

Program Efficacy Report

Refrigeration & Air Conditioning (HVAC/R)

Submitted by Professor Ed Szumski
Department Head,
Electricity/Electronics/Refrigeration

March 2011

Program Efficacy, Spring 2011

Complete and attach this cover sheet as the first page of your report.

Program Being Evaluated

Refrigeration

Name of Division

Applied Technology, Transportation and Culinary Arts

Name of Person Preparing this Report

Edward J. Szumski

Extension

8501

Name of Department Members Consulted

Carlos M. (Buzz) Busselle III, Edward Worley

Name of Reviewers

Sheri Lillard; Marco Coto; Edward Jones

Program Review Committee Representatives

Jesse Galaviz; Kevin Kammer

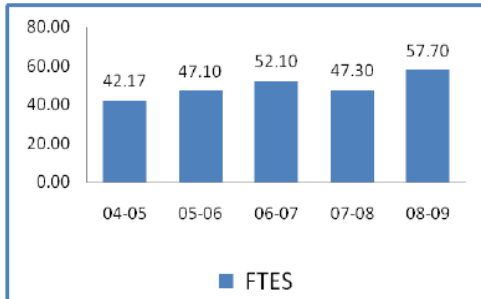
Work Flow	Due Date	Date Submitted
Date of initial meeting with department	March 8, 2011	March 10, 2011
Final draft sent to the dean		March 28, 2011
Report submitted to Program Review Team		March 28, 2011
Meeting with Review Team	March 18, 2011	

Staffing

List the number of full and part-time employees in your area.

Classification	Number Full-Time	Number Part-time, Contract	Number adjunct, short-term, hourly
Managers	0	0	0
Faculty	0	0	7
Classified Staff	0	0	0
Total	0	0	0

Refrigeration & Air Conditioning



Description:

A career training curriculum designed to train individuals for the workforce in the field of Heating, Ventilation and Air Conditioning/Refrigeration. (HVAC/R).

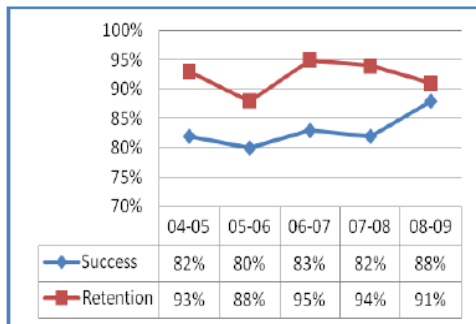
Assessment:

- Enrollment is up, retention is strong and completions are very high.
- The Refrigeration Program has one full time faculty member and an FTEF of approx. 4.5.

	04-05	05-06	06-07	07-08	08-09
Duplicated Enrollment	240	255	276	252	310
FTEF	3.26	4.17	4.48	4.15	4.48
WSCH per FTEF	388	339	349	342	386

Program Goals:

- Offer a current curriculum designed to prepare students to be employed at an introductory level in the field of Heating, Ventilation and Air Conditioning/Refrigeration (HVAC/R).
- Preparation includes EPA certification for low pressure and high pressure refrigerants.



Challenges and Opportunities:

- Our biggest challenge is our facility. We were recently moved, and the facility we moved to is not finished yet. Once the shelves are up and the walls are finished, we will be on our way.
- Opportunities for our students are bountiful.
- We continue to work on increasing the number of women in our programs.

	04-05	05-06	06-07	07-08	08-09
Sections	10	13	14	13	14
% of online enrollment					
Degrees awarded	1	3	3	1	1
Certificates awarded	9	13	12	17	18

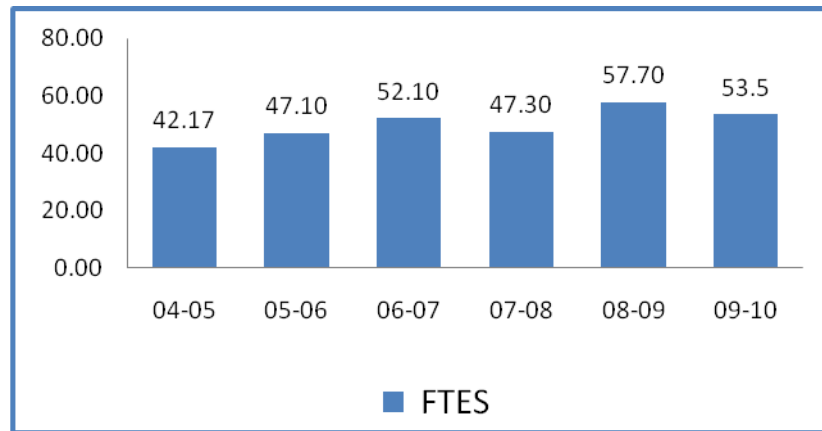
Action Plan:

Presently, our priorities are to finish and organize the facility. We will continue to offer as many classes as permitted so our students finish in a timely manor.

UPDATED EIS Data: Refrigeration 2004-2010

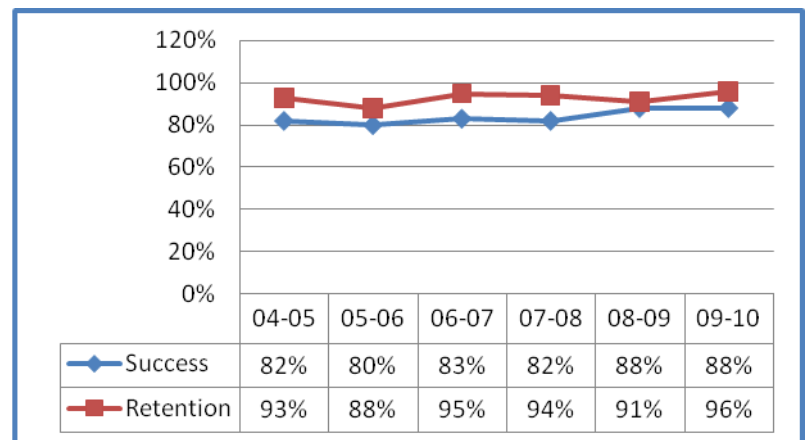
FTES

04-05	42.17
05-06	47.10
06-07	52.10
07-08	47.30
08-09	57.70
09-10	53.5



	04-05	05-06	06-07	07-08	08-09	09-10
Duplicated Enrollment	240	255	276	252	310	286
FTEF	3.26	4.17	4.48	4.15	4.48	4.48
WSCH per FTEF	388	339	349	342	386	358

