Department of
EDUCATION
Office of Educational Improvement and Innovation
Public Service Building
255 Capitol Street NE
Salem, OR 97310-0203
503-947-5600
Fax 503-378-5156
http://www.ode.state.or.us/go/cte/

Oregon Department of Community Colleges and Workforce Development
Public Service Building
255 Capitol Street NE
Salem, OR 97310-0203
503-378-8648
Fax 503-378-3365
http://www.odccwd.state.or.us/prgapproval/

Career and Technical Education
Program of Study Application (Perkins Eligible)
2011 Version

Directions—please enter information into ALL the fields in this application. (If you have technical problems with this application, contact Ron Dodge—503-947-5653, ron.dodge@ode.state.or.us.)

Secondary School District:	Beaverton
Secondary School ID Number:	**4638**
Secondary School Name:	**Health & Science HS**
Community College Name:	**Portland Community College**
Additional/Alternate College Name:	Oregon Institute of Technology

CTE POS—Title:	**Project Lead the Way**		
Career Area:	Industrial Engineering Systems--IE		
Cluster Area:	IE--Engineering		
Focus Area:			
Secondary CIP Code & Title:	1401 (4 digit)	1401 Engineering, General	
Community College CIP & Title:	15.0303 (6 digit)	Electronic Engineering Technology (EET)	
Secondary Program Title:	ENGINEERING & DESIGN ACADEMY		
Community College Program Title:	Electronic Engineering Technology (EET)		
Community College Award:	Associate of Science Oregon Transfer		
Secondary School/District Administrator:	Sue Irwin		Sue_Irwin@bev
Secondary Curriculum Coordinator:	Vicki Lukich		Enter email
Regional Coordinator/Contact:	2A--Lynn Wilson-Dean		Lynn.wilsondean@pcc,edu
Community College Contact:	Kendra Cawley		kcawley@pcc.edu
Secondary Lead teacher:	Tom Baker		james_baker@beavton.k12.or.us
Teacher CTE Endorsement:	IES--Engineering Technology		6/25/2012
			Enter email
			Enter email
College Lead or Department Chair:	OIT - Claude Kansaku		claude.kansaku@oit.edu
	PCC-Williams, Sanda N		sanda.williams@pcc.edu
Secondary CTE POS Visual **Hyperlink**: (or include a hardcopy of visual in Addendum B)	http://spot.pcc.edu/pavtec/HS%20POS%20Roadmap%20Templates/		☐ No link, but included in Addendum B
CC CTE POS/Pathway Visual **Hyperlink**: (or include a hardcopy of visual in Addendum B)	http://www.pcc.edu/programs/electronic-engineering/		☐ No link, but included in Addendum B

Submit complete application materials by email to your CTE Regional Coordinator.
(Regional Coordinator: Email application and addenda to this mailbox-- POS.Application@state.or.us)

CTE POS Course Lists—Secondary

Please list the CTE Program of Study Secondary Courses below. "Core Courses" are those in which the CTE teacher will:

- **Teach with intent and purpose the CTE POS knowledge and skills identified in the CTE POS' Skill Set**
- **Assess and record student achievement of those standards**
- **If your secondary school does not have course numbers, contact Ilene Spencer**
- **It is expected that it will take at least 2 credits to complete a skill set and prepare the student for the technical skill assessment.)**

Secondary Core CTE Courses

TSA* Required	School Course #	Secondary Course Name	# of Credits	5-digit NCES Code	Course Description (brief) (boxes below will expand)	Teacher Name	**CN?	Articulating College	College Course #	College Course Name
☐	C4701 C4702 C4703	Introduction to Engineering Design	1.5	21004	Introduction to Engineering Design, including engineering design process, engineering notebooks, sketching 3D objects, computer-based 3D modeling, reverse engineering, and fluid power, engineering ethics.	Baker	☐	Oregon Institute of Technology	MET 241 EE 101/2 CIV 101/2	CAD for Mechanical Design I Introduction to Engineering I/II Orientation in Engineering
☐	C8751 C8752 C8753	Principles of Engineering	1.5	21004	Principles of Engineering, including Engineering careers, technical communication, simple machines, fluid power systems, basic electrical systems, control systems, statics, strength of materials, reliability engineering, kinematics, energy sources	Baker	☐	Oregon Institute of Technology	MET 111 EE 103 CIV 103	Orentation I Introduction to Engineering III Freshman Design Experience
☐	820DE 1 820DE 2 820DE 3	Digital Electronics	1.5	21004	Digital Electronics, including electrical theory, analog & digital circuits, And/Or/Invert (AOI) logic, NAND/NOR logic, combinational logic circuits,	Baker	☐	Oregon Institute of Technology	EE 347 EET 207 CST 207	Digital Logic EET Elective CET or SET Elective

					Programmable Logic Devices (PLD), latches and flip-flops, synchronous and asynchronous counters, state machines, microcontrollers, robots					
☐							☐			

**TSA required—Technical Skill Assessment required course—required courses that, when completed, trigger TSA assessment eligibility for the student*
*** CN = College Now—course identification as College Now or articulated courses*

CTE POS Course Lists—Post-Secondary

Post-secondary Core CTE Courses: *List all courses that complete delivery of the identified Skill Set—those included in the Course/Skill Set crosswalk matrix*

Name of Certificate or Degree Program	Enter name of college program			Degree or Certificate:	Select certificate or degree
College Course #	Post-Secondary Course Name	Number of Credits	*College Now?	Course Description (brief) (boxes below will expand)	
EET 111	Electrical Circuit Analysis 1	5	☐	International System of Units, engineering notation and prefixes, definitions of current, voltage, resistance, power, work and efficiency. For DC circuits: Ohm's and Kirchoff's Laws; DC resistive networks including Thevenin and Norton equivalent circuits. Node voltage and mesh current analysis methods; Capacitance and RC transient response. Includes a 3-hour per week laboratory session.	
EET 121	Digital System 1	3	☐	The first course in digital electronics covering basic electrical concepts, number systems, combinational gates (AND, OR, NOT, NAND, NOR, and XOR), electrical characteristics and internal structures of TTL gates, Boolean algebra, Karnaugh mapping, and use of MSI devices including adders, decoders, encoders, multiplexers and demultiplexers. Includes a 3 hour per week laboratory.	
EET 101	Intro to Electric Test Equipment	1	☐	Introduces the operation and use of various types of equipment and tools used in electronic technology including; oscilloscope, function generator, DMM, and voltage source, calculator, and EXCEL. Also uses software controls to obtain and analyze data avail- able on this equipment. Use Spice to perform simulation.	
			☐		

