

SUMMARY OF FINDINGS: EMPLOYER, STUDENT OPINIONS ON WELDING

John Krnacik Jr., Director
Department of Research and Evaluation
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TABLE OF CONTENTS

Collection of Information.....1

Background to the Study.....1

Results of the Employer Survey.....2

Results of the Student Interest Survey.....3

Conclusion.....4

SUMMARY OF FINDINGS: EMPLOYER, STUDENT OPINIONS ON WELDING

At the request of Mr. David Pilon, Associate Dean, Division of Technology, MCC's Department of Research and Evaluation conducted two surveys in October, 1989 to collect local opinion on career aspirations and opportunities in welding.

Collection of Information

In the first survey, two callers employed by R & E completed telephone interviews with representatives of 30 firms in the Metro Detroit area which regularly do welding work. The callers, who have been trained to do executive interviews, completed their calls on October 11-13, 1989, using the instrument in Appendix B. A list of the firms which they contacted appears in Appendix A.

In the second survey, 126 MCC students registered for classes in Applied Tech Welding (ATW) and Welding Technology (WET) during the Fall, 1989 term answered a student interest survey administered during classes the week of October 16. See Appendix C for the survey.

The clerical staff in R & E coded the surveys, entered data on MCC's mainframe computer, and generated printouts of the results. Information from those printouts and from other College sources appears in the report below.

Background to the Study

In recent years, enrollment in MCC's welding courses has declined, as Table 1 shows (see also Appendix D).

Table 1
Student Credit Hours in Welding, 1980-1989

<u>Year</u>	<u>Spring Terms</u>			<u>Fall Terms</u>			<u>Yearly Total</u>
	<u>ATW</u>	<u>WET</u>	<u>Total</u>	<u>ATW</u>	<u>WET</u>	<u>Total</u>	
1980	338	1010	1348	294	1144	1438	2786
1981	144	1300	1444	334	1531	1865	3309
1982	310	904	1214	284	663	947	2161
1983	180	824	1004	130	434	564	1568
1984	56	388	444	128	283	411	855
1985	160	292	452	267	191	458	910
1986	234	213	447	269	238	507	954
1987	270	298	568	211	234	445	1013
1988	251	169	420	281	118	399	819
1989	214	180	394	258	133	391	785

Background to the Study (cont.)

Thus, between the Spring of 1980 and the Spring of 1984, the two sequences of welding courses generated an average of 1141 student credit hours per term.

However, in the last eleven terms (Fall, 1984-Fall, 1989), the same sequences of courses generated an average of 445 student credit hours per term, a decline of 61 per cent since the earlier part of the decade.

Moreover, as the table shows, in seven of the last eleven terms, including the last four, ATW courses have generated more student credit hours than the WET courses.

Calendar 1989 credit hours in ATW and WET courses were the lowest in the last ten years.

It should be noted that some faculty attribute the decline in WET credit hours to deliberate down-scaling of WET offerings in the last few years, when the number of full-time WET teachers has dropped to zero. Divisional administration says the scheduling changes were dictated by falling demand for WET offerings.

Whatever the case, faculty and administration agree that some ATW courses are now offered regularly in place of WET offerings and that students have been directed to the ATW sections in the absence of comparable WET offerings in the schedule.

Results of the Employer Survey

Representatives of 30 firms, 20 of them located in Macomb County, said that they currently employ 180 persons who do welding, 172 full-time and 8 part-time, an average of six welders per firm surveyed.

Respondents rated their chances of hiring new or replacement welders at better than fair (3.21 on a scale on which 5.00 is high) during the next one to three years. Specifically, they said they would hire the following:

--in one year	91 welders	(16 firms responding)
--in two years	78 welders	(11 firms responding)
--in three years	32 welders	(5 firms responding)
--in four years	26 welders	(2 firms responding)
--in five years	1 welder	(1 firm responding)

Thus, the employers said that they will have jobs for welders over the short term, at least.

Results of the Employer Survey (cont.)

