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Are Four-Year Universities Better Than Two-Year Colleges at Preparing Students to Pass the FAA Aircraft Mechanic Certification Written Examinations?

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Sorenson Best Paper Award Recipient
**ARE FOUR-YEAR UNIVERSITIES BETTER
THAN TWO-YEAR COLLEGES AT PREPARING
STUDENTS TO PASS THE FAA AIRCRAFT
MECHANIC CERTIFICATION WRITTEN
EXAMINATIONS?**

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ABSTRACT

This study evaluates differences between two-year and four-year schools offering a Federal Aviation Administration (FAA) Part 147 aviation maintenance technician program. The actual average test scores were analyzed to determine whether students from four-year university programs were better prepared for the test than students from two-year college or technical school programs. Test scores can be viewed as a direct indication of the quality of the aviation maintenance programs at these schools. The study found that there was no statistically significant difference in the test scores between two-year college and four-year university students taking the FAA examinations. These results support previous studies that found the learning outcomes of two-year and four-year students on general subjects to be comparable.

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BACKGROUND

The FAA has established two avenues for an individual to obtain an Airframe and Powerplant (A&P) mechanic certificate. The first avenue is by work experience. Federal Aviation Regulation (FAR) Part 65 describes how an applicant for a mechanic's license must demonstrate between 18 and 30 months of aircraft work experience as a mechanic before being considered experienced enough to take the written examinations. This method is commonly used by military trained mechanics seeking to obtain commercial aircraft mechanic certification. The second avenue is to attend an FAA approved Aviation Maintenance Technician School (Certification, 2002). These schools must meet the requirements of FAR Part 147, which identifies specific requirements for the school facility, equipment, instructors, curriculum and student-to-instructor ratio. Individuals who complete the school curriculum are deemed by the FAA to be qualified to take the written examinations for A&P mechanic certification (Schools, 2002).

FAA approved Aviation Maintenance Technician schools can be found at four-year universities, public community colleges and technical schools, privately operated technical schools, and even some public high schools. While the occupation of aircraft mechanic is often viewed as a blue collar job and the course of instruction better suited for technical colleges more than 20 four-year universities in the United States offer an FAA approved Aviation Maintenance Technician program as part of a Bachelor of Science degree. These four-year degrees are often described as aviation maintenance management, indicating graduates of these programs are prepared to provide technical leadership in the performance of maintenance tasks or to manage the efforts of mechanics (Schools, 2002).

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STATEMENT OF THE PROBLEM

Are four-year universities producing trained aircraft mechanics who are better prepared to provide the technical leadership required for management positions in the aviation maintenance industry than those from two-year technical colleges? The issue of the quality of the instruction and training at four-year universities that offer an FAA approved Aviation Maintenance Technician program is the same concern that the FAA has for every Part 147 school. The FAA requires that Part 147 schools maintain a level of instruction that results in a minimum 70% first-time passing rate on the mechanic written examinations. But given that the FAA mandates the curriculum and instructional goals of a Part 147 school, are mechanics trained at four-year universities achieving higher test scores than those trained at two-year colleges?

Limitations

While the FAA does record the individual test scores students achieve on the three sections of the aircraft mechanic written examination (general, airframe, and powerplant), the FAA only provides the public with the average test scores for all students from each school taking the tests in any given calendar quarter. As such, only average test scores will be used to evaluate the performance of students from four-year and two-year institutions. In addition, the FAA only posts scores for students for the previous eight calendar quarters.

Delimitations

A four-year university offering an aviation maintenance management degree will expose the student to much more management theory than is required in the FAA technician school curriculum. The technical manager will require skills in interpersonal relations, psychology, accounting, and law in addition to an extensive knowledge of aircraft systems. This instruction will better prepare the four-year university graduate for a managerial position. However, for the purpose of this study, only the level of achievement on the FAA aircraft mechanic written examinations will be used as a measure of the aviation maintenance technical knowledge attained by the student.

THE EDUCATION OF AN AIRCRAFT MECHANIC

Students pursuing an aircraft mechanic certificate by attending a FAA approved school are engaged in a demanding course of study. Whether the students attend a four-year university or a two-year technical school, they are required to participate in over 1,900 hours of classroom and laboratory

instruction in 43 subject areas before the FAA will consider them prepared to take the examinations for aircraft mechanic certification. In comparison, a typical four-year college degree of 127 credit hours will require approximately 1,680 hours of classroom instruction. To obtain an A&P mechanic certificate will require the student to pass three written tests, two oral examinations, and two practical tests (O'Brien, 1999).

