INSTITUTIONAL PROGRAM REVIEW 2014 – 2015
Program Efficacy Phase: Instruction
DUE: April 13, 2015

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.

For regular programmatic assessment on campus, the Program Review Committee examines and evaluates the resource needs and effectiveness of all instructional and service areas. These review processes occur on one-, two-, and four-year cycles as determined by the District, College, and other regulatory agencies. Program review is conducted by authorization of the SBVC Academic Senate.

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 appropriate committees

Our Program Review process includes an annual campus-wide needs assessment each fall, and an in-depth efficacy review of each program on a four-year cycle. All programs are now required to update their Educational Master Plan (EMP) narrative each fall. In addition, CTE programs have a mid-cycle update (2 years after full efficacy) in order to comply with Title 5 regulations.

Two or three committee members will be 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 embedded in the form. As you are writing your program evaluation, feel free to contact the efficacy team assigned to review your document or your division representatives for feedback and input.

Draft forms should be written (and submitted to the Dean) so that your review team can work with you at the small-group workshops (Feb 13, Feb 27, Mar 27, and Apr 10, 2015). Final documents are due to the Committee co-chair by **Friday, April 13, 2015** at midnight.

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 work with the writer as they draft their documents during the efficacy process. Another campus concern focused on the duplication of information required for campus reports. As such, the efficacy process now incorporates the EMP sheet, a curriculum report, SLO/SAO documentation already generated elsewhere. The committee continues to strive to reduce duplication of other information while maintaining a high-quality efficacy process.

Program Efficacy
2014 – 2015

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

Program Being Evaluated

HVAC/ Refrigeration

Name of Division

Applied Technology, Transportation and Culinary Arts

Name of Person Preparing this Report **Extension**

Tarif H. Halabi

Names of Department Members Consulted

Edward Worley, Philip Lawton

Name of Reviewers

Michael Mayne, Andee Alsip, Rochelle Fender

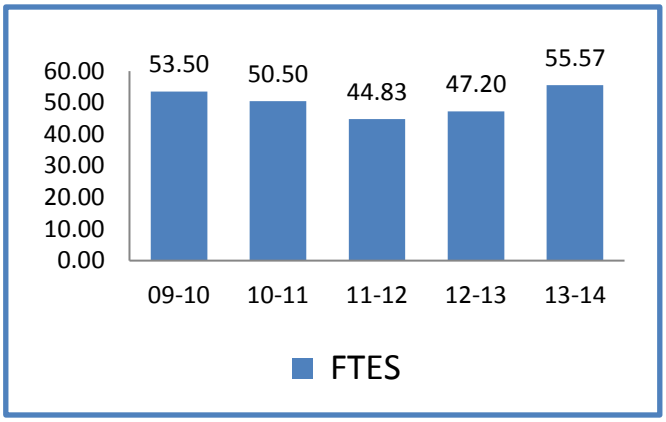
Work Flow	Due Date	Date Submitted
Date of initial meeting with department	February 27, 2015	March 27,2015
Final draft sent to the dean & committee		
Report submitted to Program Review Team		March 27, 2015
Meeting with Review Team	March 27 and April 10, 2015	April 10, 2015
Report submitted to Program Review co-chair	April 13, 2015	April 13, 2015 Last Submittal

Staffing

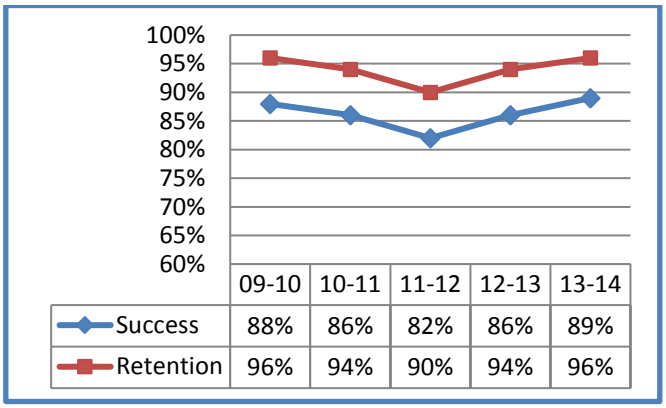
List the number of full and part-time employees in your area.

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	7

EMP HVAC/Refrigeration 2014-2015



	09-10	10-11	11-12	12-13	13-14
Duplicated Enrollment	286	258	218	229	271
FTEF	4.48	3.98	3.44	3.34	4.48
WSCH per FTEF	358	381	391	425	372



	09-10	10-11	11-12	12-13	13-14
Sections	14	12	10	10	13
% of online enrollment	0%	0%	0%	0%	0%
Degrees awarded*	2	2	1	0	2
Certificates awarded*	18	14	6	8	8

Description:

The program prepares students for entry level employment in the residential and commercial HVAC/R repair and installation. With climate change and longer dry periods in the west, HVAC/R technicians are in demand. Many have their own business or work as independent contractor for box stores. The department offers Environmental Protection Agency (EPA) certification, required for handling refrigerant gases used in the industry. The course curriculum has essentially remained the same in years.