** CN = College Now—course identification as College Now (or articulated courses)*

Element 1: Standards & Content

☒ A. Relevant, rigorous standards-based content aligned with challenging academic standards;
☒ B. Shared secondary and post-secondary technical content which incorporates the knowledge and skills identified in the Oregon Skill Sets or other industry-based standards, which are validated through national and state employer input;
☒ C. The program is of sufficient size, scope and sequence to include curriculum and instruction leading to student attainment of academic and technical knowledge and skills for high school graduation, college entry, and careers within **high wage, high demand fields**.
☒ D. Systemic approach to CTE using industry-based academic and technical knowledge and skills where student performance is demonstrated through valid and reliable assessments aligned to industry standards; and
☒ E. Assure secondary and post-secondary students are prepared for **high demand and high wage careers and occupations** that are responsive to regional, state or global employment trends.
☒ F. Safety and drug-free workplace expectations are an integral, explicit and mandatory part of the CTE instructional program. Laboratory spaces with power equipment model a safe and clean learning environment. Available safety certification is required for students, as appropriate.
☒ G. Based on the Program Design and instructional plan where each student will:
- ☒ Recognize connections between academic and technical content;
- ☒ Meet diploma requirements, post-secondary entry requirements, and certificate/degree requirements;
- ☒ Demonstrate mastery of academic and technical content that is aligned with industry standards;
- ☒ Apply learning through authentic experiences, and
- ☒ Build confidence to compete in high wage, and/or high demand occupations. .

Comments and additional information: Please address the questions for both the Secondary Partner and the Post-Secondary Partner found in the "Areas of Strength" and Priority Concerns" worksheet at the end of this section of the ***Readiness and Sustainability Tool***:

SUCCESSES

Secondary Partner:

- *What's working well that is worth keeping?* Our Engineering program is based on Project Lead the Way (PLTW), a national organization that provides hands-on, real-world, problem-based curriculum addressing the science and math from an Engineer's perspective. All members of the sophomore class will continue to be exposed to Engineering curriculum, first in an introductory class for all students, followed by additional Engineering classes targeted to students selecting either the Health Academy or Engineering Academy.

  Following the PLTW curriculum, which is the gold standard for high school pre-engineering courses, we are setting the stage for students to confidently pursue post secondary education and careers in the broad field of engineering. We will be pursuing dual credit opportunities for our students in all PLTW courses. Additionally, the Health & Science School PLTW program has just received state certification, the first program to be certified in its first year, a tribute to the commitment of the PLTW teacher, academic staff, building leadership and the Advisory Committee.
- *What goals do you have to sustain and improve your program?* Goals include moving the Engineering program so that the sequence starts with freshman, and to add the PLTW capstone class. There is also interest in incorporating Gateway to Technology, the PLTW middle school curriculum, into our middle school science courses.
- *What strategies will you use to reach your goals?* Both the Engineering and Biomedical PLTW teachers are convinced this will improve our program. We will continue to campaign for these changes. We will be limited by teacher availability and funds for summer training.
- *How will you know if you are successful?* When freshman and middle school students at Health & Science are taking Engineering courses.

Post-Secondary Partner:

- *What's working well that is worth keeping?* Summer training at OIT does a good job preparing teachers to deliver the curriculum. It is very helpful to put new teachers together with both master PLTW teachers and university professors in the content area. New teachers leave training with confidence in the curriculum and delivery, and the underlying theory.
- *What goals do you have to sustain and improve your program?* OIT is committed to sustain and improve summer training. Last summer, teachers were housed on campus rather than at a local hotel, which made master teachers and professors more accessible. OIT provides the professors that help deliver the underlying theory to deepen teacher's understanding of the material.
- *What strategies will you use to reach your goals?* At this point OIT has a working and sustainable model. OIT has hosted summer training since 2007.
- *How will you know if you are successful?* The indicator for success is that teachers will continue to be able to receive summer training at OIT for the classes they plan to teach at their school.

PCC Response

The academic community at Portland Community College (PCC) has developed and approved PCC Core Outcomes that are common to graduates of all PCC programs and aligned with general education goals. Core outcomes cover six areas—communication, community and environmental responsibility, critical thinking and problem solving, cultural awareness, professional competence and self-reflection.

CTE students at PCC are assessed on their ability to demonstrate certificate and AAS degree outcomes for their program area of concentration. The current methods of assessment may include one or more of the following: oral or written examinations, quizzes, written assignments, visual inspection techniques, safe work habits, task performance, and work relations.

PCC's Curriculum Support Office is in the process of gathering all current CTE Program Outcomes and publishing them to a website under their respective certificates and AAS degrees (http://www.pcc.edu/resources/academic/degree-outcome/index.html).

In the PAVTEC Work Sessions that included both PCC and secondary school staff, academic (reading, writing and math) entrance expectations of PCC and specifically PCC CTE programs were discussed and cross walked with high school course curricula. The curricula of the high school's CTE Programs of Study, combined with the school's diploma requirements, are designed to prepare students to meet or exceed those expectations.

PCC'S **Electronics Engineering Technology** program and its options (Biomedical Electronics Technology, Renewable Energy Systems, Mechatronics, Automations and Robotics, Wireless and Data Communications Technology curricula) are designed to strengthen both the academic and technical skills of our students. Most courses include lab sections which utilize the state of the art technology. The program is continuously revised to meet the industry demands and needs. The program staff and faculty conduct intensive research for national and international implications. The advisory committee provides valuable input and evaluation in developing and revising the curriculum of each options of the EET program.

