Remodeling and Cabinet Installation Structures by Students 2016-17

Portland Community College

Bathroom Remodeling Project Using Revised Curriculum Spring 2017

Building Construction Technology

Academic Program/Discipline Review

Presenting during 2017-2018 Academic Year

February 2, 2018

BCT FUN FACTS 2018:

TOTAL DEGREES AWARDED BY BCT SAC LAST 5 YEARS: 106

5 YEAR AVERAGE DEGREES AWARDED BCT SAC: 21.2 degrees per year

We are proud of our students, and we are grateful to have been able to contribute to their success.

- Hilary Campbell, Kris Cowan, Brad Fox, Toby Harper, Suzanne Najafdari, Shawna Poppe, Karen Sanders, Shannon Baird

Table of Contents

Building Construction Technology
Academic Program/Discipline Review
Presenting during 2017-2018 Academic Year
February 2, 2018

Program/Discipline Overview

1. 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?

Introduction
The Building Construction Technology (BCT) department at PCC provides students with the knowledge and skills necessary to gain employment in the construction industry. Our goal is to develop students into productive employees and lifelong learners. We aim to provide courses, degrees and certificates that are directly applicable to the skill sets required by area employers. BCT shares these goals with community college programs and some four year university programs (OSU, for example) around the country. Our primary goals and objectives have not changed, and are not expected to change. Construction, as an industry, is expected to continue to provide living wage careers in the years ahead, particularly in the Portland metropolitan area.

One Department - Three Unique Programs
PCC BCT provides three distinct programs of study: Hands-On, Design/Build Remodeling, and Construction Management. The Hands-On program was founded in the 1970s and continues to be a leader in residential construction in the Portland area. The The Design/Build Remodeling program, more recently established, has continued to grow. Both programs have now become stronger through shared curriculum and alignment of coursework. The Construction Management program is now a vibrant and growing program, with the largest enrollment seen in years. Each unique program has evolved over the last five years as we worked with our Industry Advisory Board (IAB) to provide for their needs . These needs will change in the next five years, and BCT anticipates working closely with our IAB as they help us keep up with the many new products and processes coming into the construction industry. The BCT SAC meets nearly every Friday during the academic year to reflect, assess, plan and work toward continual improvement, and we meet three times per year with our IAB membership. The following section contains more detail about these three distinct programs.

Building Construction Technology Hands-On Program

The Hands-On program prepares students to enter the home building industry. Students are trained in all aspects of light wood residential construction, from concrete foundations to wood framing to interior and exterior finish. Students also learn strong fundamentals in construction math, print reading, residential building codes, and estimating. The program prepares students for entry-level employment as residential framers, finishers and specialty workers. Students are hired by local General Contractors, subcontractors, remodelers, and suppliers. Some open or operate independent businesses as general contractors or subcontractors.

The Hands-On training is the original BCT program, begun in the 1970s. This program provides industry partners with well-trained, skilled workers who have experience in the latest residential construction practices, including advanced framing techniques, rainscreen installation, and more. ***Thanks to faculty leadership from recent full time faculty Kris Cowan and temporary full time faculty Brad Fox, the Hands-On program is incorporating major changes in curriculum to continue our efforts to be a regional and national leader in sustainability education, outpacing other programs nationally.***

Building Construction Technology Construction Management Program

The Construction Management program prepares students for entry-level management positions in the construction industry. Students are introduced to the wide range of skills required by the industry, including estimating, scheduling, costing, construction codes, building structural and mechanical systems, construction law, business principles, and project management. A strong foundation in blueprint reading, math, computer applications, writing, public speaking, and presentation is emphasized. Students are trained for positions as field engineers, project engineers, estimators, schedulers, owner's representatives, suppliers, and more. Students are hired by local general and specialty contractors, suppliers and businesses. Some open or operate businesses as independent contractors.

Building Construction Technology Design-Build Remodeling Program

Launched in 2005, the Design/Build Remodeling program prepares students for entry-level positions in kitchen and bath remodeling, as well as the residential home remodeling and refurbishment business. Students are trained in many of the same skills as the Hands-On students, but are provided additional advanced design focused training specific to the kitchen and bath remodeling industry. In addition to their hands-on training, students take courses in interior planning, kitchen and bath mechanical systems, lighting systems, and business principles. ***Our graduates are hired by local leaders in the kitchen and bath industry including, in the last 5 years, these companies and more: Neil Kelly, Olson and Jones, Artisan Renovation, Hammer and Hand, Green Hammer .***

Primary Takeaway: Design Build Remodeling Program Recognized Nationally

The Design Build Remodeling program at PCC was recognized this year, 2017, as a **School of Excellence** by the National Kitchen and Bath Association (NKBA). The major revisions made to the program by Faculty member Hilary Campbell were recognized by the reviewers as significant, and were pointed out as a model for future programs to follow. Hilary was invited to present her work at KBIS, the annual kitchen and bath trade association convention, in Orlando, Florida, January 2018.

1. B. Briefly describe curricular, instructional, or other changes that were made as a result of your SAC's recommendations in the last program review and/or administrative response.

Below you will find the key portions of the Administrative Response to our SAC Suggestions, with the BCT Follow Up in *BOLD ITALICS* summarizing where we are at in 2018.

1. Committed Bond Projects: Since the BCT worksite will be dramatically impacted by bond work, we feel that implementation and funding of this work as agreed on in the design planning phase is critical. This includes:

a. Adequate funding for replacement and relocation of the remodeling houses and weatherization house. *THIS REQUEST HAS BEEN HONORED AND WE HAVE BEEN COMPLETING THE REPLACEMENT OF THESE STRUCTURES TERM BY TERM*

b. Installation of the new bathroom facilities. *THIS REQUEST HAS BEEN HONORED*

c. Construction of new access to the BCT worksite. *THIS REQUEST WAS MODIFIED, AND HONORED.*

d. Construction of the East/West concrete wall separating BCT from the proposed greenspace. *NOT NECESSARY*

e. Construction of the North/South concrete wall separating BCT from the proposed grounds Landscape Maintenance area. *NOT NECESSARY*

f. Lighting and adequate power at the revised worksite. *THIS REQUEST HAS BEEN PARTIALLY HONORED, BUT AS WE INHABIT THE SITE ADDITIONAL LIGHTING (power is necessary at perimeter of yard. KC 1/2/18) MAY BE NECESSARY*

g. Any other requirements agreed upon in the bond meetings and minutes. *THIS WAS BROAD BUT WE ARE PLEASED OVERALL WITH THE SUPPORT RECEIVED FROM THE BOND OFFICE.*

WE ARE GRATEFUL THAT THE DUST COLLECTION SYSTEM WAS INSTALLED. IT IS STATE OF THE ART, AND HAS DIRECTLY CONTRIBUTED TO IMPROVED HEALTH AND SAFETY OF OUR FACULTY, STAFF AND STUDENTS. STUDENTS TAKING CLASSES TODAY HAVE A FAR BETTER ENVIRONMENT TO WORK IN THAN THEY DID PRIOR TO THIS CHANGE. WE FRANKLY KNEW IT NEEDED IMPROVEMENT, BUT WE HAD NO IDEA HOW BADLY WE REALLY NEEDED THIS IMPROVEMENT. THANKS TO EVERYONE AT THE COLLEGE FOR MAKING THIS HAPPEN. WE KNOW IT WAS EXPENSIVE, BUT IT WAS WORTH THE INVESTMENT. THANK YOU ALL.

ONE EXCEPTION IS THE ONGOING EFFORT REQUIRED TO REMOVE A HAZARDOUS WASTE CONTAINER AND SUPPORT FROM THE MIDDLE OF OUR BUILDING YARD. THIS HAS BEEN TIME CONSUMING, AND HAS PLACED STUDENTS AT RISK. THE COLLEGE WAS UNABLE TO PROVIDE US WITH A UNIFIED MESSAGE, AND EFFORTS BY FACULTY TO REMOVE THIS MENACE WERE EXHAUSTING.

2. COMPUTER LAB SPACE: The college needs to replace the BCT computer lab that was taken away from us since the last program review. The current temporary facility has served its purpose, but must be replaced. BCT is more than willing to share open time-slots that are not utilized by BCT courses.

THIS REQUEST HAS BEEN HONORED IN SPIRIT. WE NOW SHARE A LAB WITH THE LAT DEPARTMENT, AND WE HAVE BEEN ABLE TO OFFER ALL OF THE COURSE OFFERINGS WE HAVE REQUIRED THUS FAR. WE ARE CONCERNED THAT WE MAY OUTGROW THIS FACILITY AND THE TIME-SLOT AVAILABILITY.

3. BCT DEDICATED CLASSROOM. BCT is the ONLY CTE program at Rock Creek without a dedicated classroom within which materials could be stored, and an identity for the program developed. The shop currently serves this function, but space there is limited, and this has no impact on Construction Management students who do not take hands-on classes.

WITH THE PRIORITY BOOKING FOR 2/108, WE ARE SATISFIED THAT THE COLLEGE HAS DONE WHAT THEY CAN IN THIS REGARD.

4. SOCIAL MEDIA ASSISTANCE: Engaged support from the College, including setting up 'shells' for each program in Facebook and Linked-In, would be of great help to the CTE programs in general.

THE ADMINISTRATIVE RESPONSE WAS FOR BCT TO TRY TO COORDINATE WITH TSS, OR THE CAS FACULTY, OR PERHAPS STUDENTS. WE HAVE NOT ATTEMPTED TO DO ANY OF THESE. THESE REQUIRE TIME TO COORDINATE WITH OTHERS WHO ARE ALSO OVER WORKED. WE HAVE CALLED UPON THE PERSONAL SKILLS OF FACULTY AND STAFF TO START OUR OWN SOCIAL MEDIA PRESENCE WITHOUT SEEKING FURTHER ASSISTANCE FROM THE COLLEGE.

5. MARKETING ASSISTANCE: BCT faculty would appreciate assistance from the College in more actively marketing the BCT program, and other CTE programs that teach a trade, to minorities and women.

THE AR CELEBRATED THE HIRING OF JANIS NICHOLS. WE TOO CELEBRATE THAT, AND SEND INFORMATION IN HER DIRECTION FOR PUBLICITY. WE ALSO PUBLISH OUR OWN NEWS ON THE WEBSITE BY SENDING UPDATES FROM TIME TO TIME TO THE WEB TEAM, AND WE USE OUR OWN SELF-DEVELOPED SOCIAL MEDIA PRESENCE. FACULTY CONDUCT OUTREACH WITH HIGH SCHOOLS.

6. ONLINE EVALUATION IMPROVEMENT: BCT Faculty encourage the College to develop a more robust enforcement protocol for the online course evaluation system so that we once again receive universal, meaningful feedback.

EVALUATIONS HAVE BECOME SOMETHING THAT ARE DONE BY SOME STUDENTS. WE ENCOURAGE IT. WE WILL NEVER RETURN TO 100%. WE ACCEPT THAT THE TIMES HAVE CHANGED, AND WE REVIEW THOSE THAT WE RECEIVE. WE TAKE THEM SERIOUSLY, AS WE ALWAYS HAVE.

7. SACC CHAIR: Evaluate and address the responsibilities associated with the uncompensated SACC Chair position. Recognize that the work hours required to develop and maintain Assessments, Program Reviews, Technical Skills Assessments, Program Improvements, Curriculum Improvements, etc. in CTE programs is significant, necessary, and entirely uncompensated.

ADMINISTRATIVE RESPONSE WAS: ***Increased demands for accountability and declining state and federal resources for the college are a reality. The increase in the work that diverts faculty from scholarship and instruction, but which focuses on assessment of student learning is work that should be done by faculty and should be integral to evaluating and improving teaching and learning in your***

discipline. We know that the SAC understands that this work is integral to addressing compliance issues and accreditation and appreciate the effort the BCT SAC has made in this direction.

