Building Construction Technology
Academic Program/Discipline Review
Presenting in the 2012-2013 Academic Year
February 25, 2012
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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: One Department - Three Unique Programs

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 skillsets required by area employers. BCT shares these goals with community college programs around the country. 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 training in the Portland area. The Construction Management program was struggling at our last program review, and is now vibrant. The Design/Build Remodeling program was added shortly after the last program review. Each 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 SACC 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 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 students 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, the Hands-On program is a 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 businesses. Students are trained in many of the same skills as the hands-on students, but are provided additional 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 Artisan Renovations and Olson and Jones.

**Changes Since the 2005 Program Review**

1. B. Please summarize changes that have been made since the last review.

**Major Program Changes**

- Development of the Design/Build Remodeling Program and AAS Degree Option.
- Affiliation of this program with the National Kitchen and Bath Association (NKBA) in partnership with the Architecture and Interior Design departments.

**Major Facilities Changes**

- Construction of four 16’ x 24’ ‘Remodeling Houses for use in BCT 211, Remodeling. This facility has transformed teaching and learning in this subject area. Students are now able to gain valuable hands-on experience by completing a variety of remodeling projects, such as moving walls and putting in new windows.
- Electrical service upgrades at the BCT worksite, eliminating long extension cords, improving safety, and enhancing learning opportunities. The new 220 Volt exterior ‘spider box’ (a metal box with many standard receptacles) allows for multiple tools to operate simultaneously.
- Installation of ‘Saw-stop’ technology table saws. Four ‘Saw-stop’ table saws bring cutting edge, safety conscious technology to the BCT Shop. Visit www.sawstop.com to see how these saws eliminate the possibility of losing a finger.
- Materials storage systems being installed at the BCT worksite.

**New Curriculum**

- New BCT 206 Sustainable Construction Practices course introduces major developments in green construction.
- New BCT 108 Introduction to Building Science course introduces the scientific concepts informing new materials and methods for exterior wall assemblies, HVAC systems, water supply, and waste systems.
- New BCT 129 Mechanical Systems for Kitchens and Bath course introduces these specialized systems to Design/Build students.
- New BCT 229 Introduction to Kitchens and Baths course presents the fundamentals of these specialized rooms to Design Build students.
• New BCT 244 Kitchen and Bath Cabinet Installation course teaches Design/Build students these skills.
• New BCT 115 Introduction to Residential Green-roofing course offers hands-on training in this emerging option.
• New BCT 116 Alternative Building Design course provides hands-on training in straw bale, earthen floors and walls, cob, and other green alternative materials and methods.
• New BCT 209 Vectorworks for Contractors II is being developed as an online course by adjunct Spencer Hinkle.
• Dropped BCT 101 Construction Surveying course has been eliminated to reflect changing skillsets required by industry.
• Added courses ARCH 237 Introduction to Revit, and 238 Intermediate Revit, added to the Autocad elective as options for our Construction Management students, reflecting changes in industry standards and desired skills.
• Added CG 209 Job Finding Skills course is now a requirement for Construction Management students.

Major Curriculum Revisions
• Revised BCT 207 Construction Job Costing course has been completely rebuilt by Adjunct Walt Lemon with the assistance of a PCC grant.
• Revised BCT 102 Residential Print reading course has been updated and enhanced by temporary full time faculty Hilary Campbell.
• Revised BCT 133 Commercial Materials and Methods course has been completely rebuilt by temporary full-time faculty Hilary Campbell.
• Revised ARCH 110 Introduction to Architectural Drafting course has been significantly updated and enhanced by temporary full time faculty Hilary Campbell.
• Revised BCT 100 Overview of the Construction Industry has been completely rebuilt and upgraded by faculty Shannon Baird.
• Revised BCT 150 Mechanical, Electrical, and Plumbing course has been completely rebuilt and upgraded to include sustainable technologies by faculty Shannon Baird. Upgraded from 3 to 4 credits.
• Revised BCT 134 Construction Scheduling course has been completely rebuilt and upgraded by faculty Shannon Baird.
• Revised BCT 222 Engineering for Constructors course has been completely rebuilt and upgraded by faculty Shannon Baird. Structures models and computer measuring devices purchased with funding from the Associated General Contractors have been integrated into the curriculum.
• Revised BCT 225 Construction Project Management course has been completely rebuilt and upgraded by faculty Shannon Baird.
• Revised BCT 202 Business Principles for Constructors course has been modified to address the disparate needs of Construction Management students and Design Build students.
• Revised BCT 211 Remodeling course has been upgraded by faculty Kirk Garrison.
• Revised BCT 128 Exterior Finish course has been upgraded to reflect industry changes by faculty Bob Steele.

Changes Due To 2005 Review
1. C. Were any of the changes made as a result of the last review? If so, please describe the rationale and result.
The 2005 BCT Program Review identified several key program and curricular areas BCT faculty felt needed significant changes. These areas, along with the rationale and result, are as follows:

- **Energy.** BCT developed three new courses (BCT 206, Sustainable Construction Practices; BCT 108, Building Science; and BCT 129, Mechanical Planning for Kitchens and Baths) to provide further instruction on energy concerns. These courses have been highly successful, and have evolved each year. BCT 150 Mechanical, Electrical & Plumbing, has also undergone significant alteration to reflect the increasing importance of energy concerns in building construction.

- **Green Building.** BCT 206 Sustainable Construction Practices, BCT 108 Introduction to Building Science, BCT 115 Residential Greenroofing, and BCT 116 Alternative Building Design contain theoretical, applied and hands-on curriculum that addresses sustainable construction practices.

- **Mold, Lead and Asbestos.** Content addressing these concerns has been embedded in BCT 103 Residential Materials and Methods, BCT 206 Sustainable Construction Practices, BCT 102 Residential Printreading, and BCT 211 Remodeling.

- **Insulated Concrete Forms.** Content regarding ICF’s has been embedded in the curriculum of BCT 103 (Residential Materials and Methods), and BCT 127 (Residential Concrete).

- **Structural Insulated Panel Systems (SIPS).** Have been embedded in the curriculum of BCT 103. The BCT department partnered with a local manufacturer of SIPS panels to erect a SIPS structure on campus at Rock Creek. This was a great partnership, and was a learning experience for all parties involved.

**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.

**Course-Level Outcomes**

2. A. Identify and give examples of assessment-driven changes made to improve attainment of course-level student learning outcomes. Where key sequences exist, also include information about assessment-driven changes to those sequences.

We did our first assessment last year and are currently identifying changes we want to make. For a description of our assessment processes, see section 2 B and appendices A and B.

**College Core Outcomes**

2. B. i. Describe how each of the College Core Outcomes (Communication, Community and Environmental Responsibility, Critical Thinking and Problem Solving, Cultural Awareness, Professional Competence and Self Reflection) are addressed in courses, and/or aligned with program and/or course outcomes.

BCT Construction Management alumni and former AGC Student Chapter President was profiled in the Daily Journal of Commerce March 2, 2011. Here he is in the Rock Creek Library. Mike is now working as a Construction Manager in Anchorage, Alaska.
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:

- Annual BCT-sponsored Contractors Roundtable Event brings students and Project Managers together in face to face, two minute ‘elevator pitch’ meet and greet sessions. Thanks to our industry participants.
- CG209 Job Finding Skills Mock Interviews with PCC Employment Skills Specialist Nancy Pitzer and her colleagues.
- 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 students to formally present research to a group.
- CAD classes ARCH 126, 136, 237, and 238, and BCT 105 and 209, enhance understanding of graphic communication and associated skills.