CHALLENGES

We are in our fourth year of operation, with our first graduating class in June. We are still establishing and inventing policies and practices that other schools have solidified, such as guiding students through the college application and financial aid process.

Secondary Partner:

- *What will be new or needs to be revised?* This is the first year teaching Digital Electronics. The sequence of the class needed to be revised due to materials not arriving on time. Ordering parts so that they are available on time continues to be a challenge as some of PLTW's approved vendors can require months

to ship certain items. In addition, the Principles of Engineering curriculum was massively overhauled, so some major projects were not as smooth as expected.

- *What strategies will you use to address identified priority concerns?* With a year under our belts, both the DE and POE classes should go better, and we are doing a better job staying ahead of parts orders.
- *What are the indicators you will use to measure your improvement?* Both student achievement and comprehension are good indicators as students should perform better when the proper course sequence is followed and the teacher is more confident with the material.
- *How will you know if you are successful? And when?* As soon as next year we should see improvement in student achievement in POE and DE.

Post-Secondary Partner:

- *What will be new or needs to be revised?* PLTW reviews the curriculum yearly, and makes major or minor changes every 3-5 years. Principles of Engineering was revised last year. Neither Digital Electronics or Introduction to Engineering Design are in need of major revision. When curriculum changes, so will summer training.
- *What strategies will you use to address identified priority concerns?* OIT will be aware of which classes are being considered for revision, both providing input to the review and revision process and preparing for incorporating the new curriculum into summer training.
- *What are the indicators you will use to measure your improvement?* Teacher feedback received during summer training will be used to measure the effectiveness of responding to changed curriculum.
- *How will you know if you are successful? And when?* Teacher feedback should be the same or better than previous year's feedback.

Addendum A: Skill Standards/Content/Course Crosswalk

Directions: Create an Addendum A folder for properly identified examples of the items listed below:

Required documentation for Element 1:

- Identify industry validated technical skill standards/skill sets; list all Knowledge and Skill Statements for the Cluster, and include Focus Area KS statements if appropriate (Performance Indicators are not necessary for this documentation)
- Standards-to-course crosswalk/mapping—Please use the Excel spreadsheet posted online at (http://www.ode.state.or.us/teachlearn/pte/posexampleskillmatrixfield.xls), or use one you've created locally to crosswalk the identified Skill Set against the listed courses. All courses identified in the secondary and postsecondary course lists on pages 2 and 3 should be included.

Element 2: Alignment & Articulation

☒ A. An expectation that the elements defined in the Perkins Act will ensure a greater depth and breadth of student learning through the alignment and integration of challenging academic and technical standards in curriculum, instruction and assessment. [Sec.122(c)(1) & Sec. 134(b)(3)]

☒ B. A unified, cohesive sequence of content among secondary and post-secondary partners; a non-duplicative sequence of courses or learning experiences; students receive credit for prior learning whenever possible.

☒ C. Alignment of content between secondary and post-secondary education may include course articulation or other ways to acquire Post-secondary education credits (e.g. Oregon's Credit for Proficiency, Dual Credit, etc.).

☒ D. Articulation agreements are developed, implemented and supported at the institutional level to ensure long-term sustainability and cross-sector cooperation.

☒ E. Based on the program design and instructional plan, each student will:

- ☒ Never need to take a remedial course;
- ☒ Continually progress in knowledge and skills when ready;
- ☒ Earn high school or college credit based on performance; and
- ☒ Make the connection between educational preparation and entry into a career.

Comments and additional information: Please address the questions for both the Secondary Partner and the Post-Secondary Partner found in the "Areas of Strength" and Priority Concerns" worksheet at the end of this section of the ***Readiness and Sustainability Tool***:

SUCCESSES

Through our Project Lead the Way affiliation, students receiving an A or B on the high school class and who pass the year-end PLTW standardized test receive Engineering college credit though Oregon Institute of Technology. Students may choose among 3 options to best accommodate their intended major. Refer to AddendumB_OITDualCredit.pdf for the OIT classes that may be claimed for each of the PLTW courses.

The objective of Health & Science School is to graduate students not only with college courses earned in PLTW, but also credits earned through dual credit opportunities in other academic areas. With the student population recruited from underrepresented minority populations, the financial benefits of earning college credits while in high school is huge. Additionally, since one of the strongest predictors of future college success is prior college success, the more college coursework students can experience at Health & Science School the more likely they are to be successful in college.

PLTW is addressing the problem of preparing high school students for high-paying Engineering careers by providing curriculum that not only teaches students about Engineers, but has them work, think, communicate and problem solve as Engineers. A typical high school student has a pretty good idea about careers in medicine and law, but very little about careers in Engineering. PLTW students enter college with the awareness of Engineering careers, and experience thinking as an Engineer, and are therefore much better prepared for success in an Engineering program at the college level. PLTW curriculum, by design, is articulated with college level Engineering programs.

Secondary Partner:

- *What's working well that is worth keeping?* Students are able to earn college credit through OIT.
- *What goals do you have to sustain and improve your program?* We are able to award college credit as long as we maintain our PLTW certification, so we will continue to monitor and comply with all requirements.

- *What strategies will you use to reach your goals?* PLTW does a good job of communicating with teachers, as does OIT. We will monitor all communications from OIT to make sure we are in compliance.
- *How will you know if you are successful?* By maintaining our PLTW certification, and by remaining in good standing with the PLTW organization.

Post-Secondary Partner:
- *What's working well that is worth keeping?* Communications to PLTW affiliate schools.
- *What goals do you have to sustain and improve your program?* In addition to regular communication from the PLTW national organization, OIT provides regular updates to PLTW affiliate schools about summer training, changes to requirements for claiming college credit such as updated forms, and other items of interest.
- *What strategies will you use to reach your goals?* Frequent communications at least on a monthly basis, and teacher survey information at summer training sessions as to the quality of the communications.
- *How will you know if you are successful?* Positive survey results at summer training.