BCT COURSES ARE PRIMARILY TAUGHT ONCE EACH ACADEMIC YEAR. THE BCT SAC CONTINUES TO EVALUATE THESE CTE COURSES AS THEY ARE BEING DELIVERED, AND ADJUSTING MATERIAL IN REAL TIME TO SUIT STUDENT NEEDS, CHANGES IN INDUSTRY AND REGULATORY ENVIRONMENTS, AND OTHER FACTORS. THE AR APPEARS RIPE FOR SUMMARIZATION AS "THE FACT IS THIS IS JUST MORE THAT NEEDS TO BE DONE, SO DO IT". THE BCT FACULTY ARE COMMITTED TO PROFESSIONAL DELIVERY OF INSTRUCTION, AND UPDATING INSTRUCTION IN A TIMELY MANNER. THAT IS OUR PRIMARY JOB AND FOCUS. WE COMPLY WITH REQUIREMENTS FOR ACCREDITATION. WE SADLY MISSED OUR SUBMISSION LAST SPRING AS WE WERE ENGULFED IN THE MIDST OF A SICK COLLEAGUE AND FACULTY TURNOVER IN THE KEY CLASS WHERE THE DOCUMENTED ASSESSMENT WAS TO TAKE PLACE. WE ASSESS IN ALL OF OUR CLASSES WITH VARIOUS METHODS, EVERY TIME WE DELIVER A CLASS. WE UPDATE BASED UPON OUR FINDINGS. NORMING IS LESS RELEVANT IN OUR PROGRAMS, BECAUSE IT IS RARE TO HAVE A CLASS TAUGHT BY MORE THAN ONE INSTRUCTOR, AND MOST CLASSES ARE ONLY TAUGHT ONCE PER YEAR. WE TEACH COMPETENCY. THIS COMPETENCY IS READILY DEMONSTRATED BY STUDENTS, OR IT IS NOT. OUR CHALLENGES, LIKE MANY IN CTE, ARE FAR DIFFERENT IN ASSESSMENT THAN THOSE FACED BY OUR COLLEGE TRANSFER COLLEAGUES AND THEIR PROGRAMS.

CLOSING

WE BELIEVE THAT THE COLLEGE PROVIDED THE BEST RESPONSE AND RESOURCES THAT WERE AVAILABLE TO IT AT THE TIME. IT WAS A REALISTIC RESPONSE, BASED UPON A REALISTIC UNDERSTANDING OF AVAILABLE RESOURCES. WE ARE GRATEFUL THAT THE MAJORITY OF OUR REQUIREMENTS WERE FULFILLED.

We have continued to better align the (3) degrees in BCT so students are able to obtain all 3 AAS degrees if they choose, and thereby strengthening the program and learning experience for all students. Retitling the Design/Build program to include Remodeling in the name reflects an industry standard and has made the program more intuitive to would be students, With the further development of the Design Build Remodeling curriculum, enrollment has increased. Across all AAS options, 2017 has been one our highest enrollment years.

Our affiliation of the Design/Build Remodel program with the National Kitchen and Bath Association (NKBA) in partnership with the Architecture and Interior Design departments continues. We received our Re-Accreditation with the NKBA October 2016, and the program was awarded 2017 NKBA School of Excellence, which is a performance based accolade based on two student project outcomes submitted yearly to NKBA.

2. Outcomes and Assessment

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

The BCT faculty recognize that the program review template is designed to identify particular areas of interest that are of specific importance to the College at this moment in time. As a result, the format changes, and the requests for information change from year to year. In completing the program review process these last few weeks and months, it became apparent that the format did not lend itself for a complete cataloging of the curricular updates and additions that have taken place over the last 5 years. As a result, we feel it important, as a SAC, to document this information for ourselves, since faculty may change, and programs evolve. So listed below are two catalogs, one for new courses developed or significantly re-tooled, and for updates, those courses that underwent significant revision. The summative evaluation of these lists provides us with encouragement. There is a reason we are tired all the time. We update a huge number of courses, nearly every year. This is the reality in CTE and the ever changing building industry.

New Curriculum

- **New BCT 105 CAD for Constructors I** - Introduction to Computer Aided Design course offers the fundamentals skills for creating digital construction documentation. Allows students more focused curriculum in their discipline and to be able to stay at same campus easing logistics.

- **New BCT 132 Computer Applications for Contractors** - Introduction to REVIT the latest virtual building program training emerging as valuable skill for Construction Management students

- **New BCT 199J (BCT 107 - W2019)** Office Applications for Constructors - new experimental course W2018. Uses latest software for 3D construction document interface called “Bluebeam”. It is used daily throughout the CM industry today on commercial job sites. It will be a stand alone class instead of being incorporated into an existing Commercial Print Reading Class

- **New BCT 117 Graphic Communication for Contractors** introducing free-hand drawing skills as a communication skill set on the job site for their discipline 1cr CM & DBR students required (replaces ARCH 100 for DBR students)

- **New BCT 118 Introduction to Space Planning and Design** with a focus on Kitchens and Bath and the value of design in the construction process. A new single Lec/Lab course replacing (two previous courses within the degree from ID & ARCH at a Sylvania campus). Allows students more focused curriculum in their discipline and to stay at same campus easing logistics. Required for both Design/Build Remodel and Hands-On students.

- **New BCT 209 CAD for Constructors II** - Intermediate Computer Aided Design course offers a continuation in development of skill for creating digital construction documentation including rendering and introductions to three-dimensional modeling. Allows students more focused curriculum in their discipline and to stay at same campus easing logistics for students. a

relabeled Course was - "Vectorworks" was a software dropped by construction industry, the courses was renamed, given a generic titled to accommodate industry technology changes.

Major Curriculum Revisions

- **Revised BCT 102 Residential Print Reading** course completed to be accessible by multiple faculty and dual-credit High School instructors by faculty Hilary Campbell.

- **Updated BCT 120, 121 Floor Framing, Wall Framing** Courses now better reflect modern framing techniques (intermediate and advanced framing). by faculty Kris Cowan

- **Updated BCT 129 Introduction to Mechanical Systems for Kitchens and Baths** course to reflect latest in sustainable practice trends in industry like LED lighting and high performance energy saving heating systems Upgraded from 3 to 4 credits. by faculty Hilary Campbell.

- **Updated curriculum for BCT 229 Introduction to Kitchens and Baths** course to reflect latest industry trends.Upgraded from 3 to 4 credits. by faculty Hilary Campbell.

- **Updating of BCT 206 Sustainable Construction Practices** to align with the latest developments in green construction in addition to core "green" construction concepts. by faculty Hilary Campbell.

- **Updating of BCT 207 Construction Job Costing** course by Adjunct Carl Tullis

- **Updated BCT 150 Mechanical, Electrical, and Plumbing** course has been completely rebuilt and upgraded to include sustainable technologies and to reflect changes in industry. This is done annually as changes in buildings are taking place at such a rapid pace. Upgraded from 3 to 4 credits. by faculty Shannon Baird.

- **Revised BCT 202 Business Principles for Constructors** course has been completely rebuilt to focus on industry's need of informed Construction Management students and Design Build Remodel students in this area. by Adjunct Corey Morris

- **Revised BCT 211 Remodeling** course has been *completely rebuilt* to include additional skills-sets by temporary faculty Brad Fox.

- **Revised BCT 128 Exterior Finish** course has been upgraded to reflect industry changes by faculty Kris Cowan.

- **Revised BCT 116 Alternative Building Design** course provides hands-on training in a focus area straw bale, earthen floors and walls, cob, and other green alternative materials and methods rotating yearly so student may take course multiple times with different technique focus. by adjunct faculty Bernhard Masterson.

- **Revised BCT 135 Residential Building Codes** to be offered online. This new development was challenging for students and not as successful for BCT students as classroom learning. We continue to offer a physical space class, and we have modified the online offering to be a hybrid

class that meets four times during the term. All work associated with developing, deploying, and then revising this course was conducted by part time faculty, currently temporary faculty Brad Fox. Thank you Brad for sticking with it!

- **Updated BCT 100 Overview of the Construction Industry** to better address workplace diversity, equity and inclusion

- **Updated BCT 134 Construction Scheduling** to further integrate MS Project into the curriculum earlier on in the course. This is a direct result of assessment strategies employed in the course.

- **Updated BCT 222 Engineering for Constructors** to improve competency in simple beam design. This is a direct result of assessment strategies employed in the course.

2A. 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 SACs 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 that they are assessable?

Full time faculty meet on a regular basis throughout the academic year to discuss course progress, particular challenges, and unique experiences that crop up throughout the year.

As a group, we review with our Industry Advisory Board at least twice per year and discuss changes taking place in industry that may impact students, graduates and curriculum.

Individually, faculty meet with industry representatives throughout the year to discuss challenges in industry.

Guest speakers from industry come into the classroom, and these speakers are typically provided a syllabus and a course outline so that they can fully understand what is being taught in that particular class. Instructors typically engage in a conversation with the industry representative on topics associated with the course, and through this give and take, gaps in instruction make themselves evident, changes in industry practices become clear, and the overall course becomes a work in progress ripe for improvement.

Example: In BCT 150, guest lecturers brought in case studies of work taking place in the field that utilizes new technology not covered in the textbook. The instructor asked for copies of the powerpoint materials, and through a combination of this powerpoint and notes, a new module of curriculum was established, on the spot, ready for discussion the next time the course is taught, next year. This type of on the spot invention is typical in CTE programs across PCC. Instructors collaborating with guest speakers to improve curriculum.

Building on the Example: The instructor then shared this information with the other instructors at a department meeting, providing professional development for all the other instructors in the department. This collaborative brain-sharing is the heart and pulse of CTE curriculum development. We

steal what is happening on the job now, and try to input that as quickly as possible into our classes. Because once it is in a textbook, it is likely out of date.

ii. Identify and give examples of changes made in instruction, to improve students' attainment of course outcomes, or outcomes of requisite course sequences (such as are found in in MTH, WR, ESOL, BI, etc.) **that were made as a result of assessment of student learning**.

BCT faculty typically assess student outcomes every term. Different courses use differing types of assessment tools.

One of the benefits of hands on instruction is that it often becomes immediately apparent if students are mastering material, if they are simply grasping material, if they are struggling, and/or if they are completely lost. We want to avoid completely lost when it comes to hand and power tool usage, ladders, and other safety hazards. But we want students to learn the reason behind the lesson, so that it sinks in.

Below are a few examples of direct improvements made to course instruction made as a result of assessment that occurred within the last calendar year:

BCT 134 Construction Scheduling

Intended Course Outcomes:

- Assemble and use various construction schedules to manage a construction project.
- Prioritize scheduled tasks in order to streamline planning strategies, shorten overall construction schedules, and reduce costs.
- Communicate effectively with team members by recognizing and utilizing best practices for planning and scheduling of construction tasks.

Outcome Assessment Strategies:

1. Learners will individually demonstrate the understanding and use of basic concepts that help develop a construction schedule by the following "Discovery Projects":

A. Assemble and sketch a WBS (Work Breakdown Structure).

B. Develop an activity list with durations.

C. Develop and sketch logic diagrams.

D. Compute and sketch a CPM (Critical Path Method) diagram.

2. ***Successfully complete two "Mastery Projects" which will represent the culmination of concepts, issues, and themes necessary to achieve the course outcomes.*** These projects will be completed collaboratively in groups of two persons using "Microsoft Project" scheduling software. The first learner

project will be to develop and resource load a baseline schedule. The second project will be to update that schedule, analyze and report changes, and possible corrections and adjustments.

3. Successfully complete one "Final Project" which will represent the culmination of concepts, issues, and themes necessary to achieve the course outcomes. This project will be completed individually using "Microsoft Project" scheduling software. Each learner will demonstrate their ability to develop a baseline schedule.

Assessment Review and Updates Made This Year:

This course is taught one term per year, and it is refined every year. This year we revised the course based upon the outcomes from last year. This was possible based upon the evaluation of the ***Master Project Assessment Tool*** mentioned in Outcome Assessment Strategy #2 above. As a result of this evaluation we:

1. Reviewed and rewrote the instructions used in these Mastery Projects. This was done working directly with students to identify wording which was confusing for some students. This process also identified that we cannot write "perfect" instructions. Some students preferred one way of writing a question, and others preferred the alternative. There was no universal fit.
2. Introduced two additional completed schedules from two new companies that show how schedules can be built in different ways. (This exposure to alternatives helps student literacy when reading schedules, and also, provides mental templates so that when they strike out on their own to build a schedule they have an idea of what one looks like in advance). Students completed "easter egg hunt" exercises to demonstrate their ability to read the schedules. They worked in teams, and then, for quizzes, individually. The results were compared to help identify students who were struggling.
3. Introduced MS Project earlier in the term. For most students, this is their first use of this program. We have increased the time allocated in the classroom nearly every year, and reduced the time allocated for manual programming functions. This has resulted in improved student performance on in class exercises. Last year, Winter 2017, all students successfully completed the final project, the first year that we did not have at least one student unable to complete the final project.
4. We introduced a three week look ahead schedule that was provided by a student, for a project that was going up in Portland at that time. This provided students with an example we could study in class that was being administered by a student in the class, on a project that was under construction as we taught the class. Students could drive by and see the project, and look at the schedule, and compare. This was a great opportunity for students, and it resulted by being open and flexible. It can't always happen that way, but we work for that.