The FAA regulates the operation and certification of aviation maintenance technician schools. Part 147 of the Federal Aviation Regulations defines the curriculum to be studied, the requirements for instructors, and the types of tools and equipment that must be available to the student. Given that the FAA regulates the methods of instruction in Part 147 schools, it can be expected that students graduating from these schools are uniformly skilled and ready for the aviation workplace. However, there are differences between two-year colleges and four-year universities. These differences may affect the quality of instruction and the student outcome on the aircraft mechanic written examinations (Schools, 2002).

Aviation Maintenance Technician Schools

Approximately 11,000 mechanics enter the aviation industry each year. Over 90% of new A&P mechanics are trained at three main types of institutions (in order): community colleges, vocational/technical schools, and universities. While the demand for mechanics is growing, the number of Part 147 schools has decreased from 220 schools in 1993 to 185 schools in 1999 (McGrath & Waguespack, 1999).

The Aircraft Mechanic Examination as a Program Quality Indicator

The first time passing rate of students taking the aircraft mechanic written examinations is used by the FAA as the primary indicator of program quality. FAR 147.38a addresses the quality of instruction at these schools, and establishes the minimum first time passing rates for schools based on the national passing norm for all students, corrected for the individual school according to the size of the graduating class. This method of evaluating program quality is consistent with current trends in educational accountability. According to higher education literature, focusing more on processes and outcomes will help gain a better perspective on the overall indicators of quality in academic programs (Lindseth, 1999).

The four-year universities in the United States that offer students an opportunity to obtain an A&P mechanic's license are preparing those students for leadership roles in the aviation industry. The curriculum required by the FAA is a thorough and in-depth exposure to a wide spectrum of aircraft maintenance areas. The aircraft mechanic carries a tremendous responsibility when exercising the rights of an A&P license. Aircraft may

not be able to fly if the A&P mechanic cannot solve a problem rapidly, and human life does depend on the judgments and decisions an aircraft mechanic makes.

University aviation programs have the facilities, instructors and resources to produce the best trained aircraft mechanics in the country. Four-year university students come from the upper half of their high school class, and have completed four years of study before taking the FAA examinations. This provides them with two additional years of study over their technical college counterparts.

The FAA aircraft mechanic written examination is an indicator of the quality of the aviation maintenance instruction at any Part 147 certified school. The FAA uses the average student scores for each school to determine if the school is doing an adequate job of training. The average test scores from two-year and four-year institutions would be an accurate measure of the quality of aviation education for each type of school.

STATEMENT OF THE HYPOTHESIS

The hypothesis of this study is that the first-time passing rate and average grade of aviation maintenance students at four-year universities who take the FAA aircraft mechanic written examinations will be significantly different than the first-time passing rate and average grade of students at two-year colleges and technical schools.

The null hypothesis is that the first-time passing rate and average grade of aviation maintenance students at four-year universities who take the FAA aircraft mechanic written examinations will not be significantly different than those of students at two-year colleges and technical schools, as measured at the $\alpha=.05$ level of significance.

RESEARCH DESIGN

For this study quantitative data, in the form of the average test scores of students from specific schools, were used to evaluate the performance of students from four-year universities and two-year colleges or technical schools taking the FAA aircraft mechanic written examinations. These FAA written examinations are standard across the United States, and test the student in specific areas of aviation maintenance knowledge. Because the tests are standard, an evaluation of the test results should yield an accurate comparison of the two groups of students. The aircraft mechanic written examination is a cognitive test of how well the student has learned the technical areas taught in the Part 147 curriculum.

Population

According to the FAA, there are currently 175 Part 147 certified aviation maintenance technician programs in the United States (Advisory Circular 147-2GG, 2001). Of those, 27 are four-year universities or colleges and 85 are two-year community or technical colleges. The remaining programs are at private maintenance schools and public secondary education schools.