CHALLENGES

Since OIT is the Oregon PLTW affiliate, the Engineering credits students earn by design fit into the OIT Engineering programs. It is not yet clear how well those credits will fit with Engineering programs at other schools, or whether the credits will be accepted as Engineering credit.

We are still in the early stages of articulating with Portland Community College as we have not yet graduated our first class. Included in the addendum are descriptions of classes that align well with PLTW content, including selected classes from the Electronic Engineering Technology and the Mechatronics associates degree program. Refer to highlighted classes in those Addendum A documents, and the referenced class descriptions.

Secondary Partner:
- *What will be new or needs to be revised?* PLTW is using their 3rd test vendor in as many years. This year's college credit exam will consist of an online multiple choice test plus a paper short answer test. Consistency in the test vendor will ease the amount of time teachers need to spend learning how to work with another test vendor, and help students who are familiar with the presentation of previous year's tests to be more comfortable and perform better on the test, increasing their likelihood of passing the test.
  Since we have not yet graduated seniors with engineering credits, we have yet to see if there are problems with other institutions accepting those credits.
- *What strategies will you use to address identified priority concerns?* First we must see if there is a problem with other schools accepting engineering credits; and address those institutions at that time.
- *What are the indicators you will use to measure your improvement?* A continually increasing portion of students should pass the college credit test, and colleges and universities will accept the OIT engineering credit.
- *How will you know if you are successful? And when?* We should see improvement in both areas from year to year.

Post-Secondary Partner:
- *What will be new or needs to be revised?* College credit forms will be updated as new engineering majors are added at OIT to reflect the most applicable way to apply credit to OIT majors. As PLTW classes change or as OIT classes change, there may need to be adjustments as to how PLTW classes map onto OIT credits.
- *What strategies will you use to address identified priority concerns?* PLTW impact will need to be considered whenever any of the above events occur to make sure the articulation between PLTW and OIT is kept current.
- *What are the indicators you will use to measure your improvement?* The articulation link between PLTW and OIT is up to date.
- *How will you know if you are successful? And when?* The articulation link between PLTW and OIT is currently and continuously up to date.

CTE students count on their secondary academics and exposure to possible careers to help shape their futures. In this unstable economic climate, it is more important than ever to match secondary Programs of Study with post-secondary certificates or degrees that lead to high-wage, high-skill, and high-demand jobs based on updated regional or state labor market information.

Dual credit classes provide an opportunity for high school CTE students to transition smoothly from high school to college, in a non-duplicative program of study. Articulated courses also help in shortening time-to-completion of a degree or certificate. Having dual credit available to high school programs is a motivator for students to not only stay in school, but it also motivates students to do well in their classes as articulated courses are directly tied to a college transcript. Dual credit courses offer a broader, stronger high school curriculum and assists with increasing student readiness for college level work.

Dual credit facilitates productive interaction between high schools and the college for curriculum development while enhancing college-school-community relations. In addition, articulation agreements reduce the redundancy of courses between high school and college. Coordinated curriculum helps to assure students meet college standards.

The college's dual credit staff continues to work with high school CTE teachers to make sure students are properly registered for dual credit, and that grades are recorded for dual credit offerings. Dual credit registration is now on-line at the college so this will help facilitate the process for student's to register and participate.

Allowing high school students to receive college credit for CTE high school courses that meet college standards is an important part of students' successful transition to either post-secondary education or higher starting salaries. By providing specific guidance to meet college-level requirements, credit articulation agreements also help support higher quality secondary CTE courses and more qualified CTE teachers. It is important to acknowledge that a lot of barriers still exist that apply to awarding college credit for high school courses. Even when curriculum is aligned, there are issues relating to course delivery and/or instructor qualifications that are "deal-breakers" for dual credit. For Portland Community College, adherence to the faculty-defined Instructor Qualifications is tremendously important for maintaining accreditation standards. On the other hand, when students take a high school course that is substantially the same as a college course, there is reasonable concern that student effort may be duplicative.

In addition to the Institutional Articulation Agreements described above, course-to-course credit articulation agreements are in place for many courses, and will continue to be developed. Updated agreements are prepared annually in the fall by the college's dual credit staff and signed by appropriate secondary and post-secondary staff.

Element 3: Accountability & Assessment

☒A. Business, community and education partners, such as an Advisory Committee, participate in evaluating program vision, goals and priorities such as:
- ☒ Assist in CTE program of study development and validation of industry skill standards for curriculum content and technical skill assessment, where appropriate,
- ☒ Play an active role in curriculum development, implementation and program evaluation,
- ☒ Participate in the CTE teacher recruitment, instructor appraisal process and ongoing faculty professional development.

☒ B. Each Perkins-eligible CTE program of study's performance shall be measured against the set of Perkins-required performance measures as described in Perkins IV Measurement Definitions. [Perkins Section 113 (2)(A-B)].

☒ C. Perkins performance data is used for data-driven, CTE program of study improvement decisions (See page 12 of this document)

☒ D. Based on the Program Design and instructional plan each where each student:
- ☒ Monitors their own progress through their demonstration of attaining standards
- ☒ Demonstrates their technical and academic proficiency in meaningful ways
- ☒ Adapts their program to meet their personal goals based on industry requirements and performance outcomes

Comments and additional information*:** Please address the questions for both the Secondary Partner and the Post-Secondary Partner found in the "Areas of Strength" and Priority Concerns" worksheet at the end of this section of the ***Readiness and Sustainability Tool:

SUCCESSES

HS2 has a community advisory panel in place. In addition to their regular duties, the advisory panel has participated in the PLTW certification review, and the review of the Engineering instructor's technical and career background. The advisory panel is also well-represented during passages, when students present their reflections on their learning journey at the end of 8th, 10th and 12th grades.

HS2 is committed to gather data on student success including the data contained in the Perkins IV Performance Measurement. Perkins data will be used to drive the CTE program of study. To assist with data collection, all PLTW teachers and students are required to participate in standardized pre-assessments in math and science. The current partner is NWEA, Northwest Evaluation Association.

