2016-2017 Instructional Program Review Annual Update

1. Discipline/Area Name: ACRV – Air conditioning, Refrigeration and Ventilation	For: **2018-2019**
2. Name of person leading this review: Joseph Owens	
3. Names of all participants in this review: Ken Hymen and Ernie Bridges	
4. Status Quo option: Year 1: Comprehensive review ☐ Year 2: Annual update or status quo option ☒ Year 3: Annual update ☐ Year 4: Annual update or status quo option ☐	In years two and four of the review cycle, programs may determine that the program review conducted in the previous year will guide program and district planning for another year. ☒ Check here to indicate that the program review report written last year accurately reflects program planning for the current academic year. (Only programs with no updates or changes may exercise the status quo option. All others will respond to questions 6 – 13.)

Number of Full-time Faculty 1 **Number of Part-time Faculty** 4

Data/Outcome Analysis and Use

5. Please review the subject level data and comment on trends (more data will be available the Program Review web page):

Indicator	2012-2013	2013-2014	2014-2015	2015-2016	Recent trends?	Comment
Enrollment #	218	196	207	190	Decrease	Improved employment in area may have caused reduction in enrollment.
# of Sections offered	10	9	10	10	No Change	Presently, we only offer high unit courses, that result in long class hours and limit student enrollment options. We are looking into a program restructure offering smaller unit courses.
# of Online Sections offered	0	0	0	0	No Change	At present online courses are not viable for our program.
# of Face-to-Face Sections offered	10	9	10	10	No Change	Presently, ALL our courses are face to face, as they involve lab. We are looking into a program restructure offering smaller unit courses with

						some lecture only courses.
# of Sections offered in Lancaster	10	9	10	10	No Change	We presently do not have the facilities to offer more classes. We are looking into a program re-structure.
# of Sections in other locations	0	0	0	0	No Change	No program changes
# of Certificates awarded	21	4	22	18	Decrease	Drop in Certificates but an increase in Degrees!
# of Degrees awarded	5	6	4	6	Increase	Increase in Degrees but Certificates dropped.
Subject Success Rates	71.8%	73.5%	71.5%	71.1%	No Change	Success is fairly constant
Subject Retention Rates	82.1%	81.6%	85.5%	84.2%	No Change	Retention is fairly constant
Full-time Load (Full-Time FTEF)	1.10	1.10	1.10	1.10	No Change	All courses have noticed reduced enrollment. Not enough to warrant dropping any courses.
Part-time Load (Part-time FTEF)	2.21	1.94	2.21	2.21	No Change	Constant!
PT/FT FTEF Ratio	2.1:1	1.76:1	2.1:1	2.1:1		Constant!

#	Indicator	Comments and Trend Analysis
7.	If applicable, report program/area data showing the quantity of services provided over the past four years (e.g. # of workshops or events offered, ed.plans developed, students served)	
8.	Student success and retention rates by equity groups within discipline	Review and interpret the subject data by race/ethnicity and gender. Identify achievement gaps. List actions that are planned to meet the Institutional Standard of **69.1%** for student success and to close achievement gaps: Student success with regards to race/ethnicity and gender is at 71% success which is at or slightly above the AVC institutional standard of 69%. The retention data comes in at 83.4% which is slightly lower than the college wide level of 87%. Our overall unduplicated head count is down slightly. We believe this trend is due to the improved employment in the local area. Equipment Manufacturing companies have increased their hiring level, giving jobs to those mechanically inclined which are our typical entry level students. This could be considered a positive trend, resulting in better trained entry level candidates into the ACRV industry, resulting in increased wages.

