

**HAWAII COMMUNITY COLLEGE
ANNUAL INSTRUCTIONAL
PROGRAM REVIEW**

**Machine, Welding and Industrial
Mechanics Technologies (MWIM)**

APRIL 2, 2007

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ANNUAL INSTRUCTIONAL PROGRAM REVIEW
Machine, Welding and Industrial Mechanics Technologies (MWIM)
April 2, 2007

I. Narrative and Analysis of Data

a. Statement on the mission or purpose of the program, including the target student population;

This program prepares the student for employment in the metalworking and mechanical/maintenance trades. It also provides employed persons an opportunity to develop or upgrade skills.

Employment may be in construction, food processing, manufacturing, utilities, astronomical observatories, or related industries. Successful students have good physical health, above average eye/hand coordination, mechanical reasoning and good form and spatial relationship perception. Job responsibilities may include fabricating, repairing, or maintaining metal products on equipment, buildings, and systems.

The program services the traditional student and is restructuring its offerings into smaller modules and different areas of instruction and is scheduling evening classes to include incumbent workers and workers who wish to upgrade themselves.

b. Information on external factors affecting the program;

Adequate funding is essential to the ongoing restructuring of the program. Past funding has been from RDP. Additional requests are pending. Changes in the management of OCET and RDP have negatively affected the program's ability to proceed as rapidly as possible.

c. Attach PHI Report (CTE Programs only) See attached.

d. Required external measures, if applicable (e.g.) Nursing Cert. None.

e. Analysis of data

To make a determination of program health based on current data is premature. The program is in the turmoil of restructuring efforts that have been stalled for reasons beyond its control. The program is working very hard to restructure itself from a program that was scheduled to be stopped out to a viable and integral program that services a variety of populations and offers much needed training for the island.

Number of Majors: The number of FTE student majors is 14.2 and the program had 32 unduplicated majors for the academic year. The majority of students in the program are taking less than 15 credits per semester which is the primary reason the FTE is less than half the number of majors.

Average Class Fit & Student- Faculty Ratio: Class caps for the program are set at 17. The program's average class size is 13.83 and average class fit for the academic year is 80.4%. The student faculty ratio is 6.94.

FTE Faculty: The BOR appointed program faculty of 1 is not adequate based on the 2.29 calculated FTE faculty. The program has traditionally had 2 FTE faculty; the number dropped with the retirement of one instructor. Recruitment efforts in 2006 were unsuccessful; a 2007 recruitment effort seems likely to result in the hiring of an instructor. The second instructor, the program coordinator and driving force behind the restructuring, also retired leaving the program as of Spring 2007 without 0 full time instructors. Fortunately, he has agreed to continue on part time and is leading the restructuring effort and working arduously with lecturers to develop their abilities as instructors.

GPA and Number of Graduates: The program paid course (PPC) average GPA is 2.85 and the non-PPC average GPA is 3.2. Both of these are within the average range for the department and division. The MWIM program graduated 4 students. This low number is an adverse effect of a drop in 2003-2004 enrollments. This drop compelled the program's coordinator to stall program restructuring efforts so he could return to the classroom. Enrollment has increased and restructuring efforts are preceding.

II. Update or Create Your Action Plan including Budget Request with Justification, if needed.

1. Hire a qualified individual to fill at least one of the two open instructor positions. Start the process of finding a qualified individual to fill the second position.
2. Work with OCET and RDP to secure funding to purchase necessary equipment to implement the RAC certificate of completion.
3. Develop program and course level student learning outcomes.
4. Document strategies for assessment of student learning outcomes.

Data Chart

QUANTITATIVE TREND DATA CHART

Program Name: Machine Welding and Industrial Mechanics

	Fall 2005	Spring 2006	AY
#1 Number of Unduplicated Majors	30	16	32
#2 Total Student Semester Hours	240	186	426
#3 FTE Student Majors	16.00	12.40	14.20
#4 Number of Graduates	-	-	4
#5 Number of classes	10	8	18
#6 Avg Class size	15.90	11.25	13.83
#7 Avg Class fit	93.1%	64.6%	80.4%

