



Dental Laboratory Technology Program Review

February 18, 2016

The Portland Community College Dental Laboratory Technology Program offers a high quality oriented education in the field of Dental Laboratory Technology. Each course is patterned to standard acceptable procedures in the industry, along with newer emerging techniques. The faculty challenges students to reach their perceived potential and then strive for even higher goals. This program is open to all qualified applicants and welcomes the diversity of the attending students. Continual assessments both within the school and out in the field, insures the highest quality course offerings available.

- PCC Dental Laboratory Technology Mission Statement

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I. Program Overview

The Portland Community College DLT Program began in 1967. Currently, students enrolled in the program may graduate earning a two-year Certificate (75 credit hours) or a two-year Associates degree (91 credit hours). The program is fully accredited by the Commission on Dental Accreditation (CODA). The most recent accreditation site-visit was in 2010, with the next visit scheduled for 2017. PCC offers the only DLT program in Oregon and is one of only 17 accredited programs in the nation. Additionally, the PCC DLT program is unique, as it is offered within a dental sciences department, which includes Dental Assisting and Dental Hygiene training. Only six training institutions in the United States share these three allied dental training offerings.

The first year focus in the DLT program is on *Removable Denture Fabrication*. Included in this training is learning the technique for creating full and partial dentures, over-dentures, immediate dentures and the repair of broken dentures. Following the first year of enrollment, students sometimes choose to focus on working in dental labs that only fabricate dentures, there by exiting the program to seek employment. Other students who leave the program after the first year, may decide to receive additional training to become a Denturist. This involves taking the necessary general science courses, such as A&P, Microbiology and courses within the dental hygiene program, such as Oral Pathology, Medical Emergencies and Periodontology. Additional DLT practicum lab hours are also necessary as well as 1,000 internship hours for those pursuing their Denturist License.

Students who continue into the second year of the DLT program complete coursework in fabricating *Fixed Restorations*, including crowns and bridges, implants, orthodontic appliances and use of CAD/CAM technology. Students completing the full two year program are competent at the basic entry skill level for working in all dental laboratory settings, which could include large laboratories (many employees) small labs (1-5 employees), and with experience, can even open their own dental lab business.

The program capacity in both the first and second year of the program is currently 24 students (48 total).

A. What are the educational goals or objectives of this program/discipline? How do these compare with national or professional program/discipline trends or guidelines? Have they changed since the last review, or are they expected to change in the next five years?

Goal 1 Access -

We will provide access to quality dental laboratory technology education through the use of scientific evidence based instruction and technology that meets current industry standards.

Goal 2 Student Success –

We will promote success for all dental laboratory technology students through outstanding teaching by faculty who act as mentors and professional role models and who provide instructional methodology that prepares the student to

successfully complete national, regional and/or state examinations required for certification and entry into the workforce.

Goal 3 Diversity –

We will enrich the dental laboratory technology student’s educational experience by providing and promoting cultural awareness that acknowledges each individual’s worth and uniqueness and enhances effective interactions, communications and/or provision of care with all individuals or groups.

Goal 4 Continuous Improvement –

We will develop faculty and students who continuously seek to enhance knowledge as life-long learners by seeking peer support in professional associations, fulfilling evidence based continuing education and applying self-assessment and reflection skills.

Goal 5 Cultivating Partnerships –

We will create partnerships that effectively link students with practicing dental lab technicians and other oral health care professionals who will provide advising, mentoring and enrichment experiences in preparation for employment upon graduation.

Goal 6 Community –

We will serve as a key resource to the community by comprehensively preparing competent students who will function as a dental laboratory technician upon graduation.

Goal 7 Ethics and Responsibility –

We will prepare the student to practice ethically and responsibly as a Dental Laboratory Technician.

The program goals have been designed to reflect the college’s core themes of *Access and Diversity, Student Success, Quality Education, Economic Development and Sustainability*. Additionally, the theme of *Ethics and Responsibility* demonstrate the important governance under which the profession should work. Other National Guidelines that are followed include:

The Commission on Dental Accreditation (CODA) Standards which state:

“The program must demonstrate its effectiveness through a formal and ongoing planning and outcomes assessment process that is systematically documented and annually evaluated. This process must include the following:

- *Dental laboratory technology program goals that include, but are not limited to student outcomes that are consistent with the goals of the sponsoring institution and appropriate to dental laboratory technology education;*

- *time-table for implementation that indicates roles and responsibilities of all participants;*
- *methods to assess goals and provide outcomes that include, but are not limited to, measures of student achievement;*
- *review and analysis of compiled data obtained from assessment methods, and related conclusions;*
- *findings and conclusions are used for program improvement, and for revisions to the overall planning and outcomes assessment process.”*

- CODA Standard 1-1

The Compendium of Curriculum Guidelines developed by the American Dental Education Association (ADEA):

“The guidelines are intended as a curriculum development aid. They are not official policy statements of ADEA; nor should they be construed as recommendations for restrictive requirements or as a mechanism to standardize allied dental education programs. While accreditation standards have moved to a competency based curriculum model and assessment of outcomes as a means to determine whether a program is achieving its goals, program directors have indicated there is a need for more specific guidelines.....These guidelines are intended for entry-level educational programs, regardless of level (Certificate, AS or BS) or institutional setting (community college, university dental school or academic health center).....Graduate competencies that should be imbedded.....include.....but are not limited to:

- *Problem solving*
- *Critical thinking*
- *Health and safety concerns/concepts*
- *Regulatory concerns*
- *Health promotion*
- *Professionalism*
- *Ethics*
- *Cultural diversity*
- *Self-assessment skills*
- *Evaluation of current scientific literature*
- *Interpersonal communication skills*
- *Evidence -based decision making*

- ADEA Compendium of Curriculum Guidelines, Feb. 2005

The dental laboratory technology program goals reflect and support the PCC Institution and the national accreditation commission, as well as the American Dental Education Association. They have not changed since the previous 2010 program review, but will be reviewed and revised this year so that they more accurately represent the newly developed PCC Strategic Plan and the Outcomes Revisions and College Mission Statement changes that will be taking place. Additionally, the field of dental laboratory technology is currently re-

defining the skills needed by future lab technicians due to new technology, changes in the types of materials used in fabrication of restorations, and different laboratory working environments. While dental technology has always been a mix of art and science, the next decade will see the artistry begin to fade away and math and science begin to dominate the industry. The PCC DLT Program must continually revise and refine its course of study to reflect the emerging changes and will work to do so with resources made available through the college as a result of this program review.

B. Briefly describe changes that were made as a result of SAC recommendations and/or administrative responses from the last program review:

Many of the changes recommended in the previous 2010 program review have not yet occurred due to the connection they had within the PCC bond activities. They are presented in the following table:

SAC Recommendation	Administrative Response	Action Taken	Implementation Year
Improve instructor station by adding a single station vacuum system	Include in the bond work for the HT building	No Action Taken	
Replace cabinetry and bench counters and improved storage	Include in the bond work for the HT building	No Action Taken	2015 new lab stools purchased for student seating
Replace outdated/inoperative equipment	Include in the bond work for the HT building		In 2013-2015 outdated equipment and supplies purged. In 2014 new AV equipment, video and monitor viewing added to lab.
Replacing faculty and lab assistants retirements occur in the next 2-3 years.	No Administrative Response		2012 Homayoun Louie FT Temporary Hire. 2013 Patrick McMurray, FT Temporary Hire

II. Outcomes and Assessments: Reflect on learning outcomes and assessment, teaching methodologies, and content in order to improve the quality of teaching, learning, and student success.

A. Course-Level Outcomes: The College has an expectation that course outcomes, as listed in the CCOG are both assessable and assessed, with the intent that SAC's will collaborate to develop a shared vision for course-level learning outcomes.

i. What is the SAC process for review of course outcomes in your CCOGs to ensure they are assessable?

The dental laboratory technology program utilizes a comprehensive curriculum and program review process annually to assess all aspects of program goals, course outcomes and learning experiences (**See Appendix #1 for Curriculum and Program Management Plan [CPMP]**). SAC members meet monthly to discuss programmatic topics. The meeting is devoted to issues specifically listed on the CPMP. For topics needing more in depth discussion, the SAC utilizes the October and April SAC Inservice days.

Specifically, the process for review of course outcomes in the CCOGs to ensure they are assessable, is a three step process. During the current term the SAC reviews the CCOG's and Syllabi for the upcoming term. It is important that both CCOG's and Syllabi are reviewed at the same time in order to ensure that instructors are quoting the *Course Descriptions* and *Intended Outcomes* accurately as approved by the Curriculum Committee and stated in the CCOG's. Any minor changes within the course are stated in the Appendix for the course and a decision is made regarding major changes that need to be brought forward to the Curriculum Committee for the next year. Additionally, at the end of the term each instructor completes the **End of Term Report (See Appendix #2)** and submits it to the Director. This report maps the course with the Certificate / Degree Outcomes and allows the instructor to reflect on teaching methods, what went well with the course that term, and intended changes for the next offering. Further, specific course activities are chosen each year to assess whether they meet the course intended outcome as well as the certificate/degree outcome and college core outcome they are mapped to. The in depth study is presented in the annual Learning Assessment Council (LAC) Report. Findings from the LAC Reports have been instrumental in determining improvements needed either in learning activity design or teaching methodology in order to improve student learning.

This three-pronged approach allows for thorough assessment by the SAC to ensure the course description, intended outcomes and topics are appropriate for student learning

prior to the term offered and then also assessed at the end of the term for improvement of the course prior to its next offering. The in-depth LAC reporting allows for focus specifically on certain aspects of learning activities to ensure the outcomes are being met in an assessable and effective way. The process that is currently being practiced satisfies both the college assessment requirements as well as the national CODA accrediting requirements.

ii. Identify and give examples of changes made in instruction to improve students' attainment of course outcomes, or outcomes of requisite course sequences that were made as a result of assess of student learning.