9.	Career Technical Education (CTE) programs: Review the labor market data on the California Employment Development Department website for jobs related to your discipline.	Comment on the occupational projections for employment in your discipline for the next two years and how the projections affect your planning: In California, the number of Heating/Air Conditioning and Refrigeration Workers is expected to grow much faster than average growth rate for all occupations. Jobs for Heating/Air Conditioning and Refrigeration Workers are expected to increase by 31.8 percent, or 7,100 jobs between 2014 and 2024. (Up from the ten year expectations of 23.0 percent, or 4,600 jobs between 2012 and 2022.) In California, an average of 710 new job openings per year is expected for Heating/Air Conditioning and Refrigeration Workers, plus an additional 340 job openings due to net replacement needs, resulting in a total of 1,050 job openings The median wage in 2016 for Heating/Air Conditioning and Refrigeration Workers in California was $51,700 annually, or $24.86 hourly. The median is the point at which half of the workers earn more and half earn less In California, the number of Maintenance and Repair Workers, General is expected to grow slower than average growth rate for all occupations. Jobs for Maintenance and Repair Workers, General are expected to increase by 12.4 percent, or 15,000 jobs between 2014 and 2024. (A slight increase over earlier projections for Jobs for Maintenance and Repair Workers, General was expected to increase by 12.1 percent, or 14,100 jobs between 2012 and 2022) In California, an average of 1,500 new job openings per year is expected for Maintenance and Repair Workers, General, plus an additional 3,160 job openings due to net replacement needs, resulting in a total of 4,660 job openings. The median wage in 2016 for Maintenance and Repair Workers, General in California is $40,484 annually or $19.47 hourly. The median is the point at which half of the workers earn more and half earn less. The projected numbers of new hires for the HVAC industry is 263 per year until 2023 in LA County alone. This does not count positions in the maintenance and repair or construction industry. Of course there are sales and manufacturing companies like BYD (Build Your Dreams – an electric bus manufacturing company) and Kinkisharo (a light rail car manufacturing company) that have established their manufacturing facilities in the local area and have increased their employee base, hiring many of our student graduates.

		I am constantly asked for increased course offerings aimed at those working in industry with equipment specific courses making it possible for career changes or progression. Course subjects include Hydronic systems, Chillers, Boilers and Zone Control, along with preparation for trade certification exams. While this would be great, and meet the needs of the industry, the present budgetary and staffing constraints create obstacles. We are in the process now of laying out a program redesign that should increase course offerings and meet the growing needs of the HVAC/R industries.

10. Cite examples of using action plans (for SLOs, PLOs, OOs, ILOs) as the basis for resource requests and how the allocation of those resources or other changes resulted in improved outcomes over the past four years.

SLO/PLO/OO/ILO	Action Plan	Current Status	Impact of Action
ILO 4	**Heat transfer in Refrigeration system**	**Ongoing**	An example of utilizing technology in the learning environment to improve instruction and for all our students especially the hearing impaired students that require interpreters was the purchase of the Smart Kapp white board, which has enabled students to receive all board work to a personal electronic device like smart phone or iPad and have the capability of saving screen shots or converting it to a PDF file to save for future reference. This board was purchased using prop 20 money. We will purchase two more boards, making it possible to put one in each lab and the community use computer lab.
SLO #2	**Update refrigerant handling tools and equipment to current technology**	**Ongoing**	New recovery equipment and refrigerant servicing tools to include digital MGA, micron gauges, hoses, vacuum pumps and system analyzers are needed in the labs. To purchase this equipment a Perkins grant will need to be applied for. In the event of a Perkins grant to make the equipment purchase, we would require an increase in our annual budget to maintain and keep the equipment in a serviceable condition.

11. Review the goals identified in your most recent comprehensive self-study report and any subsequent annual reports. Briefly discuss your progress in achieving those goals.