Employers reported that they presently were paying these salaries to their welders:

- entry level salary \$7.64/hour (20 firms reporting)
- with 2 years' experience \$9.28/hr (17 firms reporting)

Average salaries have been weighted according to the number of welders employed full-time by the individual firms.

Employers said that their companies are required to do welding certified under the following codes:

- | | |
|-----------------------------------|------------|
| -- Military specifications | 60% |
| --AWS D.1.1 | 40% |
| --ASME Section IX | 10% |
| --Other | 27% |

Employers said that their companies routinely require their welders to have training, as follows:

- | | |
|---|------------|
| -- quality assurance/quality control | 60% |
| --blueprint reading/layout/drafting | 53% |
| --inspection | 53% |
| --supervision | 33% |
| --basic metallurgy | 33% |
| --welding engineering | 30% |

Almost half (47%) of the firms said that they reimburse their employees for tuition expenses associated with training. However, only four firms (13%) said that they currently have any welders enrolled in training programs.

When asked what level of welding skills they were looking for in welders they might hire, the employers designated the following:

- | | |
|-------------------------------------|------------|
| -- knowledge in a broad area | 63% |
| --knowledge in a special area | 13% |
| --apprenticeship completion | 3% |
| --associate's degree | 3% |
| --certificate | 3% |
| --certification to specific code | 3% |

Results of the Student Interest Survey

During the week of October 16, 126 MCC welding students, enrolled in either ATW or WET sections, answered a student interest survey in class.

Results of the Student Interest Survey (cont.)

--65% of the students had earned fewer than 30 credit hours at MCC, and 35% had earned 30 or more credits.

--74% said they planned to earn a certificate in welding.

--39% said they planned to earn an associate's degree in welding.

--48% said they planned to complete an apprenticeship program in welding.

Of the students, 17% (n=22) said they currently were employed in jobs which required them to do welding. Another 28% (n=29) said that they planned to seek a welding job after leaving MCC. A number of those who said they did not plan to seek a welding job after leaving MCC said that they planned to be welding technicians, welding engineers, or welding supervisors.

Thus, about 40-45% of the students surveyed either are, or plan to be employed in welding-related jobs.

When asked to name the highest degree which they planned to earn in the next three to seven years, students gave these answers:

--none	5%
--certificate	14%
--associate's degree	16%
--apprenticeship completion	17%
--bachelor's degree	35%
--master's degree	1%
--don't know	13%

When students were asked how strongly they would recommend to friends their learning experiences in MCC's welding courses, they said they would recommend those experiences strongly (4.20 on a scale on which 5.00 was high). Eighty-five per cent of the students answered either "strongly" or "very strongly" to the question.

Conclusion

Employers said they planned to hire welders in the short term. They favored those with a broad range of experience. The vast majority of students planned to earn at least a certificate in the next 3-7 years. About 40-45 per cent of them expected to hold a welding-related job. They said that they would strongly recommend the welding courses which they had taken at MCC.

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APPENDIX A

LIST OF EMPLOYERS SURVEYED

- 01 AAA Welding Inc., Warren, MI
- 02 Alco Corporation, Roseville, MI
- 03 Applied Industries, Ecorse, MI
- 04 Arkit Tool & Die Welding Inc., Detroit, MI
- 05 Beswick Corporation, Madison Heights, MI
- 06 C.A.S. Industries, Troy, MI
- 07 Fab-Tech Welding, Sterling Heights, MI
- 08 Greene Metal Production, Mt. Clemens, MI
- 09 Huges Industries, Yale, MI
- 10 Industrial Welding Co., Warren, MI
- 11 Industrial Welding Service, Warren, MI
- 12 Johnston Fab., St. Clair Shores, MI
- 13 Lanzen Fabricating, Roseville, MI
- 14 Lapeer Industries, Lapeer, MI
- 15 Laquerre Tool, Roseville, MI
- 16 Lupatin Welding Inc., Fraser, MI
- 17 M & M Services Inc., Troy, MI
- 18 Marty's Tool & Die, Redford Twp., MI
- 19 Mercury Metalcraft, Roseville, MI
- 20 Merlin Industries Inc., Roseville, MI
- 21 Metropolitan Welding Co., Utica, MI
- 22 Prima Welding, Roseville, MI
- 23 Profab Sheet Metal, Mt. Clemens, MI
- 24 Rayco Welding Inc., Warren, MI
- 25 Riddell Engineering, Hazel Park, MI
- 26 Sabre Tec, Harrison Twp., MI
- 27 Slim's Alignment, East Detroit, MI
- 28 Trans Tube Inc., Pontiac, MI
- 29 Unique Welding Inc., Warren, MI
- 30 Verne Corporation, Chesterfield Twp., MI