BCT 222 Engineering for Constructors

Intended Course Outcomes:

- Communicate effectively and collaborate on a construction project

- Identify potential loads and forces acting on a building.
- Identify structural systems and members represented on construction documents.
- Recognize bending moments, shear, deflection buckling, and how they determine the size and configuration of structural members.

Outcome Assessment Strategies

- Students will work collaboratively in small groups to design and build a simple truss that will then be loaded until failure.
- Individual class projects that show effective use of knowledge.
- Individually Maintain a journal on design calculations

Assessment Review and Updates Made This Year:

This course is taught one term per year. It is assessed every time it is taught. The assessment tool used has been refined several times, and the instructional materials and delivery have been adjusted every year since the instructor began teaching the course. The goal in refinement has been competency. We are happy to have achieved, with a few outliers, competency within the student body for this assessment. Outliers typically fall into either extremely math concept challenged, formula application challenged, attendance challenged, or they have a life event which has prevented them from devoting the time necessary to master the material.

This year we revised the course based upon the outcomes from last year, and as a result we:

1. Introduced Beam Sizing problems earlier in the term
2. Provided more time to review examples of Beam Sizing problems in class
3. Introduced use of scale models in the class earlier in the term

Sequencing Review and Updates Made This Year:

Our BCT courses are primarily taught to degree seeking students. The individual course outcomes are reviewed individually, BUT also collectively, as a degree package, to ensure that the needs in the field as expressed by our Industry Advisory Board (IAB) are being accommodated, or even exceeded. The primary goal must be to ensure that there are no gaps in the educational preparation of the students as we prepare them for career launch. But the needs of industry change, and the methods and materials and tools used in the field evolve or are replaced or abandoned, and we in instruction will necessarily be one step behind the adopters on cutting edge technologies and new materials. As a SAC we must be vigilant and diligent to appreciation of these changes taking place, and how those changes affect our courses and our degree content.

So one method is course development or improvement, but another is course sequencing. We have, over the last 5 years, identified how course sequencing must be altered to accommodate the overall arc of learning taking place within the degree.

We added the two BCT specific CAD courses, and hoped to identify the "sweet spot" where these courses would best be placed within the degree structure.

We moved BCT 222 Engineering for Constructors to the Winter term, because the Spring term course load had become overwhelming for students.

We attempted to place the new BCT Design Build courses that were added in strategic locations that enhance the overall learning experience for students.

Addressing College Core Outcomes

2. B. 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 Outcome for passing students**. (You can copy from the website and paste into either a Word or Excel document to do this update, and provide as an Appendix).

We have provided an updated Core Outcomes Mapping Matrix as an Appendix.

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

As a CTE program the **evidence that our degree and certificate students are meeting our outcomes is provided by reports from employers and alumni and former students.**

We attempt as best we can to maintain contact with our students AFTER they have left our courses, to gain feedback on what worked and what did not work, or what they felt was missing.

We don't have the resources or the tools to systematically track every student. The CTE programs have been requesting assistance from the college on this area for years, and it was a focus of one of the PCC LEAD Academies, but resources are scarce and we have not seen this in the last 5 years become a priority.

However, despite a lack of systematic review, we as faculty who engage on a regular basis with students term after term DO hear back from MANY of our students.

Between 2013 and 2017, we can confidently state that nearly ALL of our students who worked hard to achieve our course and program outcomes, and graduated with a degree from one of our programs, were able to locate living wage employment within the construction industry in the Portland metropolitan area.

We have alumni return to classes EVERY YEAR in our Construction Management program to talk to current students about what worked and what didn't work. When we hear a comment from a student

that is a direct suggestion on how to improve our program, we respond. We investigate, and we make changes.

Example: Students suggested incorporating work presented by guest speaker Rob Fallow of Fortis Construction directly into the curriculum so that the discussion on Change Orders would be more clearly understood. The faculty worked directly with Rob to make it happen, and now the Change Order process is more clearly presented with the help of that example.

Getting a job after, or before, graduation is the best indicator that industry values our degrees and certificates, and the quality of our graduates. That those students keep jobs, excel, move up in industry, and return to tell their stories to our current students, is the best indicator that those graduates themselves value what they received as an education, and that it is working in their lives.

2. C. ii. Reflecting on the last five years of assessment, provide a brief summary of one or two of your best assessment projects, highlighting efforts made to improve students' attainment of your Degree and Certificate outcomes. *(If including any summary data in the report or an appendix, be sure to redact all student identifiers)*

The best assessment tool used within the BCT curriculum is the Technical Skills Assessment that we use to evaluate our Hands On and Design Build Remodeling students. In this assessment, which is a summative skills assessment, students are evaluated on a rubric of individual skills which must be completed in sequence, successfully, in order to provide a new opening in an existing wall, prepare that opening for a window installation, successfully install the window, and then trim the window and re-install interior and exterior finishes as appropriate to the existing structure.

We find that this assessment tool works extremely well for several key reasons:

1. The tool summarizes skills that have been learned in ALL hands on classes during the first five terms of the program. The evaluation takes place during the Remodeling class, which is taught during the final term of the program, and allows students to APPLY many of the skills they have been learning in other courses.
2. The tool is step by step. Evaluation by the instructor of each individual step is possible, and students are not allowed to move on to the next step until they have passed the current step. In this way, complete understanding and application of the skill is evaluated, and if necessary, reinforced. In some cases, it must be learned at that time, in order to move on to the next step in the process.
3. Basic level competency is required to move forward, so ALL students who attend class and do the work are gaining AT LEAST minimal acceptable competency in each skill. Of course, mastery of most of these skills will take many hours, and sometimes months, of practice on the job.

A skilled carpenter is not made in two years. But a solid foundation is the primary gift that our program provides. Students can build on this foundation and then the sky's the limit.

2. C. iii. Do you have evidence that the changes made were effective by having reassessed the same outcome? If so, please describe briefly.

As stated above, in the summative Technical Skills Assessment tool that we have developed, the assessment is taking place in real time, in front of an instructor. If the student is unable to successfully complete the task before them, the instructor provides remedial instruction until the student is confident they are prepared to attempt the task again. The task is again reviewed by the instructor, and the process repeats itself. Fortunately, the vast majority of our students do not ever require more than one remedial intervention. Most pass each step on the first attempt. That said, some of the steps are more challenging, and these can trip up nearly everyone on the first attempt. The instructor has learned which of these to expect, and time is built into the course to allow for remediation for the entire class on these key aspects.

It is those that challenge most of the class which prove to be the most obvious gaps in industry. The difference between a professional window install and just a window shoved into place is a very important difference, one we attempt to make clear for every single student. We want to develop budding professionals, not barely passing laborers.

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

We have learned over the last few years that we already were assessing most outcomes, because of our hands on applications. The development of assessment tools that fit the conversation taking place within the greater college environment was complicated by the fact that most of the participants within the assessment coaching team were not familiar with CTE educational practices. Had that been the case, we believe we would have been able to save quite a bit of time in providing evidence of the tools we had already developed, and then spent the time available to improve those tools.

The situation was difficult for all involved, and we understand it was a process we all had to go through to get where we are.

We now focus on developing clearly defined, transparent, explainable assessment tools when we develop new courses and new curriculum, so that we can explain to others who are not familiar with CTE what we plan to do in the classroom or the lab or out on the worksite.

We can appreciate that assessment of an outcome in a non-CTE, non-lab experience can be far more challenging, and we have found that those types of classes are the most challenging for BCT.

2. C. v. Are any of PCC's Core Outcomes difficult to align and assess within your program? If yes, please identify which ones and the challenges that exist.

We believe that we have the faculty and the resources and the expertise to address every college core outcome robustly and with conviction.

We want to develop graduates who communicate well with others, because construction is a communication industry. We want graduates who are environmentally responsible and understand that their project is being built in A PLACE, locally, nationally and globally. We want graduates who support the communities in which they live, by giving back, like so many in the construction industry already do. We want graduates who have honed the skills of critical thinking and problem solving, because the construction industry is problem solving, and this requires a critical, constructive, skeptical eye, with a vision for solutions. We want to develop graduates who are culturally aware, of the conditions around them, and of the challenges of others. Our students discuss the differences between people, and their common humanity, and their shared rights to equitable employment opportunities, protection from discrimination, and our shared history of systemic racism, sexism, and marginalization of certain groups by a white male dominated historical legacy. Our instruction, and our example, aim to enlighten our darker past and light the way toward a brighter future for each and every one of our students. We want graduates to demonstrate professionalism in everything that they do, and we aim to provide instruction and guidance in the development of these skills. And finally, we aim to develop students ability to look at themselves, evaluate what they find, and take pride in themselves, and aim to improve, every day, for the rest of their lives.

We are confident that we are making an effort to provide instruction, and to lead by example, on every one of PCC's Core Outcomes. This is our responsibility as instructors.

With all of this said, we have identified in our Mapping Matrix those areas that are our strengths, and those that are our weaknesses. We work to improve instruction in areas of weakness, or we attempt to guide our students toward Gen Ed choices that can better address those weaknesses. For this reason, we require our students to take WR 227, and either COMM 111 or 215. We are more than willing to point our students in the direction of other experts here at PCC. We have many. Just ask a faculty member, or a student.

Below are some examples of how we achieve these PCC Core Outcomes for students:

Communication

The BCT Industry Advisory Board has been a vocal advocate for developing communication skills in our graduates. The BCT department has addressed their suggestions, and this PCC Core Outcome, as follows:

- BCT Sponsors guest speakers on a regular basis to bring students and Project Managers together. Thanks to our industry participants.
- CG 209 Job Finding Skills Mock Interviews with PCC Employment Skills Specialists.
- WR 227 Technical and Professional Writing is a requirement for our Hands-On and Construction Management students.
- SP 215 or SP 111 is a requirement for all students.
- ARCH 110 Introduction to Architectural Drafting, BCT 102 Residential Printreading and BCT 213 Commercial Printreading teach graphic communication skills.
- BCT 100 and BCT 225 teach professional written and verbal communication requirements.
- BCT 222, BCT 130 and BCT 133 require formal presentations to the group.

- BCT 105 and 209 are CAD classes that enhance understanding of graphic communication and associated skills.

Community and Environmental Responsibility

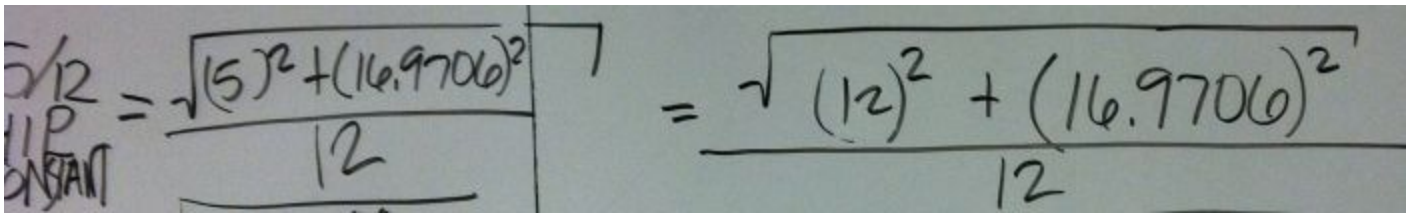
Community Responsibility:

- BCT 135 Residential Codes, and BCT 136 Commercial Codes instruct responsible practices to ensure building safety.
- BCT 130 Construction Safety instructs Construction Management students in best practices to ensure each worker returns home safely after working on a construction project.
- BCT 100 Overview of the Construction Industry instructs best practices for working in the community, and introduce sustainability in construction.
- Civic responsibility and Professional Ethics are embedded in our instruction across the curriculum.
- Students often are organized to volunteer on construction projects that benefit the community.
- BCT 106 students often participate in projects that benefit the campus and nearby community.