Community and Environmental Responsibility
Community Responsibility:

- ARCH 132 Residential Codes, and ARCH 133 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.
- Civic responsibility and professional ethics are embedded in our instruction across the curriculum.
- Student club members regularly 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.”
- Specific courses addressing this have been described in detail above under “Changes”.

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, calculating 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 a 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.

- **BCT 222 Engineering for Constructors:** Students analyze structural loads, paths, and reactions, and calculate the size of simple beams required to accommodate estimated loading.

- **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.

**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 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.

- **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.

**Core Outcomes Mapping Matrix**

2. B ii. **Update the Core Outcomes Mapping Matrix for your SAC as appropriate.**

http://www.pcc.edu/resources/academic/core-outcomes/mapping-index.html

See Appendix C for our updated Core Outcomes Mapping Matrix

List Degree and certificate student learning outcomes, showing the alignment with the college core outcomes, and identifying the strategies that are in place to assess the degree and certificate outcomes.
Building Construction Technology Hands-On
AAS Degree Outcomes

1. Interpret construction documents to build concrete foundation and flatwork systems to Oregon code standards.
   Direct Assessment tool 1: Instructor completes sheet documenting accuracy of each completed foundation (competency) in BCT 127.
   Direct Assessment tool 2: Instructor Observation of student's lab work performance, based on the following criteria:
   • Students work collaboratively in small group settings.
   • Students are evaluated based on actively participating and quality workmanship.
   • Students are not marked down because of a slow work tempo or any workmanship errors, providing student willingly makes corrections.

2. Interpret construction documents to build residential floor, wall and roof framing systems to Oregon code standards
   Direct Assessment tool 1: Instructor completes sheet documenting accuracy of floor, wall, and roof systems (competency) in BCT 120, 121, 122, and 123
   Direct Assessment tool 2: Instructor Observation of student's lab work performance, based on the following criteria:
   • Students work collaboratively in small group settings.
   • Students are evaluated based on actively participating and quality workmanship.
   • Students are not marked down because of a slow work tempo or any workmanship errors, providing student willingly makes corrections.

3. Interpret construction documents to build various residential interior and exterior wall and roof coverings, millwork, cabinetry and finishes to Oregon code standards
   Direct Assessment tool 1: Instructor completes sheet documenting accuracy of interior and exterior wall and roof coverings, millwork, cabinetry and finishes (competency) in BCT 128, BCT 203, and BCT 219.
   Direct Assessment tool 2: Instructor Observation of student's lab work performance, based on the following criteria:
   • Students work collaboratively in small group settings.
   • Students are evaluated based on actively participating and quality workmanship.
   • Students are not marked down because of a slow work tempo or any workmanship errors, providing student willingly makes corrections.

4. Use mathematic and estimating skills to effectively estimate material quantities and labor costs for a residential structure.
   Direct Assessment tools: Portfolio final exam project in BCT 204B: students estimate a residential structure and instructor compares student results with instructor results.
5. Practice the efficient use of natural and man-made resources in residential building construction.

   Direct Assessment tool: Embedded question in BCT 206; “Wood and steel are both used as structural materials in residential and commercial construction. Compare and contrast the proper uses and typical application of these natural and man-made materials. Consider wall assembly, embodied energy, air sealing and leakage, thermal bridging, and any other aspects you care to add.”

6. Read, understand and generate construction documents, and communicate in the construction environment using effective written and oral communication skills.

   Direct Assessment tool: Portfolio project in ARCH 110; Students read and interpret information to generate construction drawings for a small house.

Building Construction Technology Construction Management
AAS Construction Management Degree Outcomes

1. Demonstrate a basic understanding of residential and commercial construction codes, materials and methods.

   Direct Assessment tool: Embedded question in ARCH 133 requiring students to navigate the building code to solve a problem related to a materials compliance issue.

2. Effectively apply mathematics and basic engineering principles to solve problems encountered on construction projects.

   Direct Assessment tool: Embedded question in BCT 222; Calculate the appropriate beam size for a simply supported beam

3. Recognize the appropriate use of natural and man-made resources in both residential and commercial construction.

   Direct Assessment tool: Embedded question in BCT 206; Wood and steel are both used as structural materials in residential and commercial construction. Compare and contrast the proper uses and typical application of these natural and man-made materials. Consider wall assembly, embodied energy, air sealing and leakage, thermal bridging, and any other aspects you care to add.

4. Demonstrate basic ability to read, interpret and generate construction documents. Demonstrate oral communication skills necessary in the construction environment.

   Direct Assessment tools: Portfolio project in ARCH 110; Students read and interpret information to generate construction drawings for a small house. Portfolio project in BCT 222; Students prepare a written and oral presentation on a bridge design proposal for the Willamette River.

5. Demonstrate basic estimating, scheduling, job costing and business principles typically encountered on a construction project.

   Direct Assessment tool: Portfolio project in BCT 225; Students prepare a Scope of Work, Letter of Intent, Schedule, and Estimate. Students work in groups of three to conduct peer review of projects.

6. Identify safe construction practices typically used in a construction company’s OSHA safety compliance program.

   Direct Assessment tool: Portfolio Project in BCT 130; Students prepare a Safety Plan for their hypothetical company and present it to the class.
The student samples assessed were entire classes. All courses were chosen because they are required courses for the BCT CM AAS degree. The courses were selected because, in all cases, the courses are providing summative learning experiences rather than formative experiences. The learning outcomes we are assessing are broad and interrelated, and the assessment tools developed for each of these courses require students to apply knowledge and skills from other formative classes, in addition to the content from the course in question, to produce the highest level of work. “Drop in” students, and none degree seeking students, were also assessed.

Building Construction Technology Design/Build Remodeling

AAS Degree Design/Build Remodeling Degree Outcomes

- Evaluate building systems, including structural and mechanical, and apply such knowledge to building design and construction requirements.
- Employ efficient, environmentally responsible and safe construction skills and techniques on remodeling and/or new construction projects.
- Identify and analyze technical and aesthetic requirements, research industry specifications, and specify appropriate building and finish materials, equipment, and fixtures to meet client needs and building code requirements.
- Create kitchen and bath design solutions meeting client aesthetic and budgetary needs by using the National Kitchen and Bath Association (NKBA) guidelines and the elements and principles of design including universal and accessible design criteria.
- Exhibit organizational and written/oral communication skills required to bring design/build projects from initial concept to completion.
- Prepare contract documents, using industry standards for written and graphic communication.
- Manage project schedules, subcontractors, and suppliers.
- Practice ethical standards of business conduct and professional services.

Because of BCT faculty sabbatical/retirement, the Design-Build Remodeling program does not have a completed assessment. BCT will hire a new full-time faculty member with major responsibilities in the DB program this spring, and we anticipate assessing the program during the 2013/2014 school year.

2. B. iii. Describe the strategies that are used to determine whether students have met the outcomes of their degree or certificate

The strategies are listed under each corresponding outcome above.

2. B. iv. Identify and give examples of assessment-driven changes that have been made to improve students’ attainment of degree and certificate outcomes.

BCT faculty regularly assesses their classes and curriculum for improvement. 2011/2012 was our first year implementing the new assessment tool requirements, and we are currently identifying potential changes.

Other Curricular Issues

3. A. To what degree are courses offered in a Distance modality (on-line, hybrid, interactive television, etc)? Have any significant revelations, concerns or questions arisen in the area of DL delivery?

The BCT department experimented with ITV courses several years ago. Instructors taught from Rock Creek campus, and typically had students at Rock Creek, Southeast, and Cascade. We stopped doing this
because the technology did not work well. There were times when audio and video did not work, and instructors were not able to see students at other locations well enough to pick up on non-verbal clues (such as a perplexed look) to teach to everyone. It also added another layer of stress for the instructor, who had to get handouts to several locations (and they didn't always make it).