#8	FTE of BOR Appointed Program Faculty	-	-	1
#9	Number of FTE Faculty	-	-	2.29
#10	Student semester hours for all PPC class enrollments	290	186	476
#11	Student-Faculty Ratio	-	-	6.94
#12	PPC Credits Earned Ratio	.98	.92	.95
#13	Non-PPC Credits Earned Ratio	.69	1.00	.84
#14	PPC Avg GPA	2.74	2.96	2.85
#15	Non-PPC Avg GPA	3.07	3.33	3.20
#16	Budget	-	-	5632.00
#17	Program Cost per SSH***	-	-	168.24

*** - calculated using rank 4 rate per credit hour of instruction

PROGRAM DESCRIPTION

The **Machine, Welding and Industrial Mechanics** Technology program is placed in the Applied Technical Education Division's Transportation and Applied Technology Department of Hawai'i Community College. Other programs within this division include: Auto Body Repair and Painting, Automotive Mechanics, Diesel Mechanics, and Electronics.

This program prepares the student for employment in the metalworking and mechanical/maintenance trades. It also provides incumbent workers with an opportunity to develop or upgrade skills. Employment may be in construction, food processing, manufacturing, utilities, astronomical observatories, or related industries. The job requires good physical health, above average eye/hand coordination, mechanical reasoning and good form perception and spatial relationship. Job responsibilities may include fabricating, repairing, or maintaining metal products on equipment, buildings, and systems.

This program is being restructured and the rural development project funding will allow the development of industrial mechanics. Promotion of the program and recruiting of students is an ongoing process. External funding for lecturers through RDP allows the program to offer a diverse curriculum with low enrollment caps.

The program offers two separate certificates of completion; one in machine shop (20 credits) and another in welding (20 credits). The Associate of Applied Science and Certificate of Achievement include the modules in Machine Shop and Welding. Current RDP funding will allow the development of the certificate of completion in industrial mechanics (presently planned for 20 credits).

PROGRAM GOALS

The primary objective of the Machine, Welding and Industrial Mechanics Technology program is to provide curricula and activities to allow students to gain knowledge and salable skills that qualify them for entry-level employment in those occupations requiring machining, welding, industrial mechanics or maintenance skills. We also strive to assist students in their intellectual, social, cultural and personal development. These objectives are consistent with the college's mission, the philosophy and goals of the UH Community Colleges and the State Master Plan for Vocational Education.

PROGRAM HEALTH INDICATORS

INDICES	MINIMUM LEVEL	ACTUAL LEVEL	SATISFACTORY LEVEL
PROGRAM DEMAND/CENTRALITY: Fall 2006			
Number of Applicants	12	31	25
Number of Majors	15	23	20
Student Semester Hours	180	270	240
Class Credit Hours	24	30	24
Number of Classes Taught	2	12	2
PROGRAM EFFICIENCY: Fall 2006			
Average Class Size	7.5	11	10
Student Semester Hours per FTE Faculty	90	108	120
Equiv. Class Credit Hours per FTE Faculty	12	12	12
Percentage of Small Classes	50%	33%	0%
PROGRAM OUTCOMES: Fall 2004 (See Perkins III Core Indicators on Page 5)			
Credits Earned Ratio – General Education	n/a	00%	
Credits Earned Ratio – Vocational Education	n/a	00%	
Degrees and Certificates Awarded – AY 2001-2002	n/a	00%	
Placement into Further Education, Employ, or Military	n/a	00%	
Program Retention – Fall to Spring	n/a	00%	
Retention in Employment	n/a	00%	
Non-Traditional Program Participation – Females	n/a	00%	
Non-Traditional Program Completion – AY 2001-2002	n/a	00%	

2005-2006 PERKINS III CORE INDICATORS WELS & MWIM

Core Indicators	# in Denominator	# in Numerator	Adjusted Level	Actual Level
Academic Achievement	6	4	81.92%	60.00%
Vocational Skills	13	11	90.00%	83.33%
Degrees & Certificates	13	2	37.33%	16.67%
Placement/Employment	4	3	71.72%	100.00%
Retention/Employment	3	2	92.00%	50.00%
Nontraditional Participation	25	1	14.60%	4.55%
Nontraditional Completion	3	0	12.73%	0.00%