Environmental Responsibility

- Sustainability and environmental responsibility is a program outcome of all three degree options, requiring that students " Practice the efficient use of man-made and natural resources."
- BCT 206 Specifically addresses this throughout the course.

Critical Thinking and Problem Solving



The process of building is an exercise in critical thinking and problem solving. Workers in our industry wake up every day and work on unique projects that will never be duplicated. Our programs prepare students for this future. A few of the many ways students solve problems and think critically are mentioned here:

- BCT 104 Construction Math: Students use math to calculate length, area, and volume, and then apply this knowledge to practical applications such as calculating concrete volume, common and hip rafter length, and estimating materials.

- BCT 103 Residential Materials and Methods and BCT 133 Commercial Material and Methods: Based upon student research into materials, students must select the best material for a given application, and justify their selection.

- BCT 211 Remodeling: Students evaluate existing conditions for impact of proposed modifications on an existing structure. Topics include shear strength, bearing points, joist and rafter layout, and finding wires/pipes in walls. After classroom discussions, remodeling students then do the actual work in one of our Remodeling houses. Our TSA is complete in this course.

- BCT 222 Engineering for Constructors: Students analyze structural loads, paths, and reactions, and calculate the size of simple beams required to accommodate estimated loading. Our Beam Design Assessment is completed in this course.
- BCT 221 Construction Law: Students are introduced to the complexity of the legal landscape, and how to analyze situations and best protect themselves from legal action.

Cultural Awareness

Students in the BCT program are diverse in terms of gender, age, race, ability, etc.

Our students get to know one another very well as they go through our program since they have classes together, they learn about one another as they work on group projects together, they are involved in club activities, and they study together.

The hands-on classes in particular force students from different backgrounds, and with different skill/knowledge levels, to work collaboratively as they complete various projects. Our hands-on classes are six hours long, and students get to know one another very well as they work together in the BCT shop collaborating to complete assigned projects, or outside in the rain at our worksite.

Construction Management students are introduced to the wide variety of materials and methods used around the world, and the variety of working conditions industry workers face, in BCT 100 Overview of the Construction Industry. In BCT 100, racism and sexism in the industry are directly addressed and students write reflection papers on articles they read.

Professional Competence

Professional Competence is embedded In the BCT curriculum, as our goal is to produce skilled, immediately employable graduates. CTE students develop professional competency through hands-on experience, class projects, and individual work. Hands-On students are evaluated based upon their professionalism toward their fellow students, toward their work, and in the quality of their work and execution. Construction Management and Design/Build Remodeling students are similarly evaluated in their classroom projects, exercises and presentations. A few courses in which professional competence is highlighted:

- BCT 202 Business Principles for Constructors: Students are introduced to ethical practices, workplace expectations, and best practices. Students are assessed based upon the business plan they develop.

- BCT 225 Construction Project Management: Students are introduced to the expectations of the workplace, and evaluate best practices through case studies presented in class.
- BCT 130 Construction Safety students must develop a safety plan and present it to the group. The professionalism of their presentation is a factor in their assessment.
- All BCT Hands-On instruction, as mentioned above, factors in professional competence in individual assessment tools and outcomes. This addresses both our hands on and our design build remodeling students.
- CG 209 Job Finding Skills develops students' skills in resume development, interviewing skills, and best practices for cover letters to potential employers.

Self-Reflection

- BCT students write reflection papers in many of their courses, including BCT 206, BCT 108 and BCT 225.
- Construction Management students write two reflection papers during their cooperative education experience in BCT 280A.
- Hands-On students work in small groups in many of their courses, and reflect on what practices produced the best outcomes.
- Construction Management students are introduced to the importance of structurally integrated feedback loops to ensure:
    - Jobsite safety regimens are respected, enforced, and informed by near miss reporting resulting in plan improvement.
    - Job Costing systems adequately reflect real-time data that can inform decision-making for ongoing work.
    - Scheduling systems which provide progress reporting compared to baseline schedules to inform decision-making for adjusting work scheduling to address real-time deviations from scheduled timeframes.

Each of the above feedback systems are used to illustrate the need for ongoing evaluation of performance. These tools are used to introduce students to the vital importance of self-reflection to individual improvement.

Other Instructional Issues

3. A. Please review the data for course enrollments in your subject area. Are enrollments similar to college FTE trends in general, or are they increasing or decreasing ? What (if any) factors within control of your SAC may be influencing enrollments in your courses? What (if any) factors within control of the college may be influencing enrollments in your courses?

BCT enrollment has been consistent, and consistently strong when compared to our campus, and when compared to the College overall. Our enrollment is at or near capacity. We have been making consistent efforts to strengthen our programs, and to get the word out about our programs within the community. We believe that by letting people know about our programs, every year, we will have stronger programs when enrollment is challenging. Promotion is an ongoing issue. Our students are our biggest promoters. Solid graduates with solid skills tell employers and colleagues that our programs

develop good employees. We also spend some time on the other methods, and these include a Facebook page, and an Instagram page, and Promotional t-shirts. Having faculty out at public events in BCT t-shirts is a good way to get a face on the program.

3. B. Please review the grades awarded for the courses in your program. What patterns or **trends to you see**? Are there any courses with consistently lower pass rates than others? Why do you think this is the case, how is your SAC addressing this?

BCT awards grades that are consistently higher than the college average. We attribute this to the competency based approach we use in instruction and assessment. This is discussed in other areas of this report. We do have several classes in which grades are consistently lower, and these classes typically are those with more robust, challenging curriculum that challenges students. We are comfortable with these disparities. For example, our BCT 221 Construction Law class is consistently challenging. The course is taught BY A LAWYER. And the curriculum was written by lawyers, so for our students, this is not a walk in the park. But the majority pass the course, and as a result, achieve the outcomes we are hoping for. They do not typically get as close to mastery of that material as they do just basic competence, but they are not planning on becoming construction lawyers. They need only an understanding of the material, so that they can navigate their professional environment.

3. C. Which of your courses are offered online 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 yes, describe the differences and how your SAC is addressing them.

The BCT SAC identified online learning as an opportunity to save students commuting time, reach more students, and limit our footprint on the environment, and as such, we undertook to launch BCT 135 online. Our results have indicated, and our discussions with students have confirmed, that while students want online classes in the abstract, they do not do as well at these courses. In fact, some do not do nearly as well. We have many hands on type learners, for whom lecture classes are a stretch. The online environment is a REAL stretch.

After much experimentation, all completed by our Brad Fox, who has worked tirelessly on this aspect, we have modified this class, and this year we are offering it as a hybrid course, so that some seat time is required at the beginning, in the middle, and in the end of the term, to keep students focused on the course, and provide physical backup to the online environment.

3. D. Has the SAC made any **curricular changes as a result** of exploring/adopting educational initiatives (e.g., Community-Based Learning, Internationalization of the Curriculum, Inquiry-Based Learning, etc.)? If so, please describe.

Yes, man changes, and these continue.

We mention in other areas of the report our work with Habitat.

BCT 100 continues to incorporate more international issues within the Global Context unit of the course.

Our Hand-On courses are inherently Inquiry-based, with direct feedback to students.

3. E. Are there any courses in the program that are 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 quality instruction.

BCT currently offers over 70 unique articulations as Dual Credit with area High Schools. The current faculty are working to better understand how so many course offerings got approved for Dual Credit, because it appears that there are courses offered as Dual Credit that we do not offer here at Rock Creek.

We have developed a process that has been in place for several years now in which we host the High School instructors for a day or two (last summer we hosted 15 instructors at PCC) to review qualifications and curriculum. We also visit local area high schools. This last year, Hilary Campbell and Kris Cowan each visited St. Helens at various times, Shannon Baird visited Forest Grove, along with Hilary and Kris.

The huge number of approved individual course offerings is, however, unworkable, and we are working with our Dean, Karen Sanders, to strategically address this problem.

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

Please also see Feedback from Students, below in 4.D.

We have not developed SAC specific questions. We find the students who do respond provide a wide variety of information in their replies.

Most students do not wait for course evaluations to provide us with feedback. This is addressed in other areas of this report, but we have developed a solid working relationship with students, and they feel comfortable voicing complaints or suggestions directly to an instructor, or in some cases, to the department chair if it involves a comment about an instructor. Students who have a comment about the chair voice this in the course evaluations, or directly to the Dean.

A benefit of students moving through programs in a cohort is they develop relationships, and soon, if they have a complaint, then they all have the same complaint within a week. This is our experience.

Finally, we have our own entry surveys that we use to get to know students as they enter the program. We also make an effort to know every student.

What comes from all this listening?

We have replaced instructors, once, mid-stream, in coordination with our Dean. We have modified curriculum. We have changed the ordering of classes in the program. We have added classes to the program. We have dropped classes from the program. All of this has been done in conversations with all stakeholders. And the biggest stakeholders are students.

Needs of Students and the Community

4. A. Have there been any changes in the demographics of the student populations you serve? If there have been changes, how has this impacted curriculum, instruction or professional development?

Student demographics within the BCT student body change from year to year, and from economic cycle to economic cycle. The BCT SAC occasionally discusses changes in demographics in our weekly meetings.

Observed (though undocumented) fluctuations in student demographics since the last Program Review include:

- Increases in recent years of students interested in sustainable and alternative construction practices as these methods become more mainstream, better known, and more in-demand in the marketplace.
- Increases in the number of students seeking training with funding from the GI Bill.
- Increases in the number of employed industry workers seeking to move from physical work to management.

Official demographics statistics from the College Department of Institutional Effectiveness are as follows.

Gender Distribution: Overall gender demographics have been fairly constant since 2012.

2012-13	Male 69.6%	Female 29.6%
2013-14	Male 67.4%	Female 31.0%
2014-15	Male 70.0%	Female 27.9%
2015-16	Male 70.9%	Female 27.5%
2016-17	Male 70.0%	Female 27.2%

Variance in report due to unreported information.

Age Distribution: Age distribution has also been somewhat constant.

	2012-13	2013-14	2014-15	2015-16	2016-17
Under 20					
Count:	15	17	15	16	22
Percent:	5.6%	7.0%	6.4%	6.5%	10.3%
20-24					
Count:	43	31	34	42	31
Percent:	15.9%	12.8%	14.6%	17.0%	14.6%
25-49					
Count:	171	163	153	162	136
Percent:	63.3%	67.4%	65.7%	65.6%	63.8%
50+					
Count:	41	31	31	27	24
Percent:	15.2%	12.8%	13.3%	10.9%	11.3%

Ethnicity Distribution: Race/Ethnicity distribution are as follows and are consistent. They indicate what we already know: the vast majority of our students self-identify as White/Non-Hispanic.

	2012-13	2013-14	2014-15	2015-16	2016-17
Af. Amer.					
Count:	12	8	8	6	10
Percent:	4.4%	3.3%	3.4%	2.4%	4.7%
Asian					
Count:	10	8	12	16	14
Percent:	3.7%	3.3%	5.2%	6.5%	6.6%
Hispanic					
Count:	13	22	21	32	22
Percent:	4.8%	9.1%	9.0%	13.0%	10.3%
Multi-racial					
Count:	5	8	9	12	12
Percent:	1.9%	3.3%	3.9%	4.9%	5.6%
Native Amer/					
Alaskan					
Count:	5	2	2	1	1
Percent:	1.9%	0.8%	0.9%	0.4%	0.5%
Pacific					
Count:	1	-	1	-	1
Percent:	0.4%	-	0.4%	-	0.5%
Unreported					
Count:	23	27	20	18	19
Percent:	8.5%	11.2%	8.6%	7.3%	8.9%
White					
Count:	201	167	160	162	134

Percent:	74.4%	69.0%	68.7%	65.6%	62.9%
Total:	270	242	233	247	213

Looking at the current demographics we can see that we have few noticeable changes that would draw our attention to adjusting our curriculum or instructional or professional development. If trends started to show a shift or change in demographics we would then meet and discuss the required changes to accommodate the new student base. Student success is our first priority in maintaining the BCT program as we move into the future.

Geographic distribution:
Because our program is the only one of its kind locally, students come from a wide geographic area to attend classes at Rock Creek. Information from PCC Institutional Effectiveness shows that students come to the program from Aloha/Farmington, Hillsboro/Forest Grove, St. Johns and other parts of the Portland Metropolitan area. Some students also came to us from Washington State.