Since the 2010 Dental Laboratory Technology Program Review, the program has incurred many changes. Two long-time faculty members retired and Homayoun Louie and Patrick McMurray were hired as FT Temporary Faculty to teach the second year and first year curriculum, respectively. In the few short years of their joining the department, major changes in curricula have occurred based on assessment information gained from the CPMP, the End of Term Reviews, LAC Reports and changes in the industry. The SAC has worked very hard to implement the changes listed below:

Revision Year	Course # / Title	Action	Reason
12/2013	DT 143 – Denture Techniques III	Deactivated	Subjects revised and taught in other courses
12/2013	DT 206 – Dental Technology Lab VI	Deactivated	Subjects revised and taught in other courses
12/2013	DT 285 – Dental Seminar and Practicum	Deactivated	Subjects revised and taught in other courses
12/2013	DT 271 – Partials, Immediate and Overdentures	Revised/Moved to 1 st Yr Curr.	Subject taught in first year with other “removable” technique
12/2013	DT 103 – Dental Technology Lab III	Revised	Subjects updated
12/2013	DT 102 – Dental Technology Lab II	Revised	Subjects updated
12/2013	DT 142 – Denture Techniques II	Revised	Subjects updated
12/2013	DT 206A – Dental Technology Lab VI (ortho appliances)	New Course	Lab created for focus on orthodontics

12/2013	DT 206B – Dental Technology Lab VII (CAD/CAM and Implants)	New Course	Lab created for focus on CAD/CAM and Implants
12/2013	DT 286 – DT Registered Graduate Preparation	New Course	Online course created to prepare students for RG Testing and Certification
12/2013	DT 287 – Introduction to CAD/CAM Technology and Implant Systems (lecture)	New Course	Lecture course created for CAD/CAM and Implant topics.
03/2014	CEU #3452	Practicum added for working DLT	Occupational Preparatory course for skill upgrade.
03/2014	DT 291	Added Practicum 1cr.For Denturist	Denturist Lab Practicum
03/2014	DT 292	Added Practicum 2cr.For Denturist	Denturist Lab Practicum
03/2014	DT 293	Added Practicum 3cr.For Denturist	Denturist Lab Practicum
03/2014	DT294	Added Practicum 4cr.For Denturist	Denturist Lab Practicum
03/2014	DT 295	Added Practicum 5cr.For Denturist	Denturist Lab Practicum
10/2014	Change Math Require.	Removed from Course of Study	Embedded within Program courses
10/2014	DT 275 Dental Laboratory Management	Revised Related Instruction	College Request

While the SAC has made numerous changes over the past few years to the curriculum, the challenge the instructors face is to put the changes into practice. Many of the topics that will now be taught reflect current practices in the field, but are not able to be fully taught with the technology needed in the current lab. For the 2015/16 academic year, off-site facilities will need to be solicited for the laboratory practice.

B. Addressing College Core Outcomes

- i. **Update the Core Outcomes Mapping Matrix** - For each course, choose the appropriate Mapping Level Indicator (0-4) to match faculty expectations for the Core Outcomes for students who have successfully completed the course.

Mapping Level Indicators:

- 0: Not Applicable.
- 1: Limited demonstration or application of knowledge and skills.
- 2: Basic demonstration and application of knowledge and skills.
- 3: Demonstrated comprehension and is able to apply essential knowledge and skills.
- 4: Demonstrates thorough, effective and/or sophisticated application of knowledge and skills.

Core Outcomes:

- 1. Communication.
- 2. Community and Environmental Responsibility.
- 3. Critical Thinking and Problem Solving.
- 4. Cultural Awareness.
- 5. Professional Competence.
- 6. Self-Reflection.

Course #	Course Name	CO1	CO2	CO3	CO4	CO5	CO6
DT 101	Dental Technology Lab I	1	0	1	0	1	0
DT 120	Dental Anatomy	0	0	0	0	1	0
DT 141	Denture Techniques I	1	0	0	0	1	0
DT 151	Science of Dental Materials I	1	0	0	0	0	0
DT 102	Dental Technology Lab II	1	0	2	0	2	0
DT 142	Denture Techniques II	2	0	0	0	2	0
DT 152	Science of Dental Materials II	2	0	0	0	2	0

HE 125	First Aid and Industrial Safety	1	1	2	0	1	0
DT 103	Dental Technology Lab III	2	0	2	0	3	0
DT 271	Partials, Immediate and Overdentures	2	0	0	0	3	0
Elective							
DT 204	Dental Technology Lab IV	3	0	3	0	4	0
DT 254	Science of Dental Materials III	0	0	0	0	3	0
DT 270	Inlay Casting, Crown and Bridge	0	0	0	0	3	0
DT 275	Dental Laboratory Management	2	2	2	1	3	0
DT 205	Dental Technology Lab V	3	0	3	0	4	0
DT 254	Science of Dental Materials IV	0	0	0	0	3	0
DT 272	Dental Ceramics	0	0	0	0	3	0
DT 276	Dental Laboratory Management Lab	4	4	4	3	4	3
DT 206 A	Dental Technology Lab VI (Ortho Appliances)	1	0	3	0	4	0
DT 206 B	Dental Technology Lab VII (CAD/CAM, Implant)	0	0	3	0	2	0
DT 284	Dental Specialties	2	3	0	3	0	3
DT 286	DT Registered Graduate Preparation	3	0	0	0	3	2
DT 287	Intro to CAD/CAM and Implant Systems	0	0	0	0	3	0
Course #	Course Name	CO1	CO2	CO3	CO4	CO5	CO6

C. For Career and Technical Educational Programs: Degree and Certificate Outcomes

i. Briefly describe the evidence you have that students are meeting your Degree and /or Certificate Outcomes

Since 2010, with the help of Kendra Cawley (Dean of Academic Affairs) and Susan Wilson (Academic Support Coordinator), the program has been able to assess the students' ability to meet certificate/degree outcomes in a much more streamlined process. Previously, the program was required by the institution to have certificate/degree outcomes and the CODA Accrediting body required skill competencies. Kendra and Susan met with the program director in 2013, and together, we were able to design certificate/degree outcomes that would meet both institutional and program accrediting requirements. Additionally, it was determined at that time that the two other dental programs (Dental Assisting and Dental Hygiene) were going to be able to utilize results from national/regional testing for Learning Assessment (LAC) Report analysis. At that time there was a very low percentage of Dental Laboratory Technology students who sat for national certification exams, as there is not a State requirement for them to do so. While there is no requirement for DLT's to attain certification, employers desire their employees to be certified. Graduates who possess this are looked upon more favorably for hire and at an increased pay rate. It was decided by the faculty that developing a course for preparation for *Registered Graduate* testing would help to reinforce the importance of gaining this desired employment certification and the first course was offered to the second year class in spring of 2015 as an optional course. Those who completed the National Association of Dental Laboratory (NADL) RG testing all received passing scores. Because this course is now embedded in the second year course of study, all students will be enrolling in order to complete the National RG test. Future LAC and TSA Reporting will include results of DLT student Registered Graduate testing and competency.

[Please see Appendix #3 for PCC RG testing results since 2010.](#) (press ctrl and click to link to appendix)

The dental laboratory technology degree/certificate outcomes encompass the core outcomes of the College and meet the skill competencies expected of the Commission on Dental Accreditation, and the State of Oregon Board of Dentistry's standard of care for the profession. Evidence that students are meeting the Dental Laboratory Technology Degree/Certificate *Outcomes* is listed below according to the course where the outcome is met. The degree of competency that it is met at (Introductory, Developing or Competent), is also included. Because students are not able to pass courses without showing competence in each of the course outcomes, evidence of success is provided by attainment of a passing grade in each course and graduation from the program.

Please Note: For a complete list of Course Titles and Course Sequencing, See Appendix 4

Certificate/ Degree Outcome	Mapped to Core Outcome	Course/s	Meet Through	Competency Level
Apply general laboratory techniques to prepare and evaluate impressions and casts, use articulators, develop functional occlusion on articulated cases and fabricate custom impression trays (Cert and Degree)	Critical Thinking And Problem Solving Professional Competence Self-Reflection	DT 101, 270	Projects, Quizzes, Group Activities	Introductory
		DT 102, 204, 205		Developmental
		DT 103, 206		Competent
Demonstrate the ability to apply the physics and chemistry of materials being used during fabrication of complete dentures, removable partial dentures, fixed prostheses, including inlays, onlays, crowns, bridgework and a variety of orthodontic appliances (Cert and Degree)	Critical Thinking And Problem Solving Professional Competence	DT 151, 141, 271, 253	Assignments, Projects, Quizzes, Midterm, Final Exam,	Introductory
		DT 152, 142, 254, 272		Developmental
		DT 287, 205, 206, 204		Competent
Use work practices and safety protocols that promote a safe	Community & Environmental Responsibility	DT 101, 204	Projects, Quizzes, Discussion	Introductory
	Critical Thinking	DT 102, 271,		Developmental

environment	And Problem Solving	205		
	Professional Competence	DT 103, 206		Competent
Demonstrate business practices and procedures appropriate to managing or owning a dental laboratory business (Cert and Degree)	Communication	DT 101, 102, 275, 284	Assignments, Projects, Written Midterm, Final Exam, Discussion,	Introductory
	Community & Environmental Responsibility	DT 103, 275		Developmental
		DT 276		Competent
Use oral and written communication skills for effective professional interactions (Cert and Degree).	Communication	DT 010, 102, 120, 142	Assignments, Projects, Written Paper, Quizzes, Midterm, Final Exam, Online Discussion, Group Activities	Introductory
		DT 103, 142		Developmental
		DT 276, 286		Competent
Apply legal and ethical principles while working in diverse laboratory and community settings (Cert and Degree)	Community & Environmental Responsibility	DT 141, 204	Assignments, Projects, Written Paper, Quizzes, Discussion, Group Activities	Introductory
	Cultural Awareness	DT 142, 271, 205, 275		Developmental
		DT 284, 206, 276		Competent
Be prepared to continue dental, community and world awareness through continuing education and active participation in professional and nonprofessional organizations (Degree)	Community & Environmental Responsibility	DT 101, 102, 103	Assignments, Projects, Written Paper, Quizzes, Final Exam, Online Discussion, Group Activities	Introductory
		DT 275, 284		Developmental
	Professional Competence Self-Reflection	DT 276, 286		Competent

Be prepared to transfer to a college or university in the health care field (Degree).	Communication	DT 120	Quizzes, Final Exam, Online Discussion, Group Activities	Introductory
	Critical Thinking and Problem Solving	DT 275		Developmental
	Cultural Awareness	DT Elective, 286, 276		Competent
Demonstrate a deeper knowledge of business procedures pertinent to owning or managing a dental laboratory	Critical Thinking and Problem Solving	DT 101, 141, 142, 284	Assignments, Written Paper, Quizzes, Final Exam, Online Discussion,	Introductory
		DT 103, 275, 286		Developmental
		DT 276		Competent

(Results gathered from End of Term Reports)

- i. **Reflecting on the last five years of assessments, provide a brief summary of the one or two of your best assessment projects, highlighting efforts made to improve students' attainment of your Degree and Certificate Outcomes.**

During the past five years, assessment of the DLT curriculum in all courses has taken place as the two long-time FT Instructors (Gary Smith and Ray Ridgley) retired and two new instructors (Homayoun Louie and Patrick McMurray) have taken their place. In their first year of joining the DLT Team, each instructor taught the courses they were responsible for as the previous instructor had taught. In the following years, the courses were refined, completely revised or inactivated so that new courses with more current and relevant information could be added. Within each course being taught the new instructors have also taken a close look at the projects previously assigned and designed improvements to subject material, methods of instruction and assessment of student learning. The required annual LAC reporting provides an avenue for the new instructors to focus on one or two learning activities each year to evaluate the effectiveness of the learning project in helping students gain competence in meeting core/course outcomes, and also to determine whether the grading rubrics used appropriately measure student learning. Each year learning is improved as a result of the LAC reporting that has been done. In reflecting over the past five years of assessments, the most useful, unique, and validating projects were those assessed and submitted to the LAC in the 2014-15 school year. The assessment reports submitted during this year received high peer review feedback and were one point away from receiving exemplary report status. The two Program

Outcomes/PCC Core Outcomes that were assessed are reflected in the table below with narrative to follow:

Program Outcome	PCC Core Outcome
Focal Outcome #1 Demonstrate business practices and procedures appropriate to managing or owning a dental laboratory business	Communication and, Community and Environmental Responsibility
Focal Outcome #2: Use oral and written communication skills for effective professional interactions	Communication and, Self-reflection

Focal Outcome #1: Many graduates from the DLT program have a long term goal of opening their own dental laboratory. This usually occurs after they have gained experience and improved their skills as an employee in another lab. Once they have honed their laboratory skills they may desire to take on the responsibilities of lab ownership. Ownership involves targeting demographics for successful location of their lab, understanding marketing and the customers they will serve, developing an operational/financial plan to sustain their business and understanding the environmental and State regulations for the chemicals and supplies they work with.