Sample

The sample for this study will be taken from the four-year universities and the two-year community and technical colleges. Programs at private schools and secondary public schools will not be evaluated. All 25 of the four-year universities or colleges, the entire population, will be used to evaluate the test scores of four-year program students. Only 30 of the two-year college or technical schools will be used to evaluate the test scores of two-year program students. These 30 were selected at random from the 85 possible schools.

Sources of Data

The FAA publishes the test scores for each individual aviation maintenance technician school on a quarterly basis. The scores are recorded on FAA Form FS8080-08-147 for the general, airframe and powerplant sections of the test. Examples of the forms are presented in Appendix A.

These forms show the number of students that took the test that quarter, the number that passed, and the average grade. The form also shows the average score of the students in specific segments of the test over the last year, such as how they scored in the basic electrical portion of the general test. The data from FAA Form FS8080-08-147 for the schools selected for evaluation will be compiled to obtain the average test results for each type of program (two-year versus four-year) being evaluated. The scores are available on the FAA website (2000-2002).

Treatment of the Data

The test results from the selected schools were in the form of interval data. The data were recorded on a spreadsheet for each quarter for the previous two years. The test scores for each section of the three tests were also recorded. The data were quantified using the causal-comparative methodology. The independent variable was whether the data is from a four-year or two-year school. The dependant variable is the average test score of the students from that school. The data were evaluated first on the average grades for the overall test. The test results were evaluated using a t-test for

independent samples, at a level of significance of $\alpha = .05$. This revealed whether there was a significant difference between the overall test scores between students from four-year and two-year institutions.

Student performances in the specific areas of the aircraft mechanic examinations were evaluated. This data was in the form of an average score for all students tested over the prior year. The specific areas evaluated on the mechanics examinations are listed in Appendix B. The evaluation revealed whether four-year or two-year schools are significantly better than their counterparts in certain areas of instruction.

RESULTS

The average test scores of the four-year university and two-year college students taking the FAA aircraft mechanic written examinations were evaluated using a t-test. All 27 four-year university and 30 randomly selected two-year colleges were used for this evaluation. The four-year and two-year programs selected are listed in Appendix C. The test scores quantified were for nine calendar quarters, from the first quarter of 2000 to, and including, the first quarter of 2002.

Powerplant Section Test Results

The independent t-test results, at the $\alpha=.05$ level of significance, for the powerplant section of the aircraft mechanic examination is shown in Table 1.

Based on the results of the t-test, the difference between the test scores of four-year and two-year school students on the powerplant section of the mechanic test was not statistically significant.

Table 1. Overall scores on the powerplant portion of the FAA aircraft mechanic certification written examination of students in selected four-year and two-year aviation maintenance technician programs, 2000-2002

<i>Group</i>	<i>Four-year schools</i>	<i>Two-year schools</i>
M	87.72	87.53
SD	5.09	5.97
SEM	0.5	0.48
N	105	153

$p = .6263$

$t = .4884 < 1.98 = ns$

$df = 104$

General Section Test Results

The independent t-test results, at the $\alpha=.05$ level of significance, for the general section of the mechanic test is shown in Table 2.

Based on the results of the t-test, the difference between the test scores of four-year and two-year school students on the general section of the mechanic test was not statistically significant.

Table 2. Overall scores on the general topics portion of the FAA aircraft mechanic certification written examination of students in selected four-year and two-year aviation maintenance technician programs, 2000-2002

<i>Group</i>	<i>Four-year schools</i>	<i>Two-year schools</i>
M	86.89	87.91
SD	6.57	5.38
SEM	0.6	0.45
N	122	141

p = .0948

t = 1.6836 < 1.98 = ns

df = 121

Table 3. Overall scores on the airframe portion of the FAA aircraft mechanic certification written examination of students in selected four-year and two-year aviation maintenance technician programs, 2000-2002

<i>Group</i>	<i>Four-year schools</i>	<i>Two-year schools</i>
M	87.51	87.47
SD	5.95	5.25
SEM	0.56	0.45
N	112	137

p = .7956

t = .2597 < 2.000 = ns

df = 111

Airframe Section Test Results

The independent t-test results, at the $\alpha=.05$ level of significance, for the airframe section of the mechanic test is shown in Table 3.

Based on the results of the t-test, the difference between the test scores of four-year and two-year school students on the airframe section of the mechanic test was not statistically significant.