OCCUPATIONAL DEMAND
Hawai'i County - 1998-2008

Occupational Title	State 2005	Hawaii 2005	Hawaii New 2005-2011	State Replacement 2005-2011	Hawaii Replacement 2005-2011
Machinists	388	51	5	51	6
Welding, soldering & brazing workers	237	42	-2	39	7
Maintenance & repair work	8123	880	135	908	98
Sheet Metal & Plastics Tech	520	53	11	68	7
	9268	1026	149	1066	118
Total demand 2005-2011 = 267					

Source: EMSI Table for Hawaii County

ANALYSIS OF THE PROGRAM

Program Demand/Centrality

The program exceeds the satisfactory level for all categories in the program demand classification. Occupational data supplied by EMSI for Hawaii County indicates a continuing need for workers trained in the skills provided by the MWIM program.

Program Efficiency

The program exceeds the satisfactory level for two of the four categories for program efficiency. It exceeds the minimum level for all four categories. The program's percentage of small classes is 33%. External funding for lecturers through RDP allows the program to offer a diverse curriculum with low enrollment caps.

Program Outcomes

Of the seven Perkins core indicators the MWIM program exceeds the desired level in one: Placement/Employment. The program's low indicators are tied to the dual populations it seeks to serve and it being in the midst of restructuring. The program is a traditional educational program focusing on students seeking a degree as well as one positioning itself to offer classes for incumbent workers and those who want to develop their skills either for work or for personal interest. The program has restructured class offerings into small modules for a variety of topics and hold the majority of its classes in the evening to make it more desirable for working individuals.

The program has no entry requirements and is designed for the student to attain his/her desired level of competence. For this reason the program gets many under prepared students taking developmental classes. This adversely affects the program's results in the areas of academic achievement and vocational skill.

The program is open entry, open exit so what seems to be attrition is often the accomplishment of short term objectives for students who enter the program to learn a particular skill and quit once learned. The establishment of two certificates of completion to be awarded for the first time spring 2007 was done to provide short term credit programs for employed persons wanting to upgrade skills. It is hoped these certificates will help provide statistical evidence of the services offered by the program.

The ongoing program restructuring seeks to create programs of study that are diverse and able to service a larger part of the industrial community. The incumbent worker attending classes in the evening will be actively recruited as will the traditional high school population. To complete the restructuring will require a major effort by Hawaii Community College, the program and instructors.

Plan of Action 2005-2006

The continued restructuring of the MWIM Tech program and the completion of the necessary facilities modification; the hiring of a tenure track instructor, approval of the industrial mechanics option in MWIM; the purchasing and installation of the RAC equipment and trainers and the development of a recruiting effort to expand the options entering students may choose from when entering HawCC.

The current RDP funding will allow the development of the program up to the Industrial Mechanics option. Requests for further funding will allow the program to develop new offerings in the construction trades that HawCC does not presently offer.

The former Chancellor recommended plumbing as one career option that may be developed. There are approximately 15 construction trades that can be developed with the recommendations of the National Center for Construction Education and Research (NCCER). This is an effort worth considering and it could bring closer ties to most of the programs in the Applied Technical Education (ATE) Division.

The MWIM Tech Program is a part of the Transportation and Applied Technology Department. This could be an effort to address the needs of most of the applied technology career options that are available to future students.

Response to last year's plan of action

The restructuring is ongoing. A delay has occurred due to an unexpected drop in enrollment and the need for the program coordinator to return to teaching and also because of management issues in the program's OCET and RDP areas. The enrollment has improved and is above the satisfactory level.

The electrical part of the facilities modification is approximately 85% complete. A problem with the installation of 40 foot containers for storage has resulted in delays; the program is currently awaiting approval from the RDP grants officer so the storage space can be completed.

Original estimated cost for the RDP project is less than required; additional RDP funds have been requested to complete the project. The program will not initiate purchasing the RAC trainers and equipment until there is reassurance that there is sufficient funding to purchase all elements needed to implement additional concentrations.

The program restructuring is a vital part of the viability of this offering. The restructuring will be pursued if funds are available. First order of priority is the addition of the refrigeration and air conditioning concentration, second is hydraulics, pneumatics, and metallurgy. Other options include plumbing and other programs in accordance with NCCER recommendations.