More Mature Students: The gender, age, ethnicity, geographic and student type distributions have impacted instruction. For example, more experienced students have been coming into our program, and this trend requires that the "bar" be raised in many of the courses we teach. Mature students have a greater familiarity with many subjects. This raises new challenges, including a focus on filling gaps in student knowledge. Meanwhile, the needs of the more traditional, younger students must still be addressed.

Students Want Degrees: Our students continue to overwhelmingly be degree seeking students. Well over 90% of all students in class surveys consistently indicate this to instructors.

Diversity Opportunities: BCT faculty continue to identify African Americans and women as a great potential source of new, employable students. A BCT degree provides an excellent opportunity for these students to find living wage jobs in a rewarding career. As mentioned elsewhere in this review, the construction industry provides unique opportunities for minorities and women. This is an area where the college could provide leadership in recruitment and outreach, and some marketing muscle.

Embracing Change: BCT faculty provide a learning environment that is dynamic and contextually relevant. We recognize that industry norms and practices evolve, and the faculty must pass this on to students. Roles within our industry for women and minorities have increased significantly since the last BCT program review, and will continue to expand before our next program review. We discuss with students how this impacts the workplace, its expectations, and opportunities.

4. B. What strategies are used within the program/discipline to facilitate success for students with disabilities? If known, to what extent are your students utilizing the resources offered by Disability Services? What does the SAC see as particularly challenging in serving these students?

Modify When Possible: Whenever possible, BCT faculty help students modify an activity in order to achieve the same outcomes, but with a more acceptable accommodation for the student. We have had students with various physical conditions that we have accommodated. We also allow for extra time, for outside testing, basically any accommodation that does not change the overall assessed skill is within reason and we do our best. The primary challenge occurs when a requested modification would change

the overall outcome of the activity. We work with students to help them recognize this, and aim to help them achieve the intended outcomes.

Open Enrollment: BCT is an open enrollment program, which means that nearly anyone can enter our program. For those who do not have the requisite academic levels/skills, we have a federally supported Perkins staff member, Suzanne Najafdari, who does an excellent job helping these students by working one-on-one with them. She helps them find remedial classes appropriate to their skill levels, and also works closely with BCT staff to help these students succeed. Federal Perkins support for Suzanne is a huge contributor to the BCT student success.

At this time, it is unknown how many of our students are using Disability Services.

4. C. What strategies are used within the program/discipline to facilitate success for online students? What does the SAC see as particularly challenging in serving online students?

Distance Learning Opportunities: The data suggests that BCT should develop and offer more online options, or at least more hybrid options, which would both reduce student commuting and expand our potential pool of students. We have had discussions with various CTE programs regarding these options, and have openly investigated our next steps. With that in mind we have offered one online class that was not well received. After revisions to the class and offering it as a hybrid we have had greater success. With any new technology comes the challenge to integrate it so that it can be used effectively. We are continuing to evaluate new approaches that can be used to help distant learners. The nature of many of our learners; who are hand on learners, we have found that face to face classes have a greater impact on student success. With that in mind we continue to address in our SAC meeting ways in which we can change and improve to offer greater value to our students.

4. D. Has feedback from students, community groups, transfer institutions, business, industry or government been used to make curriculum or instructional changes.

Feedback From Students

Physical Evaluation Eliminated: Up until the just a few years ago BCT typically evaluated every class, every term. This provided BCT faculty with current comments from students in every class. Faculty Co-Chairs would discuss the results of these evaluations to consider modifications to the curriculum and delivery of the material. These in-class evaluations provided a near 100% response rate, increasing the value of the information provided. These evaluations provided a true representative cross-section of each course. Sadly this tool has been eliminated.

Online Evaluations: The new online evaluations do not provide nearly the same cross-section. The response rate from BCT students dropped from nearly 100% to from 9% to 29% during the first term of the new college-wide online system, in spite of a concerted effort imploring students to participate in the online process. This unenforceable, optional online interface currently yields very little or no useful feedback. The BCT Faculty hope the College develops an enforcement protocol for the online system so that we once again receive universal, meaningful feedback. At this point, this is a significant step backward for course assessment and improvement. In the years 2013-2017 we see typical response rates of between 25% and 50%, despite encouragement.

Office Hours / After Class: The BCT Co-Chairs have an open door policy for all students. We ask students with complaints or comments about a course or an instructor to first present their concerns to that

faculty member. If a student does not feel satisfied with the response from the instructor, then the BCT Department Chairs will listen to the concerns of the student. Often student criticism is based more on the course content than the instructor. For example, there can be overlap between two courses, and sometimes students feel this redundancy wastes their time and money. Often this overlap is intentional: faculty might communicate so that when the Construction Math class covers stair calculations, the Tool Safety class also goes over stairs, helping to reinforce this vital skill.

Feedback from Community Groups

BCT works directly with community groups such as Habitat for Humanity, for example, and we incorporate feedback as appropriate.

Feedback from Transfer Institutions

The BCT Construction Management program has had an articulation agreement with the Oregon Institute of Technology (Oregon Tech) for many years. This agreement allows students to transfer with their AAS degree from PCC to Oregon Tech so that students can continue on toward a Bachelor Degree in Operations Management.

Recently, Oregon Tech introduced a second path toward a Bachelor's Degree. The Bachelor of Applied Science in Technology Management is available to all AAS graduates, which will benefit Construction Management students, Hands-On students, and Design/Build students. The BCT department worked closely with Maureen Sivegny of Oregon Tech to help them customize this degree path for our BCT students, and we continue to maintain lines of communication to provide timely updates to the degree as it rolls out.

Feedback from Business and Industry

BCT continues to maintain and develop relationships with industry. Our industry partners influence our programs and curriculum.

One recent example: This fall representatives from McKinstry visited our BCT 150 MEP course, and discussed their work on data server farms in Prineville. The course now incorporates that presentation into the curriculum for the course.

Feedback from Government

BCT receives feedback from governmental agencies because of the nature of our programs; many of our courses are directly related to regulatory oversight. Here are a few examples where BCT must remain current:

- BCT 135 Residential Codes
- ARCH 133 Commercial Codes
- BCT 130 Construction Safety
- BCT 221 Construction Law

In each of these classes, the contextual relationship between curriculum and the world of work is strong. These classes instruct on the latest changes in governmental requirements, and each year these courses address the latest developments in building codes, legal processes, and safety requirements

Feedback from Accrediting Agencies: The NKBA

BCT has spent the better part of three years working with the NKBA as they have gone through their own internal restructuring. Hilary Campbell, who oversees our Design Build Remodeling program, has restructured our entire curriculum over the last few years to align with the NKBA Body of Knowledge, and further, has been instrumental in educating the NKBA about some limitations within their more narrow view of our field. As a result, we have directly influenced the manner in which future programs are accredited. Hilary deserves all of the credit for this work. In fact, she just presented our program in January at the National Kitchen and Bath Conference in Orlando, KBIZ.

Faculty

5. Faculty: reflect on the composition, qualifications and development of the faculty

5. A. Provide information on how the faculty instructional practices reflect the strategic intentions for Diversity, Equity and Inclusion in PCC's Strategic Plan, Theme 5. What has the SAC done to further your faculty's inter-cultural competence, and creation of a shared understanding about diversity, equity and inclusion?

Theme 5 states that PCC will: Create a Nationally Renowned Culture for Diversity, Equity and Inclusion.

It then identifies four strategic intentions.

- 5-1 PCC gathers and uses empirical evidence to analyze and improve access, advancement, climate, education, training, recruitment, contracting, hiring and retention of historically underserved populations of students, faculty and staff.
- 5-2 PCC applies racially conscious systems of analysis, including Critical Race Theory, to examine and dismantle systems of inequality at the college.
- 5-3 PCC's approach to internationalizing its curriculum expands opportunities to create globally aware and culturally intelligent students, staff and faculty.
- 5-4 PCC strives to provide opportunity to all students and the appropriate level of support services to ensure the highest level of success.

The BCT Faculty and Staff are proud to have been incorporating many of the strategic intentions mentioned in our Strategic Plan since before PCC had a strategic plan.

As a CTE program, we are working with a the diversity of students that find us from the general public, helping them work together to learn together, guiding them toward best practices in industry, which have evolved into inclusive best practices.

BCT incorporates lessons from industry in the classroom and in our labs. Our course curriculum is updated regularly to incorporate developments in the workplace. We tackle issues like discrimination and hate speech in the workplace, and many other topical issues of equity and inclusion.

Example: ALL BCT Construction Management students read an op/ed article entitled "Reading James Baldwin on a Segregated Southern Construction Site" in BCT 100, a required course, and then write a

reflection paper on their own experiences with racism in America. The author reflects on his experience on a construction site where the black workers were paid "laborer" wages by the day, and whites "carpenters wages" by the hour. He recalls that the man who possessed the best carpentry skills among the entire crew, white and black, was a black man, and despite that his skills solved all the most difficult problems, he was quickly handed a broom when the "boss" came by to check on progress. The instructor guides a discussion on this topic, opening with their own experience, and setting the ground rules for discussion, primarily, that students are all encouraged to speak from their own experience, but that they are to refrain from judging or de-legitimizing anyone else's experience.

A similar discussion is held on sexism in the workplace. Historical conditions are discussed.

Example: In BCT 150, when discussing fire safety systems in buildings, the Triangle Shirtwaist Factory fire is discussed, including the locked working conditions of the women working in the building, which resulted in dozens and dozens of women leaping to their deaths on the streets of Manhattan.

Example: In BCT 100, we discuss the financing of buildings, and the various mechanisms that exist that contribute to communities being able to afford housing, and to afford owning property. In this discussion, the topic of structural racism is discussed and illustrated. Often students speak from their own experience on this topic.

In an effort to further the understanding of the faculty, full time faculty member Shannon Baird has participated in numerous PCC sponsored and RC sponsored activities, and reported back to the BCT SAC. These include a 2 day training on Diversity and Inclusion at RC, multiple several hour primers on issues related to diversity and inclusion, and drop in workshops for faculty and staff on topics such as whiteness and systemic racism. Shannon also wrote and directed the film White on White and screened it on all 4 campuses as a part of Whiteness History Month in February 2016.

Full time faculty member Hilary Campbell is the first full time female faculty member in the history of the BCT department. She has brought her own interest in advancing opportunities for women and the disadvantaged to the department. She regularly attends events in the local public schools, particularly middle schools, to encourage girls and boys to consider CTE programs as they enter high school, and to pay attention to their own learning styles and interests, and their own challenges.

All four BCT faculty regularly attend high school events and speak directly with high school students to help them navigate their own challenges and difficulties. We could always do more.

During our last faculty search in 2016, the BCT department developed a flyer to send to industry professionals, and made a concerted effort to contact industry professionals from under-represented populations to encourage a broad, diverse pool of applicants.

5. B. Report any changes the SAC has made to instructor qualifications since the last review and the reason for the changes. (Current Instructor Qualifications at: http://www.pcc.edu/resources/academic/instructor-qualifications/index.html)

The BCT Department faculty structure may not be unique at PCC, but it is specialized and it reflects the diverse character of the programs we offer. As mentioned earlier, BCT is really three programs in one, tightly related, but unique in their own characteristics and focus within our broad industry. Our faculty profiles represent this diversity. The skill-set requirements for teaching in our programs differ, and as a result, we have made an effort to locate faculty who "specialize" in each of the degree areas.

BCT has adjusted and modified instructor preferred qualifications as full-time positions become vacant, to ensure that these programs are supported, and ensure that students are learning from experts in their field. As a result of this effort, we are proud that BCT currently features three unique full time faculty members who are truly experts in the degree subject areas that they serve.

BCT is currently in search of a new full-time faculty member. This position, and the instructor qualifications that accompany the position, are tailored to the unique role that is being filled. The instructor vacancy is for our lead in the hands-on remodeling area, which is the "capstone" type class for our Design Build Remodeling students. This position is also responsible for providing instruction in residential concrete installation, and requires the ability to lecture on a variety of subject areas that are focused in the residential construction sector. The position was last filled by long-time PCC BCT instructor and department Co-Chair Kirk Garrison.