While most of our classes do not lend themselves to an online format, we do have three classes we plan to offer online: BCT 105, VectorWorks for Constructors, BCT 209, VectorWorks for Contractors (these are both CAD classes), and ARCH 132, Residential Building Codes. Since virtually all of the work in these two classes can be done on the computer, this seems doable in the online format. Nancy Pitzer, our Cooperative Education specialist, already teaches CG 209 online for BCT students. We discussed this with our Advisory board in January 2013. IAB members agreed that we should evaluate course offerings for online suitability in order to offer as many online/hybrid classes online as possible.

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

The BCT department has not made any changes in our curriculum as a result of the items listed above. BCT does do many service projects during the course of the school year, but it all happens through our Clubs and industry contacts; see “Community and Environmental Responsibility” in section 2 B above, and “Community Service Projects” in section 7 E below.

3. C. Identify and explain any other significant curricular changes that have been made since the last review.
   See Section 1 B above

**Needs of Students and the Community**

**Demographics**

4. A. How is instruction informed by student demographics?
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 students seeking retraining due to NAFTA closing of Portland Freightliner facility
- Increases in younger students in hands-on and management during the housing boom of 2005-2007.
- Increases in the number of older students in management following the collapse of the housing market in 2008.
- 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 demographic statistics from the College Department of Institutional Effectiveness are as follows.
Gender Distribution: Overall gender demographics have changed very little since 2008.

- **2008-09**: Male 75.8%   Female 24.2%
- **2009-10**: Male 75.2%   Female 24.8%
- **2010-11**: Male 80.2%   Female 19.8%

Age Distribution: Age distribution has also been somewhat constant.

- **18-20 year olds**
  - 12.5% in 2008-2009
  - 5.9% in 2009-2010
  - 6.1% in 2009-2010
  - 6.1% in 2010-2011.

- **21-25 year olds**
  - 15% over the same time period

- **26-30 year olds**
  - 21.6% over the same time period

- **31-40 year olds**
  - 23.8% in 2009-2010
  - 26.9% in 2010-2011
  - 27% in 2011-2012

- **41-50 year olds**
  - 15% over the same time period

- **51-60 year olds**
  - 8.8% in 2009-2010
  - 9.2% in 2010-2011
  - 9.7% in 2011-2012

- **60+ year olds**
  - 2.9% in 2009-2010
  - 3.3% in 2010-2011
  - 3.6% in 2011-2012

Ethnicity distribution: Race/Ethnicity distribution statistics are limited to the past two years, and are fairly consistent. They indicate what we already know: the vast majority of our students self-identify as White / Non-Hispanic.

**2009-2010**
- White/Non-Hispanic = 75.8%
- Hispanic = 5.6%
- American Indian = 3.0%
- African American = 3.9%
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.

Student type distribution
Over the last three years, the recent economic depression in the construction industry has caused a significant change in degree seeking students compared to non-degree seeking students, as well as a marked change in the full time to part time ratio. These are trends that are consistent with the college as a whole.

- Degree seeking students increased from 84.3% in 08-09 to 91.1% in 09-10 to 93.9% in 10-11.
- Full time students increased from 45% in 08-09 to 50.4% in 09-10 to 62.3% in 10-11.
- Half time students decreased slightly over the same period, from just over 33% to 29%.
- Part time students decreased significantly, from 21.4% in 08-09 to 8.7% in 10-11.

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: The recent economic depression in the construction industry caused a significant change in degree seeking students compared to non-degree seeking students; degree seeking students increased as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-2009</td>
<td>84.3%</td>
</tr>
<tr>
<td>2009-2010</td>
<td>91.1%</td>
</tr>
<tr>
<td>2010-2011</td>
<td>93.9%</td>
</tr>
</tbody>
</table>

These are trends that are consistent with the college as a whole.

- Full time students increased from 45% in 08-09 to 50.4% in 09-10 to 62.3% in 10-11.
- Half time students decreased slightly over the same period, from just over 33% to 29%.
- Part time students decreased significantly, from 21.4% in 08-09 to 8.7% in 10-11.
Diversity Opportunities: BCT faculty members 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.

Commuter College: Statistics on distribution paint a picture which reflects the position BCT holds in the Portland metropolitan area. Since our program is the only one of its kind locally, students come from everywhere to attend our classes at Rock Creek. Information from PCC Institutional Effectiveness shows that locally, Aloha/Farmington and Hillsboro/Forest Grove brought in 15.1% and 11.2 % respectively in 10-11. The only other area over 10% was Other Oregon, at 14.7%. Washington State brought in 5.8%, and the remaining areas vary in the 3% to 6% range, with the exception of Outer Northwest/St.Johns at 7.6%. Construction technology courses are not offered at Clackamas CC or Mt. Hood CC, and the program at Clark CC in Vancouver does not offer the same level of hands-on training that is available at PCC, nor do they offer a Construction Management program.

Distance Learning Opportunities: The data above 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 are openly investigating next steps.

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. Have there been any notable changes in instruction due to changes in demographics since the last review?

No notable changes.

Enrollment Patterns

4. C. Describe current and projected demand and enrollment patterns. Include discussion of any impact this will have on the program/discipline.

Patterns / Economic Cycles: Enrollment in the programs offered within the Building Construction Technology department fluctuates with the overall economy, and specifically the construction industry. The two most recent economic recessions found BCT with more students as the recession worsened, then less students as the economy rebounded. The current cycle is similar, but not necessarily predictable in the short term. The housing industry was significantly affected by this most recent “great recession,” and although construction is gradually improving, things are still slow (see Appendix D).
**Strong Long Term Growth**: Long-term forecasts by industry trade groups and the United States Department of Labor and Industry predict continued growth for all industry sectors served by our degree programs. An aging workforce, particularly in the supervisory roles (construction Managers, Project Managers) and pre-construction (Estimators, Schedulers, Planners) must be replaced. National and local trends suggest that the retirement of aging workers will create a shortage of skilled workers to replace retirees.

**Location**: Ongoing investment in growth related investments by local governments and private industry, and the appeal of the Portland area as a high quality-of-life destination, project our area to grow substantially over the next few decades. This growth directly translates into construction employment. Current projects such as the new Intel facility, the PCC bond, the Oregon Zoo bond, the Portland Public Schools bond, as well as investments by PSU and OHSU have helped area construction employment rise each month in 2012. Interim Rock Creek Campus President Ryslinge announced at the Rock Creek All Leader’s meeting in January 2013 that job growth in Washington County is currently the fastest in the nation. The potential impact of a new Columbia River Crossing would have a significant impact on our industry. Even without all of these large projects, economic forecasts for the region and for our industry are strong (see Appendix D).

**Future Program Strength**: The BCT department is optimistic and excited about our future. We continue to adapt and strengthen our programs. The Construction Management program operated at capacity during the 2011-2012 academic year, and we were concerned about classroom space if enrollment increased again. To date, we have managed to accommodate all students who seek to earn a BCT degree. As the economy begins to pick up, we don’t expect to see the year-on-year growth we experienced the past few years. Our programs are well enrolled, and we anticipate this trend to continue.

**Access and Diversity Strategies**

**4. D. What strategies are used within the program/discipline to facilitate access and diversity?**

**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, Annette Murphy, 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 Annette is a huge contributor to BCT student success.