APPENDIX B

_____ # of Survey

TELEPHONE SURVEY OF EMPLOYERS: WELDING
R & E Project # 89-004

Name, City of Company _____

Name, Title of Respondent _____

CALLER: "Hello, this is _____ from the Research Office at Macomb Community College. We are doing a survey to determine training needs in local welding firms. May I speak with ask for name on list?" When you have the person named on the list, and that person is willing to talk, enter his/her correct name and title above and proceed with the interview.

1. Which of the following kinds of welding does your company do?

	YES	NO
CALLER: Read list.		
Rotate choices.		
Circle appropriate number.		
1. Soldering.....	1.....2	
2. Brazing.....	1.....2	
3. Arc.....	1.....2	
4. MIG.....	1.....2	
5. TIG.....	1.....2	
6. Spot or nut.....	1.....2	
7. Resistance.....	1.....2	
8. Maintenance or repair..	1.....2	
9. Other.....	1.....2	

CALLER: If the respondent answers "no" to all of the above, Go to Q. 2. Otherwise, Go to Q. 7.

2. Do you expect to do any of these kinds of welding within the next 3-5 years?

Yes.....1--->Go to Q. 7
No.....2 See below.
DK/NA...9 See below.

CALLER: If the answer to Q. 2 is "no," "don't know," or "no answer," terminate the interview with thanks.

3. Does your company have welders who can handle the various types of welding which you expect to do in the next 3-5 years?

Yes.....1---> See below
No.....2--->Go to Q. 7
DK/NA...9--->Go to Q. 7

CALLER: If the answer to Q. 3 is "yes," terminate the interview with thanks.

Appendix B Continued

Employer Survey: Welding (cont.)

4. Where would you get the people to do your future welding work?
- | | | |
|---|---|---|
| CALLER: If the response here is # 2, Go to Q. 6. Otherwise, Go to Q. 5. | Upgrade skills of current employees.....1 | Hire new employees with those skills....2 |
| | Hire new employees and train them.....3 | One or more of the above.....4 |
| | Don't know.....8 | NA/Refused.....9 |
5. If you have to train employees, would this training be
- | | | |
|---|----------------------------|------------------------------|
| CALLER: Read list. Rotate choices. Circle appropriate number. | On the job?.....1 | Off your company site?.....2 |
| | Combination of both?.....3 | Don't know.....8 |
| | NA/Refused.....9 | |
6. If you had to hire welders in the future, would you consider hiring graduates of MCC's welding program?
- | | |
|--|----------------|
| | Yes.....1 |
| | No.....2 |
| | Don't know...8 |
| | NA.....9 |

This ends our survey. Thanks for participating.

7. What kind of welding does your company do?
- | | |
|------------------------------------|--|
| CALLER: Read list. Rotate choices. | Production.....1--->Go to Q 8, then Q 10 |
| | Non-production.....2--->Go to Q 9, then Q 10 |
| | Both.....3--->Go to Q 8, then Q 9 |
| | DK/NA.....9--->Go to Q 10 |
8. What type(s) of production welding does your company do?
- | | | | |
|------------------------------------|---------------------------------------|-----|----|
| CALLER: Read list. Rotate choices. | | YES | NO |
| | Prototype.....1.....2 | | |
| | Research and development.....1.....2 | | |
| | Maintenance and repair.....1.....2 | | |
| | Time and materials.....1.....2 | | |
| | Tool and die.....1.....2 | | |
| | Job shop/fabrication shop.....1.....2 | | |
| | Other.....1.....2 | | |

Appendix B Continued

Employer Survey: Welding (cont.)

