the classroom has certainly translated into equipment and technology sales upon their graduation.

5. **Ongoing Relationship with Past Program Graduates**
   The Welding Engineering Technology Department values the advice and input from past program graduates regarding the quality and effectiveness of the welding programs. Alumni have been very cooperative in responding to data gathering mailings. This participation has allowed the department to accurately track and document graduates activities and contributions back to the program as well as industry. Information regarding salaries, job titles/responsibilities and location of employment provide us with valuable data for program improvement plans. The program alumni are once again being called on for input as the WET Department programs go through Ferris State Academic Program Review and the Accreditation Board for Engineering and Technology (ABET) process.

6. **Active Industrial Advisory Board Committee**
   The WET Advisory Board is a critical part of our success! The members have consistently provided input and feedback of how the program can be improved and how the graduates have contributed upon graduation. As the diversity of program graduate employers grows, the membership of the advisory board has continually adapted. The most recent addition to the advisory board is a leading company in the energy construction industry. The annual Advisory Board meeting has taken place on the Big Rapids campus in each of the last 25 years. A significant indication of dedication to say the least!

7. **Participation in National Science Foundation Endeavor**
   The Welding Engineering Technology Department is currently participating in the first year of the "National Center of Excellence in Welding Education and Training" (NCWET) project. This National Science Foundation endeavor has the following goals:
   - Increase the number of welding technicians to meet workforce needs
   - Comprehensive reform of welding education
   - Enhanced faculty professional development and continuing education

   As a participating partner, the Ferris State WET Department will have access to resources which will allow the promotion of the Ferris welding programs through recruiting and educational programs to secondary and post-secondary institutions with welding programs. The program has been approved by NSF and is currently ongoing.

8. **State-of-the-Art Welding Lab Ventilation System**
   The Ferris State Physical Plant project to upgrade current air ventilation system is in process. This project, scheduled for installation in the summer of 2008, has progressed slowly and is currently being managed by the FSU Physical Plant. The welding lab facilities are a major attraction to prospective student visitors and parents. A clean, well-maintained environment will not only protect the students and faculty, but will project a positive first impression of the program, the college, and the university as a whole. This project has the complete support of the current Vice President of Academic Affairs.

9. **Welding Technology and Welding Engineering Technology Program Entry Requirement Changes**
   Curriculum change documentation was approved and implemented modifying the entry requirements for both the AAS Welding Technology and BS Welding Engineering Technology programs. Changes implemented for program acceptance in the Welding Technology degree are a MATH ACT score of 19 and an English ACT score of 14. It is expected that this change will better prepare students to succeed at Ferris State during their educational career and beyond in industry. At this time, the early indications from fall 2006 to the fall 2007 academic semesters have been very encouraging. Tracking of student academic progress is in process.

10. **Continued Attainment of Academic Program Review Goals**
Enrollment and graduation goals, as stated in the APR review documentation, have been achieved. The fall 2007 semester had 136 students enrolled in Welding Technology and Welding Engineering Technology program courses. Program conferred degrees from the Welding Engineering Technology department programs have increased steadily over the years. The number of department degrees conferred annually has consistently been very close to the goal set by the faculty of 30 AAS Welding Technology degrees and 25 BS Welding Engineering Technology degrees.

11. **Revision of WET Department "Block" Schedules**
Effective for the fall 2006 and spring 2007 semesters, "block" schedules for the Welding Technology and Welding Engineering Technology students were revised. The "block" schedules are designated times for the major WELD courses that the students must take. The changes were made to better allow welding students to enroll in degree-required courses throughout the University. The schedule has been well-received by the students.

12. **Success of the Ferris State American Welding Society Student Chapter as a FSU Registered Student Organization (AWS-RSO)**
The students responsible for the operation and activities of the AWS-RSO continue to perform at an outstanding level. The organization has done much to remain active within our own program and the community. The students organized the annual day trip to the national American Welding Society Show in Chicago, IL, in November of this year. They also continue to be involved with the Ferris and Big Rapids community. Various activities have included a United Way "Penny Push', Salvation Army "Bell Ringing", and collection of needed items for WISE.

13. **Faculty Development Activities**
The WET Department continues to effectively utilize various funding mechanisms for faculty development activities. All faculty in the department participated in one or more professional activity in this past academic year. The department intention this coming academic year is to continue our activity in this area.