**Scholarship Opportunities**: Access to the BCT program is supported by several scholarships specific to our program. The PCC Foundation Golf Tournament scholarship program benefits students in BCT, and privately funded scholarships such as the Madden Family Scholarship are available only to BCT students. The Design Build Remodeling scholarship benefits one student each in BCT, ID, and ARCH. These generous scholarships assist students who might otherwise be unable to afford college to continue in the BCT program.

**Faculty Engagement**: BCT Faculty encourages students from diverse backgrounds to enter our classes, and routinely discuss the many opportunities for students of color, women, and other minorities within the construction industry. Today’s construction industry is an overwhelmingly supportive environment for women, minorities, and emerging business owners because many contracts require representation on the construction team from these under-represented groups. The BCT programs, across the board, have had significantly high job placement rates for our women and minority students. We advise incoming women and minorities of this fact, and actively encourage them and support their studies. BCT Learning Skills Specialist Annette Murphy plays a crucial role in retaining these students.
**Partnering With ETAP:** BCT faculty collaborated with ETAP (formerly Evening Trades and Apprenticeship Program, currently Electrical Trades Apprenticeship Program) at the Cascade Campus from 2009 to 2012. The ETAP program targets minority and at-risk youth for entry-level construction training, aiming to qualify this population for entrance into the trades training programs. Between 2009 and 2010, BCT developed a training course to give ETAP students hands-on training (this training had previously been outsourced to the Willamette Carpenters Union at considerable expense to the college). We also hosted several ETAP students in our BCT 104 Construction Math class, and Adjunct Faculty Brad Fox taught a section of BCT 104 at Cascade campus one term. Unfortunately, the program is struggling to find enrollment sufficient to offer these classes (program funding has been intermittent), but our lines of communication are still open, and we strongly support the ETAP efforts to increase minority representation in the trades.

**Marketing / Outreach:** BCT actively attempts to market the program to the community. We are not marketing experts, but the faculty, staff, and students in the BCT department have produced fliers and posters and distributed these throughout the Portland area, to make people in the community aware of what BCT has to offer. We also actively update the BCT website within the www.pcc.edu portal, but time and resources are limited. Any assistance that the College could provide to improve these efforts would be welcome, and would potentially increase awareness among under-represented populations of our program. BCT faculty members encourage the College to actively market the BCT and other CTE programs to minorities and women.

**Social Media:** BCT is exploring social media options through discussions with other CTE programs, but we have not had time to commit to this avenue of community engagement. It is clearly an excellent way to connect with students that use social media—other CTE programs have had good success doing this. 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.

**Use of Feedback**

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

**Feedback From Students**

**Physical Evaluations Eliminated:** Up until the current academic year, 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

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Eleza Faison is a subcontractor on the 2008 Bond construction project at Rock Creek. Eleza is taking some BCT classes while out at Rock Creek, and partnering with BCT faculty on projects for students. Win/Win.
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.

**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. Student criticism is often 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. This overlap is usually intentional: faculty might communicate with one another so that when the Construction Math class covers stair calculations, the Tool Safety class also goes over stairs, helping to reinforce this vital skill. Other times this redundancy may require course modification. Examples:

- In 2007 the department added ARCH 110 Introduction to Architectural Drafting, and eliminated hand drafting from the curriculum of the BCT 102 Residential Printreading classes. Now students learn drafting from a qualified instructor, and there is more time to focus on printreading skills in BCT 102.

- BCT 150 Mechanical, Electrical, and Plumbing was recently modified from 3 to 4 credits, based in part upon student feedback. The subject area is changing rapidly, and there just wasn’t time in a 3 credit class to adequately cover the expanded requirements of this increasingly significant and diverse subject area.

- Students who work a day job and attend PCC in the evening have let faculty members know that the 4 credit format is difficult for night students, and we still have additional curriculum material that is not being adequately addressed. Many students have suggested breaking the class into two courses. In fact, in some schools, this material is covered in several courses rather than one course, and BCT faculty members are currently discussing options. We will present any changes to the members of our Industry Advisory Board for their feedback before making any decisions.

**Feedback from Community Groups**
BCT has modified the curriculum in BCT 106 Hand and Power Tool Safety class to align with broader college and community goals. The students in the class now work collaboratively to produce a finished product at the end of the course that will be donated to a specific user. For example, in recent years students have built and donated several picnic tables. These tables were donated to be raffled off at the Columbia County Fair and at the PCC Foundation Golf Tournament. The proceeds of the golf tournament benefit BCT student scholarships. This modification to the course curriculum enhanced the learning experience for the students, and also improved the quality of the work completed in the classes—we found that the students are more focused, and do better work, when they are working on “real” projects.

**Feedback from Transfer Institutions**
The BCT Construction Management program has had an articulation agreement with the Oregon Institute of Technology (OIT) for many years. This agreement allows students to transfer with their AAS degree from PCC to OIT so that students can continue on toward a Bachelor Degree in Operations Management.
Recently, OIT introduced a second path toward a Bachelor’s Degree. The Bachelor of Applied Science in Technology and 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 Grant Kirby and other representatives of OIT 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 has modified the course content of the Construction Management degree over the years, most recently in the development of the Computer Applications Elective and the Computer Drafting Elective. The inclusion of these electives, rather than the previously prescriptive pathway of specific coursework, was completed in response to on the ground observation and transfer institution input, as well as Industry Advisory Board input. All of these groups, including students, were telling us that more computer skills, better communication skills, and greater competence with basic software were desired in the workplace. The elective avenue allows students who already have some skills with, for example, Excel, to take an Intermediate Excel class for credit rather than the Introduction to Excel class, without this becoming a course substitution for the Registrar. The CAD elective allows students to choose between various platforms, depending upon their interest in the workplace. Those who are interested in heavy commercial work may select courses in REVIT, or AutoCAD, while those interested in residential construction, or who may plan on opening their own design/Build outfit, might choose to study Vectorworks instead.

Changes are being made as a result of industry input in the BCT Hands-On and Design-Build Remodeling programs as well. Governmental requirements for exterior building envelope have changed, and the new standards must be well understood by our students. As a result of changes to the 2011 version of the Oregon Residential Specialty Code, we are in the process of developing a Lecture/Lab course that will introduce this material in depth, and allow the students to gain hands-on experience in the new procedures. We just do not have time to cover this in existing classes, and we feel that a new class is the best way to expose students to this vital information.

In addition to all of the individual members and companies represented on our Industry Advisory Board, BCT continues to develop new relationships and strengthen existing ones with a variety of players in business and private industry. Here a just a few examples:

- Skanska: Relationship enhanced through an externship by Shannon Baird, thanks to the Sustainability Training for Technical Educators (STTE) Grant from the National Science Foundation (NSF).
- Opsis Architecture: Relationship developed through externship by Shannon Baird thanks to the STTE NSF Grant.
- Home Builders Association (HBA): Already strong connections enhanced by Bob Steele externship thanks to STTE NSFF Grant.
- Oregon Remodelers Association (ORA): Strong ongoing relationships with our IAB and Hands-On faculty.
- Associated General Contractors (AGC): Strong ongoing relationship enhanced by revitalization of the AGC Student Chapter under advisor Shannon Baird.
- Andersen Construction: Hired several BCT Construction Management graduates and sponsored tours of the new Kaiser healthcare facility off of 185th.

Each of these relationships provides valuable feedback on instruction, industry climate and requirements, and more.
Feedback from Government

Existing Courses: 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:

- ARCH 132 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.

