

West Hills College Coalinga

CTE Program Endorsement

Irrigation Engineering Technology

Appropriateness to Mission

Statement of Program Goals and Objectives

The Irrigation Engineering Technology program prepares students for careers in irrigation sales, installation, design and operation; learning skills in computer-aided drafting, irrigation management, evaluation and design, including advanced design and drip and micro irrigation design and management. The curriculum is designed to align with the Irrigation Association's certified irrigation designer (CID) certification and certified agricultural irrigation specialist (CAIS) certification. Completion of either certificate qualifies students to enter the professional job market or the units may be applied as university transfer or to fulfill the education requirement for the California Department of Pesticide Regulation's (CDPR) Agricultural Pest Control Adviser (PCA) license and the Society of Agronomy's Certified Crop Adviser (CCA).

Upon completion of the Irrigation Engineering Technology certificate the student will be able to meet the following objectives:

- a. draw basic two-dimensional drawings with the associated drawing tools and aids;
- b. create 2-dimensional isometric drawings with the associated drawing tools;
- c. demonstrate a complete understanding of the soil-plant-water relationship by correctly completing a soil water budget;
- d. calculate evapotranspiration rates for crops common to California over a complete growing season;
- e. compare and install all the major water supply systems (i.e. surface, sprinkler, drip, and micros);
- f. perform an irrigation system evaluation for drip/micro irrigation systems;
- g. determine irrigation system distribution uniformity and application efficiency for given irrigation systems;
- h. determine which type of irrigation system is appropriate for site specific conditions, i.e. soil properties and crop data;
- i. specify materials and components to make a complete system that optimizes the balance between capital investment and operation and maintenance costs;
- j. determine plant water use for given crops and climatic conditions;
- k. calculate sprinkler spacing for head-to-head coverage;
- l. select proper sprinklers for given crops and irrigation system components;
- m. complete irrigation designs for efficiency and uniformity;
- n. calculate system flow rate requirements and friction losses in hoses;
- o. determine allowable pressure differences in irrigation systems;

- p. determine proper pipe size, pressure regulation and appropriate filtration for given design parameters;
- q. select proper emission devices and design for minimization of clogging.

Catalog Description

The Irrigation Engineering Technology program prepares students for careers in irrigation sales, installation, design and operation; learning skills in computer-aided drafting, irrigation management, evaluation and design, including advanced design and drip and micro irrigation design and management. The curriculum is designed to align with the Irrigation Association's certified irrigation designer (CID) certification and certified agricultural irrigation specialist (CAIS) certification. Completion of either certificate qualifies students to enter the professional job market or the units may be applied as university transfer or to fulfill the education requirement for the California Department of Pesticide Regulation's (CDPR) Agricultural Pest Control Adviser (PCA) license and the Society of Agronomy's Certified Crop Adviser (CCA).

Program student learning outcomes:

- Students will demonstrate an understanding of soil-plant-water relationships.
 - Students will determine irrigation system distribution uniformity and application efficiency for given irrigation systems.
 - Students will determine which type of irrigation system is appropriate for site specific conditions, i.e. soil properties and crop data.
 - Students will specify materials and components to make a complete system that optimizes the balance between capital investment and operation and maintenance costs.
 - Students will complete irrigation designs for efficiency and uniformity.
 - Students will determine proper pipe size, pressure regulation and appropriate filtration for given design parameters.
- Students will understand agronomic fundamentals and technological principles (i.e. surveying, CAD, precision agriculture, soil and plant science).