DISCUSSION

The results of the t-tests for each of the three sections of the FAA aircraft mechanic examinations revealed no statistically significant difference between the test scores of four-year and two-year aviation maintenance students. The first-time passing rate for students taking the examinations was also recorded for this evaluation. However, very few two-year or four-year schools achieved first-time passing rates less than 100% for students taking the FAA tests. A review of the mean and the standard deviation on the tests, for both the four-year and two-year schools, shows that even at three standard deviations below the mean, the student scores are

within one percentage point of the 70% required for passing. As such, the comparison of the first-time passing rates between the two-year and four-year schools would not have added any valuable information to this report.

The FAA Aircraft Mechanic Examination Results

The t-test results for the powerplant section showed nearly identical mean scores between four-year and two-year schools, at 87.92 and 87.53, respectively. The standard deviation for student scores at these schools was also nearly identical, at 5.09 and 5.97.

The t-test results for the general section of the examination showed the highest amount of disparity between four-year and two-year schools, with the two-year schools showing higher mean scores than the four-year schools. The mean for the four-year schools was 86.89, while the two-year schools showed a mean score of 87.91. The standard deviation of the test scores for the four-year schools was 6.57, larger than the 5.38 standard deviation recorded for the two-year schools. This would indicate that some four-year students had more difficulty passing this section of the examinations than did the typical two-year student. But these differences in mean and standard deviation were not statistically significant.

The t-test results for the airframe section of the examination again revealed nearly identical mean values at 87.51 for the four-year schools and 87.47 for the two-year schools. The standard deviation of the test scores for four-year and two-year schools were also nearly identical at 5.95 and 5.25, respectively.

Because of the similarities in the test scores between four-year and two-year aviation maintenance technician school students, a further analysis of the scores for specific areas within the tests would not provide any significant insight into the differences between schools, and so was not attempted.

Explaining the Similarity

There are a number of possible explanations for the lack of difference in the test scores between the two-year and four-year schools. The FAA does have very specific requirements for the curriculum that must be covered by each approved aviation maintenance technician school. This would mean that students at four-year and two-year schools cover the same topics, using similar textbooks and FAA-approved training manuals.

Teaching to the Test

Since the schools are graded by the FAA on their student first-time passing rate for the examinations, schools often conduct their own written tests on their students before certifying the student as having passed the

requirements to take the FAA examinations. This allows instructors to screen out students that may not be ready to achieve a passing score of 70% on the FAA written examinations and identifies specific test areas where these students require extra instruction.

In addition, there are several private publishing companies that offer FAA aircraft mechanic certification examinations guidebooks, which contain hundreds of sample test questions for the student to practice on before taking the actual FAA examinations. These guidebooks are often sold in the college bookstores as a study guide for advanced classes.

Focused Aviation Students

As described by Brady, Stolzer, Muller, and Schaum, the aviation college student is intrinsically motivated to learn. They are more like adults in their learning style, and see aviation education as a career path (2002). For both the four-year and two-year student, obtaining an FAA aircraft mechanic certificate is a major near-term goal along their career path. Achieving this goal can be a tremendous motivating influence when it comes to studying and practicing for the examinations.

Two-Year Schools Hold Their Own

The results of this research project reinforce the findings of Pascarella, Bohr, and Terenzini (1994), in that there does not appear to be a difference in the learning abilities of students who attend two-year institutions versus those who attend four-year institutions. These results also show that there is no difference in program quality between two-year and four-year aviation maintenance technician programs. Despite any perceived advantage four-year universities may have in funding for aviation programs over their two-year college counterparts, two-year technical and community colleges appear to offer the same level of aviation maintenance instruction.

Observations on the Subject Populations

A review of the number of students taking the general section examination showed that 589 four-year students took the exam over the 27-month evaluation period, versus 637 two-year students who took the examination. This results in an average of 21.81 students per four-year university and 21.23 students per two-year college.

One interesting observation noted during this project was the disparity in the number of students taking the FAA examinations within both the four-year and two-year categories. For instance, the University of Alaska at Fairbanks had only 9 students take the examinations in the 27 month period evaluated. San Jose State University had only 11 students take the mechanic examinations. Purdue University had only 13 students taking examinations.