While students are enrolled in the program, they learn these business skills in DT 275 Dental Laboratory Management and DT 276 Dental Laboratory Management Lab. The instructor for these two courses is Greg Charles a business instructor. The DLT SAC chose to focus on analyzing whether the final business plan project was adequately assessing learning and attainment of the program outcome for *demonstrating business practices*, and the college core outcome of *community and environmental responsibility*.

During the DT 275 Business Management Lab course, students create a business plan for a fictitious lab that they will be the owners of. A rubric had been used by the business course instructor in the past to evaluate student learning, but this instructor had been the sole rater for grading the student project. In 2015, multiple raters were utilized to assess the final business projects developed by the students. The business course instructor was one of the raters and was able to assess learning on the basis of the technical business material taught, while Homayoun Louie, one of the FT DLT instructors and owner of his own dental laboratory business, was the other rater. Having Louie rate students work through the eyes of an actual lab owner, provided the unique perspective for enhancing the business instructor’s level of understanding of the DLT business. Time spent between the two instructors allowed for exchange of ideas and provided consistency in calibrating them for project assessment. The feedback students received from both instructors helped

them understand ways to improve their skills in both the technical aspects of developing their own business, as well as tailoring it for what dental lab owners must do from the start to sustain their business long term.

Results of evaluating this project and assessment of student learning were positive and enhanced by exchange of ideas between the two raters. Both instructors found students achieved learning consistently in the area of “Financial Planning,” with slightly less positive results shown in the areas of “Providing a Marketing Plan” and “Management of the Organization.”

Based on the project findings, improvements to student learning for this coming year will include more in depth explanations regarding expectations of the assignment, as well as providing examples of past projects for student viewing.

Focal Outcome #2: In 2015, focal outcome #2 was unique and counsel was provided by the SAC’s LAC coach and chair prior to the design of the project. During the first year of teaching, the lead second year instructor recognized that the program had as one of its core outcomes *“Be prepared to continue dental, community and world awareness through continuing education and active participation in professional and non-professional organizations.”* This outcome however did not have a solid way of measuring whether competency was attained by the time students graduated. The instructor therefore, had the desire to explore the concepts within this outcome to develop a more substantial means of adding material and assessment for achievement of learning. He explored this through a written assignment in his Spring DT 284 Dental Specialties Course. Students were asked to answer questions related to continuing community and world awareness, seeking continuing education and actively participating in professional and non-professional organizations.” The answers given by students were their own personal feelings, and as such related to the PCC Core Outcome of *“Self-reflection”*. Since there were no right or wrong answers, material learned from the project was to be used in shaping future curriculum development in these areas. This was a written assignment, in which, depth of thought and substance was expected. The other PCC Core Outcome that was featured in this focal analysis was *“Communication”*. The degree outcome this is mapped to is *“Use oral and written communication skills for effective professional interactions.”*

The following four areas of student writing were assessed by two raters: Focus, Content, Organization, Conventions. Assessment results revealed all student achieved scores of “Excellent” or “Proficient” for each writing category and all received a passing grade for the assignment. Both raters agreed that final papers could have been improved by more detailed instruction initially to students about how the grading rubric would be used and by also offering previous samples of writing for them to review before submission.

The topic that the students were given to write on was *"Think Global, Act Locally: Should the PCC DLT Program Incorporate Service Learning Projects into the Curriculum?"* The ideas and personal views revealed in this writing assignment provided the instructor with the information needed to shape future activities for assessing the outcome *"Be prepared to continue dental, community and world awareness through continuing education and active participation in professional and non-professional organizations."* Through the students' reflection, the instructor learned that students unanimously felt service learning should be incorporated into the DLT Curriculum. Additionally, most offered either suggestions for the DLT students to collaborate more with the DA and DH programs by providing care to the PCC dental clinic patients, or to connect students with outside community volunteer efforts such as Mission of Mercy or Medical Teams International. These ideas have already been brought to the DLT Advisory Committee and implementation of externship opportunities in community dental labs will begin Spring of 2016. Future plans for student volunteer and collaborative projects will also be looked at.

For the full 2015 LAC report, click on following link:

<http://www.pcc.edu/resources/academic/CTEArchiveEOY.html>

ii. Do you have evidence that the changes made were effective (by having reassessed the same outcome)? If so, please describe briefly.

Reassessments for these outcomes will not occur until the end of Winter Term and during Spring Term, respectively. As such, there is no evidence to report that the changes made were effective at this time. Future LAC reports will include reassessment of these activities.

iii. Evaluate your SAC's assessment cycle processes. What have you learned to improve your assessment practices and strategies?

For the current 2015/16 year the DLT SAC will be reporting on one program outcome, as instructed by the LAC, but typically the SAC's assessment cycle process includes reporting on two program outcomes per year. A new multi-year plan was submitted in November of 2015 and will be used to guide the SAC over the next five years. Discussions regarding the assessment cycle and reports take place in a face-to-face meeting and occasionally over email.

To improve assessment practices and strategies, the SAC has received peer review feedback from previous reports. This information has helped instructors to create meaningful assessments methods. Most importantly, feedback has helped the SAC to develop ways of incorporating multiple raters during assessment, as well as, creating proper rubrics that support specific analysis and inter-rater reliability. Each year feedback from peers has become increasingly more positive regarding the

reports submitted. The SAC has worked hard to learn from previous feedback and utilizes the feedback during design and writing of future reports. Most importantly however, is the information gained from the assessment of learning activities and applying what has been learned to improving future student learning. Each year changes are made based on these findings and reassessment occurs after the next offering.

iv. Are any of the PCC'S Core Outcomes difficult to align and assess within your program? If yes, please identify and explain.

While all PCC's Core Outcomes have been successfully mapped to the dental laboratory technology program outcomes, *Cultural Competency* is more difficult to assess. Currently students receive the majority of their cultural competency training while enrolled in DT 284. The 2014/15 DLT Focal Outcome #2 addressed this outcome and will be reassessed at the end of Spring 2016.

III. Other Curricular Issues

A. Which of your courses are offered in a Distance Learning modality (online, hybrid, interactive television, etc.), and what is the proportion of on-campus and online? For courses offered both via DL and on-campus, are there differences in student success? If so, how are you addressing or how will you address these differences? What significant revelations, concerns, or questions arise in the area of DL delivery?

As the instructors have become more comfortable in the courses they are now teaching, they are beginning to recognize the advantages of utilizing distance learning modalities in their courses. Currently all second year didactic courses have some component online such as taking exams and reviewing course materials, providing easy access to the instructor lecture notes and for class discussion outside of the classroom.

Additionally, the new course DT 286, Registered Graduate Preparation is fully online. This course is primarily designed to prepare the students for National Certification by taking the Registered Graduate exam through the NADL. It also provides a forum for students to discuss different issues related to school, new technology and the business environment.

One of the other many advantages is that the online format promotes self-direction in education. Distance learning allows each student to tailor their schedule to study for the RG exam in the most convenient and effective way possible. They are able to access material as often as they like and are presented with the format that is similar to what they experience when they sit for the exam.

B. Has the SAC made any curricular changes as a result of exploring/adopting educational initiatives (EG community based learning, internationalization of the Curriculum, inquiry-based learning, honors, etc.). If so, please describe.

As previously discussed, efforts are underway to create externship sights for students to work one week during Spring Term in an actual laboratory within the community. This project is currently under development and more updated information will be presented in the program review presentation

Future planning will take place based on student feedback stating the importance of volunteerism and service learning. This information was presented earlier in the LAC report discussion. Future Mission of Mercy participation by the dental laboratory technology students will be discussed with the Oregon Dental Association before the next scheduled offering.

Other feedback gained from last year's LAC report currently being explored are collaborative opportunities with the PCC DA program, and with the OHSU School of Dentistry. Currently, the PCC DA and DLT students work together by having the DA students take impressions of the DLT student's mouth and the DLT student making a model out of the impression. Future collaboration will include the use of CAD/CAM curriculum development. Instructors Homayoun Louie (DLT) and Jill Lomax (DA) will be working to incorporate a project where DA's will scan a crown preparation and the DLT students will mill it into the crown.

The Director has also been in recent conversation with representatives at OHSU to determine if the second year DLT students may receive part of their CAD/CAM instruction side-by-side with second year dental students. Students would attend portions of lecture together and then work with each other in a simulation lab in order to eventually scan and mill work of their own. Dental school instructors, as well as DLT instructors would both be involved in the learning process of students. Real-world simulation activities such as this, afford the dental student critical information about what the dental laboratory will need from them in order to fabricate a restoration that a person can use for a lifetime. Conversely, the DLT students learn the process of what the dentist must do in order to supply them with the necessary information to provide the appropriate device. Updated information will be presented at the program review with the administration.

C. Are there any courses in the program offered as Dual Credit at area High Schools? If so, describe how the SAC develops and maintains relationships with the HS faculty in support of the quality of instruction.

Currently, due to the highly specific technical nature of the DLT subject matter, dual credit is not offered at area high schools. While the program does not offer dual credit, the minimal pre-requisites required for application, unique artistic laboratory skills taught and short two-year preparation for entry into the work-force are factors that appeal to those right out of high school. The current instructors and HAO advisors are also increasing their presence at high school and career fairs. Potential students are drawn to the display of the type of dental devices that a dental lab tech is able to make through the knowledge/skills learned in the program.

D. Please describe the use of Course Evaluations by the SAC. Have you developed any SAC specific questions? Has the information you have received been of use at the course/program/discipline level?

Currently the instructors use the feedback from the students' course evaluation to help improve their own instructional skills. By examining the content of the course evaluations, and finding common concerns the students have. They then focus on these areas in order to improve their instructional skills and communication, which in turn improves the curriculum that they teach. Most comments reflect the students' desire to be trained on more updated equipment and technology. Currently the instructors have not yet developed any of their own SAC questions for students to answer on course evaluations.

E. Identify and explain any other significant curricular changes that have been made since the last review.

Homayoun Louie and Patrick McMurray have accomplished a great deal regarding curriculum changes in the short time they have been employed.