Faculty

Reflect on the composition, qualifications and development of the faculty

Meeting Program Needs

5. A. i. Quantity and quality of the faculty needed to meet the needs of the program/discipline.

The BCT department has four full-time faculty members, and each bring particular expertise to the program. The vast nature of our subject area demands that each Full-time Faculty member possess different skillsets, knowledge, and work experience. We are proud of the quality of instruction we deliver, every day. At our most recent meeting, the BCT IAB commended the faculty on the work they do on behalf of students, and the quality of the programs we offer.

Kirk Garrison has been with the Department since 2001. He is Co-Chair of the department, and brings years of experience in concrete, residential, and light commercial construction to the program. Kirk primarily teaches in the Hands-On Program. He teaches the concrete, remodeling, tool safety, residential codes, residential estimating, and residential materials and methods classes. Kirk is also the department’s Cooperative Education supervisor.

Bob Steele has been with the Department since 1998. He originally worked as a Tech four in the department, and became a full-time faculty member in 2004. Bob primarily teaches in the Hands-On Program, and brings years of experience in light-wood framing and residential finish carpentry to the department. Bob also has experience as the owner of a residential general contracting company, and has built homes for the Street of Dreams. Bob leads the residential floor, wall and roof framing courses, the finished stair construction course, and the interior and exterior finish courses. Bob also serves as SACC Chair.

Shannon Baird has been with the department since 2007, after nearly 20 years as an architectural project manager. Shannon has been Co-Department Chair for 3 years. Shannon primarily teaches in the Construction Management program. Shannon teaches construction scheduling, engineering, project management, HVAC systems, and construction math. Shannon is also Chair of the PCC CTE Chairs Council.

Hilary Campbell, Temporary Full Time Faculty, was an Adjunct for 3 years prior to her current position. Hilary teaches primarily in the Design/Build Remodeling Program and the Construction Management Program. Hilary has over 20 years of experience in the residential and commercial construction industry, acting as both a designer and a project manager. Hilary is a LEED AP and Certified Kitchen
Designer (CKD) with the NKBA.

**Adjunct Faculty** serve a vital role in providing additional expertise to the department, and in teaching to their specialties. The department is proud to have some of the most prominent names in the industry teaching part-time for us.

**Turnover**

5. A. ii. Extent of faculty turnover and changes anticipated in the next five years.

Since the last BCT Program Review in 2005, we have had the following full-time faculty changes in our department:

- In 2004 Bob Steele replaced hands-on instructor John Fulton, who retired.
- In 2007, Shannon Baird replaced Construction Management instructor Rich Edwards, who left PCC.
- In January 2013, Hilary Campbell is temporarily replacing Spencer Hinkle, who retired in 2012.
- A Faculty Search Committee is in process as part of the block hire to permanently replace Spencer Hinkle.

**Adjunct Positions and Qualifications**

5. A. iii. Extent of the reliance upon part-time faculty and how they compare with full-time faculty in terms of educational and experiential backgrounds.

BCT Adjunct Faculty come from private industry and teach to their specialty. 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 classes that match their particular skillsets. Full-time faculty must have a broad enough background to tackle a wide range of classes. Building Construction Technology is a very broad subject area, with thousands of specialty positions, and full-time faculty must be comfortable within this overall context.

When looking for a part-time instructor we typically seek out an expert in the particular subject we are hiring for. For this reason, not all part-time faculty are qualified to fill a full time slot. For example, our Construction Law instructor is a lawyer, and while he is qualified to teach that course, he is not qualified to teach full-time in the BCT department. On the other hand, other adjunct faculty members may be qualified for full-time employment. For example, 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 residential and commercial printreading courses and the commercial materials and methods course. She was capable of doing this because she had experience in many facets of the construction industry.

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:

**Walt Lemon**, Adjunct Faculty, teaches BCT 204C, Construction Estimating, BCT 207, Construction Job Costing, and BCT 213, Advanced Construction Estimating. Walt is a Certified Professional Estimator (CPE) with the American Society of Professional Estimators (ASPE), and has over 35 years in the industry as a scheduler, project manager and estimator. His field experience, prior to graduating in 1974 with a B.S. in Construction Engineering from Arizona State, includes rough carpentry framing, concrete finisher and laborer. For the past 16 years he has been a senior estimator for a major general contractor in Portland. His estimating experience includes offices, schools, industrial concrete, multi-family complexes, casinos, hotels and high rises. He has worked
on projects in value from several hundred thousand to well over $200 million. Walt is currently the Northwest Governor of the Columbia-Pacific Chapter #54 of the ASPE.

**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.

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**Kevin Spellman**, Adjunct Faculty, teaches BCT 202C Business Principles for Construction for students in the Construction Management Program. Kevin brings 30 years of experience in the construction industry, including 17 years as president of Emerick Construction, a mid-sized Portland commercial construction company. He has worked on projects throughout the Northwest, ranging from $200,000 up to $40 million. He received a B.A. in Business Finance from the City of London College, and an M.S. in Construction Management from the University of Reading, UK.

**Robin R. Fisher**, Adjunct Faculty, teaches BCT 202D Business Principles for Construction 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 and baths.

**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.

**Spencer Hinkle**, Adjunct Faculty and recently retired Full-time Faculty, teaches Cabinetmaking and VectorWorks. Spencer has over 20 years of experience in the remodeling and cabinetmaking industry, and is the author of the textbook Construction Mathematics, used as a textbook at PCC and other schools. He received the Staff Excellence Award in 1998 from US Bank and PCC, Educator of the Year Award in 2004 from the Oregon Building Congress and the Galbraith Award in 2006 from PCC Rock Creek. Spencer is a certified kitchen designer; he earned a two-year degree in Building Construction Technology from PCC and a B.A. from the University of South Florida. Spencer is a Certified Kitchen Designer (CKD) with the National Kitchen and Bath Association (NKBA).

**Jim Sayers**, Adjunct Faculty, 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.

Brad Fox, Adjunct Faculty, teaches BCT 106, BCT 104, BCT 203, and ARCH 132. He has taught at PCC since 2009; before that, he was the general manager of Fox Silver Fox Enterprise, Inc. From 1991 to 2008 his company built over 100 new residential homes in the Aloha area. His responsibilities included plan submittal, estimating and cost accounting, concrete foundations and flat work, framing, cabinet installation, and interior and exterior finishes for all production projects. He was also responsible for sales, customer relations, and managing the cabinet shop.

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.

Greg Haines, Adjunct Faculty, has been installing eco-roofs in Portland since 2002, when he cofounded Eco-roofs Everywhere as a nonprofit organization. He managed Eco-roofs Everywhere as a nonprofit until 2007, then reformed as a corporation. He currently teaches eco-roofing at Portland Community College every March / April. Greg studied under landscape ecologists at Connecticut College and in Yellowstone National Park, under grants from the National Geographic Society and the National Science Foundation.

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

BCT faculty represents a broad spectrum mirroring the community, including faculty members of color, gender, diversification and age. BCT Faculty members also come from various cultural backgrounds. Our Full-time Faculty have a wide range of work experience, and they bring that diversity into the classroom, including national and international experience.

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

BCT submitted an Instructor Qualifications Requirements revision at the end of fall term 2012 as a result of faculty retiring and department needs changing. BCT faculty members carefully looked at our programs holistically, and realized that our current faculty skillsets do not mesh with what the program now needs. The Construction Management program has grown dramatically since our last program review, and staff felt we needed to replace retiring faculty member Spencer Hinkle (who taught mainly in the Hands-On and Design-Build Remodeling programs) with someone who could teach in both the
Design-Build Remodeling and Construction Management programs. Since Bob Steele and Kirk Garrison both teach mainly in the Hands-On Program, this gives our department a better “teaching skills” balance.

**BCT Instructor Qualifications Requirements (Revised in January 2013)**

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.