Whereas, Embry-Riddle Aeronautical University had the highest number of four-year students taking the mechanic examinations at 454. Two-year schools, such as Ellis Regional Vocational Technical College, had only 4 students take the examinations during the evaluation period. San Diego Community College had only 9 students take the examinations. Whereas, Tulsa County Area Vocational Technical School had the highest number of two-year students taking the FAA examinations, at 351.

Assuming that an individual student takes all three test sections to obtain an A&P certificate, the number of students obtaining their A&P mechanic certificate from four-year colleges ranged from 3 at the University of Alaska at Fairbanks to 151 at Embry-Riddle Aeronautical University. Using the same assumption for two-year schools, the number of students obtaining their A&P mechanic certificate ranged from 3 at San Diego Community College to 117 at Tulsa County Area Vocational Technical School.

One reason for the disparity in students taking the examinations may be economics. The aviation industry near some schools may eagerly accept partially trained aircraft mechanics without FAA certification. This issue was raised in a Hawaii Community College article (2001), which stated, "The demanding FAA requirements and instructor expectations will always be challenging for the students. Course demands often cause students who gain AERO experience to apply for less skilled (non-certificated) jobs with the airlines prior to completion" (p. 9).

CONCLUSIONS

The hypothesis for this study was that the first-time passing rate and average grade of aviation maintenance technician program students at four-year universities, who take the FAA aircraft mechanic written examinations will be significantly different from that of students at two-year colleges and technical schools. The t-test results for the schools sampled in this study revealed that there was no statistically significant difference in the first-time passing rate, and the average grade, between two-year college and four-year university students taking the FAA aircraft mechanic examinations.

The null hypothesis of this study stated that the first-time passing rate and average grade of aviation maintenance technician program students at four-year universities who take the FAA aircraft mechanic written examinations will not be significantly different from that of students at two-year colleges and technical schools, as measured at the $\alpha=.05$ level of significance. Based on the t-test results, the null hypothesis was not rejected. There was no significant difference between the first-time passing rate and average grades of two-year college and technical school students, as compared to four-year university students, taking the FAA aircraft mechanic examinations.

The learning outcome of any school that is preparing students to enter the field of aviation maintenance is measured by their students passing all of the FAA aircraft mechanic certification examinations. Because of the need to insure that their students successfully pass the examination, there is a definite need at two-year institutions to control the technician training curricula. This factor may also explain the similarities in the scores between the two-year and four-year institutions.

The certification process is one of the best indicators of the quality of the facilities and instruction at the school. The results of this study clearly show that the aviation maintenance technician programs at two-year colleges and technical schools are comparable to those at four-year universities, as far as the quality of instruction is concerned.

RECOMMENDATIONS

Further study is warranted to determine why there is a wide disparity in the number of students from each school taking the FAA examinations. With the low number of students taking the aircraft mechanic examinations at schools such as Purdue University and San Diego Community College, it would be valuable to know why students are not taking full advantage of the aviation maintenance technician programs available at their schools. In conjunction with this, additional research is needed to determine whether there a connection between the difference in the stated educational goals of two-year and four-year programs and the difference in the number of students from each type of institution taking the examinations.

Another area where further study is warranted is whether the examinations were taken at the same point in the educational experience, that is, taken after two-year of study, regardless of the institution. Additionally, a longitudinal study comparing the career success of students from two-year programs versus those from four-year school programs may show if there is any career advantage in obtaining an A&P mechanic certificate from a four-year university.

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APPENDIX A

EXAMPLES OF FAA FORM FS8080-08-147 USED TO RECORD QUARTERLY AIRCRAFT MECHANIC CERTIFICATION EXAMINATION SCORES OF AN AVIATION MAINTENANCE TECHNICIAN SCHOOL

SCHOOL NORMS VS NATIONAL PASSING NORMS
 SCHOOL: CP1088R SAN JOSE STATE UNIVERSITY
 FOR 1 QTR 2002 FS 8080-08-147 WESTERN PACIFIC
 JAN FEB MAR WPT5
 TYPE TEST NO APPLS NO APPLS PASS PCT APPLS PASS AVG GRADE
 AMP 0 0 0 0