The program has had difficulty in finding qualified applicants for the tenure track position. A Screening Selection committee is currently in the process of reviewing applications and hopeful that a qualified applicant will be found.

Plan of Action 2007-2008

5. Hire a qualified individual to fill at least one of the two open instructor positions.
Start the process of finding a qualified individual to fill the second position.
6. Secure funding to purchase necessary equipment to implement the RAC certificate of completion.
7. Develop program and course level student learning outcomes.
8. Document strategies for assessment of student learning outcomes.
9. Continue work on restructuring.

Appendix A: History and Admission Requirements

Program History

This section describes the history of the program, including significant milestones in the development of the program. It should include the date of initiation, significant modifications in the program, the date of first accreditation and re-accreditation (where applicable), significant awards or record of outstanding performance and significant current activity.

The Welding and Sheet Metal Technology Program is one of the five original programs offered when the Hawai'i Vocational School, now Hawai'i Community College was established in 1941. Since then, the program has moved with the school to different locations and has been served by changing administrations, instructors, and educational philosophies.

In 1983, the Welding and Sheet Metal Technology Program was named as one of the three energy-related programs by the Federal Department of Energy Cooperative Honors Program in Energy-Related Technologies for minority students of Pacific/Asian descent. This program provided generous financial aid to qualified students but is presently not available due to a lack of funding.

The program moved to its new location on the University of Hawai'i at Hilo campus in the spring of 1989. This new facility provides current technology in welding, sheet metal and basic metalworking.

In 1996 an outside consultant from California, Mr. Chuck Blesh, was hired to evaluate all welding programs in the State of Hawaii. Mr. Chuck Blesh, American Welding Society Certified Welding Inspector, visited and evaluated our program at Hawaii Community College. A quote from his evaluation: "Each college has an excellent facility for lab and classroom study. Hawaii's is outstanding. The best that I have seen. This facility should be seen by all dignitaries who visit the area."

With the decline of the sugar and manufacturing industries, there was a decline in enrollment in this program. An industry/island wide survey in 1999 clearly showed a need for this program with changes to include machine shop and industrial mechanics to service industries that need maintenance and millwright type workers. The program was restructured to include these other areas of instruction.

In Fall 2002, a revised program was submitted to the curriculum committee and approved. The program name was changed in Spring 2003 from Welding & Sheet Metal (WELSM) to Machine, Welding and Industrial Mechanics Technologies (MWIM). This new program was implemented in Fall 2003 and the program restructuring is continuing.

The Machine Tech option in the MWIM Program has been developed and approved as a 20 credit Certificate of Completion. The integration of the MACH courses into the MWIM CA and AAS degree program is pending approval and once approved will be a part of the core requirements in the MWIM Program.

The Industrial Mechanics option of this program is presently being developed and facilities modification projects will enable the program to offer a curriculum that will include refrigeration and air conditioning, Industrial maintenance and Industrial Mechanics.

Rural Development Project (RDP) funding (\$200,000) allowed the program to purchase new equipment and establish offerings in Machine Technology. An additional (\$215,000) is currently allowing the program to develop offerings in Industrial Mechanics. The continued RDP funding is projected into the year 2008. Total RDP funding to the year 2008 will be approximately \$580,000.

Admission Requirements

Admission to Hawai'i Community College and to the **Machine, Welding and Industrial Mechanics** Technology Program is open to any high school graduate or person 18 years of age or older who can profit from the instruction offered. Students may transfer from other institutions of higher learning after proper application has been made and official transcript received and evaluated. Credit accepted toward graduation may be granted only for courses that are substantially equivalent to offerings at Hawai'i Community College and in which a grade of "C" or better has been earned.