The current minimum instructor qualifications requirements are as follows:

1. Hold a Master's degree in Architecture, Construction Management, Civil or Structural Engineering or other construction related fields and have a minimum of 3 years of recent full-time experience in residential/light commercial construction industry. Recent teaching experience at the college level or industry training experience, or a combination of teaching at the college level and industry trainer experience, may be substituted, year for year, for recent experience in the residential/light commercial construction industry. OR

2. Hold a bachelor's degree in Architecture, Construction Management, Civil or Structural Engineering or other construction related fields and have a minimum of 4 years of full-time experience in residential/light commercial construction industry. Recent teaching experience at the college level or industry training experience, or a combination of teaching at the college level and industry trainer experience, may be substituted, year for year, for recent experience in the residential/light commercial construction industry. OR

3. Hold an associates' degree in a construction-related field or a Journey Person card, and have a minimum of 5 years of full-time experience in residential/light commercial construction industry. Recent teaching experience at the college level or industry training experience, or a combination of teaching at the college level and industry trainer experience, may be substituted, year for year, for recent experience in the residential/light commercial construction industry.

In addition, the department has added the following preferred qualifications to the job posting:

At least 8 years of hands on experience installing residential or commercial concrete foundations and flatwork, light-wood framing floor, wall and roof systems, interior and exterior finishing on residential construction projects.

- Demonstrated hands on experience in site setup, foundation and flatwork layout, and utilities coordination and building trades management in residential construction
- Demonstrated hands on experience with interior and exterior residential remodeling projects
- Demonstrated experience with Alternate Dwelling Unit and/or Tiny House construction
- Familiarity with building science principles Demonstrated experience working with international residential code
- Demonstrated experience in coaching, training, teaching or mentoring in an industry or educational environment

5. C. How have 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.

The BCT Faculty are proud to report that our professional development opportunities over the last 5 year period are too numerous and robust to list comprehensively.

Individually each full time faculty member (and our full time temporary) have regularly participated in professional development training seminars and trade shows sponsored by industry partners such as the Association of General Contractors (AGC), the Home Builders Association (HBA), and the National Kitchen and Bath Association (NKBA).

JLC LIVE: Most recently, Kris, Hilary and Shannon each prepared presentations for the *Journal of Light Construction a* sponsored JLC Live event at the Portland Convention Center in November, 2017. This event is a major attraction for residential contractors, developers, architects and designers. Each faculty member presented a specialized lecture of 1.5 hours designed specifically with the JLC audience in mind. While we all enjoyed the experience, the highlight by far was handing a check for $900.00 to the PCC Foundation, the speaking fees that we sent to fund scholarships.

Topics presented were:

- Hilary Campbell, *Understanding Today's Kitchen Design*
- Kris Cowan, T*hermal Enclosure: Past Present and Future*
- Shannon Baird, *Collaborative Delivery Methods for Construction*

Career Pathways Exploration for High School Students: Hilary Campbell, Kris Cowan, Brad Fox and adjunct instructor Keri Salim, developed curriculum and hosted high school students in 3 week after school sessions to introduce them to the construction industry (Beaverton School District Career Encounters Program). We will be hosting again next fall term.

Dual Credit Observation: Kris Cowan has been leading our Dual Credit adoption, and has participated in numerous one on one evaluations with High School instructors, as they attempt to provide PCC level instruction at the high schools - a very tall order indeed, and an opportunity for Kris to help them

develop, and to learn from them as well. We monitor 72 independent course offerings at over a dozen high schools across the State.

Habitat for Humanity: Kris Cowan has lead and continues to engage on a regular basis with the local Habitat for Humanity group, focusing our students on community based learning projects in BCT 120, BCT 128 and BCT 203. Hilary and students participated in Women Build day in May 2017.

PSU Build Lab: Faculty attended the PSU Build Lab event focused on Accessory Dwelling Units (ADUs) and Tiny Houses at Portland State University this fall. St Helens High School showcased their own tiny house at the event.

NKBA Chapter Meetings: Hilary Campbell attends regularly these events in the Portland area, keeping connections and making new ones, encouraging student members to participate.

Oregon Remodelers Association: Shannon Baird participated in a panel discussion on workforce development with the Oregon Remodelers.

Benson House: PCC Faculty visited the Benson High School home that their students built over the last several years. We also attended their annual open house at Benson and met faculty and students.

Viking House: PCC Faculty visited the Forest Grove High School home that their students built over the last year. We also attended their annual open house at Benson and met faculty and students.

St. Helens High School: PCC Faculty visited the St. Helens High School home and met faculty and students.

PACTEC Dual Credit Symposium: Each year the BCT Faculty have hosted high school teachers at an event at Rock Creek to review course alignment and instructor qualifications. This year we added further instructional components so that teachers could earn Construction Contractors Board CEU credits for attendance.

Online Instruction: During the last 5 year period, part-time and now full-time temporary instructor Brad Fox embarked on developing our first online course, BCT 135. We are now modifying the course based upon assessment results and student feedback to deliver as a hybrid, offering a limited amount of physical seat time for students to get to know the instructor, and one another, better, and to help provide a solid foundation for our hands-on oriented learners who typically struggle in the online delivery environment.

Presenter for NKBA-AKBD Exam Study Group Yearly Seminar: Hilary Campbell was a presenter at this annual function.

SUMMER TERM DEVELOPMENT PROJECTS: During the summer term, full time faculty typically engage in professional development opportunities that they normally would be unable to accomplish during the school year. This is a particularly great time to take advantage of an extended period of time for larger project work. Examples of this type of professional development include:

- **ADU Construction:** Kris Cowan constructed an Accessory Dwelling Unit in Portland during 2017, and has done similar projects in the past.

- **Foundation replacement and seismic upgrading:** Shannon Baird spent the summer of 2017 taking off his management hat and completing hands on work on his home

- **Earth Advantage Sustainable Homes Professional:** Kris Cowan is currently enrolled in the Sustainable Homes Professional course offered through Earth Advantage. This year long training is a comprehensive, interactive, experience-driven education program for residential high performance homes.

- **KBIS:** Hilary Campbell has been attending this annual event every other year since joining our faculty, and in 2018 will be presenting our program to this national audience.

- **Syrian Refugee Art Camp in Istanbul:** Shannon Baird and Hilary Campbell co-hosted a three day art camp at Yusra Community Center in Istanbul, Turkey for Syrian refugee children ages 5-11. They were assisted by their own children, Zeke and Isabella. The camp was followed by a European tour of museums and historical sites, with an emphasis on the refugee crisis in Europe and the history of refugees.

- **Film Production:** In the summer of 2016, Shannon Baird wrote and directed the short film, White on White, which was presented at the Rock Creek Faculty Inservice, and was screened on each PCC campus as a part of the Whiteness History Month event.

Unasked Question: What is the current state of the faculty? Share any additional information you were not asked that as a SAC you believe is relevant to a review of your program.

The BCT department believes this is still vital information, and vital to the success of our programs. Therefore, we would like to summarize for the College on this important aspect of our existence.

Since our last program review, our faculty has been in a state of constant flux. We are happy with the resulting enrichment this has added to our programs.

In the year after our last program review, **Hilary Campbell** was hired as a full time faculty member. Hilary had been on a one year temporary appointment during our last program review. Hilary has been the most active faculty member in recent memory, which is saying something given that she took over a position that was previously held by **Spencer Hinkle**, longtime BCT Chair and Champion. Hilary has overseen the transition to making our Design Build Remodeling program a sustainable, going concern. Students now seek out our program from around the country. Hilary oversaw our Program Review with the *National Kitchen and Bath Association*, resulting in our re-accreditation of the program, and through her tenacity has helped the *NKBA* understand and value the unique program that we have here with our hands-on component to the Design Build Remodeling program. Hilary presented at KBIS in January 2018.

In 2016, longtime Full-time Faculty member **Bob Steele** retired. Bob primarily taught in the Hands-On Program, bringing years of experience in light-wood framing and residential finish carpentry to the

department. Bob was an owner of a residential general contracting company, and built homes for the Street of Dreams. We are grateful for his service, first as a tech, and then as an instructor.

We are very pleased that his position was filled by one of our former students, **Kris Cowan**. Kris was a student in our Construction Management program, and was actively working in industry for Habitat for Humanity. Kris brings an entirely different skill set and perspective to the department, and he has enriched the curriculum, and the student experience, with his own experience.

In the spring of 2017, long time faculty member **Kirk Garrison** was forced to step away from his duties due to a medical condition. Part time faculty member **Brad Fox** was kind enough to step up and help our students by filling in for Kirk spring term. Kirk was Co-Chair of the department, and taught our concrete and remodeling courses.

We have since learned that Kirk will not be returning to BCT, and we hired Brad Fox to complete a one year temporary assignment to fill Kirk's position. Brad comes from a construction family, and has brought his experience to our students, who have expressed their satisfaction with his hands-on classes. Brad is also a determined instructor, always willing to go the extra mile to improve. Several years ago Brad piloted our first online class, and despite challenges and difficulties, he has continued to work with the PCC Distance Education department to improve and hone the course. We are very grateful that Brad was available, since during this boom in local construction it is very difficult to locate qualified instructional staff.

Forecast: Once the hiring process we have currently undertaken is complete, we are hoping to have a solid full time faculty contingent that will be with us for years to come.

BCT Adjunct Faculty come from private industry and teach to their specialty. Many, but not all, teach in the Construction Management program. While Full-time Faculty may be forced to teach outside of their 'comfort zone' from time to time, we like to have part-time instructors teaching well within their 'comfort zone', bringing their particular skill sets into the classroom or lab. Full-time Faculty must be broad enough in their experience to tackle a broad range of classes. Building Construction Technology is a very broad subject area, with thousands of specialty positions. Full-time Faculty must be comfortable within this overall context.

When looking for a part-time instructor we typically seek out an expert in that particular subject. For this reason, not all Part-time Faculty would be qualified to fill a full time slot. Our Construction Law instructor, for example, is a lawyer, and a perfect instructor for that course, but he would not be qualified to teach full-time within BCT. Others may bring a broad skill set to the department. Current temporary Full-time Faculty Hilary Campbell began as an Adjunct teaching our ARCH 110 courses, and then branched out at our request to include the printreading courses and materials and methods courses. Her scope has broadened further as a full time instructor.

The BCT department is thankful to have committed individuals teaching highly specialized classes in their field of expertise. Many have been with us for years. The following is a list of several of these amazing instructors who teach to their specialty:

Bernhard Masterson, Adjunct Faculty, teaches BCT 116 Alternative Building Design, a BCT elective open to all students. Bernhard is a Portland, Oregon based natural builder. He has been teaching courses and workshops in natural building, including cob buildings and structures, earthen plasters, and

earthen ovens, since 2003. He is an active collaborator with the Village Building Convergence, and is the owner of Bernhard Masterson Natural Building. Bernhard earned his B.A in Fine Arts from Lewis and Clark, and his Masters of Education from PSU.

Bruce Poinsette, Adjunct Faculty, teaches BCT 130 Construction Safety for students in the Construction Management Program. Bruce has been involved in construction safety for more than 33 years. He is a Safety & Loss Control Consultant, for the Associated General Contractors of America, Oregon-Columbia Chapter, providing safety training and program evaluations for member firms since 1989. Prior experience includes being a Loss Control Consultant for a major worker's compensation carrier and working in various capacities for Oregon O.S.H.A. He began his career as a Safety Compliance Officer in 1973 and as a Safety Consultant in 1982. He is an O.S.H.A. Outreach trainer. He is a member and twice past president of The American Society of Safety Engineers, Columbia- Willamette Chapter. In 2003 the chapter presented him with the chapter's Safety Professional of the Year Award. He is also member and past president of the Southeast Portland Rotary Club.

Carl Tullis began teaching our Commercial Estimating classes when Walt Lemon retired. Carl is a former student, and comes to us with dozens of years in the commercial construction industry as a commercial estimator and cost planner. Carl has worked to adapt the curriculum to suit today's work environment, and now teaches Commercial Estimating, Advanced Commercial Estimating, and Construction Job Costing.

Corey Morris is a practicing licensed architect who began teaching our commercial printreading class, BCT 213, shortly after our last program review. Since then, he has taken over responsibility for BCT 202c, Business Principles for Constructors, and recently, has been working to develop our latest course offering, BCT 107 Construction Office Applications in which students will learn to use Bluebeam pdf reader for marking up drawings, submitting RFIs, and more.