Assessment:

FTEF has improved to 2009-10 levels even-though the number of sections offered has been reduced from a peak of 14 in 2010 to 10 sections in 2011-2013.

• WSCH/FTEF has declined due to lab intensive classes but is within the norm compared with previous years.

• The student success rate is at 89% which is higher than the campus average

• The number of certificates awarded stayed at its previous level. More sections are needed to improve ability of students to graduate. They were cut after 2009-2010.

• Single, inadequately equipped lab serves the program and that continues to limit its growth.

Department Goals:

• Update the laboratory by purchasing advanced trainers that better serves the curriculum to help bring it up to current industry standards.

• Provide standard climate control in classroom and some protection from elements when working outdoors

• Increase the number of sections offered so that students can complete their HVAC/R program in three or four semesters. Improving completion rate.

• Update course content to include smart technologies And develop an industry recognized certificate program to be integrated with our existing program

Challenges & Opportunities:

• The full time faculty retired in 2009; position was eliminated. No real budget ever allocated to program.

• Hard to find Faculty to teach morning sections

• Lab space and outdoor covered patio were contracted to be built when program was moved to the Technical Building in 2008; however the work is yet to be completed

• Lab does not have ceiling, proper air-conditioning, or eyewash station as per OSHA requirements.

Action Plan:

• Complete the lab construction to provide ceiling and adequate air-conditioning/heating. Build outdoor awning.

• Develop industry recognized certification.

• Hire a full time faculty. And purchase updated trainers.

• Offer more sections of core courses.

• Create a pool of part-time faculty who may be available to teach in the day time

• Provide the adjunct faculty with training opportunities to stay current with emerging technologies.

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.

Strategic Initiative	Institutional Expectations	
	Does Not Meet	**Meets**
Part I: Access		
Demographics	The program does not provide an appropriate analysis regarding identified differences in the program's population compared to that of the general population	The program provides an analysis of the demographic data and provides an interpretation in response to any identified variance. If warranted, discuss the plans or activities that are in place to recruit and retain underserved populations.
Pattern of Service	The program's pattern of service is not related to the needs of students.	The program provides evidence that the pattern of service or instruction meets student needs. If warranted, plans or activities are in place to meet a broader range of needs.

Demographics - Academic Years - 2011-12 to 2013-14		
Demographic Measure	**Program: HVAC/R**	**Campus-wide**
Asian	7.3%	5.2%
African-American	11.0%	14.2%
Hispanic	52.3%	59.2%
Native American	0.0%	0.3%
Pacific Islander	0.0%	0.4%
White	29.4%	16.8%
Unknown	0.0%	3.9%
Female	4.6%	54.8%
Male	95.4%	45.1%
Disability	10.1%	5.7%
Age Min:	21	14
Age Max:	57	84
Age Mean:	34	29

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?

An examination of the demographic data above reveals that the HVAC program student population closely mirrors the campus-wide populations in general. The Hispanic, Asian, and African American Demographic measure correlates very effectively against the composition of students on the San Bernardino Valley College campus. This shows that we as a community college are truly serving our community constituents which are by majority Hispanic but nonetheless quite diverse. Compared with Campus-wide average, The Asian student population is 2.1 percent higher, while the Hispanic population is 6.9% lower and the African American population is only 3.2% lower, all within acceptable range and fall within our Colleges mission statement of *providing quality education and services that support a diverse community of learners*. It is additionally important to point out that we have had an impressive increase in the white student population compared with the last four years in that it exceeded the campus-wide percentage by a 12.6% increase which can be attributed to perhaps more adults students wanting to change careers as a cause of the economic recession that has inflicted the area. As for the female population, it is important to note that historically, CTE majors in general have had an unbalanced female to male ratios and they have been under enrolled in these field. It remains a challenging issue to get female enrollment to grow to offset the imbalance. It is however encouraging to see that in comparison to the last four years, the percentage of female enrollees has doubled to 4.6% from 2.5%. We are thus working towards increasing the ratio of female student population in the program and continue to register and retain female students towards these increasingly higher paying careers by having more contacts with our community through high school presentations and high school career day visitations to make local students aware of the opportunities that exist in this career.

In addition, if we look at the disabled population ratio as compared to the campus-wide number, we see that it is double that of the campus wide average. That is extremely encouraging and reflects ongoing efforts by the faculty to provide this special population an opportunity of learning a valuable skill to improve their lives by working closely with the DSPS office to provide any help that might be needed for such populations.

In regards to the average age of our students in the program. It can be seen that its remarkably higher than the campus average and we believe it's due to the nature of the technical field in that a good chunk of our student body are adults who are switching careers or are coming back to school to learn a trade. We thus would like to address this issue by focusing on the newly graduated high school students and to promote the program to that group of students to make them aware of the ever increasing demand that this trade has. These efforts will include more active Faculty participation in high school visitation and presentations throughout the community.

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.