FERRIS STATE UNIVERSITY

2008-2009 Unit Action Plan

Division: Academic Affairs

College/Unit: Technology

Department: Welding Engineering Technology

Challenges to Continued Success:

1. **Department Program Enrollment, Retention and Completers**
   The competition for post-secondary welding students is increasing daily. Industry is in dire need of welding labor at all levels, including welders and fitters, welding technicians, and welding engineers. This demand has created financially attractive employment opportunities for students with minimal welding training and skills. Upon completion of only a few courses, students are being offered very lucrative employment positions. This historically has not been the trend within the Ferris State welding programs, but at the community college level. Students contemplating their educational path certainly consider the shorter path to employment being offered by an abbreviated community college educational experience. Virtually without fail, the student electing to attend a Ferris welding program enters with the academic plan to obtain a degree.

   Starting with the fall 2006 academic semester, the Welding Engineering Technology Department implemented increased academic entry requirements for the welding programs. An applicant to the Welding Technology program, in addition to meeting University and College of Technology admission standards, is required to have a minimum ACT score of 14 in English and 19 in Mathematics. These ACT scores meet the course entry requirements for the initial ENGL and MATH courses contained in the degree. Previously, a student's ACT scores were not evaluated for Welding Technology program entry. Although not analyzed, the initial results have been very favorable. Transfer students entering the Welding Engineering Technology program are now required to have courses included in the Ferris Welding Technology degree, but not typical to the majority of community college degrees. This further academic study better prepares the student for success in the B.S. program.

   Companies that recruit at Ferris State for welding personnel typically interview and hire students who are in the process of or have completed either the Welding Technology A.A.S. degree or the Welding Engineering Technology B.S. degree.

2. **Supply & Expenditure Budget**
   The S&E budget allocation continues to be a major focus within the College of Technology. The College of Technology Dean's Office is currently developing a funding plan for S&E department annual allocations. The WET Department is hopeful a solution can be reached that recognizes the past accomplishments and future potential of each individual program.

3. **Capital Equipment Budget**
   The need for access to capital equipment funding on an annual basis is desperately needed. Currently, capital equipment purchases are limited to funding that becomes available from Perkins Grants (VocEd funds) or one-time equipment purchases. Funds available from these sources are allocated at the discretion of either the VPAA Office or the COT Dean's Office. The WET Department has been the appreciative recipient of funds from these sources and will continue to request these in the future. In the past, department required capital equipment purchases have come directly from department S&E and/or the welding local fund.

FERRIS STATE UNIVERSITY

2008-2009 Unit Action Plan

Division: Academic Affairs

College/Unit: Technology

Department: Welding Engineering Technology

Ongoing or Proposed Significant Activities:

1. **Ongoing Significant Activity: Recruiting and Marketing**
   Continue recruiting efforts at high schools, vocational centers and community colleges. This effort includes advisory board participation by faculty at various sites and coordination of on-campus student/instructor tours of the FSU welding program facilities. Continued faculty participation in various industry supported societies and associations at the local, district, and national levels. Continue to update and inform educational and industry contacts of the FSU WET programs through the WET Department website. To insure our quality of education, we will continue longitudinal outcomes assessment through the administration of Welding Technology and Welding Engineering Technology pre- and post-test examinations. This test instrument was administered on-line this past semester to the students.

   The best marketing and recruiting activity remains the Annual State Secondary Welding Competition held each May in the Ferris welding facility.

2. **Ongoing Significant Activity: Industrial Consignment Agreements**
   Improve and foster relationships with major manufacturers of capital welding equipment, consumables and supplies. Currently, at any given time, the WET Department has in excess of $400,000.00 in consignment equipment in our lab facilities. The support of the welding programs from industry allows us to keep our academic curriculum up-to-date and current.

3. **Proposed Significant Activity: Capital Equipment Budget**
   Creation of a yearly equipment budget will assist in keeping student learning up-to-date with industry standards and expectations. The welding programs are constantly at risk due to the tremendous dependence on the private sector. Each time a consignment agreement comes due, the risk of non-renewal exists. Industry has become very protective of its marketing and support dollars. Fortunately, the WET Department has been able to successfully renew

our agreements, but the program curriculum has been affected from time to time. Creation of this funding would have to be a combination of department, college and university effort.

4. **Ongoing Significant Activity: ABET Accreditation Process**
   The WET Department has elected to take on the challenges and requirements of receiving accreditation of the Welding Engineering Technology program through the Accreditation Board for Engineering & Technology. Information is currently being procured and discussed to determine the requirements of ABET and how they apply to the WET curriculum. The WET Department Advisory Board has supported this endeavor, as well as the FSU College of Technology leadership. The decision has been made by the WET Department to officially start the ABET process in January, 2008.