9. What type(s) of non-production welding does your company do?

	YES	NO
CALLER: Read list.		
Prototype.....	1.....	2
Rotate choices.		
Research and development.....	1.....	2
Maintenance and repair.....	1.....	2
Time and materials.....	1.....	2
Tool and die.....	1.....	2
Job shop/fabrication shop.....	1.....	2
Other.....	1.....	2

10. How many welders do you currently employ full-time?

Write exact number here _____

11. How many welders do you currently employ part-time?

Write exact number here _____

12. Does your company require training for employees in . . . ?

	YES	NO
CALLER: Read		
list. Rotate		
choices.		
Quality assurance/quality control...1.....	1.....	2
Basic metallurgy.....	1.....	2
Blueprint reading, layout, drafting.1.....	1.....	2
Supervision.....	1.....	2
Inspection.....	1.....	2
Welding engineering.....	1.....	2
Other.....	1.....	2

13. Does your company pay for employee training or reimburse them for upgrading skills?

Yes.....1
 No.....2
 DK/NA.....9

14. Are any of your welders currently enrolled in a formal training program?

Yes.....1
 No.....2
 DK/NA.....9

Appendix B Continued

Employer Survey: Welding (cont.)

15. Does your company or any of your customers require welders to be certified to any of the following codes?

		YES	NO
CALLER: Read	AWS D 1.1 (structural code).....	1.....	2
list. Rotate	ASME Section IX (boiler code).....	1.....	2
choices.	Any military specifications.....	1.....	2
	Other specifications (automotive, etc).....	1.....	2

16. What level of welding skills is your company looking for?

Caller: Read	Knowledge in a special area.....	1
list. Rotate	Knowledge in a broad area.....	2
choices.	Certificate.....	3
	Associate degree in Welding.....	4
	Apprenticeship completion.....	5
	Certification to specific code.....	6
	Other.....	7

17. What entry-level salary are you currently paying welders?

\$ _____	per hour
\$ _____	per week
\$ _____	per month
\$ _____	per year

18. What salary are you paying welders with two years' experience?

\$ _____	per hour
\$ _____	per week
\$ _____	per month
\$ _____	per year

19. How would you rate the chances of your hiring additional welders at your company during the next 1-3 years?

CALLER: Read list. Rotate	Excellent.....	5
choices.	Good.....	4
	Fair.....	3
	Poor.....	2
	Very poor.....	1
	DK/NA.....	9

Appendix B Continued

Employer Survey: Welding (cont.)

20. How many full-time employees do you estimate that you would hire, either as new employees or replacements in . . . ?

One year _____

Two years _____

Three years _____

Four years _____

Five years _____

This concludes our survey. Thank you for participating.

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APPENDIX C

STUDENT INTEREST SURVEY: WELDING

Directions: Check only one response per question.