	Success	Retention
04-05	82%	93%
05-06	80%	88%
06-07	83%	95%
07-08	82%	94%
08-09	88%	91%
09-10	88%	96%



	04-05	05-06	06-07	07-08	08-09	09-10
Sections	10	13	14	13	14	14
% of online enrollment						
Degrees awarded	1	3	3	1	1	
Certificates awarded	9	13	12	17	18	19

Fall 10

10

Part I. Questions Related to Strategic Initiative: Access

Use the demographic data provided to describe how well you are providing access to your program by answering the questions below. **Demographic Information** Refrigeration 2007-2010

Gender

	Frequency	Program Percent	Campus Percent
Valid	17	1.0	< 1.0
F	42	2.5	55.7
M	1652	96.6	43.7
Total	1711	100.0	100.0

Ethnicity

	Frequency	Program Percent	Campus Percent
Valid	196	11.5	2.22
Asian	61	3.6	4.42
Black	246	14.4	20.50
Filipino	27	1.6	1.84
Hispanic	783	45.8	42.90
Nat American	9	.5	0.93
Other	20	1.2	0.95
Pac Islander	6	.4	0.72
White	339	19.8	22.48
X	24	1.4	3.06
Total	1711	100.0	

Disability

Disability	Frequency	Dept. Percent	Campus Pct.
No disability	1680	98.2%	95.5%
Disabled	31	1.8%	4.5%
Total	1711	100%	100%

Age

Average Age	N	Youngest	Oldest	Avg. Age Dept.	Avg. Age Campus
	1711	17	70	37.47	29.1

Does the program population reflect the college's population? Is this an issue of concern? If not, why not? If so, what steps are you taking to address the issue?

Analysis of the demographic data shows that, overall, our students in the Refrigeration program courses reflect the composition of students on the San Bernardino Valley College campus. It is comprised of students with ethnically diverse backgrounds with the majority population of Hispanic ethnicity at 45.8% or about 3 percentage points above the general campus population. Black students in the refrigeration program are about 6 percentage points below the general campus population and the white students in the refrigeration program are about 2.7 percentage points below the campus average percentage. The five remaining refrigeration program populations are within 1 percentage point of the campus average. I think the major differences between the campus percentages and our program percentages for the black and the white student numbers are in the "VALID" percentage of 11.5% for which there is no explanation given from our institutional researcher. The San Bernardino City Unified School District is a Hispanic-Serving School District (HSSD) and perhaps our student population reflects the percentage of students our department recruits from area high schools. The only major area of concern is the very low proportion of female students. All of the refrigeration, air conditioning, and heating occupations listed on the "**Nontraditional Employment for Women**" Civilian Labor Force by Occupation and Sex shows less than 25% of those occupations are held by women. The entries in **BOLD** show the occupations where women are **less than 25%** of the workforce (see report on the next page). We are highly committed to increasing female enrollment in our courses and programs. To address this issue nationally, a bill has been introduced in Congress on March 11, 2010, that addresses this inequality. H. R. 4830: To promote the economic self-sufficiency of low income women through their increased participation in high-wage, high demand occupations where they currently represent 25 percent or less of the workforce. SEC. 2 (7) FINDINGS "Women make up 95.6 percent of child care workers, whose hourly wage averages \$9.79, but only 1 percent of electricians, who make an average hourly wage of \$23.98" Over a lifetime, a woman makes \$629,216 and an electrician makes \$1,510,080. This is a \$880,864 difference over a lifetime! Area employers are interested in balancing their workforces and are very interested in hiring our non-traditional students.

To address this issue locally, during this next three year period, my adjunct faculty members will have a working session with me to cover special populations. I am a trainer with the Institute for Women in Trades, Technology & Science (IWITTS) and we will cover topics such as recruitment and retention of women in our refrigeration program. We'll also work with Tradeswoman Inc., Nontraditional Careers Statewide Leadership Project – San Diego County Office of Education, and Women In Non-Traditional Employment Roles (WINTER), to help expand the horizons for women to enter our high-wage, high-skill professions. We seek mentors for our entry-level refrigeration/air conditioning, and heating students and we are going to elementary and middle schools (5th and 6th grades) to show young girls that they can succeed in traditional male employment positions. Since Science, Technology, Engineering and Math (STEM) are part of our curriculum, I'll work with the STEM representatives to integrate our programs into their presentations. A plan is now in place to have a representative from our department/program make a presentation at a workshop during the Science Day event this May.

Although we have very few disabled students, we do have strategies for physical accessibility to our classrooms. All doors are at least 36 inches wide. Lab tables and desks are at standard height and lab materials can be reached by someone in a wheelchair. Hearing impaired students can have copies of the instructor's board notes. We can make copies and/or send them .jpg pictures of the white boards in the classrooms. Our DSPS office has worked with our department in the past with test accommodation and also they have provided our hearing impaired students with a captionist to record what is said up in front of class.

We also have incorporated strategies into our courses for the other "special population" students which include economically disadvantaged, single parent, and displaced homemaker students. These strategies include instructional support, tutoring, and career guidance which were suggested by the California Community College Special Populations Collaboration.