Goals/Objectives	Current Status	Impact of Action (describe any relevant measures/data used to evaluate the impact)
1. Electricity, for Work and Control	Ongoing	Utilizing technology in the learning environment to improve instruction and for all our students especially the hearing impaired students that require interpreters was the reason for a purchase of a Smart Kapp white board, which has enabled students to receive all board work to a personal electronic device like smart phone or iPad and have the capability of saving screen shots or converting it to a PDF file to save for future reference. This board was purchased using prop 20 money. We will purchase two more boards, making it possible to put one in each lab and the community use computer lab.
2. Analyze basic refrigeration system	Ongoing	Refrigerant recovery equipment and refrigerant servicing tools to include digital MGA, micron gauges, hoses, vacuum pumps and system analyzers will improve the quality and quantity of lab time allowing increased individual experience by reducing the student lab team experience to two students from four.
3. Upgrade Power grid in labs –	Ongoing	a. We need to increase our 3 phase availability in the labs (4 ea - 3 phase 240V stations with utility disconnects, 50 amp circuit ampacity, with ability to lower fused protection- per lab) b. Additional 20 amp circuits 120 V dedicated – for each workbench c. Out-side lighting to accommodate evening labs in the exterior lot. d. Outside (external of building) power sources to be utilized for outside lab projects.
4. Lab equipment storage	Ongoing	a. We need more space in our labs. Existing space is inadequate to use for storage and active labs simultaneously. We still need a remote storage site / training lab for our training aids. b. Acquire a location / remote lab for Commercial students to work on Commercial and Industrial equipment. (outside storage / lab has potential and could remedy this issue)
5. Trellis / Rack to support / hang equipment from to facilitate a realistic training environment.	Ongoing	a. Build an over-head trellis system to support ductwork, piping, fan coils and air moving equipment to make it possible for the commercial Air Conditioning class to learn on equipment that they will work on in industry. b. Need a hydronic system pump and air handling units to maximize training on an eight ton chiller that was donated to the Commercial air conditioning program
6. Tool Issues	Ongoing	We continue to have issues with hand-tools that are pilfered. Equipment items (specialty tools) that wear out pre-maturely, or disappear. We have a TA that maintains the security of the tool room during the morning hours, but there is not any help for the evening programs. Instructors with 25 students are not capable of watching the students in the lab, while issuing tools and maintaining inventory control

6. Additional Adjunct instructors and Teaching assistant	Ongoing	• Program re-structure which will reduce class lengths, but increase success and retention rates. (Long 5 hour classes in the evening are an issue for students and the instructors.) • Increased course offerings will make it possible to offer students different career path options. • An additional TA will improve equipment and supplies security, and assist instructors in the labs when working with a 25:1 student teacher ratio.

Briefly discuss your progress in achieving those goals: Analyze basic refrigeration system – tools and equipment will be approached with a Perkins Grant application this coming year, and a request for increased supplies budget to cover the maintenance of lab equipment. The additional help in our Tool room has been addressed and will continue to be addressed until it is resolved. The help will also help with maintaining and performing maintenance on the equipment

Please describe how resources provided in support of previous program review contributed to program improvements: In the past in years of diminished budget, we've relied on Perkins Grants to purchase new tools and training aids.

12. Based on data analysis, outcomes, program indicators, assessment and summaries, list discipline/area goals and objectives to advancing district Strategic Goals, improving outcome findings and/or increasing the completion rate of courses, certificates, degrees and transfer requirements in 2018-2019. Discipline/area goals must be guided by **district Strategic Goals** in the Educational Master Plan (EMP), p.90. They **must be supported by an outcome or other reason (e.g., health and safety, data analysis, national or professional standards, a requirement or guideline from legislation or an outside agency).**

Goal #	Discipline/area goal and objectives	Relationship to Strategic Goals* in Educational Master Plan (EMP) and/or Outcomes	Action plan(s) or steps needed to achieve the goal**	Resources needed (Y/N)?
1 & 3	Improve the quality of hands on training achieved in the Commercial Refrigeration and Air Conditioning courses.	*2. Increase efficient and effective use of all resources: Technology, Facilities, Human Resources, Business Services *3. Focus on utilizing proven instructional strategies that will fostertransferable intellectual skills - Other Reasons	• We need to increase our 3 phase availability in the labs (4 ea - 3 phase 240V stations with utility disconnects, 50 amp circuit ampacity, with ability to lower fused protection- per lab) • Additional 20 amp circuits 120 V dedicated – for each workbench • Out-side lighting to accommodate evening labs in the exterior lot. • Outside (external of building) power sources to be utilized for outside lab projects. • Smart Kapp white boards – one for each lab	Yes