Historically and currently, our classes are offered in the evening after the 6:00 p.m. time slots or on Saturday morning and afternoon. This serves our population extremely well in that it provides our prospective students to be able to work during the day and attend the classes conveniently

in the evening. This schedule also provides students the ability to find jobs during the day in the field as trainees and still complete the certificate requirements within three semesters. Furthermore, we are offering all of the program classes HVAC001 through HVAC007 consistently every semester in order to empower our students to complete their certifications within their recommended program time span of three semesters (see below for recommended study plan). In addition, this scheduling permits having new student enrollments ongoing throughout the year being the FALL and Spring Semester. In addition, the North American Technician Excellence certification (NATE) which is a highly respected HVAC certification body, requires that certified technicians must enroll and take classes as refresher courses every five years. This reinforces the idea that evening class patterns best serve the community. It is also important to note that our program has no Full time faculty, all are Adjunct working professionals in the field during the daytime and do teach our curriculum in the evenings.

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

Strategic Initiative	Institutional Expectations	
	Does Not Meet	**Meets**
Part II: Student Success – Rubric		
Data/analysis demonstrating achievement of instructional or service success	Program does not provide an adequate analysis of the data provided with respect to relevant program data.	Program provides an analysis of the data which indicates progress on departmental goals. If applicable, supplemental data is analyzed.
Student Learning Outcomes (SLOs)	Program has not demonstrated that they are continuously assessing Student Learning Outcomes (SLOs) based on the plans of the program since their last program efficacy. Evidence of data collection, evaluation, and reflection/feedback, and/or connection to student learning is missing or incomplete.	Program has demonstrated that they are continuously assessing Student Learning Outcomes (SLOs) based on the plans of the program since their last program efficacy. Evidence of data collection, evaluation, and reflection/feedback, and connection to student learning is complete.

Provide an analysis of the data and narrative from the program's EMP Summary and discuss what it reveals about your program. (Use data from the Charts 3 & 4 that address Success & Retention and Degrees and Certificates Awarded")

Upon analysis of the Educational Master Plan, we can see that FTEF has improved to 2009-10 levels even-though the number of sections offered was reduced from a peak of 14 in 2010 down 10 sections for two academic years and then back up to 13 sections. This shows greater demand for our program.

The student success rate had dropped from a peak of 88% from 2009-10 down to 82% in 2011-12 due to reduced section offerings but has since increased and surpassed the previous peak level by one percent of 89%. This remains an impressively high success rate much higher than campus average. This success rate can be attributed to providing a structured program of study as outlined above (Part I of report) and our excellent part time Adjunct Faculty having exceptional field experience working in the HVAC industry and staying current with industry standards 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. The previous discussion is also valid to proving why student retention is an impressive 96% and has hovered above the 90% level in the last four years. The number of Certificates awarded dropped significantly from their peak level in 2009-10 level of 18 down to 6 for the 2011-12 year but has steadily started increasing to current level of 8. This cut was drastically affected because of the severe cut in class sections caused by budget cuts and not being able to offer the complete class sequences every semester thus delaying student progression and degree award certifications. This same pattern and cause/effect relationship can be seen for the Degrees awarded data which went from 2 in 2009-10 down to 0 in 2012-13 back up to 2 to 2013-14. This steady increase can be attributed to being able to offer all the courses consistently (adding sections) in the last two semesters which should improve Degree and Certificate awarded numbers.

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.

Job market related to their majors or certificates: (resource: California Employment Development Department EDD) . www.labormarketinfo.edd.ca.gov and www.bls.gov . **Also, our research, planning and institutional effectiveness department provided statistics for Job outlook nationwide, California, and Inland Empire.**	The median wage in 2014 for Heating/Air Conditioning and Refrigeration Workers in the Inland Empire was $51,439 annually, or $24.74 hourly. The projected job growth shown is tremendous testifying to the great need for the program. A 46.1 percent growth in job openings are projected between years 2012-2022, one of the Largest percent increases in projected employment growth in any county in California. Actual employment numbers projected to be 3771 up from 2580. (See Below).
Standards in the field	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.
Labor and other statistics (national, western states, regional) **www.labormarketinfo.edd.ca.gov**	Typical jobs requirements as stated in referenced website: repairing, installing, troubleshooting, testing, adjusting, reassembling, calibrating, and operating the heating, ventilation, air conditioning/refrigeration (HVAC/R) systems or subsystems. All of the above requirements are covered in our curriculum.
Colleges with similar program	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.

Heating/Air Conditioning and Refrigeration Workers Estimated Employment and Projected Growth					
Geographic Area (Estimated Year-Projected Year)	**Estimated Employment**	**Projected Employment**	**Numeric Change**	**Percent Change**	**Additional Openings Due to Net Replacements**
California (2012-2022)	20,000	24,600	4,600	23.0	5,100
Butte County (2012-2022)	50	60	10	20.0	10
East Bay Area (2012-2022)	1,540	1,790	250	16.2	390
Fresno County (2012-2022)	660	750	90	13.6	170
Imperial County (2012-2022)	70	90	20	28.6	20
Inland Empire Area (2012-2022)	2,580	3,770	1,190	46.1	650

Request Placed: 3/3/15
Request Received: 3/3/15
Request Completed: 3/6/15
Completion Next week

Job Projection Rates

HVAC/Refrigeration

State and National Trends

United States	Employment		Percent Change	Projected Annual Job Openings [1]
	2012	2022		
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	267,600	323,500	+21%	12,370
California	**Employment**		**Percent Change**	**Projected Annual Job Openings [1]**
	2012	**2022**		
Heating, Air Conditioning, and Refrigeration Mechanics and Installers	20,000	24,600	+23%	970