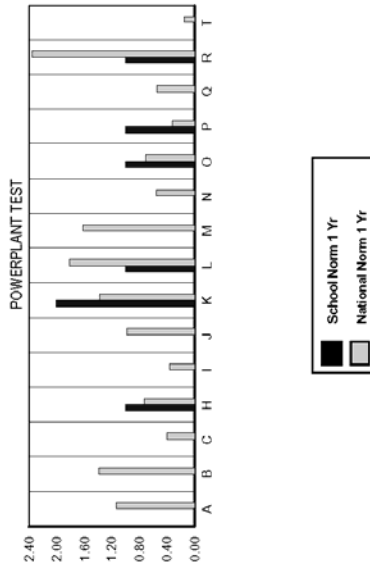
CURRENT QUARTER

TWO YEAR ACCUMULATIVE **

APPLS 3 SCHL NORM 100 NATL APPLS 5787 NATL NORM 96

COMPUTER TEST SCHOOL NORM VS NATIONAL NORM

	A	B	C	H	I	J	K	L	M	N	O	P	Q	R	T
Recip	0.00	0.00	0.00	1.00	0.00	0.00	2.00	1.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00
Eng	1.13	1.39	0.40	0.73	0.36	0.66	1.39	1.81	0.00	0.55	0.71	0.32	0.54	2.35	0.15



SCHOOL NORM VS NATIONAL NORM - 1 YR

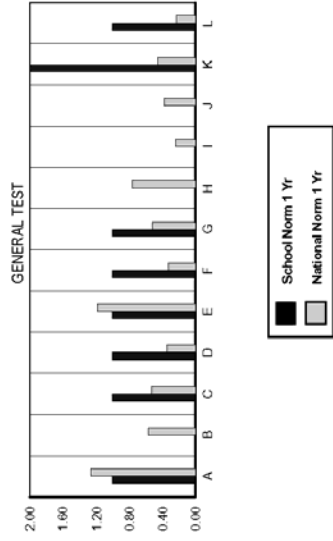
** CURRENT 08 EFF DATE 10/03/96

SCHOOL NORMS VS NATIONAL PASSING NORMS
 SCHOOL: CPRT088R SAN JOSE STATE UNIVERSITY FOR 1 QTR 2002 FS 9880-08-147 JAN/FEB/MAR
 WESTERN/PACIFIC WPI/5

CURRENT QUARTER		TWO YEAR ACCUMULATIVE **	
TYPE TEST	NO APPLS	SCHL NORM	NATL APPLS
AMG	0	100	95
		APPLS	NATL APPLS
	0	4	5732
		AVG GRADE	
	0		
		PCT APPLS PASS	
	0		

COMPUTER TEST SCHOOL NORM VS NATIONAL NORM

	A	B	C	D	E	F	G	H	I	J	K	L
Basic	1.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00	0.00	2.00	1.00
Elect	1.26	0.57	0.53	0.35	1.19	0.33	0.52	0.76	0.24	0.38	0.45	0.23
SCHOOL NORM 1 YR												
NATIONAL NORM 1 YR												



SCHOOL NORM VS NATIONAL NORM - 1 YEAR

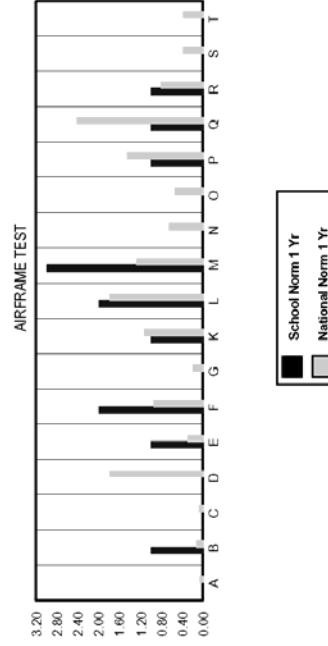
** CURRENT DB EFF 01 OCT 1998

SCHOOL NORMS VS NATIONAL PASSING NORMS
 SCHOOL: CPRT088R SCHOOL NAME: SAN JOSE STATE UNIVERSITY FOR: 1QTR_2002 FS 808048-147 WESTERNPACIFIC JAN/FEB/MAR WPI/5

CURRENT QUARTER			TWO YEAR ACCUMULATIVE **		
TYPE TEST	NO APPLS	NO APPLSPASS	APPLS	SCHL NORM	NATL APPLS
AWA	0	0	2	100	5604
					NATL NORM
					95