Program Requirements

Course #	Title	Units
AET 15.....	CAD for Agriculture.....	2
AET 21.....	Ag-Irrigation Management	3
AET 22.....	Irrigation Evaluation and Design Principles.....	4
AET 23.....	Advanced Irrigation Design	3
AET 24.....	Drip and Micro Irrigation Design and Management.....	3
Total.....		15

In addition to the core courses the student must take at least three units from the following courses:

Course #	Title	Units
AET 10.....	Surveying	3

AET 11.....	Advanced Surveying with GIS Applications	2
AET 16.....	CAD Applications for Land Management in Agriculture.....	1
CRPSCI 6	Introduction to Precision Agriculture	3
CRPSCI 19	California Water	3
SLSCI 21	Soils.....	4
	Total.....	3

Total Units Required for Certificate 18

Background and Rationale

California agriculture is in the middle of a severe crisis, with yet another year of drought coupled with increased environmental concerns and a down turned economy. "Farmers' decisions to fallow thousands of acres during last year's drought cost \$260 million in crop losses statewide, as well as hundreds of jobs. That's bad news in Firebaugh, a city of 6,000. Because of the downturn in the economy, the city's sales tax plummeted 43% in the last quarter of 2008 " If the Westside is California's heartland, then Valley agriculture is its heart and water is its lifeblood.

With the decrease in water supply, area growers need to conserve every drop of water. This is creating a gap between industry needs and education. There currently are not enough students entering careers in irrigation, thus creating a need for employees trained in irrigation design, scheduling and consulting. This certification program is designed to align with the Irrigation Association's certified irrigation designer (CID) and certified agricultural irrigation specialist (CAIS) certification. The Irrigation Association is the leading membership organization for irrigation equipment and system manufacturers, dealers, distributors, designers, consultants, contractors and end users. Certification will allow students to enter the workforce, or transfer on to four-year programs such as Agricultural Engineering at Cal Poly, San Luis Obispo.

Curriculum Standards

Display of Proposed Sequence

Fall Semester

AET 15

AET 21

AET 22

Spring Semester

AET 23

AET 24

AET 10

Transfer Applicability (if applicable)

All units are transferrable, with 15 units aligned with C-ID.

Need for Program

Enrollment and Completer Projections

Courses in the new program will be offered by Agriculture faculty. Students will be recruited from high school and existing precision agriculture, maintenance mechanic, heavy equipment and rodeo programs. Once fully implemented, approximately 15 students are expected to complete the certificate program every two years.

These numbers are based on the estimates of enrollment of similar certificate programs with adjustments made for college size and course offering schedule. It is anticipated that these numbers will remain constant year to year based on the experience of other colleges in the state.

Approximately 20 students will be enrolled in each course.

Place of Program in Curriculum/Similar Programs

This program is a new program at WHCC and will be offered in conjunction with other vocational and agriculture programs offered at the Farm of the Future.

Similar Programs at Other Colleges in Service Area

There are no similar programs within our service area, as West Hills College Lemoore does not have a similar program.

Labor Market Information and Analysis

The following SOC codes were used for employment: Agricultural Engineers (17-2021); Civil Engineers (17-2051); First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers (37-1012); Landscaping and Groundskeeping Workers (37-3011); First-Line Supervisors of Farming, Fishing, and Forestry Workers (45-1011); Agricultural Equipment Operators (45-2091); Pipelayers (47-2151); Plumbers, Pipefitters, and Steamfitters (47-2152); Helpers-Pipelayers, Plumbers, Pipefitters, and Steamfitters (47-3015); Farm Equipment Mechanics and Service Technicians (49-3041).

SOC	Description	2013 Jobs	2016 Jobs	Change	% Change	Replacements	Openings	Annual Openings
17-2021	Agricultural Engineers	32	30	(2)	(6%)	3	3	1
17-2051	Civil Engineers	2,344	2,465	121	5%	207	328	109
37-1012	First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers	1,672	1,782	110	7%	66	176	59
37-3011	Landscaping and Groundskeeping Workers	15,389	16,387	998	6%	1280	2,278	759
45-1011	First-Line Supervisors of Farming, Fishing, and Forestry Workers	4,814	4,937	123	3%	354	477	159
45-2091	Agricultural Equipment Operators	7,698	7,995	297	4%	804	1,101	367
47-2151	Pipelayers	687	782	95	14%	36	131	44
47-2152	Plumbers, Pipefitters, and Steamfitters	2,916	3,176	260	9%	141	401	134
47-3015	Helpers--Pipelayers, Plumbers, Pipefitters, and Steamfitters	357	411	54	15%	20	74	25
49-3041	Farm Equipment Mechanics and Service Technicians	1,430	1,435	5	0%	163	168	56
Total								1,713