Jim Sayers has been involved in the construction industry in different capacities since 1983. He has worked for Architectural and Engineering firms as a Draftsman, Engineering Technician, and Construction worker on residential and commercial projects, and also operated his own company, Sayers Designs, for twelve years. Since 1995 Jim has worked as a Building Inspector, Mechanical Inspector, Plumbing Inspector and Plans Examiner in both Residential and Commercial applications. Jim is currently the Building Official for the City of Tualatin, and he has obtained multiple certifications from the International Code Council, State of Oregon and FEMA. In 2012 Jim was on the planning team for the International code Council, Annual Business Meetings and Final Action Hearings where he has been recognized for his teamwork and leadership. Jim has taught college level coursework for Blue Mountain Community College and Portland Community College. Jim has 30 years of experience in the industry, and draws on real life experiences to bring the study of Commercial Codes and the International Building Code to life.

Mike Raichart, Adjunct Faculty, teaches BCT 224 Cabinet Installation. Mike received his BA in Industrial Arts Education from the University of Northern Colorado in 1968. After teaching junior high shop for three years, he worked as a cabinetmaker in both Colorado and Oregon for 15 years. In 1986 he began his career as a cabinet installer after selling his share of a now well-known cabinet manufacturer in Washington County. He enjoys sharing the "tricks of the trade" he has picked up throughout his career. Mike retired in 2010, and we are fortunate to have him teaching our cabinet installation class.

Robin R. Fisher, Adjunct Faculty, teaches ID 238 for students in the Design/Build Program. Robin is a Certified Master Kitchen and Bath Designer (CMKBD) and Certified Aging in Place Specialist (CAPS) . She is a national speaker and educator with the National Kitchen and Bath Association, and her award-winning designs have been featured in multiple local and national trade and consumer magazines. In Robin's 28 years in the industry she has been a founding partner of both a Portland design/build remodeling firm and an independent residential design firm. Her true love is designing kitchens & baths.

Alan Mitchell, Adjunct Faculty, retired attorney specializing in defending subcontractors in disputes with general contractors, joined us in the spring of 2013 to teach BCT 221 Construction Law. We are very grateful for his service to our students.

Keri Salim, Adjunct Faculty, has joined us to teach our CAD courses. More than that, she helped develop each of these courses, and has worked tirelessly to develop unique curriculm for our BCT students. She has also assisted with developing CAD documents for other courses, allowing learning to cross from one course to another, and providing continuity for students, faculty, and the programs we administer. She has been an amazing force in our department, and we are grateful to have her with us.

No longer Adjunct Faculty:

Brad Fox, Adjunct Faculty, was hired as a full time temporary instructor for 2017-18.

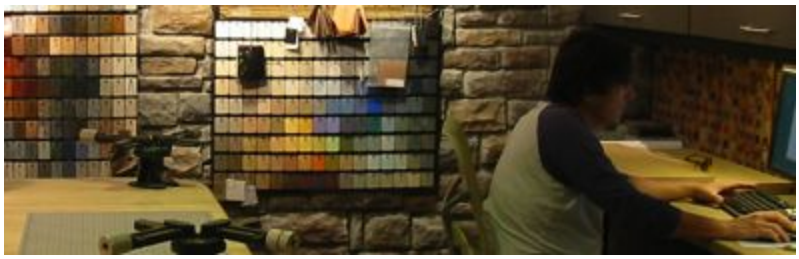
Walt Lemon, deceased, Adjunct Faculty, taught BCT 204C, Construction Estimating, BCT 207, Construction Job Costing, and BCT 213, Advanced Construction Estimating. Walt was a Certified Professional Estimator (CPE) with the American Society of Professional Estimators (ASPE), and brought over 35 years in the industry as a scheduler, project manager and estimator. He graduated in 1974 with a B.S. in Construction Engineering from Arizona State, and his years of industry experience culminated in his being elected Northwest Governor of the Columbia-Pacific Chapter #54 of the ASPE. Walt was a BCT Champion. In Industry Advisory Board meetings he regularly lauded the skills and potential of our CM students over the competition down at OSU in Corvallis. He appreciated the grit and determination of our adult students. He was loud, rough, sometimes offensive to some, and always committed to helping EVERY student excel to be the best that they could be. We are grateful he chose to give back through BCT.

Kevin Spellman, Adjunct Faculty and IAB member, retired from teaching to spend more time with his family. We are grateful for his service to our students.

Facilities and Support

Classrooms, Labs and Equipment

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



BCT Shop Resource Room funded entirely by donations from our Industry Partners. Currently we are working to continue to keep this space up to date with current industry trends.

The 2008 Bond brought several welcome changes to the BCT site. The resulting site design and fencing has given the hands-on students a safe, secluded area to focus on learning. The new restrooms allow students and Faculty to spend more time in the lab environment. The new remodel homes will be available for classes to remodel and redesign for the next several years.

Major Facilities Changes

- New designated BCT classroom **in Building 2/108,** and outside the classroom a BCT Communication Board for posting current events post and industry news and jobs.
- BCT 127 Poured two foundations and BCT 120,121,122 framed two houses for use by the LAT department for various labs. Plantings, sprinkler systems etc. Giving the LAT Department a more realistic lab experience. One of these homes currently houses all of the Bee Hives at Rock Creek.
- Industry Professionals gave a guest lecture and installed a section of 'Pervious Concrete' in the BCT yard. This innovative product allows rain to filter through the concrete eliminating the need for stormwater management.
- New format for Remodel Class BCT 212 including a mock-up house in Shop for Student Installation of mechanical, plumbing and electrical and demonstrations by temporary faculty Brad Fox
- BCT 212 added a 'Timber frame' front porch a BCT house in the yard. Timber framing incorporates techniques that do not use nails for connections
- BCT 120,121,122 Built two new remodel houses at the BCT yard. These were built to replace the previous houses lost to the Bond Road improvement. And can be used for remodeling in the BCT 211 class for several years to come.
- Dust collection system installed in the BCT shop from 2008 bond
- BCT Faculty is currently working with the Learning Garden to build a picnic shelter

6. B. Describe how students are using the library or other outside-the-classroom information resources (e.g., computer labs, tutoring, Student Learning Center). If courses are offered online, do students have online access to the same resources?

- BCT 133: Students prepare a research paper; they pick a product and research it.

- BCT 222: Students research bridge design for prep for proposal.
- BCT 103: Students research six building products, discussing the pros and cons of each for specific applications. Students also research and write three Article Reviews on any construction related subject.
- BCT 106: Students complete a "power tool research project," where they research a power tool they would like to purchase (now or in the future), and write a one or two page summary of what they find. They consider such things as brand, reliability, price, weight, ergonomics, safety features, availability, track record, etc.
- BCT 211: Students do three reviews of construction–related videos, books, and periodicals.
- LEED library is maintained by the department on reserve in the library.
- Nearly all BCT instructors put textbooks on reserve in the library for students who cannot afford to buy them.
- BCT 135 and 136 Codes class students can access codes online.

6. C. Does the SAC have any insights on how students are using Academic Advising, Counseling, Student Leadership and Student Resource Centers (e.g., the Veterans, Women's, Multicultural, and Queer Centers)? What opportunities do you see to promote student success by collaborating with these services?

Resource Centers
Students mention use of many of the Resource Centers on campus and district wide. In addition, Suzanne Najafdari, BCT's Perkin's Advisor, ensures that students are aware of resources available to them.

We have several Veterans in the program, and nearly all of these speak highly of their experiences with our **Veterans Center.**

This year we have one student, female, who was living in her vehicle for 3 months, and she claimed to use many services at the college. Specifically mentioned was the **Women's Resource Center** at Rock Creek.

The **Multicultural Center** has been very supportive of students on campus, and has a very solid, upbeat presence. Faculty member Shannon Baird has partnered with the MCC at Rock Creek and at Sylvania.

We have had several students in BCT who openly identify as Gay and also as Transgendered, and they have mentioned the support of the **QRC** at Rock Creek.

Many students use the **Student Computing Center** for homework.

Administrative Assistance
Shawna Poppe is the Administrative Assistant for the BCT Program. Shawna replaced long-time BCT Administrative Assistant Niki Steele, who stayed with the Science and Technology Division when BCT joined BATCP. Shawna has been busy this year learning all about our program, and we are quite thankful to have her with us and appreciate her work on our behalf.

Instructional Support Technician
Toby Harper is the BCT Instructional Support Technician IV, and is responsible for maintaining the BCT Shop and other facilities. Toby works primarily with the Hands-On classes and instructors, ordering

materials for labs, making sure equipment is maintained in good operating order, and assisting instructors in the Hands-On classes.

Perkins Advisor/Learning Skills Specialist

Suzanne Najafdari is the Perkins Learning Skills Specialist and Advisor for BCT, and has worked with our students since 2017. Suzanne has developed a strong understanding of our students in a short period of time, and the BCT curriculum. Suzanne has learned the details of each of our programs and degrees and is a valuable member of the BCT team. We are very fortunate to have Suzanne, and the services she offers our students is immense.

Suzanne provides many services to BCT students, including:

- Individual advising and creation of academic plans and learning contracts
- Encouragement and assistance in applying for scholarships
- Assistance with navigating college resources and culture
- Assistance with academic and financial aid appeals
- Acting as liaison with general advising and other Student Services departments
- Creation of training plans and cost sheets for students on special third party funding, such as Vocation Rehab and Trade Act

Faculty Advising

BCT faculty also provide initial and follow up advising for students. We work very closely with Suzanne. Nearly every Construction Management student requires some form of course substitution.

Marketing Assistant: BCT would welcome additional support in marketing the program and developing a stronger web presence.

7. Career and Technical Education (CTE) Programs only. To ensure that the curriculum keeps pace with changing employer needs and continues to successfully prepare students to enter a career field: Evaluate the impact of the Advisory Committee on curriculum and instructional content methods, and/or outcomes. Please include the minutes from the last three Advisory Committee meetings in the appendix.

7. A. Describe current and projected demand and enrollment patterns for your program. Include discussion of any impact this will have

The impact of our Industry Advisory Board cannot be underestimated. BCT has perhaps the longest running Advisory Board at PCC.

The Advisory Board has had significant influence on the program. Major influences directly attributable to Advisory Board influence since the last program review include:

- Strengthen Opportunities for all students through coordination of guest speakers and site visits
- Curriculum improvements to the Design/Build Remodeling option
- Curriculum changes to the Hands On option
- Curriculum changes to the Construction Management option
- Encouragement and support for Events that bring industry professionals working in the field into the classroom, making course content relevant.

- Providing strategic guidance on program improvement. Emphasis on written and oral communication skills, computer skills, critical thinking skills.
- Support and encouragement for extracurricular activities and meet and greet opportunities

7. C. Describe current and projected demand and enrollment patterns for your program. Include discussion of any impact this will have.

Demand for all three of our programs has been steadily increasing. We have had waves of enrollment with the construction industry slowed in 2008, and we have had steady enrollment during the last 5 year period. The programs are operating at capacity, and we do not plan on increasing enrollment caps as we are unable to "double" the size of the program at current enrollment levels. So we would rather have strong enrollment for one cohort, than engage in a two cohort option that would see less than robust numbers.

The outlook for jobs in our sector is particularly strong, and we hope to continue to provide high quality graduates who are prepared to fill these positions.

We continue to be surprised that people in the industry, and the in the area, HAVE NOT HEARD of our programs. We continue to do what we can in terms of outreach, but it is a very big industry, and we can only reach so many contacts with the means we employ (described in other areas of this report).

7. C. How are students selected and/or prepared for program entry?

BCT is an open enrollment program—anyone can sign up for our classes if they have the prerequisites (BCT has program prerequisites in reading, writing, and math).
Faculty, staff, and Suzanne all work with students one on one to make sure any remedial work is completed. We also offer pre-enrollment group advising in the form of Information Sessions several times each year. Students are encouraged to begin the programs in the Fall term, and to move through the programs as a cohort.

7. 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 or state forecasts if appropriate.

Construction Industry Employment RED HOT
Construction employment in the Oregon construction industry, particularly in the Portland Metropolitan Area, is very strong. Heavy job growth has continued since 2012, as is evidenced by the increase in numbers employed in the state as Carpenter and Construction Managers.

In 2016, construction management graduates interviewed by faculty were accepting offers as Project Engineers (basically Assistant Project Managers) with entry level salaries significantly above the entry level salary for a full-time PCC faculty member. Most top students were accepting offers in the $55,000 - $75,000 range, depending upon experience and strength of the individual's qualifications, and the specific type of position being applied for. Larger companies offer higher salaries, and smaller companies offer other benefits, including more opportunities for wider experiences.