Table 12.

San Bernardino Valley College Top 10 Certificates by Total Number Obtained, 2004-2005 to 2008-2009

Program Title	2005-2006	2006-2007	2007-2008	2008-2009	Total
Psychiatric Technology	54	51	41	53	199
Child Development Associate Teacher	31	31	36	42	140
Alcohol/Drug Studies	28	31	37	31	127
Administration of Justice	23	20	19	24	86
Refrigeration & Air Conditioning	13	12	17	20	62
Basic Auto Body and Paint Technician	16	22	0	29	67
Child Development Teacher	50	43	50	61	204
Library Technology	13	9	8	16	46
General Warehousing	0	1	42	0	43
Electronics Technology	25	21	15	17	78

Source: Datatel

Pattern of Service

How does the pattern of service and/or instruction provided by your department serve the needs of the community? Include as appropriate hours of operation/pattern of scheduling, alternate delivery methods, weekend instruction/service.

Hours of Operation/pattern of scheduling

Our classes are primarily taught in the evenings (6:00 p.m.) or on Saturday morning and afternoon. Our students can work in the HVAC/R field as trainees during the day and still complete their certificate requirements within three semesters. Our department brochures contain a flowchart (see next page) which shows the layout of courses in the proper order in which our students should enroll with the prerequisites having been met in the previous semester. This is something I wish I had when I was a student here at SBVC back in the early 1970's. For all of our semester classes, the pattern rotates Monday-Tuesday, Wednesday-Thursday, and Saturday, Fall and Spring semesters. For example, if REFRIG 001 and REFRIG 003 are scheduled for Monday-Tuesday in Fall 2010, they will be scheduled for Wednesday-Thursday in Spring 2011, and then on Saturday in Fall 2011. Currently all classes are being offered every Fall and Spring semester.

Alternate Delivery Methods

The TECALC 087 is planned to be taught in an on-line format during the 2011-2012 academic year.

Weekend instruction/services

Classes are also taught on Friday evenings and on Saturdays during the Fall and Spring semesters to help our students complete their certificate within three semesters.

ATTENTION REFRIGERATION STUDENTS

HERE IS THE SUGGESTED ORDER THAT YOU TAKE YOUR REFRIGERATION CLASSES.....NOTE THAT YOU **DO NOT** TAKE THEM IN NUMERICAL SEQUENCE.

TAKE THE CLASSES IN THIS ORDER:

First Semester

REFRIG 001

REFRIG 004

REFRIG 007

Second Semester

REFRIG 002

REFRIG 005

TECALC 087

Third Semester

REFRIG 003

REFRIG 006

Note that the REFRIG 007 and the TECALC 087 class may be taken in either semester.

Part II: Questions Related to Strategic Initiative: Student Success

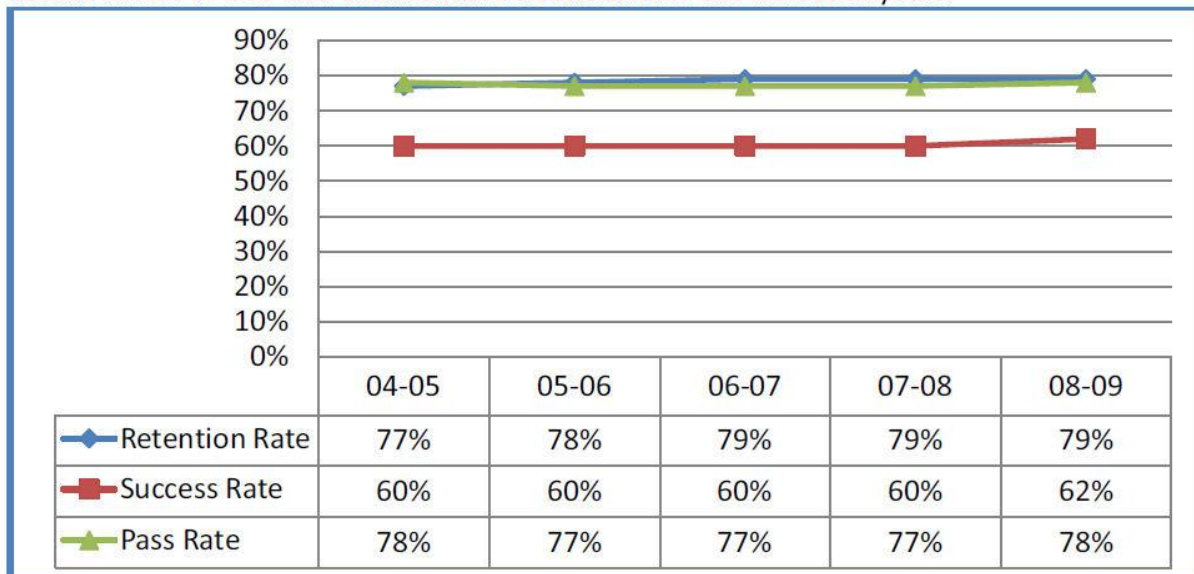
Provide a brief analysis of the data and narrative from the program’s EMP Summary and discuss what it reveals about your program. (Use data from the second two charts of the EMP One-Sheet on page 2 of this form)

Analysis of the shows that the student retention rate averages **93%** with 96% for the high and 88% for the low. Our student retention rate exceeds the campus-wide average by 14 percentage points. The campus-wide student retention average is only 79%. Our students are motivated to stay in our program because of our program policy of designing a course “Ed Plan” (on the previous page) so the students know which classes can be taken and meet the prerequisites of the classes for the following semester. We attribute this good student retention rate to our excellent adjunct staff who all work in the Heating, Ventilation, Air Conditioning/Refrigeration (HVAC/R) industry and the actual hands-on experience the students receive in the laboratory portion of the classes by working on air conditioning and refrigeration systems which represent the varied units our students will service in the industry. Our students can finish a Refrigeration and Air Conditioning certificate in three semesters!