Data provided by Jenni Abbott, Technical Assistant Provider, Center of Excellence Labor Market Research

Employer Survey

SOC	Description	Annual Opening s	Pct 10 Hourly Earning s	10th Percentile Annual	Median Hourly Earning s	Median Annual Wages
17-2021	Agricultural Engineers	1	\$23.75	\$49,400	\$37.51	\$78,021
17-2051	Civil Engineers	109	\$29.53	\$61,422	\$42.78	\$88,982
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49-3041	Farm Equipment Mechanics and Service Technicians	56	\$10.84	\$22,547	\$17.24	\$35,859
Total		1,713				
Average			\$7.14	\$14,848.13	\$10.04	\$20,891.14
Weighted Average			\$13.80	\$28,696.16	\$20.10	\$41,801.16

Data provided by Jenni Abbott, Technical Assistant Provider, Center of Excellence Labor Market Research

Explanation of Employer Relationship

Employer data was created by the Center of Excellence for the CTE Enhancement Fund. Data used is for the Central Valley and Mother Lode Regions.

List of Members of Advisory Committee

K. Birdwell
J. Silvera
E. Pulido
K. Vargas
P. Smith
R. Evans

Recommendation of Advisory Committee

Minutes

Date 8/11/15
Time 5:31 – 7:02
Location FB-03

Person	Present	
	Yes	No
Kerri Birdwell	x	
John Silvera	x	
Kurt Quade		x
Chris Chaney	x	
Eddie Pulido	x	
Katie Vargas	x	
Jamie Anthony		x
Phil Smith	x	
Richard Evans	x	
Clint Cowden	x	
Tim Ellsworth	x	

1.0 Call to order

1.1 Call to order

1.1.1 K. Birdwell called the meeting to order at 5:31 pm on August 11, 2015

1.2 No Additions to the Agenda

1.2.1 K. Vargas moved to accept the agenda with no additions

1.2.2 P. Smith Seconded the motion

1.2.3 Motion passed unanimously

2.0 Public Comments

2.1 No Public comments

3.0 Approval of Minutes

3.1 Previous minutes were tabled

3.1.1 K. Birdwell moved to table previous minutes

3.1.2 J. Silvera seconded the motion

3.1.3 Motion passed unanimously

4.0 Administrative Report

4.1 State of the Farm – C. Cowden

4.1.1 Preliminary garlic tonnage = 5 tons/acre, almond production appears to be lower than last year even with 4 acre-ft of leach water applied during water dormancy, pistachios appear to be similar to the rest of the region with a good amount of bunches but blanks appear to be an issue, 2016 cropping plan will include 22 acres of pistachios, 25 acres of almonds, 30 acres of fresh market garlic, 30 acres of processing tomatoes, 25 acres of student hay projects, 5 acre sugar beet trial

5.0 Old Business

5.1 Curriculum Process – Tim Ellsworth

5.1.1 Faculty communicate with advisory board regarding the future training needs for the Valley → Faculty gathers this information and compares to available C-ID courses if not available, use the DQP process to develop curriculum → this curriculum is brought to Ag area meeting to ensure it is supported by Labor Market data → curriculum, labor market data and C-ID is presented to the advisory committee for input and approval → this curriculum is submitted to the West Hills College Coalinga curriculum committee where content as well as rigor are assessed and approved → The curriculum is then forwarded to the Chief Instructional Officer to ensure it fits with the college mission and goals → Now curriculum is submitted to the West Hills College Board of Trustees for approval → Upon Board approval the curriculum is submitted to the Regional Vocational Curriculum Committee to ensure program does not negatively impact regional programs and to ensure it meets rigor → Upon approval the curriculum is submitted to the California Community College Chancellor's Office for approval