Appendix B: Degree Requirements
Machine Technology option

First Semester		CA	AS
Weld 26	Basic Arc Welding	2	2
Weld 27	Metalworking Lab I	2	2
Weld 28	Metalworking	2	2
Weld 29	Oxy-fuel Weld, Braze, Cut	2	2
Mach 20	Intro to Machine Technology	1	1
Mach 21`	Measurement and Layout	1	1
Mach22	Handtools and Benchwork	1	1
Mach 23	Basic Machine tools	1	1
** Math 50E	Technical Math or higher		3
** Eng	Eng 21, 51, or 22 or higher		3
	TOTAL	12	18
Second Semester			
Weld 24	Measurement and Layout	2	2
Weld 25	Metal Fab I, Sheet Metal	2	2
Weld 31	Intermediate Weld	2	2
Weld 40	Qualification Prodecures	2	2
Mach 24	Lathe Facing, Turning and Knurling	2	2
Mach 25	Lathe Shape Altering and Tapering	2	2
Blprt 30D	Blprt Reading for Machine Trades	3	3
Elective	Cultural, Natural, Social Env.	-	3
	TOTAL	15	18
Third Semester			
Mach 26	Lathe II	6	6
Electives	WELD or MACH electives	-	6
Blprt 30B	Blprt for Welders	3	3
Elective	Cultural, Natural, Social Env.	-	3
	TOTAL	9	18
Fourth Semester			
Mach 27	Vertical Milling and Intro to CNC	-	4
Mach 28	Shaper, Line Bore, Lathe and Drill	-	2
Electives	Weld or Mach electives	-	8
Elective	Cultural, Natural, Social Env.	-	3
	CVE (optional)	-	-
	TOTAL	-	17
	TOTAL	36	71

Appendix B: Degree Requirements
Welding and Sheet Metal option

First Semester		CA	AS
Weld 26	Basic Arc Welding	2	2
Weld 27	Metalworking LabI	2	2
Weld 28	Metalworking	2	2
Weld 29	Oxy-Fuel weld, braze and cut	2	2
Mach 20	Intro to Machine Shop	1	1
Mach 21	Measurement and Layout	1	1
Mach 22	Handtools and Benchwork	1	1
Mach 23	Basic Machine Tools	1	1
** Math 50E	Technical Math or higher		3
** Eng	Eng 21, 51, or 22 or higher		3
	TOTAL	12	18
Second Semester			
Weld 24	Measurement and Layout	2	2
Weld 25	Metal Fab I, Sheet Metal	2	2
Weld 31	Intermediate Weld	2	2
Weld 40	Qualification Prodecures	2	2
Mach 24	Lathe Facing, Turning and Knurling	2	2
Mach 25	Lathe Shape Altering and Tapering	2	2
Blprt 30D	Blprt Reading for Machine Trades	3	3
Elective	Cultural, Natural, Social Env.	-	3
	TOTAL	15	18
Third Semester			
Weld 41	Advanced Welding	8	8
Electives	Weld or Mach electives	-	4
	Blprt 30B		Blprt for Welders3 3
Elective	Cultural, Natural, Social Env.	-	3
	TOTAL	11	18
Fourth Semester			
Weld 50	Special Processes	-	8
Electives	Weld or Mach electives	-	6
Elective	Cultural, Natural, Social Env.	-	3
	CVE (optional)	-	-
	TOTAL	-	17
	TOTAL	36	71

Appendix C: Faculty

Regular Faculty

<u>Name</u>	<u>Tenure Status and date</u>	<u>Degrees Held</u>	<u>Rank</u>
Kenneth Muranaka	Tenured, 1976	B.Ed.	C-5

Part-time Faculty

<u>Name</u>	<u>Tenure Status and date</u>	<u>Degrees Held</u>	<u>Rank</u>
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Appendix D: Advisory Committee

Mr. Glenn Kotomori, Manager
BOC Gases/Gaspro Inc
525 Kalaniana'ole Ave
Hilo, Hi. 96720 Ph. 935-3341
3371

Mr. Leonard Tanaka
Owner
T&T Electric Inc.
456 Kekua'naoia St.
Hilo, Hi. 96720 Ph. 935-9029
6127

Mr. Kelvin Kohatsu
HELCO, Inc.
P.O. Box 1027
Hilo, HI 96720 Ph. 935-1171

Mr. Kyle Kinoshita
Keck Observatory
65-1120 Mamalahoa Hwy
Kamuela, Hi 96743 Ph. 881-3860

Mr. Norman Uchida
HELCO, Inc.
54 Halekauila St.
Hilo, Hi 96720 Ph. 969-0422

Mr. Steve Hurt
Kailua RAC Inc
454 Kalanikoia St.
Hilo, Hi. 96720 Ph. 969-7847

Mr. Ron Koehler, Manager
Mauna Kea Obsrv. Support
177 Makaala St.
Hilo, Hi. 96720 Ph. 935-