The student success rate averages **83.83%** with 88% for the high and 80% for the low and far exceeds the campus average by almost 24 percentage points. The campus average success rate is only 60% with a high of only 62%. I think the retention rate and the success rate are closely related. We attribute this good student success rate to our excellent adjunct staff who all work in the Heating, Ventilation, Air Conditioning/Refrigeration (HVAC/R) industry and the actual hands-on experience the students receive in the laboratory portion of the classes by working on air conditioning and refrigeration systems which represent the varied units our students will service in the industry. These same adjunct faculty members hire our students to come and work at the companies where they are employed. We are awarding an average of 16 certificates per year and about 2 Associate Degrees per year. Our refrigeration program is one of the top 10 programs awarding certificates with a total of 62 certificates awarded over the past four years. See Table 12 on the top of page 7.

San Bernardino Valley College Average Course Success, Course Retention, and WSCH per FTEF

Retention rates have remained steady over the last five years, while success rates took a sharp decline in 2004-2005 and then remained constant for the next four years.



Supplemental Data

Provide any additional information such as job market indicators, standards in the field or licensure rates that would help the committee to better understand how your program contributes to the success of your students.

<p>Job market related to their majors or certificates: (resource: California Employment Development Department EDD and the California Community College Green Degree and Certificate Programs)</p>	<p>There are jobs available in our local area. I'll use the most current (March 2011) local (San Bernardino) labor statistics. The percentage of increase is in the number of jobs.</p> <p>Typical median wages are \$20.78 per hour.</p> <table border="0"> <tr> <td>1. Heating/Air Conditioning and Refrigeration Workers</td> <td>11.3% increase</td> </tr> <tr> <td>2. Refrigeration Mechanics & Installers</td> <td>13.0% increase</td> </tr> <tr> <td>3. Solar Thermal Installers and Technicians</td> <td>13.0% increase</td> </tr> </table>	1. Heating/Air Conditioning and Refrigeration Workers	11.3% increase	2. Refrigeration Mechanics & Installers	13.0% increase	3. Solar Thermal Installers and Technicians	13.0% increase
1. Heating/Air Conditioning and Refrigeration Workers	11.3% increase						
2. Refrigeration Mechanics & Installers	13.0% increase						
3. Solar Thermal Installers and Technicians	13.0% increase						
<p>Standards in the field</p>	<p>Standards of acceptance are stated in the Refrigeration Service Engineers Society (RSES), the North American Technician Excellence (NATE) organization and the Environmental Protection Agency (EPA) for the handling of refrigerant gases, proper use and installation and their replacement gases. Our students must also complete the EPA 608 (Section 608 of the Clean Air Act) Universal Certification (which covers all three Types of refrigerant using devices) course, and carry their authorization card on the job site.</p>						
<p>Labor and other statistics (national, western states, regional) www.labormarketinfo.edd.ca.gov</p>	<p>Typical jobs require repairing, installing, troubleshooting, testing, adjusting, reassembling, calibrating, and operating the heating, ventilation, air conditioning/refrigeration (HVAC/R) systems or subsystems. See the chart of heating, ventilation, air conditioning/refrigeration (HVAC/R) jobs in the local area. (See the EDD information on number of Industries Employing This Occupation listed on the next page)</p>						
<p>Comparison colleges</p>	<p>The HVAC/R program here at SBVC is one of only 14 community colleges in all of southern California. Mount San Antonio College in Walnut, CA offers a certificate and an associate degree. Riverside Community College also offers a certificate and an associate degree and both are located within 40 miles of San Bernardino. See chart on next page.</p>						

Job Placement	There is no Job Placement data attached to the e-mail you sent me to complete this document. Typically, HVAC/R contractors and area businesses contact us and ask for student referrals. I ask the company representative for their e-mail and/or website address and I have our students e-mail their current resume to the company which then contacts each student about scheduling job interviews for jobs.
Licensure rates	All of our students will successfully complete the EPA 608 Universal Certification this and every semester. The refrigeration program has a plan to teach the EPA 609 certification classes will begin with the Fall 2011 semester. Both certification exams will be offered during the Fall 2011 semester. All employees who handle refrigerant gases must have this EPA certification card in their possession.
Advisory Committee Recommendations	Our advisory committee discussed expanding our program to include the new hi-pressure gases that are coming on the market and to develop some LEED certification courses and the SEER requirements necessary in the near future. The inclusion of adding Agreen@ courses (environmental and energy saving items) to our curriculum. Discussion included wind energy, solar (photovoltaic) panels, solar heating panels and related technologies course and we will investigate these technologies and will incorporate some aspect of sustainable energy Agreen technology@ information in some of our other courses.

Industries Employing This Occupation (click on Industry Title to View Employers List)

Industry Title	Number of Employers in San Bernardino County				
Building Equipment Contractors					1,382
Commercial Machinery Repair/Maintenance					179
Hardware & Plumbing Merchant Wholesalers					186
Elementary and Secondary Schools					782
Colleges and Universities					62
Mount San Antonio College Air Conditioning & Refrigeration	37.50			1970	22177
Mount San Antonio College Air Conditioning & Refrigeration	37.50	S		1970	03023
Riverside City College Air Conditioning & Refrigeration	29.00	S		1975	04470
Riverside City College Air Conditioning & Refrigeration	29.00			1975	22770
San Bernardino Valley Colleg Refrigeration & Air Conditioning	31.00			1971	22768
San Bernardino Valley Colleg Refrigeration & Air Conditioning	31.00	S		1971	04880