5.2.2 Because this process took over 1 year to be completed we are reviewing this curriculum packet

6.0 New Business

6.0 K. Vargas moved to treat 6.1 – 6.4 as one item

6.0.1 J. Silvera seconded the motion

6.0.2 Motion Passed unanimously

6.1 Irrigation Engineering Technology

6.2 Industrial Maintenance Technology

6.3 Integrated Pest Management

6.4 Welding Technology

6.1-4 Combined Curriculum

6.1-4.1 R. Evans moved to approve the curriculum as submitted

6.1-4.2 P. Smith seconded the motion

6.1-4.3 Motion passed unanimously

7.0 Standing Reports

7.1 **Precision Ag** – The industry is contracting due to the corn prices in the Midwest. There is an increasing need for entry-level technicians who understand more about electronics and hydraulics. There is a push for more precision ag in water and sensor based agriculture.

7.2 **PCA/CCA** – There is still a need for more PCAs and CCAs in the Valley and courses need to be taught so that working professionals can take them (i.e. weekends and evenings.) Continue to align curriculum so that it will allow students to path both the CCA and PCA credentialing.

7.3 Irrigation – As a group, the advisory committee doesn't agree with the content that is being covered in the Irrigation Association's Certified Agricultural Irrigation Specialist exam, but it is still the industry standard and therefore be used as the structure for the curriculum, but California requirements need to be expressed and taught such as scientific irrigation scheduling during off-peak energy cycles.

7.4 Welding – There have been a lot of layoffs in the oil fields over the past 6 months, but there is still a need for structural and manufacturing welding. Therefore additional welding opportunities, other than in the oil fields, need to be stressed to students.

7.5 Heavy Equipment – Employment is still slow but with high speed rail coming on we will need to have our program up and going to fill this need. We probably should look at contract training, especially with technology.

7.6 IMT – Agriculture products manufacturing is still king in our region which means seasonality. We try to offer the sequenced courses for skill upgrade of current workers such that graduation happens during hiring phases.

8.0 Announcements

8.1 No announcements

9.0 Adjournment

9.1 K. Birdwell adjourned the meeting at 7:02

Adequate Resources & Compliance

Library and Learning Resources Plan

☒ The Learning Resources collection has been reviewed by the faculty originator and the librarian.

The following resources are currently available for course support:

☐ Books

☒ Reference Materials

☒ Media

☒ Electronic Resources

The following resources are recommended for purchase to further support the course:

☒ Books

☐ Reference Materials

☐ Media

☐ Electronic Resources

Additional Comments: A copy of the course texts for student use would be beneficial.

Facilities and Equipment Plan

Room Space Requirements:

Lecture classroom and science laboratory

Staff Requirements:

One FTE faculty for certificate

Equipment Requirements:

Equipment for startup of proposed certificate - \$48,000

- Each student will need a computer station with IrriCAD irrigation design software installed and a large format printer: 18 computers @ 1,500 each, large format printer @ \$7,000 and \$4,000 lab license for IrriCAD.
- Each group of four students will need an evaluation kit including: graduated cylinders, pressure gauges, goof plugs, hand tools, water capture devices and etc. \$200/year for equipment upkeep and replacement.

Financial Support Plan

One full-time faculty and one 0.5 full-time faculty are paid through the general fund with additional courses taught by adjunct as grant funding allows.

Faculty Qualifications and Availability

Discipline: Agricultural Production or Agricultural Engineering

Faculty Qualifications: Any Bachelor's degree and two years of professional experience or any Associate's degree and six years professional experience.