Much is left to do however. Jim Glidewell, of the Cal-Lab Group spoke at an annual technology meeting in Chicago recently and reported that

“Many feel the future of dental lab technology is bright for those who are open-minded.” He anticipates that to keep up with the increased demand in crown and bridge and implants and to better position themselves against offshore outsourcing (which has been increasing over the last ten years), all labs should continue to grow their CAD/CAM use of technology. Additionally, the implant business is expected to experience a growth spurt as the aging population increases, implant dentistry becomes more affordable, and these restorations, which are more aesthetically pleasing and function more naturally are in higher demand. Continuing advocacy for

the technology to effectively teach these important aspects of the changing industry will be at the forefront of curriculum changes. It is predicted that these new material developments will put labs on a level playing field with offshore production.”
(<http://www.ada.org/news4775.aspx>.)

As future trends rely on more use of computer technology, tomorrow’s technician must fluently identify with the computer and be able to visualize in 3D. The shift in the education required will bring students with a completely different knowledge base, skill set and outlook. Their role will evolve into more of a computer software operator and designer. Restorations will be milled and individual tooth shade and characterization will be applied to ceramics or similar materials in a 3-D process. Curriculum and applicant selection revisions will be necessary in the coming years. The new evolving technology will be able to provide patients with instant gratification and a great white smile that didn’t take a month or two to create.

(<http://www.glidewell dental.com/lab/lab-perspectives> and <http://www.dentalaegis.com/iDLT/2011/02/fast-forward-2020>).

The statements presented by Jim Glidewell and other experts in the field cause programs such as PCC’s to pause and reflect on reconstructing their program and application process to meet the future demands of the field and the public who they serve. In May of 2013, with the support of Dean Jen Piper, a meeting of DLT advisory committee members and stakeholders in the profession was convened to address the topic of the future of the DLT profession and program at PCC. Seventeen passionate DLT professionals and stakeholders joined the Dean, Director (Josette Beach) and program faculty to discuss the topic. The group discussed the cross-roads the field is currently facing and recent factors influencing the operations and sustainability of labs such as:

- Cost of new technology and new materials
- Outsourcing of dental technology work to China
- Boutique and mid-size labs ability to keep prices affordable compared to prices charged by large manufacturing labs and,
- Increase demand of aesthetic restorations and implants being fabricated out of new materials through technology.

The group was committed to their belief that the PCC accredited DLT program plays a vital role in providing the well-trained employees desired by laboratory owners. Points that reverberated over and over by the group included:

- Formal dental laboratory technology training was desired when hiring employees
- Education should focus on the basic sciences of dental materials, anatomy and basic technique while also including the newer CAD/CAM technology that is now available.
- Hiring formally trained DLT’s provided them with educated employees who could move into management and supervisory positions.

- They are very concerned about the fact that more DLT's are retiring than can be replaced by the DLT Program.
- An adjustment of the curriculum should be made to include more technique in fabricating implants.
- Put an emphasis on replicating what is currently happening in the workplace between dental offices and labs by including soft skills focusing on inter-professional collaboration (currently in industry dental assistants are producing the scans and working with the DLT's to provide them with the information needed for milling the product).
- Providing more practicum/externship opportunities to increase their ability to rapidly produce materials in the lab, which currently impact their pay rates when entering the field (not sure how you want to say this, but this was a big discussion item related to gainful wage)

Both the stakeholders and advisory groups were in consensus that DLTs of the future would need different skill sets when entering the profession, as compared to those needed in the past. As previously discussed, knowledge of computer, scanning and milling principles would be needed. Many felt there was a need to offer more externship opportunities to students in both the first and the second year of the program. Volunteering their own labs for these opportunities to take place created the avenue for the externships that are being developed for spring 2016. Furthermore, the innovative idea of "stacking certificates" was discussed for students who choose to focus only on one area of specialty (removable *or* fixed prosthetics). Further discussion on this topic will occur in the remainder of the program review report.

IV. Needs of Students and the Community

A. Have there been any notable changes in instruction due to changes in the student populations served?

The instructors are aware of the numerous challenges faced by today's students. The DLT enrolled students vary greatly by age span, educational level, skill ability, personal challenges, as well as ability to communicate in the English language. Skills performed by a dental lab technician can be performed from start to finish by the technician with little need for communication with others around them. This type of environment is appealing to many who enter the profession. In order to complete the course of study for the DLT program however, a certain level of education, comprehension, interpersonal and group collaboration is necessary. The instructors work tirelessly to help each individual student at whatever level they are at. It is not uncommon for the instructors to make extra lab time available for those students who find themselves needing additional time to grasp a concept and put it into practice, or simply to make-up time due to personal challenges. Instructors note that students who have gone through

the PCC ESL courses have improved communication skills during their enrollment in the program.

Changes in instruction that have recently occurred were installation of large monitors so that students can see demos more appropriately from anywhere in the lab, use of videos so that students can watch demos over multiple times and including more distance learning as previously discussed. Additionally, the students are receptive to accessing course materials online. Instructors have made efforts to provide the students access to course materials including powerpoints, handouts and videos online.

The following statistical information reveals other important data regarding the students served in the DLT program:

- PCC Institutional Effectiveness demographic statistics for the last three years reveal that the program's students' race/ethnicity representation is increasingly becoming more diverse: (2012/13 = 23.5%, 2013/14 = 31% and 2014/15 = 51.4%). The program's current academic year (51.4%) reveals greater race/ethnicity diversity compared to the general PCC population % range of 35.7 – 37.5%. Please see the Tables below.

Sylvania										
Female	15,149	53.8%	7,327	53.8%	4,821	56.9%	5,656	54.0%	2,819	55.2%
Male	13,019	46.2%	6,302	46.2%	3,647	43.1%	4,823	46.0%	2,290	44.8%
White	16,953	63.6%	8,671	67.0%	5,029	62.5%	6,301	63.5%	2,659	55.0%
Asian	2,064	7.7%	948	7.3%	500	6.2%	725	7.3%	595	12.3%
Pacific Islander	172	0.6%	73	0.6%	45	0.6%	77	0.8%	31	0.6%
Hispanic	3,070	11.5%	1,261	9.7%	861	10.7%	1,375	13.8%	549	11.4%
Black	1,450	5.4%	518	4.0%	724	9.0%	367	3.7%	402	8.3%
American Native	263	1.0%	115	0.9%	98	1.2%	91	0.9%	58	1.2%
Multiracial	1,737	6.5%	810	6.3%	552	6.9%	662	6.7%	360	7.5%
Foreign National	940	3.5%	540	4.2%	239	3.0%	331	3.3%	177	3.7%
Total Reported	26,649		12,936		8,048		9,929		4,831	
Not Reported	2,009		925		568		745		347	
Age: Under 20	5,457	19.0%	2,317	16.7%	979	11.4%	2,228	20.9%	1,235	23.9%
20-24	8,424	29.4%	4,123	29.7%	2,445	28.4%	3,375	31.6%	1,409	27.2%
25-29	5,445	19.0%	2,842	20.5%	1,866	21.7%	1,978	18.5%	844	16.3%
30-39	5,405	18.9%	2,744	19.8%	1,953	22.7%	1,879	17.6%	952	18.4%
40-49	2,326	8.1%	1,095	7.9%	841	9.8%	767	7.2%	445	8.6%
50+	1,599	5.6%	739	5.3%	531	6.2%	447	4.2%	293	5.7%
Average Age	29		29		30		28		28	

http://www.pcc.edu/ir/factsheet/credit/factsheet_201501_wk04.pdf

The SAS System

Dental Lab

CAMPUS TABLES: Race/Ethnicity Distribution		Total	Foreign National	Multi-Racial	African American	Asian	American Indian/Alaska Native	Hispanic	White Non-Hispanic
		N	%	%	%	%	%	%	%
Collegewide, Excl Campus 6									
	2012-2013	34	2.9	.	.	14.7	.	5.9	76.5
	2013-2014	29	6.9	.	3.4	6.9	10.3	3.4	69.0
	2014-2015	37	8.1	5.4	2.7	21.6	8.1	5.4	48.6
Sylvania	2012-2013	34	2.9	.	.	14.7	.	5.9	76.5
	2013-2014	29	6.9	.	3.4	6.9	10.3	3.4	69.0
	2014-2015	37	8.1	5.4	2.7	21.6	8.1	5.4	48.6

http://www.pcc.edu/ir/program_profiles/201415/DT.pdf

- The field of dental laboratory technology appeals to both males and females. The table below however reveals a steady increase of females enrolling each of the past three years. It is not known whether the decrease in male enrollment is related to the economy recovering from the recession when many people were unemployed, or due to other factors.

Dental Lab

CAMPUS TABLES: Gender Distribution			Female	Male
		N	%	%
Collegewide, Excl Campus 6				
	2012-2013	36	44.4	55.6
	2013-2014	31	51.6	48.4
	2014-2015	39	74.4	25.6
Sylvania	2012-2013	36	44.4	55.6
	2013-2014	31	51.6	48.4
	2014-2015	39	74.4	25.6

- The following table exhibits that dental laboratory technology is a career that appeals to newly graduated high school students, as well as the more mature adult returning for a change of career or re-entry into the work force. It can also be noted that between 2012 and 2015, the enrollment of the older adult (age 51-60 age group) has decreased drastically. Again, whether these findings are related to the economic changes over the past three years or not is known.

Dental Lab

CAMPUS TABLES: Age Distribution			18-20	21-25	26-30	31-40	41-50	51-60
		N	%	%	%	%	%	%
Collegewide, Excl Campus 6								
	2012-2013	37	10.8	21.6	13.5	29.7	10.8	13.5
	2013-2014	31	12.9	29.0	22.6	12.9	12.9	9.7
	2014-2015	40	17.5	27.5	20.0	20.0	10.0	5.0
Sylvania	2012-2013	37	10.8	21.6	13.5	29.7	10.8	13.5
	2013-2014	31	12.9	29.0	22.6	12.9	12.9	9.7
	2014-2015	40	17.5	27.5	20.0	20.0	10.0	5.0

The PCC dental laboratory technology program attempts to meet each student “*where they are*” when they enroll and guide them along the way to becoming a competent DLT. Whether language, financial or study skill barriers exist, the faculty work hard to find the most effective resource available at the college to help.

B. What strategies are used within the program/discipline to facilitate success for students with disabilities? What does the SAC see as particularly challenging in serving these students?

The instructors are sensitive to the individual needs of each student. They recognize that students with challenges in learning and/or abilities may feel self-conscious or have a lower self-esteem. Currently all students are reminded of the resources available to them through the Office of Students with Disabilities. Accommodations are met when deemed reasonable in relation to the technical skill requirements for this industry. Examples of efforts that have recently been employed include:

- Utilizing other students to assist in note taking instead of using some other means that would stand out more. Students taking notes get monetary compensation for their effort, which is a “plus” for them.

- Lengthening standard test times and keeping test areas quiet for all of the students so as not to create any unusual or noticeable difference to any student.
- Creating videos with captioning for students who are hearing impaired and providing interpreters in lectures and labs.
- Allowing students to schedule additional practicum time when personal challenges have kept them from completing the term at the regularly scheduled time.
- Offering enrollment in the following year's cohort when sudden circumstances are cause for the student to withdraw unexpectedly.

Future discussion is planned with advisors to see if more direct communication can occur between the advisor and instructor when concerns of the students need to be addressed.