1. Number of the course in which you're being surveyed (for example, WET 999) _____

2. At the beginning of this term, how many credit hours had you earned at MCC?

Fewer than 30 _____
30 or more _____

3. Which welding courses (either ATW or WET) have you completed at MCC?

4. Which welding courses (either ATW or WET) do you plan to take at MCC in the next 1-3 years?

5. Do you plan to earn a certificate in welding at MCC?

Yes _____
No _____
Don't know _____

6. Do you plan to earn an associate's degree in welding at MCC?

Yes _____
No _____
Don't know _____

7. Do you plan to complete an apprenticeship program in welding at MCC?

Yes _____
No _____

8. Are you currently working as a welder? (If you answer "yes" to this question, then skip to Q. 10)

Yes _____
No _____

Appendix C Continued

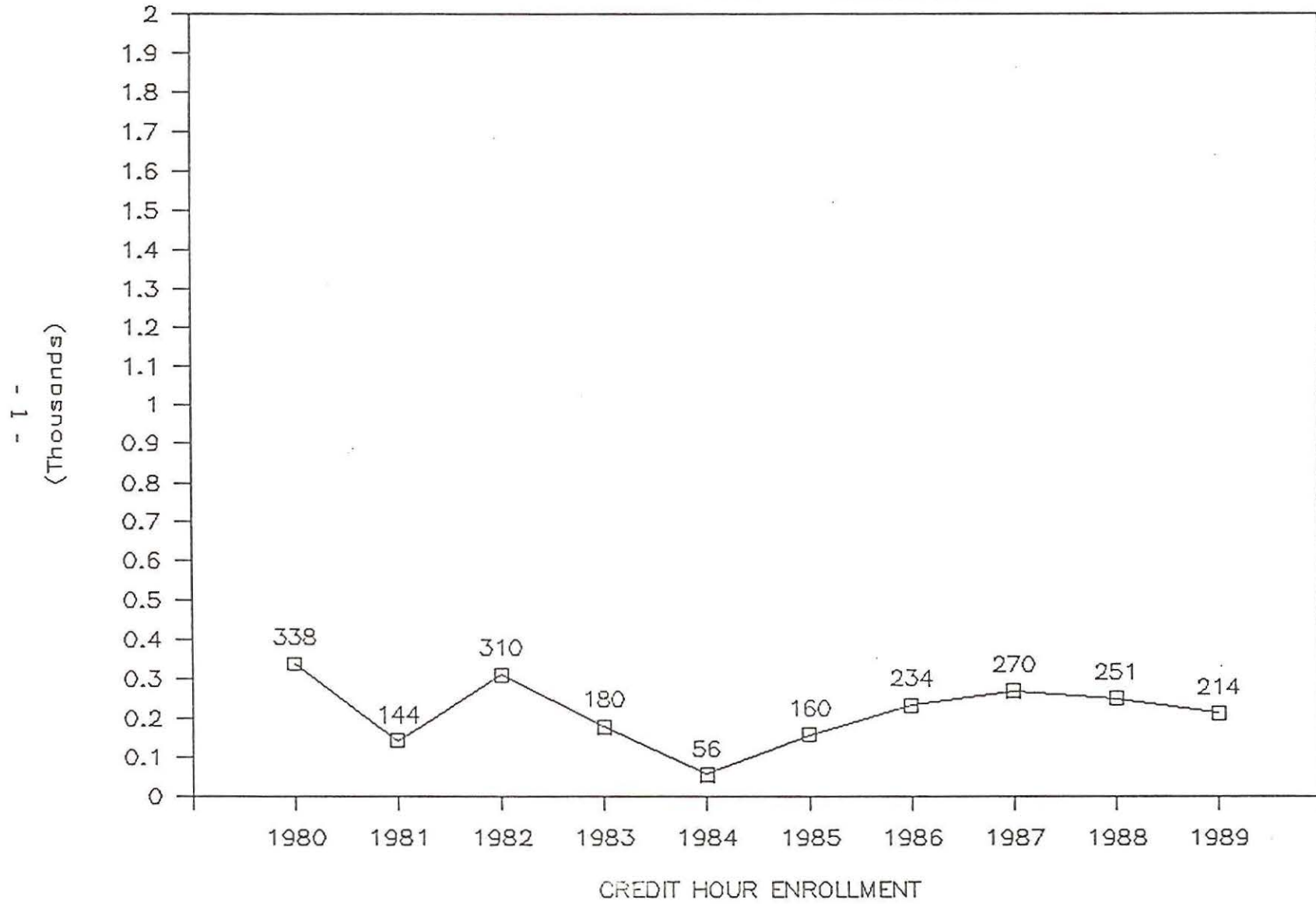
Student Interest Survey: Welding (cont.)

9. Do you plan to seek employment as a welder when you've finished your studies at MCC?
- Yes _____
No _____
Don't know _____
10. What is the highest educational degree which you expect to earn in the next 3-7 years?
- None _____
Certificate _____
Associate's _____
Apprenticeship completion _____
Bachelor's _____
Master's _____
Other _____
Don't know _____
11. From the standpoint of how much you've learned, how strongly would you recommend to a friend the welding courses which you've completed at MCC so far?
- Very strongly _____
Strongly _____
Moderately _____
Weakly _____
Very weakly _____
12. As you see them, what are the strong points of MCC's offerings in welding?
13. As you see them, what are the weak points of MCC's offerings in welding?