Faculty Availability:

Full-Time Faculty: 1.5 FTE Faculty

Adjunct Faculty: 2, 0.5 FTE Faculty

Based on model curriculum (if applicable)

All units are aligned with C-ID, as applicable.

Licensing or Accreditation Standards

N/A

Student Selection and Fees

No limitation on enrollment and no materials fee.

PROGRAM PROPOSAL PACKET

FACULTY ORIGINATOR: T. Ellsworth

DATE: 4/6/2015

☒ New Program Proposal

☐ Program Revision Proposal

PROGRAM NAME: Irrigation Engineering Technology

TYPE OF DEGREE: ☐ AA or AS Degree

☒ Certificate

☐ AA-T or AS-T

CHECKLIST: (check all that apply)

☐ AA-T or AS-T Addendum

☒ CTE Addendum

1. Statement of Program Goals and Objectives

The stated goals of the program must include (but are not limited to) the preparation of students for one or more baccalaureate majors. Often the stated goals are the Program Student Learning Outcomes. If the degree is AA-T or AS-T the statement must also include language referencing the intent of the degree which is to provide students with a seamless transfer to the CSU.

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- a. draw basic two-dimensional drawings with the associated drawing tools and aids;
- b. create 2-dimensional isometric drawings with the associated drawing tools;
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- d. calculate evapotranspiration rates for crops common to California over a complete growing season;
- e. compare and install all the major water supply systems (i.e. surface, sprinkler, drip, and micros);
- f. perform an irrigation system evaluation for drip/micro irrigation systems;
- g. determine irrigation system distribution uniformity and application efficiency for given irrigation systems;
- h. determine which type of irrigation system is appropriate for site specific conditions, i.e. soil properties and crop data;
- i. specify materials and components to make a complete system that optimizes the balance between capital investment and operation and maintenance costs;
- j. determine plant water use for given crops and climatic conditions;
- k. calculate sprinkler spacing for head-to-head coverage;
- l. select proper sprinklers for given crops and irrigation system components;
- m. complete irrigation designs for efficiency and uniformity;
- n. calculate system flow rate requirements and friction losses in hoses;

INSTRUCTIONAL AREA: CTE

- o. determine allowable pressure differences in irrigation systems;
- p. determine proper pipe size, pressure regulation and appropriate filtration for given design parameters;
- q. select proper emission devices and design for minimization of clogging.

2. Catalog Statement

This must be written exactly as it will appear in the college catalog. The statement must include the program's goals and objectives. The AA-T and AS-T degrees require specific language per Education Code 66746. CTE proposals must state employment options that will be available for the student upon degree completion.

The Irrigation Engineering Technology program prepares students for careers in irrigation sales, installation, design and operation; learning skills in computer-aided drafting, irrigation management, evaluation and design, including advanced design and drip and micro irrigation design and management. The curriculum is designed to align with the Irrigation Association's certified irrigation designer (CID) certification and certified agricultural irrigation specialist (CAIS) certification. Completion of either certificate qualifies students to enter the professional job market or the units may be applied as university transfer or to fulfill the education requirement for the California Department of Pesticide Regulation's (CDPR) Agricultural Pest Control Adviser (PCA) license and the Society of Agronomy's Certified Crop Adviser (CCA).

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- Students will determine proper pipe size, pressure regulation and appropriate filtration for given design parameters.
- Students will understand agronomic fundamentals and technological principles (i.e. surveying, CAD, precision agriculture, soil and plant science).