Student Learning Outcomes

The screenshot shows the San Bernardino Valley College website. At the top left is the college logo, a blue 'V' inside a circle, followed by the text 'San Bernardino Valley College'. To the right are links for 'Home | Site Index | Search Site:' and a search box. Below the logo is a banner image of a building with a clock tower, with the text 'Student Learning Outcomes (SLO)' overlaid. A navigation bar contains buttons for 'Prospective Students', 'Current Students', 'Online College', 'Instructional Programs', and 'Student Services'. Below this is the page title 'San Bernardino Valley College - Student Learning Outcomes (SLO)'. A breadcrumb trail reads 'Home » Applied Technology & Transportation » REFRIG'. A 'Previous Directory' link is shown with a folder icon. Below it is a list of 16 document links, each with a file icon: REFRIG 007.doc, SLO REFRIG 001.doc, SLO REFRIG 002.doc, SLO REFRIG 003.doc, SLO REFRIG 004.doc, SLO REFRIG 005.doc, SLO REFRIG 006.doc, SLO REFRIG 050.doc, SLO REFRIG 051.doc, SLO REFRIG 052.doc, SLO REFRIG 055.doc, SLO REFRIG 056.doc, SLO REFRIG 057.doc, SLO REFRIG 060.doc, SLO REFRIG 061.doc, SLO REFRIG 062.doc, SLO REFRIG 065.doc, SLO REFRIG 066.doc, SLO REFRIG 067.doc, and SLO REFRIG 068.doc.

The list above shows the courses that have SLOs on file with the Office of Instruction.

If you have courses for which SLOs have not been developed, explain why. What are your plans to remedy this?

All of our Refrigeration Courses, Certificates, and Degrees have Student Learning Outcomes (SLOs) developed and are on file in the San Bernardino Valley College Instruction Office and in our division. We have analyzed assessment results from all of these SLOs and determined that no changes are currently required. I worked with our Instruction office to update the list (current list is shown) which now shows all of our courses. Additional information for the certificates and degrees has been submitted to the Instruction Office (e-mailed on March 11, 2011) to be included on this list.

Attach your three-year plan for assessing SLOs.

What progress has the program made in its three-year plan? Have you implemented any program changes based on assessment results?

Our refrigeration program has completed assessment of two thirds of our courses, certificates, and degrees and is on track to complete the assessment of the remaining courses, certificates and degrees. We have completed an analysis of the assessment results (see chart) and has determined that there are no major improvement changes needed to be made this cycle. The third year of assessment results are on hold pending the outcome of the CTA "Desist" order.

SLO STATUS CHECKLIST

Refrigeration and Air Conditioning

	DEGREE	DEGREE NAME	Defined Expected SLOs	Defined Assessment of SLOs	SLOs Assessed	Data Analyzed	Date Used for Improvement
	AS	Refrigeration and Air Conditioning	F 07	F 08	F 08	F 08	Completions

		CERTIFICATE NAME	Defined Expected SLOs	Defined Assessment of SLOs	SLOs Assessed	Data Analyzed	Date Used for Improvement
		Refrigeration and Air Conditioning	F 07	F 08	F 08	F 08	Completions

	COURSE	COURSE NAME	Defined Expected SLOs	Defined Assessment of SLOs	SLOs Assessed	Data Analyzed	Date Used for Improvement
	REFRIG-001	Refrigeration I	F 07	F 08	F 08	F 08	Grades
	REFRIG-002	Refrigeration II	F 07	F 08	F 08	F 08	Grades
	REFRIG-003	Refrigeration III	F 07	F 08	F 08	F 08	Grades
	REFRIG-004	Refrigeration Electricity I	F 07	F 08	F 08	F 08	Grades
	REFRIG-005	Refrigeration Electricity II	F 07	F 08	F 08	F 08	Grades
	REFRIG-006	Air Conditioning and Heating	F 07	F 08	F 08	F 08	Grades
	REFRIG-007	Refrigeration Welding	F 10	F 10	Pending	Pending	Pending CTA

	COURSE	COURSE NAME	Defined Expected SLOs	Defined Assessment of SLOs	SLOs Assessed	Data Analyzed	Date Used for Improvement
	REFRIG-098	Refrigeration and Air Conditioning Work Experience					
	REFRIG-050C	Refrigeration and Air Conditioning I	F 07		(Class not taught during this time)		
	REFRIG-051C	Refrigeration and Air Conditioning II	F 07		(Class not taught during this time)		
	REFRIG-052C	Refrigeration and Air Conditioning III	F 07		(Class not taught during this time)		
	REFRIG-055C	Refrigeration Heating I	F 07		(Class not taught during this time)		
	REFRIG-056C	Refrigeration Heating II	F 07		(Class not taught during this time)		
	REFRIG-057C	Refrigeration Heating III	F 07		(Class not taught during this time)		
	REFRIG-060C	Refrigeration and A/C Electricity I	F 07		(Class not taught during this time)		
	REFRIG-061C	Refrigeration and A/C Electricity II	F 07		(Class not taught during this time)		
	REFRIG-062C	Refrigeration and A/C Electricity III	F 07		(Class not taught during this time)		
	REFRIG-065C	Heat-Pump Theory	F 07		(Class not taught during this time)		
	REFRIG-066C	Controls I	F 07		(Class not taught during this time)		
	REFRIG-067C	Controls II	F 07		(Class not taught during this time)		
	REFRIG-068C	Controls III	F 07	F 08	F 08	F 08	Grades

Part III. Questions Related to Strategic Initiative: Institutional Effectiveness

Mission and Purpose:

SBVC Mission: San Bernardino Valley College provides quality education and services that support a diverse community of learners.

What is the purpose of the program?