This ends our survey. Thanks for participating.
89-004/wetapb89

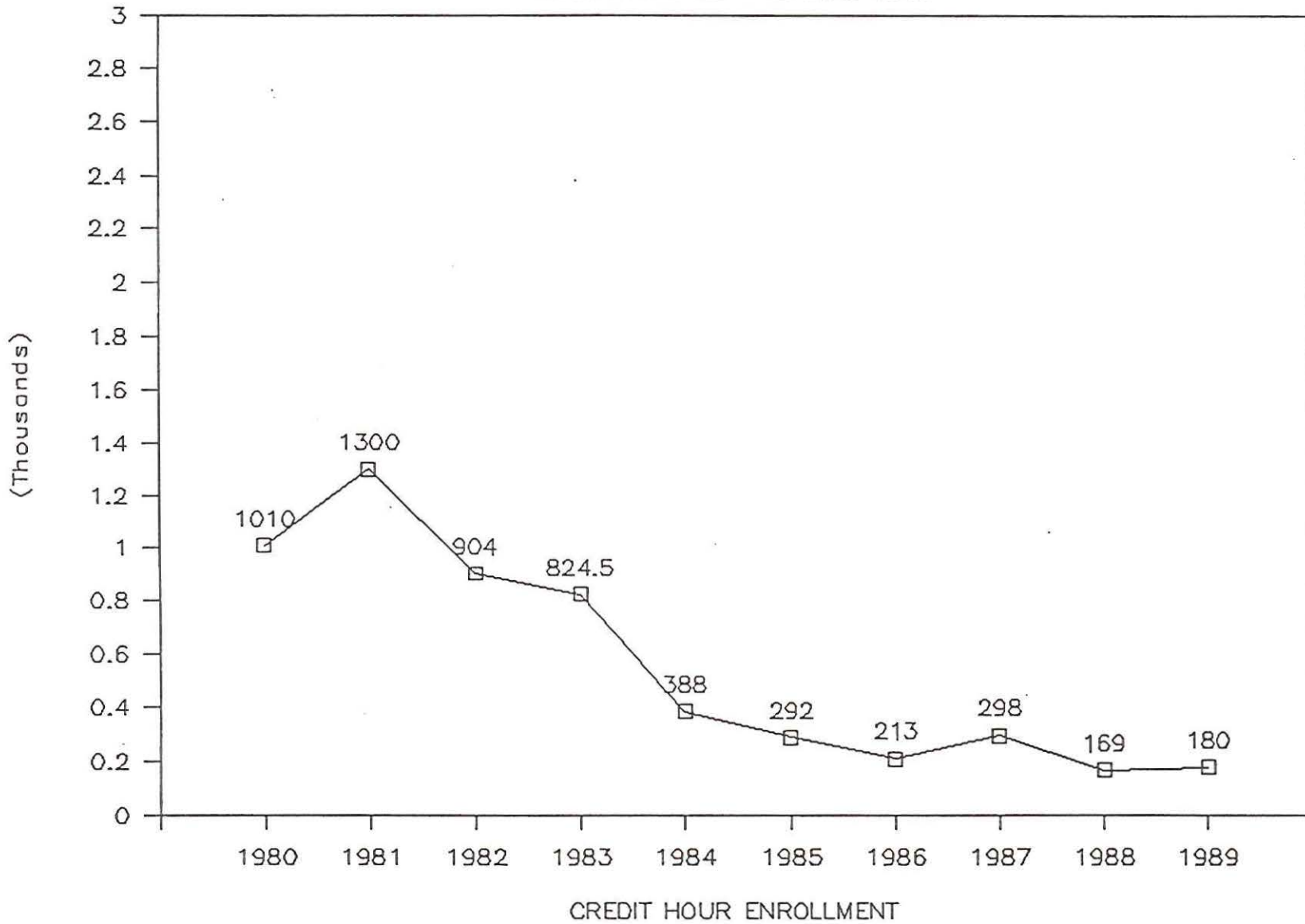
WELDING

APPLIED TECHNOLOGY - SPRING TERM