3. Program Course Requirements (as it is to appear in the College Catalog)

Course #	Title	Units
AET 15.....	CAD for Agriculture.....	2
AET 21.....	Ag-Irrigation Management	3
AET 22.....	Irrigation Evaluation and Design Principles.....	4
AET 23.....	Advanced Irrigation Design.....	3
AET 24.....	Drip and Micro Irrigation Design and Management.....	3
Total.....		15

In addition to the core courses the student must take at least three units from the following courses:

Course #	Title	Units
AET 10.....	Surveying	3
AET 11.....	Advanced Surveying with GIS Applications	2
AET 16.....	CAD Applications for Land Management in Agriculture.....	1
CRPSCI 6	Introduction to Precision Agriculture	3

INSTRUCTIONAL AREA: CTE

CRPSCI 19 .. California Water.....	3
SLSCI 21 Soils.....	4
Total.....	3

Total Units Required for Certificate 18

4. Program Prerequisite, Corequisite, or Advisory Courses

--

5. Program Prerequisite Skills and/or Knowledge

--

6. Background and Rationale

California agriculture is in the middle of a severe crisis, with yet another year of drought coupled with increased environmental concerns and a down turned economy. "Farmers' decisions to fallow thousands of acres during last year's drought cost \$260 million in crop losses statewide, as well as hundreds of jobs. That's bad news in Firebaugh, a city of 6,000. Because of the downturn in the economy, the city's sales tax plummeted 43% in the last quarter of 2008 " If the Westside is California's heartland, then Valley agriculture is its heart and water is its lifeblood.

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PROGRAM PROPOSAL PACKET
Career Technical Education Addendum

FACULTY ORIGINATOR: T. Ellsworth

DATE: 4/6/2015

PROGRAM NAME: Irrigation Engineering Technology

TYPE OF DEGREE:

- ☐ Associate of Arts for Transfer
☐ Associate of Science for Transfer
☐ Associate of Arts
☐ Associate of Science
☒ Certificate

ATTACHMENTS REQUIRED

- ☒ Labor/Job Market Data
☒ Employer Survey
☒ Minutes of Key Meetings

1. Labor Market Information and Analysis (required for new programs)

The following SOC codes were used for employment: Agricultural Engineers (17-2021); Civil Engineers (17-2051); First-Line Supervisors of Landscaping, Lawn Service, and Groundskeeping Workers (37-1012); Landscaping and Groundskeeping Workers (37-3011); First-Line Supervisors of Farming, Fishing, and Forestry Workers (45-1011); Agricultural Equipment Operators (45-2091); Pipelayers (47-2151); Plumbers, Pipefitters, and Steamfitters (47-2152); Helpers-Pipelayers, Plumbers, Pipefitters, and Steamfitters (47-3015); Farm Equipment Mechanics and Service Technicians (49-3041).

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INSTRUCTIONAL AREA: CTE

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2. Employer Survey (required for new programs)

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Weighted Average			\$13.80	\$28,696.16	\$20.10	\$41,801.16

Data provided by Jenni Abbott, Technical Assistant Provider, Center of Excellence Labor Market Research

3. Explanation of Employer Relationship (required for new programs)

Employer data was created by the Center of Excellence for the CTE Enhancement Fund. Data used is for the Central Valley and Mother Load Regions.

4. List of Members of Advisory Committee (required for new and revised programs)

K. Birdwell
J. Silvera
E. Pulido
K. Vargas
P. Smith

INSTRUCTIONAL AREA: CTE

R. Evans

5. Recommendations of Advisory Committee (required for new and revised programs)

Minutes

Date 8/11/15
Time 5:31 – 7:02
Location FB-03

Person	Present	
	Yes	No
Kerri Birdwell	x	
John Silvera	x	
Kurt Quade		x
Chris Chaney	x	
Eddie Pulido	x	
Katie Vargas	x	
Jamie Anthony		x
Phil Smith	x	
Richard Evans	x	
Clint Cowden	x	
Tim Ellsworth	x	