**Professional Development Opportunities**

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.

BCT Faculty regularly participates in professional development training seminars and trade shows sponsored by industry partners such as the AGC, the HBA, and the NKBA. Faculty also modify curriculum based upon updated industry best practices introduced in industry periodicals, journals, and internet-based publications and websites. In addition to these ongoing activities, BCT Faculty recently participated in two National Science Foundation grant projects.

National Science Foundation: Federal Grant Funds allowed three PCC BCT instructors to participate in a one term sustainability externship specific to their course subjects.

- Shannon Baird: Focusing on recent developments in LEED projects for commercial construction, Shannon divided his time between Skanska USA Building, and large General Contractor, and Opsis Architecture, a Portland-based design firm with many LEED projects on the boards and under construction. Shannon modified curriculum in BCT 100, BCT 150 and BCT 225 based upon what was obtained from the externship

- Spencer Hinkle: A cabinetmaker, Spencer Hinkle completed an externship with Neil Kelly, a local contractor and cabinetmaker, focusing on their sustainability practices.

- Bob Steele: Because of major 2009 code changes in building envelope weatherization, Bob decided to observe new siding installation processes at Legend Homes. During the time of the NSF grant (Winter Term 2010), they were actively building to the new code standards in several nearby subdivisions. Bob also implemented many new code-mandated processes into BCT 128,
Exterior Finish. He also integrated green building framing techniques into our four-class framing sequence (BCT 120 Floor Framing; BCT 121, Wall Framing; BCT 122, Roof Framing 1; BCT 123, Roof Framing 2). Course instruction modifications include:

- Alternative framing methods for interior and exterior corners.
- Off-set exterior wall stud placement.
- 24” on center stud layout.
- “Z” metal flashing to meet new code change.
- Window exterior wrap to meet new code change.
- Alternative moisture drain building wraps.
- Moisture drain mats under cultured stone veneer.

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

Computer Lab

All three Building Construction Technology AAS degree programs require computer lab space. Since the last program review, BCT has lost a dedicated computer lab in Building 2, and the ‘first rights’ to scheduling that came with it. Since then we have been shuffled around to various temporary lab spaces, currently relying on the soon to be demolished RC 5/125. This temporary room is adequate for our current needs, but does not allow for any program growth.

CADD/Software

Since the last program review, the need for our Construction Management students to be well skilled in a variety of industry standard software, such as AutoCAD and Revit, has increased significantly. BCT currently sends students to Sylvania to take AutoCAD and Revit classes. Access to computer time and instruction at Rock Creek would enhance student learning and outcomes and strengthen our programs. Preferred curriculum and outcomes for our Management students differ from those of the ARCH and ID department, as our industry uses the same software for different tasks. We strongly support collaborating with the Sylvania programs to make appropriate CADD classes available to BCT students at the Rock Creek campus.

Dedicated Classroom

BCT remains the only CTE program at Rock Creek (and perhaps in the whole college) without a dedicated classroom. We don’t want one only because all other CTE programs have one, but because BCT students and faculty would truly benefit from having our own classroom. We would be able to install
mock ups of various assembly systems in the classroom for students to use and explore. We could have drawings on file for student use, and a maintain range of other resources. We could develop a ‘center’ for the Construction Management students, who currently have none.

Worksite Improvements: 2008 Bond

The BCT Worksite is the outdoor center of the Hands-On Program. BCT is anticipating major changes to our worksite facilities on the west side of campus due to Bond related activities. A new egress road will divide our work area, requiring relocation of our remodeling houses and other structures to a newly designated location to the east of our current site. The bond work at our site will be somewhat disruptive, but we are excited about the opportunities this work will bring to our construction site. The work site has developed rather haphazardly over the years, so this work has given us the opportunity to create a master plan for how we will use our new building area. The bond will provide restroom facilities at the southwest corner of our area that will be shared with the new arena to be constructed nearby. We will also be able to relocate our remodeling houses, bringing them in closer proximity to the garage/tool storage buildings.

BCT Shop and Dust Collection Improvements: 2008 Bond

The BCT Shop is the indoor center of the Hands-On Program, and some bond work will also take place there. BCT will get a long awaited upgraded dust collection system in the Building 2 BCT shop, as the current system does not keep dust out of the air as well as it should. Installation of draft hoods over all tools, along with new ductwork with less friction, will better collect dust. This work was originally scheduled for summer 2012, but now it looks like it will take place summer term 2013.

Industry Funded Support

BCT is grateful for the support we receive from industry partners who have donated materials and equipment over the years. Since the last program review, we have developed a ‘green’ Resource Room in an area of the BCT shop for the benefit of students and faculty. The Resource Room provides students with examples of cabinetry, lighting, countertops, and interior finish materials. The AGC provided funding for a computer and large monitor, allowing students to view selections from our video library (also funded by the AGC). The list of equipment donated by industry over the years is impressive: in just the past 5 years, the AGC has funded laptop computers, Infrared Heat Cameras for energy and water intrusion analysis, a LEED library, PASCO bridge sets and handheld computers, as well as $1000 per year funding of the AGC student chapter. During that same period, Artisan Renovations provided funding for our annual BCT Barbeque, and Madden Industrial Craftsmen sponsored students to work on out of state volunteer projects.

BCT 222 students Linda Brown, Glen Gipe and Ty Williams with PASCO Bridge Kits funded by the Associated General Contractors

Facilities Improvements Since the 2005 Program Review
• Recent equipment acquisitions include: scaffolding, miter saws, Saw Stop table saws (state of the
    art equipment which prevents serious injury from occurring), a soil compactor, a concrete
    mixer, spider boxes for use on the worksite, and a gas-powered post hole digger.
• Electrical upgrades required at the current remodeling site were installed by the division.
• Students have participated in the remodeling of the garage through integrated course work in
    the remodeling class.
• BCT students installed a straw bale structure with a green roof on the north side of building 3,
    and each year students revisit the structure to perform maintenance and upgrades.
• BCT students share drafting lab space with LAT students in building 7. These studio type
    experiences, which are required for all BCT students, help to develop a ‘team’ approach to the
    curriculum. Students working on projects during lab time and also during open lab are able to
    communicate and collaborate as they develop their drafting skills.
• BCT was able to purchase a “House of Pressure” with green funds from the PCC Foundation.
    The House of Pressure is a high tech model which demonstrates how various things can impact
    how well a house “works.” The House of Pressure can model such things as poor insulation,
    inadequate air sealing, faulty exterior building envelope systems, the impact of various internal
    systems, and many other things. The model uses mechanical systems to visually demonstrate
    the impact these various situations can have on a house.

Library and Classroom Resources
6. B. Describe how students are using the library or other outside-the-classroom information 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.
• Codes class students can access codes online.

Clerical, Technical, Admin and Tutoring Support
6. C. Provide information on clerical, technical, administrative and/or tutoring support.
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.

Toby Harper is the BCT Instructional 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.
Annette Murphy is the Perkins Learning Skills Specialist and Advisor for BCT, and has worked with our students since 2005. Annette has developed a very strong understanding of our students, and the curriculum. Annette tutors many of our BCT 104 Construction Math students, as well as students in other BCT classes. Annette 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 Annette, and the services she offers our students.

Annette 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
- Individual and group tutoring for particular BCT classes: BCT 104, Construction Math; BCT 102, Blueprint Reading; BCT 204C, Estimating; and BCT 123, Roof Framing II (math applications). This sometimes involves creating worksheets with practice problems that break problem-solving into smaller steps
- Individual tutoring in reading comprehension, writing, English as a Second Language grammar, study skills, and general non-BCT math courses
- 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

In addition, Annette serves on our Advisory Committee and occasionally on BCT hiring committees.