[1]Projected Annual Job Openings refers to the average annual job openings due to growth and net replacement.
Source: http://www.onetonline.org/

Area	SOC Code	Occupation	Est Yr-Projection Yr	Percent Change	Projected Annual Openings*
Riverside-San Bernardino Ontario MSA	499021	Heating, Air Conditioning, and Refrigeration Mechanics and Installers	2012-2022	46.1%	184

*Due to Growth and Separations
Source: http://www.labormarketinfo.edd.ca.gov

Student Learning Outcomes

Course SLOs. Demonstrate that your program is continuously assessing Course Student Learning Outcomes (SLOs), based on the plans of the program since the last efficacy review. Include evidence of data collection, evaluation, and reflection/feedback, and describe how the SLOs are being used to improve student learning (e.g., faculty discussions, SLO revisions, assessments, etc.). This section is required for all programs. (INSERT SLO COURSE GRID)

See Strategic Goal 2.11

File	Size	Date	Time	File Type
Previous Directory				..
HVAC 001.doc	31k	Tue, Apr 30, 2013	02:27:54 PM	File
HVAC 002.doc	29.5k	Tue, Apr 30, 2013	02:28:08 PM	File
HVAC 003.doc	30.5k	Tue, Apr 30, 2013	02:28:22 PM	File
HVAC 004.doc	32k	Tue, Apr 30, 2013	02:28:34 PM	File
HVAC 005.doc	30.5k	Tue, Apr 30, 2013	02:28:51 PM	File
HVAC 006.doc	31k	Tue, Apr 30, 2013	02:29:07 PM	File
HVAC 007.doc	30k	Tue, Apr 30, 2013	02:29:19 PM	File
Heavy.Medium Duty Diesel Truck Certificate.doc	26.5k	Tue, Apr 30, 2013	02:23:14 PM	File

The List above shows the courses that have SLOs on file with the office of Instruction. They are also all current.and SLO Evaluations are ongoing by each course, each semester, each section. Development of student learning outcomes for each course have been completed and are being evaluated at a frequency as previously stated. During Departmental meetings, discussion about updating, revising, and supplementing the SLOs is made and also brought to the Advisory Board meetings which gives us feedback as to what changes need to take place. We have had an overall improving success rates ranging from 74% up to 92% based on the seven courses offered in the curriculum. As for Assessment of the SLO's themselves, refer to the schedule below that shows that we have comprehensively assessed all the courses in the Spring of 2014 and in the Fall of 2014 and our data was used to revise some of the criteria of evaluation of an SLO as a recent example, in one class a standard of 70% or better was identified as the evaluation criteria for the courses SLO's but that was changed to a series of hands on tests as well as questions chosen from an certification examination typically given by the RSES. Continual refinement of these criteria will be conducive to a percentage of student success rate.

		Not Assessed	Assess-ed	On-going	F09	S10	F10	S11	F11	S12	F12	S13	F13	S14	F14	S15	F15	Note
HVAC/R	001		x	x	x									x	x			Formerly REFRIG 001
HVAC/R	002		x	x	x									x	x			Formerly REFRIG 002
HVAC/R	003		x	x	x									x	x			Formerly REFRIG 003
HVAC/R	004		x	x	x									x	x			Formerly REFRIG 004
HVAC/R	005		x	x	x										x			Formerly REFRIG 005
HVAC/R	006		x	x	x										x			Formerly REFRIG 006
HVAC/R	007		x	x				x						x	x			Formerly REFRIG 007
*REFRIG	098																	Work Experience

Totals:	***0***	***7***	***7***	***6***			***1***						***5***	***7***			

Instructional Program SLOs. If your program offers a degree, certificate, or TMC, describe how the SLOs are being used to improve student learning at the program level (e.g., faculty discussions, SLO revisions, assessments, etc.). Include a discussion of how the **courses are mapped to the program**, and how this set of data is either being evaluated or is planned to be evaluated. If your program does not offer a degree, certificate, or TMC, this section is optional (but encouraged). (INSERT MAPPING GRID & RECENT PROGRAM EVAL. INFORMATION)

See Strategic Goal 2.11

HVAC/R Certificate		Students will demonstrate their ability to distinguish between electrical systems, components and circuits by successful interpretation of schematics and diagrams.	Students will demonstrate their ability to correctly compare and categorize operation and components of typical refrigeration, heating and humidifying system	Students will distinguish between and demonstrate the ability to correctly use different HVAC/R trade tools and meters.	Students will demonstrate safe work practices and use required personal protective equipment.	Students will demonstrate their ability to design, build, troubleshoot and service HVAC/R equipment
CLASSES						
HVAC/R 001		X		X		X
HVAC/R 002			X			X
HVAC/R 003		X		X		X
HVAC/R 004		X		X	X	
HVAC/R 005		X			X	
HVAC/R 006			X			X
HVAC/R 007				X	X	X

The above chart reflects the most recent mapping and evaluations for the program learning outcomes and shows that they are mapped to each individual core program competency. We can see that each course may map into at least 2 of the program core competencies to as much as 3 competencies. The whole curriculum as a whole currently reinforces the stated competencies or learning outcomes expected of every graduating student so that the student can become a viable, effective, and competent skilled individual that can effectively serve the community in the field of Heating, Ventilation, and Air Conditioning and Refrigeration. These Program Learning Outcomes are actively discussed among our Faculty and with our industry advisory board so that they can be updated and/or revised and supplemented to insure that our students improve their job skill readiness for the technologically changing market and to become current with industry standards. All of the above competencies deal with the most crucial core of the industry from understanding how the system works to reading schematics and system installation blueprints to being able to install, troubleshoot, and repair environmental control systems- core skills that are needed by the students to succeed.