The purpose of the Refrigeration program is to offer curriculums designed to prepare students to be employed at an introductory level in the fields of Heating, Ventilation, Air Conditioning and Refrigeration (HVAC/R). The curriculum consists of a Refrigeration and Air Conditioning Certificate and Associate Degree courses and the a whole series of courses sponsored by the Refrigeration Service Engineers Society (RSES) and the North American Technician Excellence (NATE) to certify journeyman-level refrigeration technicians and keep their knowledge current. Our curriculum is recognized and sanctioned by the Refrigeration Service Engineers Society (RSES) and the North American Technician Excellence (NATE) and our graduates are eligible for certification in these nation-wide organizations. We prepare our students for the work force under the advisement of our advisory committee and the employment needs as reflected by the Employment Development Department (EDD). Our department is also actively engaged with our local high schools and Regional Occupational Programs (ROP) which have programs that articulate to our program, and community and state HVAC/R organizations to advance the state and region's economic growth and global competitiveness. We also prepare students to transfer to a number of public and private universities for further study in the various fields of Industrial Technology. The Refrigeration department mission is the same as the college mission. We want our students to succeed! Our students do very well because we provide our students with the skills and knowledge necessary to succeed in business, industry, and in their chosen professions in this multicultural society.

How does this purpose relate to the college mission?

The refrigeration program mission is the same as the college mission. We want our diverse community of learners to succeed! We provide our students a hands-on learning experience to accompany their ability to understand theory, the ability to think critically, and the capacity to apply that knowledge in a real-world setting. Our students do very well because we provide our diverse student population with quality training, skills and knowledge necessary to succeed in business, industry, and their chosen professions in a multicultural society. The following named former students are graduates of our refrigeration program. Husein Aziz, owns Clima-Tech Refrigeration HVAC/R company and teaches for us as an adjunct faculty member. Phil Lawton and Tom Zevalkink work in HVAC/R at various Kaiser Hospital sites. Phil is also the President of Region 15 of the RSES. Bennie Buffam works HVAC/R for the Fontana City Schools. Daryl Salmon owns HASCO Air Conditioning and is a representative of the RSES. We have plans to increase the number of women coming into our refrigeration and air conditioning programs by attending career day activities at area middle schools to speak to those female students and show them that women can be technicians and engineers. I have posters, brochures, and DVD presentations that I've purchased from The National Institute for Women In Trades, Technology and Science (IWITTS) to show and share with these future technology and engineering students.

Productivity

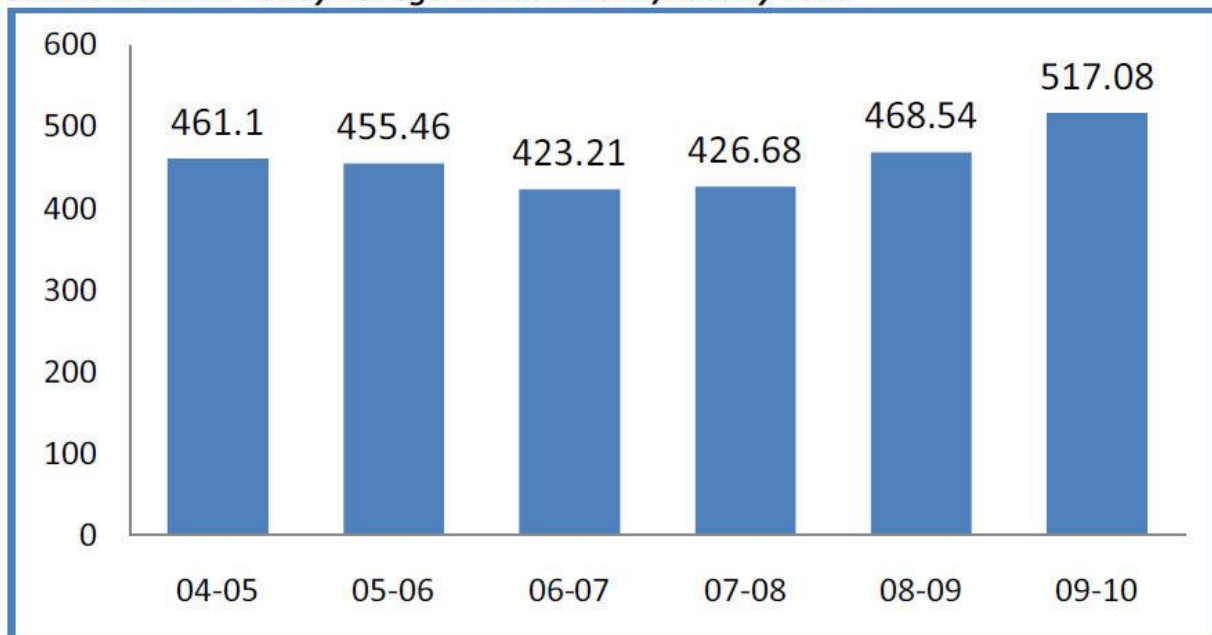
Provide additional analysis and explanation of the productivity data and narrative in the EMP Summary, if needed. (Use data from the first two charts of the EMP One-Sheet on page 2 of this form)

Analysis of the productivity data shows that the refrigeration program has excellent enrollment and provides the training needed by the students who transfer into the Industrial Technology Bachelor degree program at California State University, Los Angeles. Enrollment is up, retention is strong, completions and transfers are also strong. In the past 5 years, there has been a significant increase in FTES. The increase in FTES from 04-05 to 08-09 is an **increase of about 14 percentage points!!** There was a very slight decrease (1.6 percentage points) the 07-08 academic year due to the management mandated reduction in class offerings during that time. Last year classes in our refrigeration program generated over 53 FTES. The Refrigeration (HVAC/R) program has a duplicated enrollment with an average of 270 students per year with a low of 240 students and a high of 310 students.