Secondary Partner:

- *What's working well that is worth keeping?* The advisory panel has been instrumental in guiding HS2 during its founding and along the way.
- *What goals do you have to sustain and improve your program?* We will continue to rely on our advisory panel for guidance with new areas and strengthening and improving existing areas.
- *What strategies will you use to reach your goals?* We continue to keep our advisory panel engaged at HS2.
- *How will you know if you are successful?* The advisory panel will be filled with active members who are familiar with what's happening at HS2.

CHALLENGES

- In our third year of the Engineering program, there is as of yet insufficient data to measure progress towards meeting the Perkins IV Performance Measurement. In addition, there have been three different PLTW test vendors over the last three years, which has further complicated data collection and analysis.

Instituting "valid and reliable" Technical Skills Assessments across a broad range of Programs of Study is a challenge that continues to need evaluation, development and implementation. In order to meet the ambitious Technical Skills Assessment reporting deadlines, all Perkins-eligible CTE programs at Portland Community College have begun collecting and sharing information about what each CTE program is currently doing for skills assessment, discussing technical challenges that interfere with other comprehensive assessment, reviewing existing and new assessment tools, selecting appropriate tools, matching technical skills assessment with useful industry standards, and sharing strategies about how to address academic deficiencies revealed by skills assessment. Many CTE departments are using current licensure or industry certification exams as their TSA, some are using nationally developed standardized tests, and others are creating their own assessments.

Prior CTE Student Performance Data Analysis

Secondary Student Data Analysis—part 1

An analysis of prior CTE concentrator performance will help identify any performance measures that may need to be addressed to increase concentrator academic and technical skill attainment, as well as the other performance indicators. The analysis of prior CTE concentrator performance data may guide you toward identifying appropriate priority goals and strategies for CTE program improvement.

Prior CTE Concentrator Performance Reports with student performance targets are available at CTE Student Data Reports

In the fields below, enter the student data you have for prior year student data for up to 3 prior years. Also, enter this year's Target Performance goals, as well as actual Current Year School Wide Performance Data.

CTE Performance Indicator	Prior Year CTE Performance Year: 2008-2009	Most Recent School Wide Performance Year: 2009-2010	Most Recent State Wide Performance Year: 2009-2010	Target School Wide Performance Year: 2010-2011	Final Perkins IV Target Performance Year: 2013-2014
1S1—Academic Attainment (***Reading***)*	n/a	75%	75%	70%	100%
1S2—Academic Attainment (***Mathematics***)*	n/a	79%	72%	70%	100%
1S3—Academic Attainment (***Writing***)*	n/a	54%	53%	70%	100%
2S1—Technical Skill Attainment	n/a	n/a	95.21%		Enter 2S1 Data
3S1—High School Completion	n/a	n/a	97.49%		Enter 3S1 Data
4S1—High School Graduation	n/a	n/a	97.05%	n/a	Enter 4S1 Data
5S1—Secondary Placement	n/a	n/a	75.51%		Enter 5S1 Data
6S1—Nontraditional Participation	n/a	n/a	43.07%		Enter 6S1 Data
6S2—Nontraditional Completion	n/a	n/a	28.17%		Enter 6S2 Data

*Annual Statewide Academic Targets for All Schools and Districts

School Year	Reading	Mathematics	Writing
2008- 2009			
2009- 2010	60%	59%	60%
2010- 2011	70%	70%	70%
2011- 2012	80%	80%	80%
2012- 2013	90%	90%	90%
2013- 2014	100%	100%	100%

Secondary Student Data Analysis—part 2

Element 3 (continued: Student Data)

By design, HS2 recruits students from underrepresented minorities. Minority students form 57% of the student body (46% district wide), and 35% of our students are Hispanic (22% district wide). Recruitment material is provided in English and Spanish, and recruiting events are frequently targeted toward Spanish-speaking families.

HS2 has both a higher percentage of students than the district identified as Special Ed (15% vs. 12%) and TAG (27% vs. 11%).

***Please address the following* Guiding Questions for analysis of your CTE performance data listed on the previous page:**

1. How does your CTE concentrator performance compare to statewide performance on the CTE performance indicators?

   HS2 is equal to the state in reading, 7% ahead in math, and 1% ahead in writing.

2. What might be the cause of your current performance if it lags behind statewide academic or CTE indicator performance?

   N/A, HS2 is equal to or ahead in all categories.

3. How does your program's CTE concentrator performance data compare with school-wide student performance data?

   Since all HS2 students participate in CTE classes, it is not possible to compare CTE performance as separate from school-wide performance.

4. Do you have indications that your CTE concentrators continue with their CTE program of study at the post-secondary level? Do any of these students require remediation before they continue with their program?

   HS2 has not yet had its first graduating class, so no data is available about students continuing their CTE program at the post-secondary level.

5. What questions does your student performance data raise?

   If HS2 is significantly head of state-wide performance on math, why is it equal to or only slightly above state-wide performance on reading and writing?

6. Key Question: What action steps will you take through this CTE POS design and implementation to assist students in improving performance?

   Analyzing the data indicates that incorporating reading and writing activities in CTE classes would benefit students.

***Post-Secondary* Student Data Analysis—part 1**

An analysis of prior CTE concentrator performance will help identify any performance measures that may need to be addressed to increase concentrator academic and technical skill attainment, as well as the other performance indicators. The analysis of prior CTE concentrator performance data may guide you toward identifying appropriate priority goals and strategies for CTE program improvement.

Prior CTE Concentrator Performance Reports with student performance targets are available at CTE Student Data Reports

In the fields below, enter the student data you have for prior year student data for up to 3 prior years. Also, enter this year's Target Performance goals, as well as actual Current Year School Wide Performance Data.