Program SLO Summary Evaluation Form

Division: Applied Technology, Transportation and Culinary Arts
Program: HVAC/R Degree & Certificate
Semester Evaluated: Fall 2014
Next Evaluation: Fall 2017

Program Learning Outcome	**1. Students will demonstrate their ability to distinguish between electrical systems, components and circuits by successful interpretation of schematics and diagrams.** **2. Students will demonstrate their ability to correctly compare and categorize operation and components of typical refrigeration, heating and humidifying system** **3. Students will distinguish between and demonstrate the ability to correctly use different HVAC/R trade tools and meters.** **4. Students will demonstrate safe work practices and use required personal protective equipment.** **5.Students will demonstrate their ability to design, build, troubleshoot and service HVAC/R equipment**
Program SLO Assessment Methodology	Program Curriculum Mapping
Criteria – What is "good enough"? Rubric	Align courses to program level outcomes. Assess and evaluate alignment to determine if curriculum, SLOs or PLOs need rewritten. Determine future assessment methodology for PLOs.
What % of students met the criteria? Is this % satisfactory?	n/a
Were trends evident in the outcomes? Are there learning gaps?	PLOs were recently rewritten to better reflect program(s) contend and better align courses to PLOs. There are no gaps apparent at this time. Course and PLO alignment create a strong foundation for the assessment of the HVAC/R Degree and Certificate program
What content, structure, strategies might improve outcomes?	No improvements at this time. Degree and Certificate PLOs will be assessed using longitudinal data prior to further changes.
Will you change evaluation and/or assessment method and or criteria?	Department faculty will analyze PLO data from the mapping for future assessment.
Evidence of Dialogue (Attach representative samples of evidence)	*Check any that apply* ☐E-mail Discussion with ☐FT Faculty ☐Adjunct Faculty Date(s): ☐Department Meeting. Date(s): ☐Division Meetings. Date(s): ☐Campus Committees. Date(s): (ex: Program Review; Curriculum; Academic Senate; Accreditation & SLOs)
Will you rewrite the Program SLO?	Not at this time

Response to program outcome evaluation and assessment?	☐Professional Development ☐Intra-departmental changes ☐ Curriculum action ☐ Requests for resources and/or services

Institutional SLOs/Core Competencies. Complete the **Core Competency grid** below (INSERT CORE COMPETENCY GRID). Describe how the Institutional SLOs/Core Competencies are being used to improve student learning in your program (e.g., faculty discussions, SLO revisions, assessments, etc.). This section is required for all programs.

See Strategic Goal 2.11

	San Bernardino Valley College **Department: Refrigeration** For each course, use an x to identify the core competencies that are given a major emphasis and are measured.	HVAC/R001	HVAC/R002	HVAC/R003	HVAC/R004	HVAC/R005	HVAC/R006	HVAC/R007	*REFRIG098
Commun.	1.1 Read and retain information	X	X	X	X	X	X	X	X
	1.2 Write clearly	X	X	X	X	X	X	X	X
	1.3 Speak clearly	X	X	X	X	X	X	X	X
	1.4 Employ vocabulary of the subject studied	X	X	X	X	X	X	X	X
	1.5 Demonstrate active listening skills	X	X	X	X	X	X	X	X
Info Commp	2.1 Find and interpret information	X	X	X	X	X	X	X	X
	2.2 Evaluate authority and bias of information								
	2.3 Utilize technology to organize and present information								
	2.4 Demonstrate working knowledge of basic computer function				X				
Critical Thinking	3.1 Evaluate strengths, weaknesses and fallacies of logic								
	3.2 Locate, evaluate and select evidence to support or discredit an argument								
	3.3 Construct a persuasive argument								
	3.4 Apply learned knowledge to new situations	X	X	X	X	X	X	X	X
	3.5 Apply principles of scientific reasoning to solve problems								
	3.6 Defend a logical hypothesis to explain observed phenomenon								
Et hi cs	4.1 Accept responsibility for own actions								