Our productivity in relation to the Full-Time Equivalent Faculty has averaged 4.4 **FTEF** for the past 4 years. Last year our FTEF was 4.48. Over 2 full-time faculty members! We need to hire at least one new full time faculty member.

Our Weekly Student Contact Hours (WSCH) to Full Time Equivalent Faculty (FTEF) average is 360.33 which is below the college average of 458.68, but is within the range of other lecture/lab combination classes like Chemistry which has averaged 387 for the past two years or the English Department, with a lecture only curriculum, which has averaged 381.4 over the past 5 years. I'm sure our numbers are below the college average due to laboratory equipment limitations and student safety concerns.

San Bernardino Valley College Annual WSCH/Faculty Load



Note: Data for summer courses are not included in these calculations

Relevance and Currency, Articulation of Curriculum

If applicable to your area, describe your curriculum by answering the following questions.

The Content Review Summary from Curricunet indicates the programs current curriculum status. If curriculum is out of date, explain the circumstances surrounding the error and plans to remedy the discrepancy.

Applied Technology, Transportation & Culinary Arts				
Refrigeration / Air Conditioning				
	Course	Status	Last Content Review	Next Review Date
	REFRIG001 Refrigeration I	Active	10/26/2009	10/26/2015
	REFRIG002 Refrigeration II	Active	10/26/2009	10/26/2015
	REFRIG003 Refrigeration III	Active	10/26/2009	10/26/2015
	REFRIG004 Refrigeration Electricity I	Active	10/26/2009	10/26/2015
	REFRIG005 Refrigeration Electricity II	Active	10/26/2009	10/26/2015
	REFRIG006 Air Conditioning and Heating (HVAC)	Active	10/26/2009	10/26/2015
	REFRIG007 Refrigeration Welding	Active	10/26/2009	10/26/2015
	REFRIG050C Refrigeration and Air Conditioning I	Active	09/10/2008	09/10/2014
	REFRIG051C Refrigeration and Air Conditioning II	Active	09/10/2008	09/10/2014
	REFRIG052C Refrigeration and Air Conditioning III	Active	09/10/2008	09/10/2014
	REFRIG055C Refrigeration Heating I	Active	09/10/2008	09/10/2014
	REFRIG056C Refrigeration Heating II	Active	09/10/2008	09/10/2014
	REFRIG057C Refrigeration Heating III	Active	09/10/2008	09/10/2014
	REFRIG060C Refrigeration and Air Conditioning Electricity I	Active	09/10/2008	09/10/2014
	REFRIG061C Refrigeration and Air Conditioning Electricity II	Active	09/10/2008	09/10/2014
	REFRIG062C Refrigeration and Air Conditioning Electricity III	Active	09/10/2008	09/10/2014
	REFRIG065C Heat-Pump Theory	Active	09/10/2008	09/10/2014
	REFRIG066C Controls I	Active	09/10/2008	09/10/2014
	REFRIG067C Controls II	Active	09/10/2008	09/10/2014
	REFRIG068C Controls III	Active	09/10/2008	09/10/2014

	REFRIG098 Refrigeration Work Experience	Active	04/13/2009	04/13/2015
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All courses are current in curricunet.

Articulation

List Courses above 100 where articulation is not occurring	With CSU	With UC
All courses are numbered below 100		

Describe your plan to articulate these classes.

There are no current plans to articulate courses numbered below 100 at this time.

Currency

Follow the link below and review the last college catalog data. Refrigeration begins on p. 187.
http://www.valleycollege.edu/Instruction/Files/Catalog/2010-2011/SBVC_Catalog_1011_Complete.pdf

Is the information given accurate? Which courses are no longer being offered? (Include Course # and Title of the Course). If not, how does the program plan to remedy the discrepancy?

All of the information listed in the current SBVC Catalog is accurate. All of the courses are being offered in sequence as the current budget situation allows. Our Refrigeration Advisory Committee review out course outlines of record during our advisory committee meetings and as of our last meeting there are no discrepancies to report in the program. I will submit course outline changes to the curriculum committee when the advisory committee sees the need for change to keep up with industry and/or Environmental Protection Agency (EPA) standards.

Planning

What are the trends, external to the institution, impacting your student enrollment/service utilization? How will these trends impact program planning?

Trends include increased use of solar thermal energy systems and the need for certified solar installers. We have been moved from the old North Hall building where we had 4800 square feet all under one roof to a converted classroom and outside storage/work areas. We are running out of laboratory space and we need more room to expand our solar (thermal) installation program. We'll need at least 400 square feet when we begin to construct these solar thermal panels, the plumbing necessary to make the system work, and the roof supporting installation equipment and parts.

I see only expansion in our program due to the statewide solar initiative and the required LEED certification requirements that were enacted three years ago. Plus any new emerging technology such as the newest hi-pressure gases and the newest SEER requirements. Solar Thermal Installers and Technicians are in demand (California Community College Green Degree and Certificate Programs) and the number of jobs will increase by over 13% over the next decade. Even in a lagging economy, we still live in the desert and there is still a need for our students to fill vacant positions of employment in this era of depleted budgets.

Accomplishments and Strengths

Referencing the narratives in the EMP Summary, provide any additional data or new information regarding the accomplishments of the program, if applicable. In what way does your planning address accomplishments and strengths in the program?

Our department has been recertified as a testing site for the North American Technician Excellence (NATE) organization and the Refrigeration Service Engineers Society (RSES). Our refrigeration program has three adjunct faculty members who are approved as test proctors for NATE. The department head has completed the Occupational Safety and Health Administration (OSHA) Train-the-Trainer course training so we can provide OSHA 10-hour or 30-hour training to our students and issue these OSHA safety cards to our students as required by area HVAC/R contractors. This OSHA card must be carried by all employees working on sites where construction activities are in progress. Our faculty members work very hard to motivate our students to be successful in this occupation and our program retention and success figures bear this out.