CTE Performance Indicator	Year 1 Prior CTE Performance Year: 2007-2008	Year 2 Prior CTE Performance Year: 2008-2009	Year 3 Most Recent CTE Performance Year: 2009-2010	Year 4 Next Target CTE Performance Year: 2010-2011	Year 5 Final Target CTE Performance Year: 2013-2014
			Data Not Available		
1P1(a)—Technical Skill Attainment (Locally Approved)	97.97%	97.71%			
1P1(b)—Technical Skill Attainment (State Approved)			Enter 1P1(b) Data	Enter 1P1(b) Data	Enter 1P1(b) Data
1P2—Academic Attainment	95.53%	95.92%	Enter 1P2 Data	Enter 1P2 Data	Enter 1P2 Data
2P1(a)—Credential, Certificate, or Degree Completion	54.85%	60.45%			
2P1(b)—Credential, Certificate, or Degree Completion			Enter 2P1(b) Data	Enter 2P1(b) Data	Enter 2P1(b) Data
3P1(a)—Student Retention or Transfer	71.08%				
3P1(b)—Student Retention or Transfer		67.96%	Enter 3P1(b) Data	Enter 3P1(b) Data	Enter 3P1(b) Data
4P1(a)—Student Placement	78.95%				
4P1(b)—Student Placement		76.51%	Enter 4P1(b) Data	Enter 4P1(b) Data	Enter 4P1(b) Data
5P1—Nontraditional Participation	22.99%	20.62%	Enter 5P1 Data	Enter 5P1 Data	Enter 5P1 Data
5P2(a)—Nontraditional Completion	19.26%				
5P2(b)—Nontraditional Completion		15.18%	Enter 5P2(b) Data	Enter 5P2(b) Data	Enter 5P2(b) Data

Post-Secondary Student Data Analysis—part 2

Please address the following guiding questions for analysis of your institution's CTE performance data listed on the previous page. These questions are intended for you to address how your program influences, or is effected by, your institution's CTE performance data:

1. What, if any, questions does your institution's performance data raise in regard to your program?

Portland Community College met the targets for five of the seven performance measures. On performance measure 3P1, Student Retention or Transfer, we met the target at the 90% threshold. On one performance measure, 5P2, Nontraditional Completion, we did not meet the target or the 90% threshold; however, because the formula was in the process of being evaluated and would be rewritten so that the details of the definition, and the numerator and denominator better aligned with program efforts, we were told not to be concerned with this performance measure until the update was made.

2. Describe any strategies that your program uses to influence CTE performance data at your institution (e.g. tutoring, professional development for educators, etc.).

Given that it can be difficult to track all of the CTE secondary students to all potential post-secondary sites, PCC measures performance by tracking the estimated percentage of students who meet the entry requirements of the aligned post-secondary program at high school graduation.

Portland Community College does measure on a term by term basis the number of entering students who test into developmental education courses. The college can disaggregate this data in many ways (i.e. age, zip code, high school (if provided)) but we are not yet able to link the data to the specific CTE programs that are POS. We are working on a way to mark these programs in our data system. The plan is for this to take place during the 2010-2011 academic year.

Addressed in answer to question 3.

3. Are there strategies/activities that you would like to incorporate, particularly in performance areas that may be below satisfactory level, in your program?

Every summer PCC's director of Institutional Effectiveness, two members of the data collection and research staff, and the college's Perkins Title I coordinator meet to review the Perkins performance measures, targets, and data results. The purpose of this meeting is to make sure that we know where we stand to date in regards to Perkins data collection, reporting and outcomes, and what our plans are for following academic year. Even though the college overall was successful in meeting the targets for the performance measures, we continue to develop strategies to better serve students of any particular category (gender, ethnicity, or special populations) who are not meeting the performance measure targets. This way we can make sure that the CTE Perkins-funded advisors and faculty are aware of the groups of participants and concentrators who are not meeting one or more performance measure(s) and make sure that we are providing them additional time, services and resources to improve our overall data results.

4. What actions will you take in your program to positively influence your institution's CTE student performance?

During fall 2009 through spring 2010 Portland Community College (PCC) and its Institutional Effectiveness Office (research) began looking at how we might improve our in-house data reports regarding the impact of Perkins funds at the college in Perkins-eligible CTE programs. We chose to expend efforts in this direction so that we could make more informative and strategic decisions regarding our use of the Perkins funds and their alignment with the purpose(s) of the grant. We also rewrote in-house data retrieval programs so that they better align with the Perkins' definitions for CTE students who are enrolled, served or a concentrator in CTE programs at the college. Most important, we have begun the process with the new in-house data reports to have a clearer idea of who we serve in our CTE programs, who is impacted by the Perkins funds, who should we be serving that we are not, and, finally, what is happening longer term to students who enroll in CTE programs (2008-2010 Perkins Student Longitudinal Progress Report). We were also interested in how long it is taking students at the college to make reasonable progress in our CTE programs. The conversations have only begun but the new in-house data is helping us focus on how we utilize and distribute the Perkins funds, what are the demographics and psychographics of the students we serve, what types of shifts do we need to make in our use of the Perkins funds, and are we using the funds at the college most effectively to assure the long term success of Programs of Study and our work with our regional high schools.

Element 4: Student Support Services

☒ A. Student organizations are an available program component and integrated into CTE programs of study instruction. The student organization structure provides leadership development opportunities that meet the following expectations:
- ☒ Instruction, Career Development and Assessment
- ☒ Community-Based Experiences
- ☒ Organizational Management and Administrative Experiences

☒ B. All CTE students will have informational guidance support and advising to assist them in progressing through a CTE program of study in an efficient and seamless manner (e.g. Pathway Templates, Education Plan and Profile, Career Information System).

☒ C. Programs comply with Title VI- Civil Rights Act of 1964; Title IX – Education Amendments of 1972; Section 504 of the Rehabilitation Act of 1973; Vocational Education Programs Guidelines for Eliminating Discrimination and Denial of Services on the Basis of Race, Color, Sex, Religion, National Origin, Age or Disability; Title II of the Americans with Disabilities Acts of 1990.
- ☒ Appropriate access is provided for all students, including non-traditional and special populations.
- ☒ Program provides a non-biased and non-discriminating learning environment (race, color, national origin, gender and disability status).
- ☒ Program facilities provide physical access and instruction that accommodates students with disabilities including various learning styles (e.g. the use of visual, auditory, tactile, and kinesthetic teaching methods, and other appropriate forms of instruction).
- ☒ Program meets the needs of students for whom English is a second language.