1.0 Call to order

1.1 Call to order

1.1.1 K. Birdwell called the meeting to order at 5:31 pm on August 11, 2015

1.2 No Additions to the Agenda

1.2.1 K. Vargas moved to accept the agenda with no additions

1.2.2 P. Smith Seconded the motion

1.2.3 Motion passed unanimously

2.0 Public Comments

2.1 No Public comments

3.0 Approval of Minutes

3.1 Previous minutes were tabled

3.1.1 K. Birdwell moved to table previous minutes

3.1.2 J. Silvera seconded the motion

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4.0 Administrative Report

4.1 State of the Farm – C. Cowden

4.1.1 Preliminary garlic tonnage = 5 tons/acre, almond production appears to be lower than last year even with 4 acre-ft of leach water applied during water dormancy, pistachios appear to be similar to the rest of the region with a good amount of bunches but blanks appear to be an issue, 2016 cropping plan will include 22 acres of pistachios, 25 acres of almonds, 30 acres of fresh market garlic, 30 acres of processing tomatoes, 25 acres of student hay projects, 5 acre sugar beet trial

5.0 Old Business

5.1 Curriculum Process – Tim Ellsworth

5.1.1 Faculty communicate with advisory board regarding the future training needs for the Valley → Faculty gathers this information and compares to available C-ID courses if not available, use the DQP process to develop curriculum → this curriculum is brought to Ag area meeting to ensure it is supported by Labor Market data → curriculum, labor market data and C-ID is presented to the advisory committee for input and approval → this curriculum is submitted to the West Hills College Coalinga curriculum committee where content as well as rigor are assessed and approved → The curriculum is then forwarded to the Chief Instructional Officer to ensure it fits with the college mission and goals →

Now curriculum is submitted to the West Hills College Board of Trustees for approval → Upon Board approval the curriculum is submitted to the Regional Vocational Curriculum Committee to ensure program does not negatively impact regional programs and to ensure it meets rigor → Upon approval the curriculum is submitted to the California Community College Chancellor's Office for approval

5.2.2 Because this process took over 1 year to be completed we are reviewing this curriculum packet

6.0 New Business

6.0 K. Vargas moved to treat 6.1 – 6.4 as one item

6.0.1 J. Silvera seconded the motion

6.0.2 Motion Passed unanimously

6.1 Irrigation Engineering Technology

6.2 Industrial Maintenance Technology

6.3 Integrated Pest Management

6.4 Welding Technology

6.1-4 Combined Curriculum

6.1-4.1 R. Evans moved to approve the curriculum as submitted

6.1-4.2 P. Smith seconded the motion

6.1-4.3 Motion passed unanimously

7.0 Standing Reports

7.1 **Precision Ag** – The industry is contracting due to the corn prices in the Midwest. There is an increasing need for entry-level technicians who understand more about electronics and hydraulics. There is a push for more precision ag in water and sensor based agriculture.

7.2 **PCA/CCA** – There is still a need for more PCAs and CCAs in the Valley and courses need to be taught so that working professionals can take them (i.e. weekends and evenings.) Continue to align curriculum so that it will allow students to path both the CCA and PCA credentialing.

7.3 **Irrigation** – As a group, the advisory committee doesn't agree with the content that is being covered in the Irrigation Association's Certified Agricultural Irrigation Specialist exam, but it is still the industry standard and therefore be used as the structure for the curriculum, but California requirements need to be expressed and taught such as scientific irrigation scheduling during off-peak energy cycles.

7.4 **Welding** – There have been a lot of layoffs in the oil fields over the past 6 months, but there is still a need for structural and manufacturing welding. Therefore additional welding opportunities, other than in the oil fields, need to be stressed to students.

7.5 **Heavy Equipment** – Employment is still slow but with high speed rail coming on we will need to have our program up and going to fill this need. We probably should look at contract training, especially with technology.

7.6 IMT – Agriculture products manufacturing is still king in our region which means seasonality. We try to offer the sequenced courses for skill upgrade of current workers such that graduation happens during hiring phases.

8.0 Announcements

8.1 No announcements

9.0 Adjournment

9.1 K. Birdwell adjourned the meeting at 7:02