C. Has feedback from students, community groups, transfer institutions, business, industry or government been used to make curriculum or instructional changes? If so, please describe (if this has not been addressed elsewhere in this document).

Student and dental lab industry feedback has been the main inspiration for curriculum change within the program.

Student feedback is continuously used for improvement of individual courses (through course evaluations) and the program as a whole (exit surveys). Employer surveys and Alumni surveys are also distributed with less helpful information due to low response rates. Additionally, previous discussion presented how the SAC has used feedback from LAC reports for curriculum and instructional change.

Also previously discussed is use of the feedback generated from the DLT advisory committee members, as well as that of the externship partners and stakeholders.

The DLT Advisory Committee is formed of industry and public members. Membership consists of: dental laboratory technicians, dentists, lab owners of large and small labs, past graduates and group dental practice hiring personnel. The Advisory Committee meets 2-3 times per year (see section VII A. for a more complete description of the impact the advisory committee has had on program improvement).

Community partners play a critical role in keeping the program aligned with what graduates will experience upon graduation. The program is excited to implement the externship program in the upcoming months. Externship partners will provide feedback by communicating with an instructor liaison assigned to the student placed in their laboratory. This communication will occur when the instructor visits the externship site to observe the student personally and also through email or phone communication whenever feedback needs to be given by either parties. Visits to the lab by the instructor will create a partnership between the instructor, dental lab staff and students.

Students will become aware of what skills are necessary to transition from student to employee. Coaching and/or remediation will occur in the form of observation and/or team meetings and will provide the necessary feedback to both the instructor and the student for improvement as necessary.

Formal surveys will be distributed to both lab owners and students during and at the end of spring term to gain feedback for improvement in the design of the next year's rotations.

[Please See Appendix #5 for Complete List of Externship Site Rotations to be used in the Spring of 2016.](#) (press ctrl and click to link to appendix)

Examples of other industry support includes:

- Presentations and donations by local dental supply companies and laboratories on various topics
- Presentations by large labs recruiting lab technicians
- Extern Rotation sites

Maintaining collaborative efforts between the dental community and the dental laboratory technology program is extremely important to ensure that we are teaching at the highest standard possible.

V. Faculty Reflect on the composition, qualifications and development of the faculty.

Provide information on:

A. How the faculty composition reflects the diversity and cultural competency goals of the institution.

The dental laboratory technology faculty is comprised of two FT temporary faculty members, Homayoun Louie and Patrick McMurray. Both members are past graduates of the PCC DLT Program (2001 and 1981, respectively), and both meet CODA requirements of having Certified Dental Technician (CDT) Certification

The following describes each of the FT Faculty Members responsibilities:

- Homayoun Louie (Temporary Hire 2012, 2013, 2014, 2015) - Teaches second year curriculum, which relates to fixed prosthetics (crowns, bridges, implants, CAD/CAM

technology). Homayoun also serves as the Faculty Department Chair (FDC) as of 2015.

- Patrick McMurray (Temporary Hire 2013, 2014, 2015) - Teaches first year curriculum, which relates to removable prosthetics (partial and full dentures, over-dentures and denture repair). Patrick also serves as the SAC Chair as of 2014.

Part Time Faculty include:

- Gregory Charles – Teaches DT 275 and DT 276 (Dental Laboratory Management lecture and lab).
- Life Sciences PT Pool – Teaches HE 125 First Aid and Industrial Safety
- Yeojin Shin – Teaches PT second year lab sections (9 hours to release faculty department chair)

Instructional Technicians include:

- Michael Saracione – Assists Patrick McMurray during lab sessions
- Yeojin Shin – Assists Homayoun Louie during lab sessions that he teaches
- Madeline Cain - Assists Yeojin Shin during the lab sessions she teaches

The faculty composition reflects diversity and cultural competence through their own cultural diversity, bi-lingual speaking ability (Persian, Vietnamese), gender diversity, dental practice in culturally diverse settings, variety of continuing education training and courses in cultural awareness.

B. Changes the SAC has made to instructor qualifications since the last review and the reason for the changes. How do the qualifications differ /compare between FT and PT. Is it difficult to find PT faculty (talk about these things)

The current dental laboratory technology instructor qualifications were revised and approved in November of 2013. Revision occurred to reflect CODA Standards for dental technology faculty. The new qualifications are:

For All DT courses except DT 275 and DT 276:

AAS Degree in Dental Laboratory Technology from a CODA Accredited Dental Laboratory Program, plus 5 years recent, full-time, non-teaching work experience in the field.

Related Instruction: All courses listed above

- AAS Degree in Dental Laboratory Technology from a CODA Accredited Dental Laboratory Program, plus 5 years recent, full-time, non-teaching work experience in the field and
- Evidence of continuing education in the areas of team building and/or dental laboratory management skills (human relations and communication), dental materials manipulation and removable and fixed appliance fabrication (computation).

For DT 275 and DT 276:

Bachelors Degree in Business with 5 years experience using small business computer software.

Related Instruction (in DT 275,276)

- Bachelors Degree in Business with 5 years experience using small business computer software and
- Professional or continuing education course work in team building or small business practice management (communication and human relations) and small business finance skills (computation).

During the 2014/15 annual American Dental Education (ADA) annual survey audit, it was determined that PCC's past process of signifying Homayoun Louie as the "Program Coordinator" (with no release time for coordination), and Josette Beach (RDH, CDA) no longer satisfied the need for having the program overseen by a CDT. With the support of Dean, Jen Piper and approval by PCC Administration, Homayoun was appointed as Faculty Department Chair (FDC). A formal written change was submitted to CODA in November 2014 announcing Homayoun's position change and approval was received, acknowledging by CODA that the FDC responsibilities now held by Homayoun met accreditation requirements.

It can be difficult to find faculty to teach in the dental laboratory technology program due to lack of State requirements for education or certification to enter the field. To maintain national accreditation through CODA, the program must follow the Standards set by the ADA for Faculty, which are:

3-8 Faculty providing didactic instruction must hold a degree equivalent to the degree to be granted to their students or show documented annual progress toward achieving that degree.

3-9 A dental laboratory technician who is appointed after January 1, 2000 and who has not previously served as a dental laboratory technology program faculty member, must be certified by the National Board for Certification in Dental Laboratory Technology or achieve certification within two years of appointment to the program.

www.ada.org/~media/CODA/.../dlt_ssg

When hiring, full or part-time instructors we are lucky that most PCC graduates choose to earn an Associate Degree, which meets that requirement of the Standard. The more difficult requirement is to find someone who also has had the desire and initiative to apply and sit for the CDT exam. As previously mentioned, CDT certification is not a requirement of employment or practice in the field and is something done at the desire of the individual technician.

C. How have the professional development activities of the faculty contributed to the strength of the program/discipline? If such activities have resulted in instructional or curricular changes, please describe.

- Homayoun Louie:
 - 2016:
 - Screen Committee Orientation course PCC
 - DA Hiring Committee
 - 2015:
 - PTC Training Course, Productivity Training Center, CA
4 day workshop - porcelain restoration (CAD/CAM) techniques.
 - Became Faculty Department Chair
 - Digital Technology-Bonnie marshal ODA Conference
 - 3D Dentistry – Aaron Molen, DDS ODA Conference
 - Got Stress – William Kane, DDS ODA Conference
 - Periodontal Considerations for implant ODA Conference
 - Dentistry – Donald Callan, DDS ODA Conference
 - Biohazard Training, PCC
 - Non harassment/nondiscrimination course, PCC
 - 2014:
 - OIO Training – 5 day course
 - Online Instructor Orientation course
- Patrick McMurray: Continuing Education and Accomplishments:
 - 2015:
 - SAC Chair DLT Program, 2013 to present
 - Evolution of Fixed Restorative Options for the Edentulous Arch,
From: Clips to Fixed Hybrids
 - Implant Options
 - Step by Step Guide to Full Arch Rehabilitation
 - What's New? (In Dental Technology) Latest Technology; CAM
/Milling, 3D Printing, etc.
 - Abstract: Dental Lab Technology: Present and Future, New
materials and techniques
 - Annual Biohazard Training (2015, 2014, 2013)
 - Dietary Supplements
 - What's Behind the Smile That Counts
 - Solving Most Difficult Cases
 - 2014:
 - Dentsply Complete Denture
 - Completion of Certification (CDT)
 - Practical Exam for Certified Dental Technician
 - 2013:
 - Written Exam for Certified Dental Technician
 - Comprehensive Exam for Certified Dental Technician

Instructors reveal that C.E. course attendance has been very important in the last 8 years , more so than it has ever been in the past, due to all the new technology being implemented into our industry. The use of high technology is rapidly becoming more prevalent in most Dental Laboratories. C. E. keeps technicians on top of the latest technology being used in dental labs. Using this knowledge of current technology, instructors try to continually revise their courses to reflect the current industry standard. Developing new curriculum and classes advances the students skill, making them more employable in the dental laboratory workforce. For spring term 2016, we have two new classes (CAD/CAM Operation & Implant Technology) that were designed based on the new training our instructors received while attending CE course and updating their certifications

VI. Facilities and Academic Support

A. Describe how classroom space, classroom technology, laboratory space, and equipment impact student success.

Few changes have occurred in the laboratory space and equipment since the 2010 DLT Program Review. The two changes that did occur were the previously discussed audiovisual monitors and computer installation and new laboratory stools for the students use while working at the lab benches. The enhanced viewing ability greatly improves the ability for students to observe demonstrations in the crowded laboratory and the new stools improve comfort for students sitting over long periods, as well as ability to provide cleaner air by not harboring dust as occurred in the previous fabric chairs.

Other changes or improvement of the lab have not occurred due to bond and budgetary reasons. Over the past three years however, the instructors and lab assistants have worked diligently to sort through materials and equipment in order to maximize the lab space and storage in the HT basement. Dumpsters of old equipment that no longer worked or was no longer in use in modern labs were sent to surplus or disposal. Outdated supplies were also purged, as well as past teaching materials that were no longer relevant. The lab is now more organized and easier to move around in.

The physical condition of the DLT lab and equipment are deteriorating due the 40+ years of use. Recommendations for laboratory improvement and equipment purchase are listed in the recommendation section.

Current classroom lecture space is adequate for lecture courses.

B. Describe how students are using the library or other outside-the-classroom information resources.

Over the last several years the department has noticed that students are much more prepared to research information needed to be successful in class. It is no longer necessary for sessions to be held in the library to demonstrate how to search for topics or how to use the various resources. Instead of shelves lined with hard copies of books to use as resources, the dental laboratory student is able to research information through a variety of other tools. In the past students who did not have home computers were more likely to use the library computers, but more recently, students are less likely to utilize the library for this purpose.

Instructors supply videos, CD's and websites to students as necessary to enhance their learning of material presented in their courses.

C. Does the SAC have any insights on students' use of Advising, Counseling, Disability Services, Veterans Services, and other important supports for students? Please describe as appropriate.