☒ D. Based on the Program Design and instructional plan, each student will be able to:
- ☒ Identify the career path options he/she can follow to a chosen career;
- ☒ Receive consistent and informed messages about career and possible financial options for post-secondary education;
- ☒ Take ownership of their education through maintaining a current education plan and profile and/or portfolio, and
- ☒ Apply skills and traits in a variety of settings including student organizations.

Comments and additional information: Please address the questions for both the Secondary Partner and the Post-Secondary Partner found in the "Areas of Strength" and Priority Concerns" worksheet at the end of this section of the ***Readiness and Sustainability Tool***:

SUCCESSES

We provide equal access and opportunities for students with special needs in this Program of Study. We, as an entire school, do not discriminate on the basis of any protected classes. Wherever reasonable, accommodations are provided for students with special needs including extra support for students for whom English is a second language.

We have made a concerted effort to attract minority female students in engineering.

As indicated in the signed Statement of Assurances, our district and school will comply with all of the applicable assurances for Federal Grant Funds including the provisions, regulations and rules of the Carl D. Perkins Career and Technical Education Act of 2006.

HS2 students are exposed to Engineering and Medical professionals both by bringing those professionals into the schools and by students participating in field work and internships.

Students participate in Passages at the end of 8th, 10th and 12th grade, where students present examples of their academic growth and reflect on their learning, with an adult audience.

All students participate in activities to help them investigate careers that match their interests and talents. HS2 has staff and volunteers that provide guidance with college admissions and financing.

Also, our district has policies and procedures in place, which are followed and enforced in this Program of Study, that relate to safety and drug-free workplaces. A safe learning environment – both physically and emotionally - is maintained for the students in this Program of Study. Students are thoroughly instructed in the safe and ethical use of equipment including the appropriate use of computers and the Internet

CHALLENGES

Engineering has traditionally been a male-dominated profession. All students at HS2 are required to take PLTW's Introduction to Engineering Design class during their sophomore year; this class is the foundation for both the PLTW Engineering track and the PLTW Biomedical Sciences track.

PLTW curriculum is intentionally accessible to all students, while at the same time providing support material which provides additional encouragement for females and minority populations to explore careers in Engineering. HS2 has onsite and in-class support for students for whom English was not their first language.

Anecdotally, PLTW curriculum has been more accessible for students who are struggling in other classes because of the problem-based approach to learning, the increased emphasis on conveying Engineering concepts through graphics rather than text, and because students learn by doing rather than listening.

In addition, Portland State University's Engineering and Science departments have provided free seminars to encourage females and Spanish-speaking students to pursue careers in technical fields. Another core tenant of HS2 is to get every students exposed to technical careers by participating in occupational internships prior to high school graduation.

PCC Student Support Services

Post-secondary Partners:

- **How will you work with recruiting and providing services for non-traditional, displaced homemakers, and other special population students for this specific POS?**

As a standard for all CTE Programs, Portland Community College (PCC) is committed to providing equal access to all students through the removal of architectural and attitudinal barriers. All CTE programs at the college comply with a number of state and federal guidelines and Acts that require equal opportunities and access for all students. The Americans with Disabilities Act of 1990 (ADA) and the Amendments Act of 2008 is the primary driver of a lot of the decisions and policies with regard to the Disabilities Services Office.

The College's Disabilities Services Office ensures that students enrolled in CTE programs are provided specialized assistive technology services to accommodate disabilities in their CTE programs. Disability Access Services (DAS) is the district-wide department that provides the accommodations and services. Examples include adaptive equipment and computer technology, alternate media formatting (audio and electronic texts), in-class aides, media captioning, sign language interpreting and transcribing, and test accommodations.

All Career and Technical Education (CTE) programs at Portland Community College (PCC) recognize that promoting the successful participation and preparation of students in CTE programs that meet the non-traditional (NT) criteria is a priority. At the entry point of all CTE programs, students who fit the NT criteria are identified so that all levels of college resources (Perkins Student Resource Specialists, Tutoring Centers, Multicultural Centers, Women's Resource Centers, etc.) are aware that these students may need additional support in order to be successful in their chosen CTE program. Some of the students encounter few, if any, issues while others require a great deal of support to work through the academic, technical and social barriers. The greatest resources we have found are to align the students with others (mentors) in both the academic setting and workplace who, at one time, had chosen the same path and are now gainfully employed. These individuals are invaluable resources and offer a tremendous amount of support and encouragement on a personal, academic and technical skill level. PCC still struggles in successfully recruiting students for NT CTE fields. Aside from utilizing a number of the available resources available on a local, state and national level, we will also be doing

more targeted recruitment from specific programs college-wide that are providing enhanced opportunities to targeted populations: Sylvania ROOTS Program, CAMP (College Assistance Migrant Program), Workforce Network, Talent Search, Gateway to College, MOTT (Moving On Toward Tomorrow), etc. Perkins funding is utilized to identify students who show interest in NT CTE programs at all levels of academic preparation to make sure they are able to quickly access CTE program personnel and other college resources to guarantee that the connections are made early enough to improve chances of CTE program success.

The Women's Resource Centers at Portland Community College are also an additional avenue for special population students (single parents and displaced homemakers) interested in CTE programs to seek resource information and support both on campus and in the community.

Single parents, displaced homemakers, and women returning to college can take advantage of four programs offered through the college's Women's Resource Centers: Project Independence, New Directions, Career Transitions and Life Tracks. The programs are tuition free and provide a variety of skills needed to becoming employed in a family-wage job. The primary goals of the programs are self sufficiency through college preparedness. Students gain access to a variety of educational and training opportunities on the road to becoming economically self sufficient. On-going support is offered after completion of the class. This is the aspect of the program that receives Perkins funding. On-going activities provided might include academic advising, placement assistance, student support services, and community resource referrals. Students are continuously helped with identifying and removing barriers, which impede their success. Classes are offered fall, winter and spring terms.