	4.2 Demonstrate respect for a diversity of ideas and the rights of others								X
	4.3 Exhibit personal, professional and academic honesty								X
	4.4 Display behavior consistent with ethical standards w/in a discipline								X
	4.5 Apply lessons from the past to ethical issues faced in the present								
	4.6 Evaluate own ethical beliefs in relationship to moral dilemmas								
	4.7 Assume civic, political or social responsibilities								
Creative Expression & Self Awareness	5.1 Recognize own strengths and weaknesses								
	5.2 Recognize own biases and values								
	5.3 Recognize own learning style								
	5.4 Give and receive constructive feedback								
	5.5 Develop time management skills								
	5.6 Set goals for educational, personal and professional development								
	5.7 Set goals to create balance in personal and professional life								
	5.8 Evaluate diverse artistic works								
	5.9 Demonstrate creative thought through original expression								
Social Interaction & Cultural Diversity	6.1 Demonstrate etiquette in face-to-face and written interactions	X	X	X	X	X	X	X	X
	6.2 Work effectively in group settings	X	X	X	X	X	X	X	X
	6.3 Utilize conflict resolution skills								
	6.4 Demonstrate knowledge of and respect for other cultures								
	6.5 Demonstrate knowledge of and respect for one's own culture								

The above are the old core competency categories as defined previously. We can define six main categories of competencies that strongly map to each end every one of the courses. They are reading and retaining information, employing of the vocabulary of the subject studied, finding and interpreting information, demonstrating etiquette in the face-to-face and written interactions, and working effectively in group settings. These are extremely important characteristics that make up a strong HVAC/Refrigeration technician that will be working in the field. They are essential to his/her career and great emphasis is focused in each and every one of the courses so that students completing the certificate will have these skills that can help him become an effective field technician. The other sub-categories mapped are included because some aspect of the course materials reflect the need to strengthen these competencies thus their inclusion. It is important to note that an update of the core competency grid was in process but has been placed on hold until the Academic Senate has finished rewriting and revising Core Competencies.

Part III: Questions Related to Strategic Initiative: Institutional Effectiveness

Strategic Initiative	Institutional Expectations	
	Does Not Meet	**Meets**
Part III: Institutional Effectiveness - Rubric		
Mission and Purpose	The program does not have a mission, or it does not clearly link with the institutional mission.	The program has a mission, and it links clearly with the institutional mission.
Productivity	The data does not show an acceptable level of productivity for the program, or the issue of productivity is not adequately addressed.	The data shows the program is productive at an acceptable level.
Relevance, Currency, Articulation	The program does not provide evidence that it is relevant, current, and that courses articulate with CSU/UC, if appropriate. Out of date course(s) that are not launched into Curricunet by Oct. 1 may result in an overall recommendation no higher than Conditional.	The program provides evidence that the curriculum review process is up to date. Courses are relevant and current to the mission of the program. Appropriate courses have been articulated or transfer with UC/CSU, or plans are in place to articulate appropriate courses.

Mission and Purpose:

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

What is the mission statement of the program?

The mission statement of the HVAC/Refrigeration program is to provide a quality, intensive curriculum designed to prepare students to be employed at an introductory level in the fields of Heating, Ventilation, Air Conditioning and Refrigeration (HVAC/R). The program offers a Refrigeration and Air Conditioning Certificate as well as an Associate Degree option with the same title. Our courses are aligned with the North American Technician Excellence (NATE) to certify journeyman-level refrigeration technicians and keep their knowledge current. The courses are recognized and sanctioned by NATE and our graduates are eligible for certification from this national organization. We prepare our students for the work force that follow the requirements and employment needs stated by the Employment Development Department as described above in Part II under the Standards in the Field. Additionally, Our curriculum prepares our students under the advisement of our advisory board committee which provides direct input from professionals that possess current trends in the industry. Our department is also resurrecting courses that are recognized and sanctioned by a very important national industry organization called Refrigeration Service Engineers Society (RSES) which is also internationally recognized. These courses would also serve to help our students attain journeyman level certifications recognized by RSES which would make our students much more marketable for today's job market. Our department continues to actively engage with our local high school as well as Regional Occupational Programs (ROP) which have programs that articulate with ours. We also prepare students to transfer to a number of private and public universities to further their study in the various field of HVAC and mechanical engineering fields. We want our students to succeed. Our students excel because we provide them 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 correlates and parallels 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. Hussein 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.

Productivity

Provide additional analysis and explanation of the productivity data and narrative in the EMP Summary, if needed. (Use data from charts 1 and 2 (FTEs; Enrollment; FTFE and WSCH per FTFE) on page 3 of this form). Explain any unique aspects of the program that impact productivity data for example; Federal Guidelines, Perkins, number of workstations, licenses, etc.

Analysis of the Productivity data from the Education master Plan reflect that our enrollment had dipped in the years from 2011 through 2013 but has regained and surpassed levels previously attained in 2010. The reason for the dip is a direct cause of the section cutting that was imposed as a result of budget cuts. It is interesting to note that, even-though as we have brought back section offerings to less than the levels of 2010 (13 instead of 14), we have had higher enrollment which testifies to the productivity and popularity of the program. Also, our program curriculum is being taught by part-time adjunct faculty while having a Full Time Faculty Equivalent Faculty (FTEF) of 4.48 is really miraculous because that FTEF justifies to have two Full time Faculty members of which the program had one as of 2010 but then was eliminated due to retirement by that faculty and budget constraints.