5. **Ongoing Significant Activity: Provide Welding Services for the Ferris State Community**
   The Welding Engineering Technology Department has continued to provide welding and fabrication services to the Ferris State campus community. Various departments have utilized the welding facility and program curriculum to have products manufactured for university use. This service has saved Ferris State programs and departments significant amounts of financial resources over the years.

6. **Ongoing Significant Activity: Department Web Site Development**
   The Welding Engineering Technology Department strives to insure that the information contained on the department website is current and accurate. With help from the campus computer support, the content is constantly reviewed. Information pertaining to virtually every aspect of the Welding Engineering Technology Department programs can be found. Many current and potential employers have commented on the usefulness and accurate data which it contains. Professor Kuk continues to gather data and information. The information comes from a variety of sources including past and present students, employers, and program friends.

7. **Ongoing Significant Activity: Establish the Welding Engineering Technology Department "Alumni Association"**
   As a vehicle to increase our contact and continue the long-term relationships with our Welding Technology and Welding Engineering Technology alumni, the planning process to establish the WET Department "Alumni Association" is progressing. This project is being done in the background as information for other tasks (i.e.: APR, ABET) are taking place. The information, procured through surveys for APR and ABET, will help build the contact list of alumni.

8. **Proposed Significant Activity: Obtain American Welding Society "Accredited Test Facility" Status**
   This certification would allow the Ferris State welding facility to operate in accordance with the American Welding Society QC4-89, Standard for Accreditation of Test Facilities for the AWS Certified Welder Program. As an Accredited Test Facility, the department would have the ability to generate additional department revenue by providing testing and certification services for industry. The need for testing and certification of personnel in the welding industry is increasing daily.

9. **Ongoing Significant Activity: Curriculum Updates and Modifications**
   The curriculum update and modification process is ongoing within the department. The feedback and input from a variety of sources, including students, program alumni, advisory board members, and employers, keep the Ferris welding program curriculum as current as possible.

   Welding Engineering Technology Department program graduates enter a vast array of industry sectors. While all industries look for common welding knowledge from a graduate, many require specialization for an individual to be effective. One of these areas of specialization is pipe welding. Pipe welding knowledge and skills are in great demand due to the oil and gas supply and demand situation we are facing in the United States. Companies that hire Ferris welding graduates expect our students to have this knowledge. A department plan is being developed so that starting in the fall 2008 academic semester, with support from industry, the Ferris welding programs will reintroduce pipe welding to the Welding Technology and Welding Engineering Technology programs. Training and technical knowledge in pipe welding will increase the marketability of the program to prospective students while expanding the employment market for graduating students. This curriculum content addition is in direct response to the needs of industry.

Appendix C

Programs: Welding Technology / Welding Engineering Technology
Degrees: Associate in Applied Science Degree in Welding Technology and Bachelor of Science Degree in Welding Engineering Technology
Department: Welding Engineering Technology
College: Technology

Academic Program Review Cycle 2007-2013

Ferris State University
Academic Program Review Cycle 2007-2013

This cycle is reviewed annually and revised as needed by the Chair of APRC and the Assistant Vice President for Academic Affairs.

Legend:

- Degree programs
- **Non-degree programs**
- *Stand-alone academic minors*
- Pre-programs

Note: Academic minors, pre-programs, and certificates that are attached to a degree program are reviewed with that program.

2007-08

1. Health Care Systems Administration (B.S.)
2. Applied Speech Communication (B.S. and A.A.) and Communication (B.A.)
3. Industrial Chemical Technology (A.A.S.)
4. Integrative Studies (B.I.S.)
5. Legal Studies (A.A.S.)
6. Hotel Management (B.S.), Resort Management (B.S.), and Restaurant and Food Industry Management (A.A.S.)
7. Criminal Justice (B.S.)
8. Criminal Justice Administration (M.S.)
9. Training in Business and Industry (B.S.)
10. Liberal Arts (A.A.)
11. **Business Core Program**
12. **FSUS Program**
13. *Spanish Minor*
14. *Economics Minor*
15. *Military Science Minor*
16. Diagnostic Medical Sonography (A.A.S.)—Focused Report Due 10/06/07