- **How will you provide advising and tutoring services to students in this POS?**

Portland Community College uses the majority of its Perkins funding on 19 staff who serve as advisors and employment specialists in the college's CTE programs. Students entering CTE at the college are able to access these highly trained and specialized advisors for all aspects of their advising needs. Aside from general advising needs, the staff helps students maneuver the financial aid process, resolve child care and housing issues, seek professional services through college or outside resources for medical and mental health needs, and arrange for group or individual tutoring.

Welding has become a more comfortable area of growth for women through PCC's welding department's expansion of individualized course offerings and the sculpture welding course. These courses get women in the door, and once they get in the shop and try welding, they realize that they can do "this welding stuff," and many of them decide to make it a career and not just an art form or a hobby.

Welding also has a career female welder instructor who has done the job in much more difficult circumstances than in present times, and she serves as a resource and an inspiration to our female students.

There are women in all three AAS degrees of Building Construction Technology. However, the physical nature of the hands-on construction somewhat limits how many women enter that field while many women are more comfortable in the design/build/remodel area. The Construction Management degree is drawing a number of women into a career that tends to be more lucrative and less physically taxing. Students have opportunities through the student organizations they've formed to do volunteer team projects out in the community with professionals, providing female students a great opportunity taking a turn at being a project manager at a site. This is also a great way for students to make professional contacts in their field.

Element 5: Professional Development

☒ A. Professional development helps teachers and administrators develop and improve standards-based curriculum and learning experiences that address All Aspects of the Industry.
☒ B. Research and training is provided to help develop appropriate and useful assessment tools and strategies.
☒ C. Training and guidance is provided to help improve instructional delivery methodology that helps improve student performance and skill acquisition.
☒ D. Secondary teacher licensure is appropriately aligned with the CTE Program of Study and courses in the CTE POS fall within the appropriate NCES codes for that licensure.

Comments and additional information: Please address the questions for both the Secondary Partner and the Post-Secondary Partner found in the "Areas of Strength" and Priority Concerns" worksheet at the end of this section of the ***Readiness and Sustainability Tool***:

SUCCESSES

PLTW teachers are required to attend training prior to teaching the curriculum. Typically, PLTW go through the entire year's curriculum in 80 hours of class time over a two-week period, with activities assigned as homework outside of class. The training classes are taught by master teachers, PLTW instructors with many years of experience with the curriculum, along with university professors who assist with the technology and theory underpinning the curriculum. CTE instructors have access to support through PLTW's online Virtual Academy, which includes curriculum and support materials, professional development training, online forums, and technical support. Summer training Professional development and training with curriculum is a key component of PLTW's program.

Secondary Engineering instructor holds both an Initial I teaching license and a 3-year Career and Technical Teaching License, in addition to 29 years of industry experience as a software engineer.

CHALLENGES

Although the district provides generalized CTE professional development, there is only one PLTW Engineering instructor in the district. It would be helpful to have targeted PLTW Engineering professional development in the Greater Portland area which would be open to PLTW instructors in Hillsboro, Portland, Vancouver, Woodburn, and Salem.

PCC Response

Since 2009-2010, there has been a continued and increased emphasis on CTE staff and instructors participating in professional development opportunities related to the integration of academics and technical skills into CTE Programs of Study. Appropriate professional development opportunities have been identified and provided to CTE staff and instructors related to their professional development plans and aligned with the professional development needs and opportunities provided by our secondary partners.

PCC supports and promotes its mission, goals and values by continually developing the professional and personal capacity of all members of the community through the efforts of the Office for Staff and Organizational Development. The District Staff Development Office supports PCC's Staff Development Mission by:

- Advocating, promoting, communicating, and coordinating college-wide staff development opportunities
- Funding specific strategic staff development initiatives and programs
- Providing opportunity for professional and career growth to employees

Certification of Assurance

Directions: After filling in all the appropriate fields in this form, print out a copy of this Certification of Assurance page and acquire all the appropriate signatures. All signatures must be on one form, demonstrating the collaboration between all institutions participating in this CTE Program of Study. Mail complete, signed Assurance form to Ilene Spencer at: ODE, 255 Capitol St. NE, Salem, OR 97310

Name of CTE POS	Industrial Arts and Engineering—Project Lead the Way
Name of Secondary School	Health and Science HS
Name of Community College	Select Community CollegePortland CC

SECONDARY LOCAL SUPPORT and CERTIFICATE OF ASSURANCE	I have reviewed this program application document for clarity, completeness and adherence to program quality standards, and support its approval. I agree that the CTE program area requirements for secondary CTE programs, including appropriate CTE certification for teachers, the rules and regulations for Public Law 101-392, and the requirements contained in the Oregon State Plan for Career and Technical Education will be complied with in the operation of the CTE programs and services offered by the district or through contract between the district and other agencies, institutions, or individuals. I agree to furnish CTE program data as requested by the Oregon Department of Education.	
School District Administrator Signature		**Date:**
Administrator's Name	Enter Local Administrator's Name	

LOCAL SUPPORT and CERTIFICATE OF ASSURANCE	The program advisory committee has been involved in the design and development of this program.	
Advisory Committee Signature		**Date:**
Advisory Committee Member's name	Enter Advisory Committee Member's Name	

POST-SECONDARY LOCAL SUPPORT AND CERTIFICATE OF ASSURANCE	This community college has been involved in the design and development of this CTE program of study and agrees to continue collaboration meeting all 4 Core including alignment and articulation and reliable and valid technical skills assessment.	
Community College Administrator's Signature		**Date:**
CC Administrator's Name	Kendra Cawley	

For Regional Coordinator Use Only

Recommended Status:

☐ **RECOMMENDED FOR STATE APPROVAL (Perkins Eligible) Expiration Date:** ____

☐ **DISAPPROVED (and returned for revision)**

_____ **Date:** ____

Regional Coordinator Signature

For ODE/OCCWD Use Only

Approval Status:

☐ **FINAL ODE APPROVAL (Perkins Eligible)** **Expiration Date:** ____

☐ **FINAL CCWD APPROVAL**

_____ **Date:** ____

EII Education Specialist Signature

_____ **Date:** ____

OCCWD Education Specialist Signature