Because of the lab intensive and hands on nature of the HVAC/refrigeration program, productivity will have a limit that can be reached because of the number of Laboratories and the number of stations that we have. We only have one lab room available in which all lab classes are conducted. In addition, the number of equipment in the labs limit the number of class size that we can effectively conduct, therefore we can see from the EMP that our Weekly Contact Hours (WSCH) to FULL TIME Equivalent Faculty (FTEF) average is 385.4 which tends to be low compared to College average but is quite good considering the Lab intensive nature and the lab facility and equipment availability that we possess as well as student safety concerns.

Relevance and Currency, Articulation of Curriculum

If applicable to your area, describe your curriculum by answering the questions that appear after the Content Review Summary from Curricunet.

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

All Courses are current in Curricunet. See Below.

Applied Technology, Transportation & Culinary Arts				
Heating, Ventilation, Air Conditioning and Refrigeration				
	Course	**Status**	**Last Content Review**	**Next Review Date**
	HVAC/R001 HVAC/R Fundamentals	Active	11/19/2012	11/19/2018
	HVAC/R002 Domestic Mechanical Refrigeration	Active	11/19/2012	11/19/2018
	HVAC/R003 Commercial Mechanical Refrigeration	Active	11/19/2012	11/19/2018
	HVAC/R004 Electrical Fundamentals for HVAC/R	Active	11/19/2012	11/19/2018
	HVAC/R005 Commercial Electric for HVAC/R	Active	11/19/2012	11/19/2018
	HVAC/R006 HVAC/R Air Distribution Systems	Active	11/19/2012	11/19/2018
	HVAC/R007 Welding for HVAC/R	Active	11/19/2012	11/19/2018
	HVAC/R098 Refrigeration Work Experience	Active	04/13/2009	04/13/2015

Articulation and Transfer

List Courses above 100 where articulation or transfer is **not** occurring	With CSU	With UC
None		

Describe your plans to make these course(s) qualify for articulation or transfer. Describe any exceptions to courses above 100.

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.
http://www.valleycollege.edu/academic-career-programs/college-catalog.aspx

Is the information given accurate? Which courses are no longer being offered? (Include Course # and Title of the Course). If the information is inaccurate and/or there are listed courses not offered, 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.

Part IV: Planning

Strategic Initiative	Institutional Expectations	
	Does Not Meet	**Meets**
Part IV: Planning - Rubric		
Trends	The program does not identify major trends, or the plans are not supported by the data and information provided.	The program identifies and describes major trends in the field. Program addresses how trends will affect enrollment and planning. Provide data or research from the field for support.
Accomplishments	The program does not incorporate accomplishments and strengths into planning.	The program incorporates substantial accomplishments and strengths into planning.
Challenges	The program does not incorporate weaknesses and challenges into planning.	The program incorporates weaknesses and challenges into planning.

What are the trends, in the field or discipline, impacting your student enrollment/service utilization? How will these trends impact program planning?

It is imperative that the trend in the HVAC/Refrigeration industry having to do with energy efficiency and Title 24 of the California Building Code, which has many aspects that deal with green building code, be addressed by our program as also stated in our latest advisory board meeting. Among the large Title 24 code segments that apply to the HVAC industry, it specifies the use of higher seer, energy efficient equipment and controls that aid in reducing energy usages including Radiant barrier, ducting insulation, efficient water heater and HVAC systems, smart thermostat and controls systems for zonal control which provides selective conditioning and climate control. All of the preceding need to utilize smart technology as well as variable frequency motor/compressor controls which can accomplish the energy efficiency goals set by the new government regulations. All of the above require that we obtain newer trainers and equipment that has the capability. We have already provided some of the Variable frequency motors and included the training within our program but much equipment remain to be purchased. We have to provide the best and latest training in the industry standard so that our students can become valuable to the local employers that serve our community. That being projected, we do need to have a larger laboratory space to accommodate the the new advanced trainers that we plan on purchasing to accomplish our curriculum update.

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?

Using the EMP data, we can see that we would like to continue to increase the rate of successful completion of certifications and degrees awarded.by offering the full range of classes consistently every semester so that students can complete their certifications within 3 semesters. We also have the ability to certify students, by being a testing site for the North American Technician Excellence (NATE) organization. We are also resurrecting the complete

Refrigeration Service Engineers Society (RSES) program and classes and will be offering the classes to receive another certification because our current faculty are certified to proctor the examinations that will certify the students. In addition, the RSES classes will be the classes that licensed technicians will be required to take as refresher courses to maintain current in the trade, thus increasing enrollment and program effectiveness and strength.

Challenges

Referencing the narratives in the EMP Summary and/or your data, 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 remains a number of challenges in budget, Full Time Faculty, and facilities as noted earlier, there was no Perkins budget allocated prior to 2014 at all. The department head along with the division Dean have worked hard to secure Perkins funding for the first time ever in 2014 and are applying annually for funding to attain our planned improvements to the program. Funding has been used to upgrade and bring in needed tools and supplies that helped strengthen the program strength and thus student success. The program head along with the Division dean are for the first time also working on securing grant funding that will aid in acquiring new trainers discussed above in the planning section of this document. This will be critical to propel the program to become in par with industry standards. Nevertheless, all this work is being done by the Department head that is also the department head of another Discipline. This puts more stress on the individual as the time needed to administer two programs for growth becomes prohibitive, thus a Full time Faculty is really needed for the HVAC department in which that person would also become the Department head and also teach the full load in the program. This also has been pointed out earlier in the document that the FTEF figure is enough to demand two full time faculty while none exist Today. The facilities aspect noted above is the fact that we only have one Laboratory for all our classes. And in order to grow our enrollment numbers, we will need more physical space allotted to the labs so that we can offer concurrent classes and increase sections and thus enrollment. We are continuously addressing these issues in our planning and program needs documentations in the hopes of being able to get the funding to acquire more space.