Weaknesses

Referencing the narratives in the EMP Summary, provide any additional data or new information regarding planning for the program. In what way does your planning address trends and weaknesses in the program?

There are challenges in budget, facilities, and recruiting of students. We are running out of room to offer new curriculum. There are opportunities for our students in the expanding fields of sustainable "green" energy technologies and storage of these types of systems is critical to keep them from being removed from our campus by unauthorized persons. We are working on increasing the number of women and other underrepresented or nontraditional students in our classes (see page 5 for the under-represented groups and nontraditional students). Employers are trying to balance their workforces by gender, ethnicity, culture, and other means and our department will continue to recruit and retain students in those groups.

V. Questions Related to Strategic Initiative: Technology, Campus Climate and Partnerships.

Describe how your program has addressed the strategic initiatives of technology, campus climate and/or partnerships.

Technology

We use many technological methods of instruction to teach our students the applicable course material. We use PowerPoint presentations developed by our faculty along with other sources. All of our lecture/lab classrooms have TV monitors and dual VHS and DVD players. We have purchased new Variable Frequency Drive (VFDs) that allow our HVAC/R students to improve their skills in machine and motor controls. We plan to expand our program to include the new hi-pressure gases that are coming on the market and to develop some LEED certification courses and add the newest HVAC/R Seasonal Energy Efficiency Ratio (SEER) requirements information necessary in the near future due to changes in EPA standards. The SEER is a measure of the energy efficiency of the air conditioning system. SEER equals Total Cooling Output over the Cooling Season divided by Total Electrical Energy Input over the Cooling Season. The inclusion of adding sustainability [Agreen](#) courses (environmental and energy saving items) to our curriculum is also planned. Discussion with my adjunct faculty and advisory committee members also included wind energy, solar heating panels and related technologies course and we will investigate these technologies and will incorporate some aspect of sustainable energy [Agreen technology](#) information in some of our other courses. If you are planning to change or add an air conditioning system to your home or business, just ask one of our HVAC/R adjunct faculty for the name of the best manufacturer of those systems at the lowest cost over the life of the system.

Campus Climate

We've purchased a large banner that emphasizes the refrigeration certification program. Unfortunately, we are not allowed to display it for some reason. We hope to increase the appeal of the solar program by showing the "Green" sustainable technology we're supporting here at SBVC. Our classrooms have been converted to lecture/labs rather than just labs to give the students the feel of a working environment. Our students are using the tools, techniques and gases used in the HVAC/R industry. The new HVAC/R classroom in room T-126 in the Tech Building has a complete air conditioning system, piped, soldered, wired, assembled, troubleshot and functionally tested by our students. This is the same type of work our students will do on the job working for one of the almost 2600 employers in San Bernardino county or in their own HVAC/R contracting company.

Partnerships

We prepare our students for the work force under the advisement of our advisory committee and the employment needs as reflected by the Refrigeration Service Engineers Society (RSES), the North America Technician Excellence (NATE) organization, the Environmental Protection Agency (EPA) under the Clean Air Act, and the Employment Development Department (EDD) of California. We also have an agreement with the Mountain View Power Plant for a tour of the plant to show our students what that job entails. Cooling towers for the water used in the generation of electrical power is an important part of the co-generation systems used at this power plant. Southern California Edison is very interested in using our students as a pool of available workers instead of recruiting nationwide. We are in the process of developing a Memorandum of Understanding (MOU) with SCE to act as their training site. This is a win-win situation.

INSTITUTIONAL PROGRAM REVIEW 2010-11
Program Efficacy Phase, Spring, 2011

Purpose of Institutional Program Review

Welcome to the Program Efficacy phase of the San Bernardino Valley College Program Review process. Program Review is a systematic process for evaluating programs and services annually. The major goal of the Program Review Committee is to evaluate the effectiveness of programs, and to make informed decisions about budget and other campus priorities.

The Institutional Program Review Committee is authorized by the Academic Senate to develop and monitor the college Program Review process, receive unit plans, utilize assessments as needed to evaluate programs, recommend program status to the college president, identify the need for faculty and instructional equipment, and interface with other college committees to ensure institutional priorities are met.

The purpose of Program Review is to:

- Provide a full examination of how effectively programs and services are meeting departmental, divisional, and institutional goals
- Aid in short-range planning and decision-making
- Improve performance, services, and programs
- Contribute to long-range planning
- Contribute information and recommendations to other college processes, as appropriate
- Serve as the campus' conduit for decision-making by forwarding information to or requesting information from appropriate committees

Our Program Review process is two-fold. It includes an annual campus-wide needs assessment in the fall, and an in-depth review of each program every three years that we call the Program Efficacy phase. Instructional programs are evaluated the year after content review, and every three years thereafter, and other programs are placed on a three-year cycle by the appropriate Vice President.

An efficacy team of two disinterested committee members will meeting with you to carefully review and discuss your document. You will receive detailed feedback regarding the degree to which your program is perceived to meet institutional goals. The rubric that the team will use to evaluate your program is included with this e-mail

When you are writing your program evaluation, you may contact efficacy team assigned to review your department or your division representatives for feedback and input. The list of readers is being sent to you with these forms as a separate attachment.

Forms are due back to the Committee Chairs, Efficacy Team and Division Dean by **March 17, 2011**.
It is the writer's responsibility to be sure the Committee receives the forms on time.

In response to campus wide feedback that program review be a more interactive process, the committee piloted a new program efficacy process in Spring 2010 that included a review team who will interviews and/or tour a program area during the efficacy process. Another campus concern focused on the duplication of information required for campus reports. The efficacy process will incorporate the Educational Master Plan One-Page Summary (EMP Summary) and strive to reduce duplication of information while maintaining a high quality efficacy process.