Health Admissions Advising: The Health Admissions Advisors play an instrumental role in preparing potential students for application to the program. Providing information sessions, developing advising guidelines and application materials all create a seamless process for entry into the program as possible. Additionally, the HAO Advisors communicate and collaborate with the Director and Administrative Assistant to ensure that the Website and brochure for the program is updated annually.

Initially, all students are scheduled individual appointments with a health admission advisor to review what courses the students have already taken and what courses are still needed to complete the Associate Degree or Certificate. The student leaves with a term-by-term plan that was designed individually for their success. The director is also in communication with the second year students regarding their grad plan progress.

Jobs/Internships Office: Diane Jantze has been extremely valuable by presenting job search strategies, marketing approaches with their resumes and interviewing skills. Additionally she designed a "Spot Light on Students and Graduates" flyer for distribution during high school and career fairs.

Testing Center: The testing center is utilized for make-up exams and students requiring additional testing time.

VII. For CTE Programs:

To ensure the curriculum keeps pace with changing employer needs and continues to successfully prepare students to enter a career field:

- A. Evaluate the impact of the Advisory Committee on curriculum and instructional content methods, and/or outcomes. Please include minutes from the last three Advisory Committee meetings in the Appendix.**

The current Advisory Committee has been revitalized over the last few years and enthusiastically supports the DLT program. At the time of the last program review the Advisory Committee consisted of five members who had served in this capacity for a great number of years. As previously discussed a “Stakeholders” meeting was held in 2013 to discuss the current and future state of, not only DLT program, but of the profession in general. The gathering of stakeholders and advisory committee members together led the way for the revitalization of the current, more substantial Advisory Committee. At the most recent meeting held Fall of 2015, seven members were in attendance, externship policies/procedures were finalized, contracts signed and a new exciting learning opportunity awaits the students this Spring.

Whether providing historical perspective, current standards of practice in the industry, or news on upcoming trending changes, the Advisory Committee now serves the program with a higher impact that has resulted in the previously discussed curricular and instructional changes. Other suggestions from the committee that will be worked on in the near future include creating a stackable curriculum within the program. Many students who enroll in the DLT program desire to work in one or the other focused areas of the profession: *Removables or Fixed* Prosthetics. Currently, the course of study includes “Removable” fabrication technique in the first year of the curriculum and “Fixed” in the second year. Typically, attrition occurs at the end of the first year as students wishing only to work in labs that focus on “removables” leave to find work in this area. Those students who really wish to only focus on the “fixed” aspect of the program must take the whole first year before getting to the curriculum and skill practice of fixed crowns, bridges and implants.

Stackable certificates would allow the student to earn a certificate in removable fabrication if the first year of the program is completed. Likewise, those only wishing to work in fixed appliance fabrication could start at the second year point and earn a one year certificate in just this focused area. These two “one-year” certificates would not be able to be accredited by CODA, but those students who desire a broader background in the profession, with more opportunities available to them, would still be able to complete the full two years of training and earn the certificate or degree from the accredited two-year program. The director and FDC plan to work on the stackable certificates, as well as approach CODA as to the possibility of granting accreditation for

one-year DLT certificates. These certificates will help formalize a pathway that already exists, but will recognize students as having completed a segment of curriculum that satisfies a different need in the realm of DLT career pathways.

[Please see Appendix #6 for a list of DLT Advisory Members](#) and [Appendix # 7 for Advisory Committee Minutes from the past three meetings](#). (press ctrl and click to link to appendix)

B. Describe current and projected demand and enrollment patterns. Include discussion of any impact this will have on the program.

Historically, accredited Dental Lab Technology programs grew from three in 1961 to 58 in the mid 1980's. More recently there has been a reduction of accredited programs in the US to where we stand today with 19 accredited programs. The DLT profession finds itself facing a "challenging combination of events all happening at the same time," as stated by Dr. Jake De Snyder, Chair, Council on Dental Practice. Nearly every dental school has eliminated dental laboratory technology programs in their universities, which leaves graduating dentists with little understanding of the technology part of the profession. At the same time, there has been a decline in a significant number of independent accredited programs, such as PCC. These declines can be attributed to the increased cost necessary to purchase new technology needed to train today's technicians. While the training programs for the next generation of technicians has diminished, the current certified lab technicians in the US are also becoming an aging group. A large number of these baby boomers will be retiring, leaving a huge deficit between those leaving the field and the amount of students being trained to replace them. It is estimated that the industry is graduating only one-fifth of the retiring DLT workforce, while increasing demands are seen on the horizon.

<http://www.ada.org/news4775.aspx>.

Current labor market data for the industry reveals that growth in the field of dental lab technology is expected over the next decade. Peter Stein, reported in the *Golden Quarter Century* that "As we move onward further into the 21st century, we see a period of true promise and steady growth in dentistry and dental laboratory sales. There will be no decline in the demand for dental services rather, the demand will grow." This growth can be attributed in part to the increasing aging population who desire and have the means to replace missing teeth with more aesthetically pleasing implants rather than removable appliances. <http://nabl.org/certification/dental-lab-carerr.cfm>

The Occupational Outlook Handbook indicates that there were 39,000 Dental Lab Technicians employed in 2012 with an estimated 3% growth over the next ten years to 40,000. Other resources reveal that 14,040 new jobs will be filled by the field by 2018 which is a rise of 4.58% over the next few years. www.recruiter.com

The business landscape of the future is difficult to predict, the trend is that the one, two or three-person businesses is eroding away. Steve McGown, CDLT, believes the “constriction of smaller laboratories is necessary to keep the industry health. There are just too many technicians in the market who are merely dental mechanics. They produce work but don’t invest in higher education and training. An uneducated workforce is not sustainable for the future needs of dentistry.”

<http://www.qualityinfo.org/olmisi/>.

Further, Jeff Stronk, president of the National Association believes in the value of dental laboratory education stating “The laboratories that value education, stay abreast of trends, technology and material developments, become a resource for their clients and will be successful in the future.” <http://www.dentalaegis.com/iDLT/2011/02/fast-forward-2020>

Less education and formal training lead to overall lower salaries for DLT’s who are trained on the job. Unfortunately, new graduates also find that their beginning wages maybe low at the start of their career. During discussion with stakeholders about lower than desired starting wages, we learned that while graduates have the formal education that lab owners are looking for in an employee, their skill level and time management, accuracy and efficiency is still developing. The lack of speed and quality of work often creates a loss for the employer in time and materials, as poor quality or broken work must be redone. Beginning wages of new employees results in low pay, but increases as quality and speed increases. [Click here to see the Wage statistics for DLT.](#) (press ctrl and click to link to appendix)

Employers are looking for DLT PCC graduates to hire. Recently several lab groups have reached out to the DLT faculty to schedule time to present the merits of their laboratories to students. Laboratories such as Smiles by Design, Lande Dental Lab, Willamette Dental and Kaiser Permanente have either presented to students, posted job openings through the PCC Career Center, joined the Advisory Committee, or completed contracts to host externs at their laboratory. Diane Jantze works closely with the DLT faculty to post jobs to current students and graduates as they become available. The table below illustrates the number of jobs Diane forwarded from interested employers to DLT students and grads from Spring Term of 2014 to Fall of 2015:

DLT 7	Fall 2015
DLT 0	Summer 2015
DLT 6	Spring 2015
DLT 3	Winter 2015
DLT 5	Fall 2014
DLT 1	Summer 2014
DLT 0	Spring 2014

Additionally, Diane reports that “We also usually have around 2 international students per term in the DLT program that are doing Cooperative Education. I have noticed an upward trend of dental lab employers seeking to hire our graduates from out-of-state: Utah, California, Colorado, Washington and Philadelphia.”

C. Explain how students are selected and/or prepared (e.g., prerequisites) for program entry.

Potential students interested in applying for the DLT program can do so any time from October through August for enrollment in the following year’s cohort (Fall term start). Interested applicants can attend information sessions provided by the Health Admissions Advisors throughout the year. Due to the fact that there are currently no State or National requirements for licensure or certification in this field, prerequisites for entry are minimal. The requirements are listed below

Current DLT Program Requirements:

1. GED, high school graduation or minimum college GPA of 2.0. (Proof of completion/graduation/college transcript must be submitted in your application).
2. Completion of [RD 90](#) or [WR 115](#) with a C or better or college placement into [RD 115](#).
3. Placement into [MTH 20](#).
4. Satisfactory performance of wax carving tests (prerequisite).
5. Students must show evidence of having begun or completed the immunization series for Hepatitis B.
6. Students must complete [MTH 20](#) or higher to receive the Certificate. Students obtaining the AAS degree must complete [MTH 65](#) or higher. A math competency exam is not sufficient for graduating.

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All applicants who meet the minimum academic requirements are invited to participate in a wax carving test which is administered and evaluated by the two full-time faculty members. The test is scheduled monthly (or more often if needed) and applicants may test more than once to attempt to improve their final score and gain acceptance. Passing the wax carving test at a minimum level is necessary for final acceptance. The “hands-on” skill test requires applicants to carve a basic shape after an introduction to the hand tools. Following the first attempt at carving, applicants are then given more detailed instruction on carving technique with a second chance to perform the carving exercise. Those performing at the minimum level are accepted into the DLT program. This type of preliminary skill assessment directly relates to the hand – eye coordination needed by students/technicians when working in the field.

Each student admitted to the program is scheduled to meet with a Health Admissions Advisor in the first three weeks of enrollment to review their Grad-Plan and create a

path forward. When entering their second year of the program they once again meet with a Health Admissions Advisor to review the progress they are making toward their certificate or degree.

D. Review job placement data for students over the last five years, including salary information where available. Forecast future employment opportunities for students including national and state forecasts if appropriate.

Job placement data is difficult to obtain from graduates/alumni due to low survey return rates. Attempts are made annually to survey students when exiting the program as to whether they already have a job. 2015 exit surveys revealed that 8 students out of 11 respondents had already been offered employment

As of May 2014, the Bureau of Labor Statistics reports the following forecast for this profession:

Employment estimate and mean wage estimates for this occupation:

Employment (1)	Employment RSE (3)	Mean hourly wage	Mean annual wage (2)	Wage RSE (3)
35,320	2.5 %	\$19.30	\$40,140	0.9 %

Percentile wage estimates for this occupation:

Percentile	10%	25%	50% (Median)	75%	90%
Hourly Wage	\$10.64	\$13.62	\$17.71	\$23.38	\$29.51
Annual Wage (2)	\$22,120	\$28,340	\$36,830	\$48,630	\$61,390

Additional Oregon information was listed in Section B. above. The Bureau of Labor Statistics also reports that as of May 2014 Oregon has a higher percentage of occupations that are DLT relative to other parts of the country".

PCC Institutional Effectiveness provided the following information from the Oregon Employment Department. The recently updated information reports the increase in number of professionals by 2020 for Oregon and reveals that DLT is a high demand career.