Oregon Prevailing Wage Construction

http://www.oregon.gov/ODOT/Business/Wages/OR170001_Mod12_BOLI.pdf

Employment Statistics: Federal

Employment Statistics for Construction Managers
Oregon, Statewide, May 2016
Current Number Employed: 4,690 up from 2,740 in 2012
Number per 1,000 Jobs in the State: 2.618 up from 1.73
Annual Mean Wage: $94,300 up from $80,250 Hourly: $45.34 up from $38.58

Employment Statistics for First Line Supervisors of Construction Trades
Oregon, Statewide, May 2016
Current Number Employed: 5,150
Number per 1,000 Jobs in the State: 2.878
Annual Mean Wage: $68,260 Hourly: $32.82

Employment Statistics for Secondary Education Teachers in the Construction Trades
Oregon, Statewide
Current Number Employed: 230
Annual Mean Wage: $ 53,690

Employment Statistics for Carpenters
Oregon, Statewide, MAY 2016
Current Number Employed: 12,860 up from 8,240 in 2012
Number per 1,000 Jobs in the State: 7.181
Annual Mean Wage: $47,650 up from $45,400 Hourly: $22.91 up from $21.83
Percentile Wages:
10^{th}:$27,070
25^{th}:$33,770
50^{th}:$43,600
75^{th}:$58,700
90^{th}:$79,480
Location Quotient: 1.15

Portland Vancouver Hillsboro Metro Area
Current Number Employed: 8,580
Number per 1,000 Jobs in the Metro Area: 7.57
Annual Mean Wage: $51,220
Location Quotient: 1.57

*The location quotient is the ratio of the area concentration of occupational employment to the national average concentration. A location quotient greater than one indicates the occupation has a higher share of employment than average, and a location quotient less than one indicates the occupation is less prevalent in the area than average.
- From the United States Bureau of Labor and Industry; Most Recent Data from May 2016

Cooperative Education Opportunities

BCT Construction Management students enroll in three credits of Cooperative Education, and work with various companies/organizations in the greater Portland area. Many of these are paid internships. The following graphs describe the wages earned, as well as indicating a student breakdown by year and the average rate of pay over the last five years.

Forecasting

The Associated General Contractors chief economist is continuing to forecast for strong employment in the construction industry in the Portland area.

7. E. Please present data on the number of students completing Degree(s) and/or Certificate(s) in your program. Analyze any barriers to degree or certificate completion that your students face, and identify common reasons why students may leave before completion. If the program is available 100% online, please include relevant completion data and analysis.

2013: BCT CONSTRUCTION MANAGEMENT AAS AWARDED: 20

2014: BCT CONSTRUCTION MANAGEMENT AAS AWARDED: 7

2015: BCT CONSTRUCTION MANAGEMENT AAS AWARDED: 12

2016: BCT CONSTRUCTION MANAGEMENT AAS AWARDED: 7

2017: BCT CONSTRUCTION MANAGEMENT AAS AWARDED: 18

TOTAL CONSTRUCTION MANAGEMENT DEGREES AWARDED 5 YEAR PERIOD: 64

5 YEAR AVERAGE: 12.8

2013: BCT HANDS ON AAS AWARDED: 12

2014: BCT HANDS ON AAS AWARDED: 3

2015: BCT HANDS ON AAS AWARDED: 3

2016: BCT HANDS ON AAS AWARDED: 6

2017: BCT HANDS ON AAS AWARDED: 3

TOTAL HANDS ON DEGREES AWARDED 5 YEAR PERIOD: 27

5 YEAR AVERAGE: 5.4

2013: BCT DESIGN BUILD AAS AWARDED: 2

2014: BCT DESIGN BUILD AAS AWARDED: 4

2015: BCT DESIGN BUILD AAS AWARDED: 2

2016: BCT DESIGN BUILD AAS AWARDED: 2

2017: BCT DESIGN BUILD AAS AWARDED: 5

TOTAL DESIGN BUILD DEGREES AWARDED 5 YEAR PERIOD: 15

5 YEAR AVERAGE: 3

TOTAL DEGREES AWARDED BCT SAC LAST 5 YEARS: 106

5 YEAR AVERAGE DEGREES AWARDED BCT SAC: 21.2 degrees per year

Math NO LONGER A Barrier!: The Math 65 requirement for AAS degrees is NO LONGER a real and significant barrier for a minority of students. The BCT SAC celebrates the adoption of BCT 104 as our Math Competency. We no longer have students unable to graduate due to MTH 65. This is a big accomplishment for the College, and we are grateful to all those in the MTH dept and Administration who helped make this possible.

Third Party Funding: **THIS REMAINS A MAJOR BARRIER TO DEGREE AWARD FOR A MINORITY OF STUDENTS. WE REPEAT OUR STATEMENT OF 5 YEARS AGO:** Many students on third party funding plans face a common barrier. Often these state sponsored programs will only fund students for six terms, sometimes only 5 terms. This is an insufficient amount of time to realistically expect a mature student, often with no college credits, to achieve an AAS degree. These funders often push students to find a Certificate program in Estimating or Scheduling; however, our Industry Advisory Board members tell us that Certificates are not enough for them to seriously consider students for employment. Employers want to see degrees. Today nearly all BCT students are degree seeking.

We would like state sponsored funding organizations to recognize this industry reality, and increased time and funding options for their clients. **PCC SHOULD LOBBY FOR THIS CHANGE WITH GOVERNMENTAL REPRESENTATIVES. THIS SHOULD BE A PCC LOBBYING PRIORITY. MANY CTE STUDENTS FACE THIS.**

Common Reasons Students Leave the BCT Program

BCT students leave the program prior to graduation for many reasons. The information below is based upon exit conversations between faculty and students.

- Students find that it is too challenging to balance work, family and school.
- Students leave because they lack funding.
- Students secure gainful employment, or existing employment requirements increase, making classes and homework unmanageable. Sadly, the jobs they often secure are less skilled than those they would qualify for if they had been able to finish their degree program.
- Students have a 'life event' that requires them to leave school: a death in the family, birth of a child, loss of a job by a spouse or partner, or some other unforeseen issue.
- **Students are academically unprepared or not personally mature enough for college.THIS HAS BECOME MORE COMMON SINCE LAST PROGRAM REVIEW.**
- Family relocation requires student leave the program.
- Student decides they would rather be studying another field, engineering for example.
- **Student decides to transfer to a 4 year institution prior to completing an AAS degree. WE HAVE SEEN AN INCREASE IN THIS SINCE LAST PROGRAM REVIEW.**

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

Students in our BCT programs typically follow one of the paths listed below to continue their education in this career:

1) Continue on at Oregon Tech (OIT) and earn a 4 year degree, either the B.S. in Operations Management or B.A.S. in Technology and Management
2) Further their expertise with third party provides such as:
    a) Earth Advantage Sustainable Homes Professional
    b) LEED Green Associate and further credentials
3) Transfer prior to completion to PSU in engineering or business or management
4) Transfer prior to completion to OSU in Construction Engineering Management
5) Continue on at PCC, if a BCT or Design Build student, and earn the CM degree, or return to PCC after some work experience and do this
6) Enroll in Continuing Education courses taught through a variety of vendors

8. A. What is the SAC planning to do to improve teaching and learning, student success, and degree or certificate completion, for on-campus and online students as appropriate?

The BCT SAC intends to:

- Continue meeting on a monthly basis to evaluate known concerns
- Continue to encourage suggestions from students on potential improvements
- Continue to meet with Industry Advisory Board members at least twice per year to field ideas, discuss changes in industry, and solicit suggestions for improvement
- Continue to regularly visit projects under construction and ask the questions that lead to a better faculty understanding of what is changing in the industry
- Request that the College leadership attempt to lobby for an end to the third party funding gap described in this review, which is a real barrier for most students of this type to achieve a degree

8. B. What support do you need from 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 administration aware of your needs may help them look for outside resources or alternative strategies for support.)

1. Satisfactory completion of the current search for a full-time faculty member to replace Kirk Garrison.
2. Following through to the end of this year with the funding promised to replace remodeling houses that were lost during bond construction.
3. Commitment from College leadership that if any of the proposals being circulated to move the BCT Shop are acted upon, that our entire 10,000 SF footprint is identified as a workable minimum, and will not be reduced in any way that will limit our ability to deliver the same high quality services that we currently deliver to students on a daily basis.
4. Update room 102 in building 7 into a Drafting and CAD lab similar to Sylvania Interiors department lab with computers, drafting tables and printers.

Mapping Level Indicators:	**Core Outcomes:**
0- Not Applicable 1- Limited demonstrated or application of knowledge and skills. 2- Basic demonstrated or 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.	1- Communication 2- Community and Environmental 3- Critical Thinking and Problem Solving 4- Cultural Awareness 5- Professional Competence 6- Self-Reflection

Appendix: CORE OUTCOME MAPPING

SAC Building Construction Technology

Course #	Course Name	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**	**CO6**
BCT 100	Introduction to the Construction Industry	3	2	3	2	2	2
BCT 102	Residential Printreading	3	1	3	0	3	1
BCT 103	Residential Materials and Methods	3	3	2	0	2	1
BCT 105	CAD for Constructors I (currently teaching Autocad)	3	0	3	0	2	1
BCT 104	Construction Math	2	1	3	0	3	1
BCT 106	Hand Tool/Power Tool Use and Safety	3	0	2	2	2	2
BCT 120	Floor Framing	3	1	3	2	3	1
BCT 121	Wall Framing	3	1	3	2	3	1
BCT 122	Roof Framing 1	3	1	3	2	3	1
BCT 123	Roof Framing 2	3	1	3	2	3	1
BCT 127	Residential Concrete	2	2	3	1	2	1
BCT 128	Exterior Finish	3	1	3	2	2	1
BCT 130	Construction Safety	3	3	3	0	3	1
BCT 133	Commercial Materials and Methods	3	3	3	0	2	1
BCT 134	Construction Scheduling	3	0	3	0	3	1
BCT 150	Mechanical, Electrical and Plumbing	2	2	2	0	2	1
BCT 202C	Business Principles for Construction	3	2	3	1	3	3
BCT 202D	Business Principles for DB This course is not offered and may be revised						
BCT 209	CAD for Constructors II (currently teaching Autocad)	3	0	3	0	3	1
BCT 108	Building Science - This course is undergoing revision						
BCT 129	Mechanical Systems for Kitchens and Baths	2	3	3	2	3	1
BCT 229	Intro to Kitchen and Baths	3	2	3	2	3	1
BCT 244	Cabinet Installation	3	1	3	1	3	1
BCT 204C	Commercial Estimating	2	1	3	0	3	2
BCT 203	Interior Finish	3	1	3	2	2	0

BCT 204B	Residential Estimating	3	1	3	1	3	1
BCT 206	Sustainable Construction Practices	3	3	3	1	3	3
BCT 207	Construction Job Costing	3	0	3	0	3	2
BCT 211	Remodeling	3	2	3	1	3	1
BCT 213	Commercial Printreading	3	1	3	1	3	0
BCT 214	Advanced Commercial Estimating	3	1	3	0	3	2
BCT 216	Cabinetry 1	3	2	3	0	3	0
BCT 217	Cabinetry 2	3	2	3	0	3	0
BCT 218	Woodworking Projects	3	2	3	0	3	0
BCT 219	Cabinetmaking 1	3	2	3	0	3	1
BCT 221	Construction Law	3	2	3	2	3	2
BCT 222	Engineering for Contractors	3	2	3	0	2	1
BCT 223	Finished Stair Construction	3	1	3	2	2	0
BCT 225	Construction Project Management	3	2	3	2	3	3
BCT 226	Finish Carpentry	3	1	3	2	2	0
BCT 115	Introduction to Residential Greenroofing						
BCT 116	Alternative Building Design	3	2	2	2	2	1

BCT 132	Computer Applications for Contractors (currently teaching Revit)	3	0	3	0	2	1

BCT 107	Construction Office Applications (currently teaching Bluebeam)	3	0	3	0	2	1

BCT 117	Graphic Communication for Contractors	3	1	3	1	3	1

BCT 118	Introduction to Space Planning and Design	3	2	3	1	3	1