5	Facilitate a realistic training environment, maximizing on existing space.	*2. Increase efficient and effective use of all resources: Technology, Facilities, Human Resources, Business Services *3. Focus on utilizing proven instructional strategies that will fostertransferable intellectual skills 5.Align instructional programs to the skills identified by the labor market	• Build an over-head trellis system to support ductwork, piping, fan coils and air moving equipment to make it possible for the commercial Air Conditioning class to learn on equipment that they will work on in industry. • Equipment could be set up and operational for advanced course training, allow diagnostics, repair, maintenance and disassembly and assembly of this equipment. • Need a hydronic system pump and air handling units to maximize training on an eight ton chiller that was donated to the Commercial air conditioning program.	Yes
4	Lab equipment storage	*2. Increase efficient and effective use of all resources: Technology, Facilities, Human Resources, Business Services	• We need more space in our labs. Existing space is inadequate to use for storage and active labs simultaneously. We still need a remote storage site / training lab for our training aids. • Storage racks for lab equipment storage.) • Acquire a location / remote lab for Commercial students to work on Commercial and Industrial equipment. (outside storage / lab has potential)	Yes
2	Increase student success rate to 75 percent.	*2. Increase efficient and effective use of all resources: Technology, Facilities, Human Resources, Business Services 5.Align instructional programs to the skills identified by the labor market	Asset Inventory control – Control and maintenance of tools and supplies We continue to have issues with hand-tools that are pilfered. Equipment items (specialty tools) that wear out pre-maturely, or disappear. We have a TA that maintains the security of the tool room during the morning hours, but there is not any help for the evening programs. Instructors with 25 students are not capable of watching the students in the lab, while issuing tools and maintaining inventory control. This is an area that needs immediate attention. Adjunct instructors / TA • Program re-structure which will reduce class lengths, but increase success and retention rates. • Long 5 hour classes in the evening are an issue for students and the instructors. • Increased course offerings will make it possible to	Yes

			offer students different career path options. • TA will assist with student teacher ratios which are presently 25:1 . The additional aid in the lab environment will help with the hands on practicals and insuring a safe working environment in the lab. Increase Supply Budget for consumable supplies, that include refrigerant gases, welding gases, inert gases, copper tubing and fittings, pvc pipe and fittings, glues, welding rod, fluxes, electrical connectors, fuses, wire, UL-81 tapes and adhesives, sealants, and sheet metal caps, plenums and flex duct.	

Action plan verbs:* ***expand, reduce, maintain, eliminate, outsource, reorganize, re-engineer, study further, etc.

13. Identify significant resource needs that should be addressed currently or in near term. For each request type identify which **discipline/program goal(s) from #12 guide this need**.

Indicate which Goal(s) guide this need	Type of Request (Personnel[1], Technology[2], Physical[3], Professional development[4], Other[5])	New or Repeat Request?	Briefly describe your request here	Amount, $	One-time or Recurring Cost, $?	Contact's name
2	Personnel	Repeat	Two adjunct instructors And Teaching Assistant (TA)	Unk.	Recurring	Joe Owens
1&3	Physical	Repeat	Upgrade the electrical power distribution system in both our labs. to 120V / 240V single phase, and increase the circuits to each workstation	$30K to $70K	One-time	Joe Owens
5	Physical	Repeat	A large air handling unit and air distribution system trainer	$24K	One-time	Joe Owens
4	Physical	Repeat	Additional space for storage of training equipment and labs	$40K	One-time	Joe Owens
2	Other	Repeat	Additional instructional supplies funding	$7K	Recurring	Joe Owens

[1]List needed human resources in priority order. For faculty and staffing request attach Faculty Position Request form.

[2]List needed technology resources in priority order.

[3] In priority order, list facilities/physical resources (remodels, renovations, or new) needed for safer and appropriate student learning and/or work environment.

[4]List needed professional development resources in priority order. This request will be reviewed by the professional development committee.

[5]List any other needed resources in priority order.