2008-09

1. Nuclear Medicine (A.A.S.)
2. Professional Golf Management (B.S.)
3. Professional Tennis Management (B.S.)
4. Career and Technical Education (M.S.)
5. Electrical/Electronics Technology (B.S.) and Industrial Electronics Tech (A.A.S.) and Computer Networks and Systems (B.S.)
6. Plastics Engineering Technology (B.S.) and Plastics Technology (A.A.S.)
7. Printing and Digital Graphic Imaging Technology (A.A.S.) and Printing Management (B.S.) and New Media Printing and Publishing (B.S.)
8. Rubber Engineering Technology (B.S.) and Rubber Technology (A.A.S.)
9. Welding Engineering Technology (B.S.) and Welding Technology (A.A.S.)
10. **General Education**
11. *Arts Management Minor*
12. *Theatre Arts Minor*
13. *French Minor*
14. Business Administration (B.S.)—Focused Report Due 10/05/08
15. Operations and Supply Management (B.S.)—Focused Report Due 10/05/08
16. Sociology (B.A.)—Focused Report Due 10/05/08

2009-2010

1. Dental Hygiene (A.A.S.)
2. Radiography (A.A.S.)
3. Respiratory Care (A.A.S.)
4. Nursing (B.S.N.) and Nursing (M.S.)

5. Biology (B.S.) and Biology (B.A.)
6. Applied Mathematics (B.S.) and Mathematics (B.A.)
7. Chemistry (B.A.) and Biochemistry (B.A.)
8. Social Work (B.S.W.)
9. Advertising (B.S.) and Public Relations (B.S.)
10. Business Administration (M.B.A.)
11. Curriculum and Instruction (M. Ed.)
12. Secondary Education (B.S.) and Vocational Education (B.S.)
13. Recreation Leadership and Management (B.S.)
14. CAD Drafting/Tool Design Technology (A.A.S.)
15. Industrial Technology and Management (B.A.S.)
16. **Honors Program**
17. *Art History Minor* and *Interdisciplinary Humanities Minor*
18. Pre-Engineering (A.S.) and Pre-Pharmacy (A.S.)

2010-2011

1. Biotechnology (B.S.)
2. Technical and Professional Communication (B.S.)
3. Accountancy (A.A.S and B.S.) and Accountancy/CIS (B.S.)
4. Finance (B.S.) and Accountancy/Finance (B.S.)
5. General Business (A.A.S.)
6. Management (B.S.)
7. Visual Design and Web Media (B.S. and A.A.S.)
8. Television and Digital Media Production (B.S.)
9. Optometry (O.D.)
10. Pharmacy (Pharm. D.)
11. Heavy Equipment Service Engineering Technology (B.S.) and Heavy Equipment Technology (A.A.S.)
12. Manufacturing Engineering Technology (B.S.) and Manufacturing Tooling Technology (A.A.S.) and Quality Engineering Technology (B.S.)
13. Mechanical Engineering Technology (B.S. and A.A.S.)
14. Digital Animation and Game Design (B.A.S.)
15. Career Exploration (A.A.) and Directed Studies (A.A.)
16. *Philosophy Minor* and *Religious Studies Minor*
17. *Film Studies Minor*

2011-2012

1. Medical Technology (B.S.) and Medical Laboratory Technology (A. A.S.)
2. History (B.A.)
3. Psychology (B.S.)
4. Public Administration (B.S.)
5. Ornamental Horticulture Technology (A.A.S.)
6. Information Systems Management (M.S.)
7. Human Resource Management (B.S.)
8. Computer Information Systems (B.S. and A.A.S.)
9. Marketing (B.S.)
10. Early Childhood Education (B.S. and A.A.S.)
11. Elementary Education (B.S.)
12. Architectural Technology (A.A.S.)
13. Construction Management (B.S.), Building Construction Technology (A.A.S.), and Civil Engineering Technology (A.A.S.)
14. Facility Management (B.S.)
15. *American Studies Minor*
16. *Multicultural Relations in U.S. Minor*
17. Pre-Science (A.S.) and Pre-Mortuary Science (A.S.)

2012-2013

1. Diagnostic Medical Sonography (A.A.S.)
2. Medical Record Administration (B.S.) and Medical Record Technology (A.A.S.)
3. English (B.A.)

4. Sociology (B.A.)
5. Business Administration (B.S.) and Small Business Entrepreneurship (B.S.)
6. Information Security and Intelligence (B.S.)
7. Music Industry Management (B.S.)
8. Operations and Supply Management (B.S.)
9. Automotive Engineering Technology (B.S.),
10. Automotive and Heavy Equipment Management (B.S.)
11. Automotive Service Technology (A.A.S.)
12. HVACR Engineering Technology (B.S.) and HVACR Technology (A.A.S.)
13. Product Design Engineering Technology (B.S.)
14. Surveying Engineering (B.S.) and Surveying Technology (A.A.S.)
15. Software Engineering (B.A.S.)

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