PCC Programs and Associated Occupations

Updated Sept. 24, 2015

Source: Brenda.P.Turner@oregon.gov, Oregon Employment Department

Occupational Code and Title	2012 Employ.	2022 Employ.	Employ. Change	Percent Change	Growth Openings	Replace. Openings	Total Openings	High Demand?	2015 Wage Information							
									10th %	25th %	50th % (Median)	75th %	90th %	Mean (Avg)	2015 Annual Mean Avg	High Wage?
Dental Assisting/Hygiene/Lab																
29-2021 Dental Hygienists	1,364	1,619	255	18.7%	255	349	604	Yes	\$31.17	\$33.01	\$36.10	\$40.56	\$44.58	\$36.54	\$76,008	Yes
31-9091 Dental Assistants	1,612	1,788	176	10.9%	176	334	510	Yes	\$16.07	\$17.94	\$20.86	\$24.27	\$27.82	\$21.25	\$44,195	Yes
51-9081 Dental Laboratory Technicians	436	479	43	9.9%	43	147	190	Yes	\$11.28	\$16.56	\$21.41	\$26.38	\$29.17	\$21.03	\$43,743	Yes

E. Please present data on the number of students completing Degree(s) /Certificate(s) in your program. Analyze any barriers to degree or certificate completion that your students face, and identify common reasons that students may leave before completion.

The following table represents the number of applicants, fall term enrollment and completion data for the Dental Laboratory Technology program over the past five years:

Year	Number of Applicants	Number of qualified Applicants	Number Enrolled Fall Term	Number Completed To Graduation	Retention Rate to Completion	Reason for Attrition
2015/2017	23	19	18	TBA	TBD	TBA
2014/2016	38	25	24	Current 18	TBD	TBA
2013/2015	23	16	16	11		Financial, International student unable to stay, financial aid.
2012/2014	37	19	19	15		Change course of study, personal withdraw.
2011/2013	32	23	23	12		Personal, self-withdraw, financial, got FT job.
2010/2012	50	28	28	15		Personal, financial, (1) academic

Various reasons occur for student attrition from the program ranging from unpreparedness due to financial constraints or not being able to handle the academic rigor that is expected. Students who are not quite ready the year they enroll, but want

to work on academic study skills, improving their language and comprehension skills, or working towards financial readiness, are offered a deferment of their acceptance to the next year. The instructors work diligently to provide additional lab time to students who have unforeseen family or personal problems, but some are still not able to complete even with the additional time. Some students also withdraw each year to work in a dental lab where they can utilize all of the skills that they learned in their first year of the program. A few have returned years later to enroll in additional courses in both DH and DLT so that they can work towards State Licensing as a Denturist. *Director's Note: As transition occurred in 2011 and 2012 due to retirements, new inspiration was brought to the program by the new FT temporary instructors. Curriculum was updated and now includes teaching newer techniques used in today's dental laboratories. As a result, the program has experienced a higher retention rate in the past two years.*

The program recognizes that because of the minimum entry requirements, some students working to make positive life changes enter the program in the hopes of obtaining a career to support them. Despite the help of the instructors and the resources at the college, the road ahead of the student is quite challenging and not all are able to see the program to completion.

In addition, the graduation completion rates can be deceiving. While this group of students desire to earn an Associate Degree or Certificate, some students will take all of the DLT curriculum, but not complete the general education required for their final graduation. Many times a student who attend two years of the DLT program are able to work in labs because the training is desired by lab owners, but the final degree is not necessary for their employment. Many times students may be out working for a few years before they take the final one or two general education courses needed to finally graduate.

F. Describe opportunities that exist or are in development for graduates of this program to continue their education in this career area of profession.

Students who enroll in the Dental Laboratory Technology program have many pathways to entertain upon graduation. In addition to working in small, large or boutique labs (some may open their own labs), they may also work directly in a dentist's office fabricating restorations and appliances for the dentist. Over the past decade two students in the DLT program have decided to continue their education by enrolling in the Dental Assisting program. Additionally, those who work in dental labs may choose to obtain more education to become a denturist, become a dentist or fabricate oral prosthetic devices for injury victims or patients with oral limitations.

VIII. Recommendations

A. What is the SAC planning to do to improve teaching and learning, student success, and degree or certificate completion?

We will continue to utilize feedback from students and the advisory committee, in conjunction with industry standards to improve our teaching and learning. The implementation of newer technology such as CAD/CAM is a necessity to ensure the PCC graduates are prepared to enter the workforce. The SAC is committed to the following plan to improve teaching and learning, student success, and degree or certificate completion:

1. Continue to use the LAC process to inform programmatic changes
2. Continue to incorporate Advisory Committee recommendations to keep the program relevant and current to tomorrow's needs.
3. Continue to use student feedback to inform our decisions on how to best create applicable learning experiences.
4. Instructors will continue to seek training on new and current industry technologies.
5. We are engaging with OHSU in a pilot learning opportunity for Spring 2016. We will evaluate and work to see if this is a viable option to continue in the years to come.
6. Pursue "stackable" certificates (One Year Removable Certificate, One Year Fixed Certificate) to allow students to focus on the area of study they are most interested in working in. The accredited two-year certificate/degree would remain available for those who complete the full two-year program.

B. What support do you need from the administration in order to carry out your planned improvements? For recommendations asking for financial resources, please present them in priority order. Understand that resources are limited and asking is not an assurance of immediate forthcoming support, but making the administration aware of your needs may help them look for outside resources or alternative strategies for support.

Discussion between SAC members has resulted in the following recommendations to the administration for improvement of the program:

1. Commitment to continuing the DLT Program as a permanently funded and supported program.
2. Approve the permanently funded faculty positions to proceed into a hiring process for the DLT program:

- a. Homayoun Louie (4th year FT Temporary Faculty Member)
- b. Patrick McMurray (3rd year FT Temporary Faculty Member)
3. Complete the previous bond proposal lab enhancements:
 - a. Upgrade the lab and student spaces (cabinetry, lighting, work benches)
 - b. Purchase CAD/CAM and Scanning technology (will also be used by the DA program) \$80,000.
4. Provide assistance to help market the program (social media, video, web and marketing flyers)

APPENDIX 1

Program and Curriculum Management Plan

Term to Complete	Activity	Who is Responsible
Fall Term	<p>Program Management</p> <ul style="list-style-type: none"> • Review Block Schedule/rooms for Winter • Review College wide decisions affecting Program • Implement changes from program review • Plan/Attend Advisory Meeting <p>Curriculum Management</p> <ul style="list-style-type: none"> • Plan/Attend SAC meeting • Review Outcomes Assessment Results • Review Advisory Committee Suggestions • Review Course Syllabi/content for Winter Term • Begin process required to make minor/major course changes • Submit changes to admin/Curriculum/Degrees Committees • Review End of term Faculty Course Assess. from Previous Term • Review Demographic, Exit, Alumni, Employer, Patient Surveys 	<p>Faculty Faculty/Dir. Faculty/Dir. Faculty/Dir.</p> <p>Faculty Faculty/Dir. Faculty Faculty Faculty/Dir SAC Chair Faculty/Dir Faculty/Dir</p>
Winter Term	<p>Program Management</p> <ul style="list-style-type: none"> • Review Library holdings/ submit requests • Review Block Schedules/rooms for Spring Term • Review/revise brochure, catalog, website information • Plan/Attend Advisory Committee Meeting (If needed for Winter) <p>Curriculum Management</p> <ul style="list-style-type: none"> • Review End of term Faculty Course Assess. from Previous Term • Review Course Syllabi Content for Spring Term • Review NADL Exam Results • Review Outcomes Assessment Plan, Develop LAC Report • Update/distribute assessments as necessary • Extern Rotation Activities 	<p>Faculty Faculty Faculty/Dir Faculty</p> <p>Faculty/Dir Faculty Faculty/Dir Faculty/Dir Faculty/Dir Faculty</p>
Spring Term	<p>Program Management</p> <ul style="list-style-type: none"> • Review Applicants for Fall Term • Review Equipment, Supplies and Facility Needs • Develop Proposals for Equipment Acquisition/Maintenance • Recommend Changes in Procedures and Policies • Plan/Attend Advisory Meeting <p>Curriculum Management</p> <ul style="list-style-type: none"> • Review End of term Faculty Course Assess. from Previous Term • Review Course Syllabi Content for Fall term • Review Program Goals and Methods for Assessment • Review Methods of Instruction for Effectiveness • Textbook and Estimated Expenses Review • Plan for Summer Wax Carving Tests 	<p>Faculty/Dir Faculty/Dir Director Faculty/Dir Faculty/Dir</p> <p>Faculty/Dir Faculty Faculty/Dir Faculty Faculty Faculty</p>

APPENDIX 2

End of Term Curriculum Review Form DLT Program

Date of Review _____ Course Taught _____ Instructor _____ Term _____

1. Check the competencies that are taught in this course and indicate level of proficiency expected of student (I= Introductory, D= Developing, C= Competent)

✓ Level

- I D C 1. Apply general laboratory techniques to prepare and evaluate impressions and casts, use articulators, develop functional occlusion on articulated cases and fabricate custom impressions trays
- I D C 2. Demonstrate the ability to apply the physics and chemistry of materials being used during fabrication of complete dentures, removable partial dentures, fixed prostheses, including inlays, onlays, crowns, bridgework and a variety of orthodontic appliances.
- I D C 3. Use work practices and safety protocols that promote a safe environment
- I D C 4. Demonstrate business practices and procedures appropriate to managing or owning a dental dental laboratory business.
- I D C 5. Use oral and written communication skills for effective professional interactions.
- I D C 6. Apply legal and ethical principles while working in diverse laboratory and community settings.
- I D C 7. Be prepared to continue dental, community and world awareness through continuing education and active participation in professional and non-professional organizations (Associate Degree)
- I D C 8. Be prepared to transfer to a college or university in the health care field (Associate Degree)
- I D C 9. Demonstrate a deeper knowledge of business procedures pertinent to owning or managing a Dental laboratory.