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

Strategic Initiative	**Institutional Expectations**	
	Does Not Meet	**Meets**
Part V: Technology, Partnerships & Campus Climate		

	Program does not demonstrate that it incorporates the strategic initiatives of Technology, Partnerships, or Campus Climate. Program does not have plans to implement the strategic initiatives of Technology, Partnerships, or Campus Climate	Program demonstrates that it incorporates the strategic initiatives of Technology, Partnerships and/or Campus Climate. Program has plans to further implement the strategic initiatives of Technology, Partnerships and/or Campus Climate.

Describe how your program has addressed the strategic initiatives of technology, campus climate and/or partnerships that apply to your program. What plans does your program have to further implement any of these initiatives?

Technology

Technology is being used in every facet of teaching in all our classes. Our Faculty have utilized Power Point Presentations with computer linked projections as well as DVD's and online software with educational videos. All classrooms have these teaching tools. The learning resource center is used for online search and instruction whenever a computer lab is needed.

For the Laboratory instruction, we are continuously purchasing newer testing and troubleshooting tools utilized in the industry. Also, we are planning to purchase the advanced energy efficient trainers that will help support our strategic initiatives and planning. Additionally, we plan to expand our program to include the new high pressure gases that are coming on the market and to Resurrect the RSES courses that were cancelled in 2011 due to budget cuts. We also want to develop LEED certifications to support the Title 24 Building code dealing with higher energy efficiency HVAC/R systems with Seasonal Energy Efficiency Ratio (SEER) requirements. Meaning all Green technology and energy efficiency applications in the HVAC/R industry.

Campus Climate

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. In fact, two of our Faculty are members of RSES and Nate and are teaching the approved curricula of these industry recognized Associations within the program. 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 natural gas and steam power plant. In addition, Clima-Tech Air, a locally based regional HVAC/R company regularly hires our students as interns in apprenticeship positions to help prepare them to become full field

technicians. Recently, a large national building maintenance firm ABM has expressed interest in our HVAC/R students to be hired again as apprentices in the form of internship in their building maintenance program. We are in the process of developing a Memorandum of Understanding with that outfit.

VI: Previous Does Not Meets Categories

Listed below, from your most recent Program Efficacy document, are those areas which previously received "Does Not Meet." Address each area, by describing below how your program has remedied these deficiencies, and, if these areas have been discussed elsewhere in this current document, provide the section where these discussions can be located.

Previous efficacy review: 2010/2011

Weaknesses/Challenges: *The major identified weaknesses are facilities and recruiting. Plans for recruiting underrepresented students have been addressed previously in the demographics section. However, while how many rooms/labs we are provided are essentially out of our direct control, there are no creative solutions proposed (e.g., shared space either on campus or at district facilities). More importantly, they have not addressed specific issues regarding their facilities. A tour of their area reveals essentially one lab, one classroom, and a very small outside area where some work can be done, weather permitting. The main lab room apparently has up-to-date equipment that the students actually use, much of it donated by the adjunct faculty. However, the lab also has maybe 100 ft2of space that is used as storage for old equipment that is not used. If this area was cleaned up and the lab organized differently, they might be able to partially address some of their space issues, but this aspect (which is under their control) is not specifically mentioned in the document, nor is it addressed in planning. The classroom is sufficient, but contains three pieces of old equipment (probably decades old). Is this old equipment suitable for training students to be certified in the year 2011? Do they need updated equipment? If some of their equipment is outdated, this would appear to be a weakness and should be addressed. Are they planning to write grants to acquire new equipment? Given that there are no full-time faculty in this program to handle some of these issues, this appears to be a weakness as well, but is also not addressed. The overall concern here is that there are some clear weaknesses, but they are not incorporated satisfactorily into the planning.*

All of the above issues present the problem of available space. We essentially have one lab and one lecture rooms. Therefore, our capacity is limited and is commonly reached each and every semester. Growth or increased enrollment becomes a challenge. A suggestion for using district or shared facilities is realistically unfeasible because we will need to replicate our lab equipment and trainers for the "shared facilities" and district does not have HVAC trainer equipment and, as stated in this report, our allotted budget did not exist before 2014/2015 to purchase anything, beside the expensive cost of buying the current trainers found in our labs. These trainers were built by the part time faculty to save money. The current trainers and even the old equipment, referred to above, are still valid to teach basic heating and refrigeration cycle theory. Also, as stated in the report earlier, we are working on obtaining additional grant funding to purchase the latest state of the art trainers and equipment that will be replacing the old equipment referred to above. Therefore all of the issues stated have been and are currently being addressed and the program is being run as efficiently as is possible given the resources.