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

**Student Services Support**

6. D. Provide information on how Advising, Counseling, Disability Services and other student services impact students.

Student Employment Services: BCT is fortunate to work with Nancy Pitzer from the Rock Creek Student Employment Services department. Nancy assists our students with resume writing, interviewing skills, and job finding skills. Nancy provides crucial services to BCT by connecting our students with employers, attending our department meetings when time permits, and connecting with our program and students. She regularly visits our classes to ensure students are aware of her role and how to utilize her services. Nancy coordinates all of our BCT 280A Cooperative Education classes, and teaches several sections of CG 209, Job Finding Skills, which is required for the Construction Management students. Nancy advised the BCT Faculty that her department has recently requested resources that would enable her department to keep vital staff members. BCT faculty and staff support these efforts, and encourage administration to at least fund student services to current levels.

Advising: Many BCT students are assisted by the general advising staff at Rock Creek. Often, these students are referred to Annette Murphy, who provides valuable advising for our students, who was mentioned in 6 C above.

Veterans Resource Center: Many BCT students are veterans, and they take advantage of the services provided by this new resource at Rock Creek.

**Scheduling and Instructional Delivery**
6. E. Describe current patterns of scheduling (such as modality, class size, duration, times, location, or other), address the pedagogy of the program/discipline and the needs of students.

The BCT programs schedule classes in 9 ways or formats:

- **6 hour Lecture/Lab, two days a week**
  This type of class meets on either Monday/Tuesday from 7am to 1pm, or on Wednesday/Thursday from 7am to 1pm. Students typically meet in a classroom for no more than two hours, and then go to either the shop or the BCT worksite (depending on the specific class) to practice what they about in the classroom. Class size ranges from 12 to 30, depending on current enrollment trends. Since these classes only run once a year, instructors rarely, if ever, cut off enrollment.

- **6 hour Lecture/Lab, 4 days a week**
  This format is limited to the framing classes that meet Monday through Thursday from 7am to 1pm, Spring term. There are four framing classes: BCT 120 (Floor Framing), 121 (Wall Framing), 122 (Roof Framing I), and 123 (Roof Framing 2). The number of days the class meets is divided into four equal periods. BCT 120 meets during the first period, BCT 121 the second, and so forth. Again, students meet in the classroom for up to two hours, class size ranges as above, and we don’t limit enrollment.

- **6 hour Lecture/Lab, 1 day a week**
  Classes that follow this schedule meet from 7am to 1pm if the class meets during the week, or 8am to 2pm if on Saturday. The classroom and enrollment parameters are the same as above.

- **2 hour Lecture 1 day a week**
  This format is limited to ARCH 132, Residential Building Codes, and ARCH 132, Commercial Codes.

- **3 hour Lecture 1 day a week**
  This is our most common format. Students meet once a week for three hours; class size and enrollment parameters the same as above.

- **4 hour Lecture 1 day a week**
  Our only class like this is BCT 150, Mechanical, Electrical, and Plumbing. This class used to be a 3 credit Lecture, but due to many changes and advances in industry, the instructor needed more in-class time and we added another hour. We may consider breaking this class into two classes in the future.

- **2 hour Lecture/Lab 1 day a week**

- **1 credit Lecture/Lab for four consecutive Saturdays.** This format is unique to BCT 115, Residential Green-roofing. Students meet for 5 hours a day for four consecutive Saturdays.

- **4 hour Lecture/Lab.** This format is unique to BCT 244, Cabinet Installation. For the first two weeks, the entire class meets together on Saturdays and the instructor lectures on Cabinet installation. After that, half of the class meets with instructor for two consecutive Saturdays to install cabinets. The following two Saturdays the other half of the class meets with instructor and they install cabinets.

**Serving Industry with Desirable Graduates**

Ensuring curriculum keeps pace with changing employer needs and continues to successfully prepare students to enter a career field.

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

The 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:

- Development and implementation of the Design/Build Remodeling Option.
- Curriculum changes to the Design/Build Remodeling option including:
  - Replacing ARCH 126 and ARCH 136 with BCT 105 and BCT 209
  - Elimination of BA 238
  - Elimination of ID 225
  - Replacing ID 132 with ID 133
  - Replacing BCT 202 with specialized BCT 202D for Design/Build only
- Curriculum changes to the Hands On option including:
  - Addition of ARCH 110 (Introduction to Architectural Drawing).
  - Elimination of drawing from Blueprint Reading classes
  - Deletion of the Construction Surveying course.
  - Curriculum recommendations for the upcoming Building Shell course.
- Curriculum changes to the Construction Management option including:
  - Addition of ARCH 110.
  - Elimination of drawing from Blueprint Reading classes
  - Addition of AutoCAD. Recently substituting this requirement with a CAD elective.
  - Addition of the Computer Software Elective.
  - Deletion of the Construction Surveying course.
  - Curriculum recommendations and course support for the Construction Scheduling course
- Alignment of Business Principles class with Design Build and with Construction Management independently.
- Encouragement and support for Guest Lecturers, Contractors Roundtable, Meet Your Future. Events that bring industry professionals working in the field into the classroom, making course content relevant.
- Increasing minimum grade requirement in Construction Management course work to a C or better.
- 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

Program Entry Requirements

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

BCT is an open enrollment program— anyone can sign up for our classes. Students new to the Building Construction Technology Program must take the college’s placement tests for math and writing administered through the assessment centers prior to program advising and registration. Students must be enrolled in or have completed MTH 20 or have placed into MTH 60 or above on the Numerical Test and have enrolled in or completed WR 90 or placed into WR 115 or above. Students must complete BCT 106, Hand and Power Tool Use and Safety, with a “C” or better, or acquire department approval before enrolling in classes requiring the use of hand or power tools. Students must have completed CAS 133, or a similar course, or have basic computer skills. Keyboarding skills are also recommended. Faculty and
support staff work with students one on one to make sure any remedial work is completed. We also offer pre-enrollment group advising.

**Job Placement and Employment Forecasts**

7. C. 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 Improving**

Things are slowly improving in the Oregon construction industry. There was relatively steady job growth in both 2011 and 2012, as the information below indicates (also see Appendix).

**Construction Sector Adds 30,000 Jobs in December 2012**

Nonfarm payrolls increased by 155,000 in December, according to data released this morning by the Labor Department. This is down slightly from an upwardly revised 161,000 added in November. The unemployment rate for the month was at 7.8%. **Construction was a winner during the month, adding 30,000 jobs. Average hourly earnings were up 0.3%.** - From the AGC Smartbrief online newsletter January 4, 2013

**Employment Statistics: Federal**

**Employment Statistics for Construction Managers**

Oregon, Statewide  
Current Number Employed: 2,740  
Number per 1,000 Jobs in the State: 1.73  
Annual Mean Wage: $80,250  Hourly: $38.58  
Percentile Wages:  
10th: $41,410  
25th: $61,849  
50th: $78,570  
75th: $94,550  
90th: $118,260  
Location Quotient: 1.14*

Portland Vancouver Hillsboro Metro Area  
Current Number Employed: 1,610  
Number per 1,000 Jobs in the Metro Area: 1.64  
Annual Mean Wage: $85,920  
Location Quotient: 1.08

**Employment Statistics for First-Line Supervisors in the Construction Trades**

Oregon, Statewide  
Current Number Employed: 4,410  
Number per 1,000 Jobs in the State: 2.78  
Annual Mean Wage: $61,890  Hourly: $29.76  
Percentile Wages:  
10th: $35,270  
25th: $47,720  
50th: $61,530
Employment Statistics for Carpenters