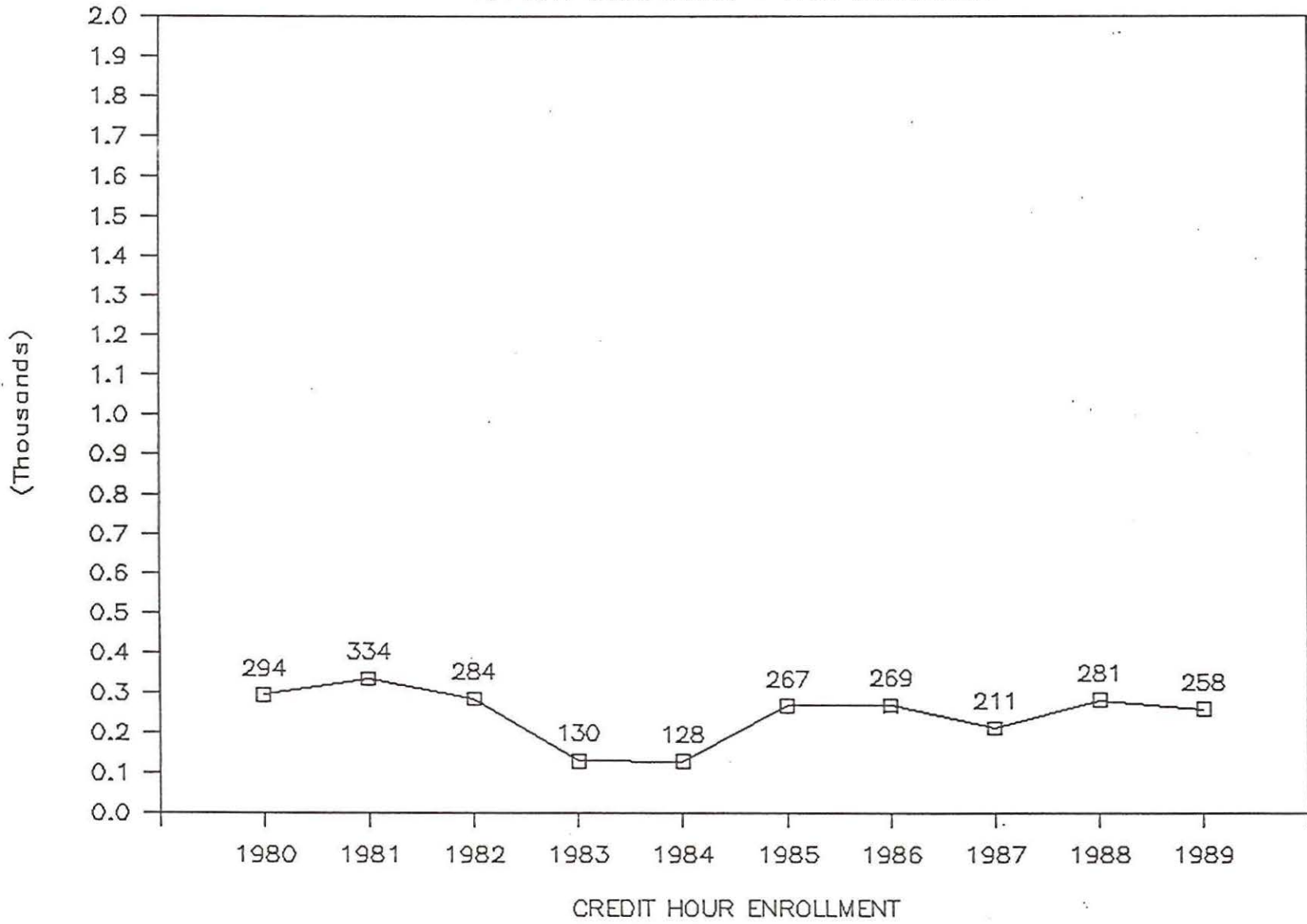
WELDING TECHNOLOGY

SOUTH CAMPUS - SPRING TERM



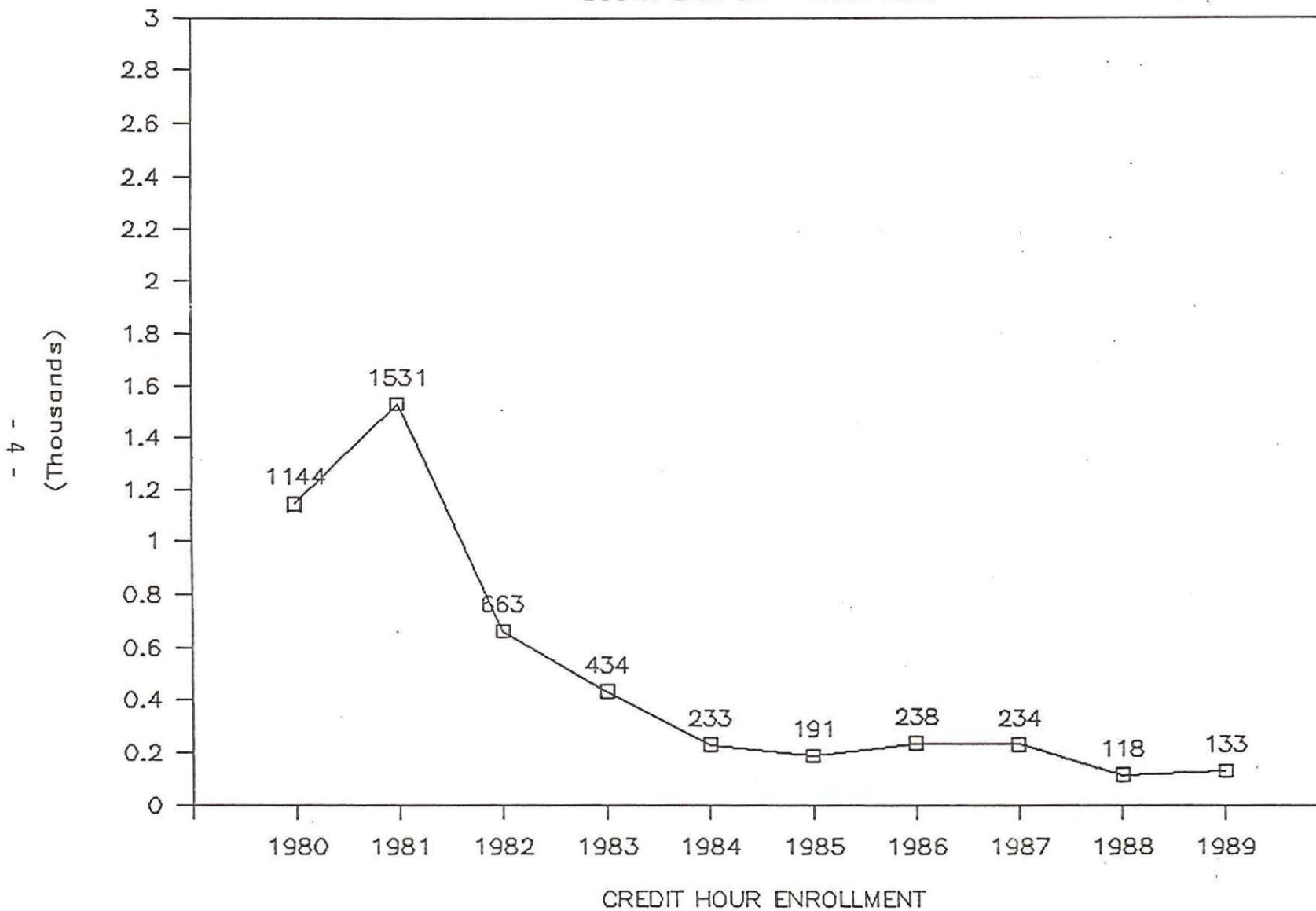
WELDING

APPLIED TECHNOLOGY – FALL TRIMESTERS



WELDING TECHNOLOGY

SOUTH CAMPUS - FALL TERM



Appendix D Continued