COMPUTER TEST SCHOOL NORM VS NATIONAL NORM

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	
Wood	A/C	Sheet	Weld	Aspy &	Arfrm	Lnlg	Hyd	Cabin	Inst	Com	Fuel	Effect	Ris	Ice/	Fire					
Struct	Cover	Ensch	Metal	Fin	Intro	Clear	Proc	Atmos	Svc	Nbr	Svc	Svc	Svc	Svc	Svc	Svc	Warm	Plan	Prot	
SCHOOL NORM 1 YR	1.00	0.00	0.00	1.00	2.00	0.00	1.00	2.00	3.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	0.00	0.00
NATIONAL NORM 1 YR	0.07	0.13	0.06	1.79	0.30	0.94	0.19	1.12	1.78	1.26	0.65	0.54	1.46	2.41	0.60	0.39	0.36			



SCHOOL NORM VS NATIONAL NORM - 1 YEAR

** CURRENT DB EFF DT OCT 1998

APPENDIX B**FAA AIRCRAFT MECHANIC CERTIFICATION TEST AREAS**

<i>Area</i>	<i>General Test</i>	<i>Airframe Test (AMA)</i>	<i>Powerplant Test (AMP)</i>
A	Basic Electricity	Wood Structures	Reciprocating Engines
B	Aircraft Drawings	Aircraft Coverings	Turbine Engines
C	Weight & Balance	Aircraft Finishes	Engine Inspection
D	Fluid Lines	Sheet Metal	
E	Materials & Processes	Welding	
F	Ground Operations	Assembly & Rigging	
G	Cleaning & Corrosion	Airframe Inspection	
H	Math		Engine Instruments
I	Maintenance Forms		Fire Protection
J	Basic Physics		Engine Electronics
K	Maintenance Pubs	Landing Gears	Lubrication Systems
L	AMT Privileges	Hydraulics/Pneu	Ignition Systems
M		Cabin Atmosphere	Fuel Metering
N		Instrument Systems	Fuel Systems
O		Comm/Nav	Induction Systems
P		Fuel Systems	Cooling Systems
Q		Electrical Systems	Exhaust Systems
R		Position/Warning	Propellers
S		Ice & Rain	
T		Fire Protection	Auxiliary Power

APPENDIX C

**UNIVERSITIES AND COLLEGE WITH AN AVIATION
MAINTENANCE TECHNICIAN PROGRAM
INCLUDED IN THE EVALUATION**

<i>Four-year Universities</i>	<i>Two-year Universities</i>
University of Alaska at Fairbanks	Western Nebraska Community College
University of Alaska at Anchorage	Community College District # 522, Illinois
Southern Arkansas University	College of Alameda, California
Clayton State College, Georgia	New Hampshire Community Technical College
University of the District of Columbia	Lake Area Technical Institute, South Dakota
Embry-Riddle Aeronautical University, Florida	Northland Community College, Minnesota
Idaho State University	City College of San Francisco, California
Lewis University, Illinois	Minneapolis Community and Technical College
Letourneau University, Texas	Hawkeye Community College, Iowa
Southern Illinois University	Everett Community College, Washington
Purdue University, Indiana	Shasta College, California
Vincennes University at Indianapolis, Indiana	Columbus State Community College, Ohio
Vincennes University at Vincennes, Indiana	North Valley Occupational Center, California
Kansas State University	San Diego Community College, California
Southern University, Louisiana	Middle Georgia Technical Institute
Andrews University, Michigan	St. Philips College, Texas
Northern Michigan University	Mt. San Antonio College, California
Western Michigan University	Piedmont Baptist College, North Carolina
Minnesota State University	Reedley College, California
Utah State University	Tulsa County Area Vocational Technical School, Oklahoma
Hampton University, Virginia	Clover Park technical College, Washington
Central Missouri State University	Lansing Community College, Michigan
Bob Jones University, South Carolina	Heart of Georgia Technical College
St. Louis University Parks College, Missouri	Glendale Community College, California
San Jose State University, California	Wayne County Community College, North Carolina
Eastern New Mexico University	Chandler-Gilbert Community College, Arizona
Penn College of Technology, Pennsylvania	College of San Mateo, California
	San Joaquin Valley College, California
	Ellis Regional Vocational Technical College, Connecticut
	Wallace Community College, Alabama