Mr. Shannon Warfield,
Pacific Rim Erectors
P O Box 2521
Kamuela, Hi. 96743 Ph. 885-

Mr. Walter Yamada, Manager
Custom Sheet Metal
16-167 Kalara St.
Keaau, Hi. 96749 Ph. 966-7803

Mr. James Hamano, Owner
Independent Crane & Rigging
61 Terrace Circle
Hilo, Hi. 96720 Ph. 935-3996

Mr. Tom Shindo
Hilo Mechanical Inc.
50 Holomua St.
Hilo, Hi 96720 Ph. 961-3882

Appendix E: Definitions of Data Elements (All data includes West Hawai'i)

A. Program Demand/Centrality:

1. Number of Applications: Total number of applications received complete and incomplete.
2. Number of Majors: Major declared/on file during the semester.
3. Student Semester Hours: Total number of semester hours based upon class credits and student enrollment. Sum of all class credits multiplied by the enrollment for each class. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes cancelled, 99V, 199V, 299V, and all CVE classes.
4. Class Credit Hours: Sum of credits of all classes offered within the program/with the program/major code/alpha. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes cancelled, 99V, 199V, 299V, and all CVE classes.
5. Number of Classes Taught: Total number of classes conducted/run within the program/with the program/major code/alpha. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes 99V, 1 99V, 299V, and all CVE classes.

B. Program Efficiency:

1. Average Class Size: Average class size of all classes conducted/run within the program/with the program/major code/alpha. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes 99V, 199V, 299V, and all CVE courses. Total enrollment in each class excludes students with "DR" and/or "W" grades.
2. Student Semester Hours per FTE Faculty: Total student semester hours from A.3. divided by analytical FTE Faculty.
 - a. Analytical FTE Faculty: Teaching based upon a full load (15 or 12 credits depending upon the contact hours.) Division Chairpersons are assigned an analytical FTE Faculty equivalent of 0.70 FTE.
 - b. Each full-time faculty within a program is considered to be 1 FTE. FTE based upon lecturers are calculated by the number of credits each are assigned to teach.
 - c. Assigned time is to be extracted from FTE calculations ...similar to calculating the FTE for a Division Chair. For example, if a Full-time faculty received 3 credits assigned time (out of a regular 15-credit load) it would be considered a .8 FTE rather than 1

3. Equivalent Class Credit Hours per FTE Faculty: Total class credit hours from A.4. divided by total analytical FTE Faculty.
4. Percentage of Small Classes: Percent of classes within the program/with the program/major code/alpha that had less than 10 students. Includes practica and other classes where 5 students = 1 semester (credit) hour; however, these classes are considered to be Low-enrolled only if there are less than 5 students or between 6 and 9 students. Excludes 99V, 199V, 299V, and all CVE classes.

C. Program Outcomes:

1. Credits Earned Ratio (Remedial/Developmental): Percentage of program majors enrolled in ESL 9, ESL 13, ENG 20R, ENG 20W, ENG 51, LSK 51, MATH 22, and MATH 50 who passed with a grade of A, B, C, D or CR.
2. Credits Earned Ratio (General Education): Percentage of program majors enrolled in all LBART courses (excluding those in C.1.) who passed with a grade of A, B, C, D or CR. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes 99V, 199V, 299V, and all CVE courses.
3. Credits Earned Ratio (Vocational Education): Percentage of students enrolled in vocational courses who passed with a grade of A, B, C, D or CR. Includes practica and other classes where 5 students = 1 semester (credit) hour. Excludes 99V, 199V, 299V, and all CVE courses.
4. Credits Earned Ratio (Overall): Combination of C.1., C.2., and C.3. above.
5. Graduate Placement Rate: Students who graduated with a certificate/degree in the PAST academic year and found work in that field.
6. Degrees Awarded: The number of certificates and degrees awarded during the PAST academic year.
7. Retention Rate: New students within a program/major continuing or retained in that program/major from the past two or more terms. (Students registered in Fall 2000 who started in Spring 2000 or Fall 1999. Students registered in Fall 2001 who started in Spring 2001 or Fall 2000.)