2. Teaching Format _____ Lecture _____ Online _____ Hybrid _____ Lab _____ Clinic _____

3. Evaluation Methods Used:

Assignments/Projects _____	Oral Presentation _____	Quizzes _____
Group Activities _____	Lab/clinic skill eval _____	Midterm _____
Research _____	Self Evaluations _____	Final Exam _____
Written paper _____	Table Clinic _____	Journals _____
Portfolios _____	Comm. Rotations _____	Other _____

4. List courses in the DLT Program that Review/Enhance material presented in this course:

Topic _____	Other Course/s _____	Review	Enhance
Topic _____	Other Course/s _____	Review	Enhance
Topic _____	Other Course/s _____	Review	Enhance

5. How do you coordinate instruction with the other course instructors?
6. What emerging information/technology/text/evidence or research do you plan on incorporating into this course in the future?
7. Based on your answer to # 6 what resource support will you need to help you?
8. Is there any subject material that is outdated and should be removed?
 List: _____ Why: _____
9. What changes will you make to the course based on student evaluations, exit/alumni surveys, board results, advisory committee comments, employer surveys or self-assessment?
10. If you were not able to cover everything included in the course content, what provisions have you made to assure students will receive the information?
 Topic: _____ Plan for Info presentation to students: _____
11. Describe any factors (positive or negative) that had an impact on your ability to achieve your teaching goals for this course:

Final Grade Distribution

Grade	A	B	C	D	F	I	W
# Students				Remediation Offered Y N	Remediation Offered Y N	Plan Developed Y N	Personal Program

Please Return this Course Review to the Program Director by End of Finals Week

Appendix 3

National Association of Dental Laboratories PCC Registered Graduate Certification Results

Year	Statistics
2010	2 RG Examinations; 2 Pass, 0 Fail
2011	13 RG Examinations; 10 Pass, 3 Fail
2012	9 RG Examinations; 6 Pass, 3 Fail
2013	3 RG Examinations; 2 Pass, 1 Fail
2014	1 RG Examination; 1 Pass, 0 Fail
2015	5 RG Examinations; 5 Pass, 0 Fail

National Rankings

AUG 2014 - JUL 2015 RECOGNIZED GRADUATE EXAMINATIONS

National Board for Certification in Dental Laboratory Technology, Inc

Portland Community College

5 Candidates Tested

5 Passed 0 Failed

Rank	Average % Score	Standard Deviation	Candidates
1	81.88%	6.57%	5
2	77.07%	14.34%	13
3	76.88%	7.35%	8
4	75.88%	7.48%	5
5	75.21%	2.64%	6
6	73.75%	10.03%	13
7	72.50%	14.40%	8
8	71.32%	11.35%	9
National Average	71.26%	10.50%	170
9	70.79%	10.59%	19
10	70.56%	11.21%	9
11	67.94%	7.02%	34
12	66.88%	10.73%	5
13	66.02%	7.46%	11

*Only schools with 5 or more candidates appear in this Table III

Appendix 4

Dental Laboratory Technology Course of Study

Course of Study

The coursework listed below is required. The following is an example of a term-by-term breakdown.

First Term		Credits
<u>DT 101</u> [§]	Dental Technology Lab I	6
<u>DT 120</u> [§]	Dental Anatomy	2
<u>DT 141</u>	Denture Techniques I	2
<u>DT 151</u>	Science of Dental Materials I	2
Second Term		
<u>DT 102</u> [§]	Dental Technology Lab II	6
<u>DT 142</u>	Denture Techniques II	2
<u>DT 152</u>	Science of Dental Materials II	3
<u>HE 125</u>	First Aid & Industrial Safety	3
General Education		4
Third Term		
<u>DT 103</u> [§]	Dental Technology Lab III	6
<u>DT 271</u> [§]	Partials, Immediate and Overdentures	2
Any COMM course on General Education List		4
DT Degree Electives		4
Fourth Term		
<u>DT 204</u> [§]	Dental Technology Lab IV	6
<u>DT 253</u> [§]	Science of Dental Materials III	2
<u>DT 270</u> [§]	Inlay Casting, Crown and Bridge	3
<u>DT 275</u> [§]	Dental Laboratory Management	2

Fifth Term		
DT 205[§]	Dental Technology Lab V	6
DT 254[§]	Science of Dental Materials IV	2
DT 272[§]	Dental Ceramics	3
DT 276[§]	Dental Laboratory Management Lab	1
General Education		4
Sixth Term		
DT 206A[§]	Dental Technology Lab VI (Fabrication Ortho Appliances)	3
DT 206B[§]	Dental Technology Lab VII (CAD/CAM and Implant Restorations)	3
DT 284	Dental Specialties	2
DT 286[§]	DT Registered Graduate Preparation	1
DT 287[§]	Introduction to CAD/CAM Technology and Dental Implant System	3
General Education		4
	Total Credits:	91

APPENDIX 5
Complete List of DLT Externship Sites for Spring 2016

Willamette Dental Group
Kaiser Permanente
Qualident Dental Lab
Smile by Design, Inc
Crown Creations
Shikosha Dental Lab
Denture Design
Cain Denture Center
The Denture Studio

APPENDIX 6

Dental Assisting Advisory Committee Members

Name	Affiliation	started
Duane Starr	Dentist	2005
Devon Transue	DLT Small Business Lab Owner	2005
Mookie Kim	DLT Small Business Lab Owner	2006
Bob Caine	Denturist	2012
John Beals	DLT Small Business Lab Owner	2013
Ron Ferris	Denturist	2013
Scott Alvarez	DLT Small Business Lab Owner	2013
Duke Hong	Kaiser Permanente	2013
	DLT Small Business Lab Owner, Past	
Jim Thomas	President ODLA	2013
Ashlie Grundy	Willamette Dental, Talent Acquisition	2015
Bryan Lofla	Willamette Dental, Lab Tech	2015

APPENDIX 7

Dental Laboratory Advisory Committee Minutes

Portland Community College
 Dental Laboratory Technology
 ADVISORY COMMITTEE MEETING
 11/19/2015
 7 PM

Committee Members Present:

- Jim Thomas (Crown Creations Lab)
- Mooki Kim (Smile by Design Lab)
- Duke Hong (Kaiser dental Lab)
- Bryan Loflin (Willamette Dental Lab)
- Ashlie Grundy (Willamette Dental)
- Ron Farris (The Denture Studio)
- Bob Cain (Hillsboro Denture Center)

PCC Personnel Present:

- Josette Beach – Program Director
- Homayoun Louie – Second year instructor
- Patrick McMurray – First year instructor

Agenda Item	Discussion Notes/Activities	Actions/Direction
DLT program updates		
a. First year curriculum changes	Elimination of DT 143 and replacing it with DT 271, moving some of DT 143 content to DT 142 that was relevant to the project we do at the beginning of DT 103 immediate Dentures then adding to partial denture projects from 2 nd years DT 203 to our current DT 103 lab schedule of projects for spring quarter.	Implemented
a. Second year curriculum changes	Elimination of DT285 course and assign the DT271 course from second year to first year. Started new DT286 (RG Preparation) online course.	implemented
Second Year Student Internship program		
a. Contract details	Discussed details of internship contract with participants and answered any concerns or questions regarding the content of the contract.	
b. Student assessment/evaluation	Distributed evaluation forms to the dental laboratory participants for student evaluation at the end of their internship period.	Follow up at next meeting

c. Program outcome

We hope DLT students acquire valuable hands-on experience during their internship period at the commercial dental laboratories. Increase students productivity hence, increases their chance of employment.

Follow up at next meeting

Open Discussion

Discussed infiltration of new technology specifically

Continue on next meeting

CAD/CAM

Into dental profession and its effect on demand for future DLT graduate students.

Importance of collaboration

Continue on next meeting

between Dental Lab businesses with PCC program to help train quality and technologically advanced technicians to meet today's industries needs.

PCC Dental Lab Technology Advisory Meeting Minutes

Date: 02/23/2015 6:00-8:00pm		Present: Homayoun Louie, Patrick McMurray, Jim Thomas, Nick Yoshida, Mooki Kim, Kristy Blake, Diane Jantze		
Location: Sylvania Campus				
<i>Topic</i>	<i>Discussion</i>	<i>Decision</i>	<i>Follow up needed</i>	<i>Who Will Do</i>
PCC Job placement services	Diane Jantze; Introduces advisory members to PCC Job Placement Services and the many services the provide to students, & employers	To try to get Dental Lab owners to use her services more often when looking for employees.	will monitor progress	Diane Jantze
Introduce committee members to each other	Casual dental lab topics	n/a	n/a	n/a
Intern contracts	Intern contracts	Pass out Contracts	Attending Labs fill out contracts & return them to PCC Dental dept.	Outside lab personel
Length of contract	How long will Laboratories will be obligated to PCC and students. Students available from 8-12:00am and on friday	3 to 4 weeks per student approx 3 times in spring quarter Lab would accept 2-3 students per quarter	Addendum on the contract stating the previous	Louie

Student requirements and credits earned	How long for student to earn credits associated w/ program	Diane J. informed us that normally 30hrs of Internship = 1hr college credit. Students will be required to do 30hr for 1 quarter 10hr at each lab (3 different laboratories)	Currently no follow up necessary	Diane J. ??
Student Evaluations	How will students be evaluated? Punctuality, work ethic, quality, production etc...	Diane J. gave us a simple evaluation form PCC uses . Very short and concise, lab representatives liked it made things simple.	Give these forms out w/ contracts for student's evaluation at each lab. This will be followed up by instructors pass/nopass grade	Louie
Advantage of interships for foreign students	Advantage of interships for foreign students that can't normally work due to there Visa status but can do school related interships	No action necessary	None	n/a
How to schedule students to laboratories	Louie and Patrick will discuss more later, more of a school matter	Louie and Patrick will discuss more later come up with a proposal and present to participating labs at a later date.	Meet in future and brainstorm a proposal	Louie and Patrick
Oregon Association of Dental Labs	Open discussion w/ Jim Thomas talking about the importance of the OADL and how the students would benefit from going to their annual meetings along w/ other lab Reps thoughts about	Figure out a way to require the students to participate in OADL meetings	Meet in future and come up w/ a way to in courage students to become involved	Louie and Patrick
Recognized Graduate/ Comprehensive Test	Announced PCC online class available next quarter to	n/a	Find ways to keep dental laboratory	Louie and Patrick

prep class	prepare for N.B.C. Comprehensive test		community informed of available classes at PCC	

Attendees: Jen Piper, Josette Beach, Homayoun Louie, Patrick McMurray, Robert Cain, Jim Thomas, Mookie Kim, Allen McGary and Michael Saracione

Minutes

Agenda item: DT program curriculum changes.

Discussion:

New courses:

- CAD/CAM
- RG Preparatory course

Conclusions:

- Jim Thomas suggested not putting so much emphasis on CAD/CAM technology and instead to concentrate more on other subject matters.
- Louie reiterate that PCC DT program is committed to stay current with the trends and new technology and its primary goal is to teach the students “basics” for all aspects of Dental Lab Technology.
- Patrick and Louie Discussed introduction of new RG (Registered Graduate) Preparatory course to encourage and prepare the students to participate in taking RG exam.
- Louie mention that in 2013, out of 14 graduates only one student sat in RG examination.
- Participants agreed that School, Lab owners and Technician must work together to promote CDT program and encourage state legislatures to pass a law making It mandatory for technician to become certified in order to be able to work in this industry.
- Michael mentioned the difficulties of getting Lab owners and ADA organization to support the efforts for making CDT mandatory due to increase in labor cost.

Action items

- ✓ Develop a plan to build support among the Dental Laboratory community for certification program.
- ✓ Continue discussion on improving DT students training in future meetings.

Agenda item: DT student Internship

Discussion:

Internship program

Conclusions:

- Louie and Patrick explained how internship relates to business goals.
- Discussed how to schedule time for transition and documentation.
- The type of training the intern will receive and evaluation methods.
- Discussed Benefits of having internship program for Dental Lab Employers and Students such as:
 - Provide a new pool of educated, trained and talented employees.

- Opportunity to evaluate and screen students for full time position.
- Minimize the time spend on training a new employee.
- Job and workplace experience for students in the program.
- Students to build a network/get exposure to industry
- Potential for increased starting salary.
- Faster ramp up with first full time job.

Action items

- ✓ Establish program parameters and goals
- ✓ A sample copy of PCC internship contract was distributed among the members for review.
- ✓ Continue discussion with the members in future meeting