Oregon, Statewide

Current Number Employed: 8,240
Number per 1,000 Jobs in the State: 5.20
Annual Mean Wage: $45,400  Hourly: $21.83
Percentile Wages:
10th: $24,730
25th: $33,020
50th: $42,950
75th: $56,850
90th: $70,720
Location Quotient: 1.15

Portland Vancouver Hillsboro Metro Area

Current Number Employed: 5,470
Number per 1,000 Jobs in the Metro Area: 5.59
Annual Mean Wage: $46,760
Location Quotient: 1.24

*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 2011

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.
Barriers to Completion and Retention

7. D. Analyze any barriers to degree or certificate completion that your students face, and identify common reasons that students may leave before completion.
Common Barriers to Completion

Math: The Math 65 requirement for AAS degrees is a real and significant barrier for a minority of students. The material covered in Math 65 is not relevant to many of our BCT AAS graduates seeking employment in the industry who have no intention of continuing their education toward a Bachelor’s Degree. The college has already agreed to address this concern. The Deans of Instruction have agreed to provide funding for curriculum development for an alternative math track, tentatively titled Math 80/85, which would provide an applied math alternative to MTH 60/65. This option will increase the advising requirements for the BCT faculty, as students who do intend to continue on toward a Bachelor’s degree will still take the MTH 60/65/95/111 track, while others may select the new MTH 80/85 track.

Third Party Funding: 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.

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.
• 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.

Additional Changes--

7. E. Describe and explain any additional changes made to the program since the last program review.

The BCT Department has been busy improving opportunities for students, and creating new ones, through extracurricular activities. Enhancing opportunities through student clubs has been a priority the last 5 years. Collaborating with industry professionals. Helping needy members of the community. Networking with potential employers, or partners. Investing in one another. The Building Construction Technology department is more than just classes and curriculum. We are a link between students and the community we serve. Below we have summarized a few of the most recent collaborative efforts in which faculty, staff and students have participated within the last two years.
Students Attend 2011 AGC Summer Convention
Left to Right, Bobbi Snow, Jamie Jones, Tom Hochstater, Eduardo Munoz, Coleen Hoyt, Shannon Baird, Mike Roark, Linda Brown

Student Activities and Clubs
BCT students have been busy with field trips, industry events, and other extra-curricular activities. Here are a few of the highlights from the last year or so, listed in rough chronological order:

- **AGC Convention**: BCT CM students and full time faculty Shannon Baird attended the Associated General Contractors summer convention at Salishan in August 2011. Two students were awarded scholarships that covered their accommodation expenses in exchange for assisting in the preparation for the event, and breakdown afterward.

- **PCC Foundation Golf Tournament**: BCT students volunteered at the PCC Foundation Golf Tournament in September, which raised $105,000 in scholarship money for the Foundation.

- **AGC Business Meeting**: BCT CM students attended the Associated General Contractors Annual Business Meeting in January, and presented the student chapter grant request for funding to purchase 5 laptop computers. The grant was approved, and the student chapter was also awarded $1000 for club activities.

- **KBIZ**: BCT faculty member Spencer Hinkle once again joined Design/Build students on a trip to KBIZ, the national kitchen and bath industry trade fair held in Chicago, Illinois. Hilary Campbell will be joining students in New Orleans this coming Spring term for this year’s KBIZ.

- **Contractor’s Roundtable**: BCT sponsored a Contractors Roundtable for 2nd year Construction Management students in the Spring and Fall of 2012. Representatives from Fortis, Howard S Wright, In-Line, Hoffman, Walsh, Andersen and Skanska were all invited to discuss their companies, internship opportunities, and individual student goals. Many students mentioned that this was one of the high points of the year for them.

- **AGC Convention**: BCT students, and Associated General Contractors Club President Nathan Davidson, attended the AGC Summer Convention in Sunriver in August 2012.
Davidson, Chapter President, who was present but seated with his work colleagues from R&H Construction, winners of an AGC Safety Award

Community Service Projects
BCT student club members have been busy collaborating on a variety of community service projects. Here are a few of the highlights since the 2005 Program Review, listed in rough chronological order:

- **Sylvania Art Department Concrete**: BCT students in the Residential Concrete class poured a large slab for the Sylvania Art Department.

- **Westview Concrete**: BCT students in the Residential Concrete class poured four concrete slabs for the Westview High School baseball and softball teams.

- **Ramp Access**: In Winter term 2011, BCT students constructed a ramp for a family with a handicapped child. This child became eligible for an electric wheelchair once the ramp provided wheelchair access to the home. The project was completed in partnership with local non-profit Refit.

- **Ramp and French Doors**: Last spring, BCT students installed French doors to a bedroom, a deck, and a ramp at the Laudahl home. These renovations provided egress for their bed-ridden son, who would not have been able to stay with his family (life safety requirements were going to force the child to be housed at another location). This BCT student project allowed this family to stay together in their home, and was completed in partnership with local non-profit Refit.

- **Benches for Learning Garden**: BCT 106 students poured concrete for learning garden benches at Rock Creek, and BCT staff installed the benches.

- **Planters for Learning Garden**: BCT Tech IV Toby Harper and student Ben Gloss built planter boxes for the Rock Creek Learning Garden.

- **Barn Upgrades**: BCT 106 students poured concrete slabs in part of the PCC college barn. This project makes it much easier for Rock Creek Campus farmer Terry Lookabill to clean up manure in the barn.
- **Ramp Access**: BCT student chapter members Ian Powell, Nathan Davidson, Michael Strachan, and Jason Butler collaborated with Refit industry professional Ken Lawson to install a complicated handicap accessible ramp at a home on NE Ainsworth during November and December, 2012. The four weekend long project allowed the family’s wheelchair bound son to return home after months of living outside of the home due to inaccessibility.

- **Picnic Tables**: BCT Tool Safety students built picnic tables to raffle at the PCC Foundation Golf Tournament.

- **Picnic Tables**: BCT Tool Safety students built picnic tables for the Rock Creek Learning Garden.

### Collaborating with the Community and Industry
In addition to coordinating the student learning based extracurricular activities listed above, the Faculty and Staff of the BCT Department have also been busy collaborating with organizations, inside and outside of PCC. A few examples of this include:

- **Career Expo**: BCT participated in the NW Youth Career Expo, which was presented by Portland Workforce Alliance and held at the Portland Expo center in May 2012. Junior and Senior high school students who attend this even are given career path information from a variety of industries. BCT Tech IV Toby Harper organized and manned the BCT booth throughout the day. Faculty member Shannon Baird attended the organizers breakfast, which featured testimonials from high school students who mentored in the Portland Workforce Alliance programs.

- **An Evening With Bruce King**: BCT co-sponsored the event “An Evening with Bruce King,” who is one of the foremost Alternative Builders in the United States, and a full day workshop with Bruce King on Alternative Construction Practices. Students in the BCT 116 Alternative Building Design course were also sponsored by the BCT department, and many students were able to go, as was Full-time Faculty member Shannon Baird and Adjunct Faculty member Hilary Campbell. The event was organized by BCT Alum Jeremy Rosenbloom, and BCT Adjunct Faculty member Bernhard Masterson.

- **Student Exit Survey**: BCT faculty collaborated with PCC’s Todd Sanders and Paul Wild to develop a pilot student exit survey for CTE programs. Information gathered through this survey greatly benefited BCT and other CTE programs, but funding to continue the program was not provided by the college, and it has been shelved.

- **National Science Foundation “Sustainability Training for Technical Educators” (STTE) Grant**: BCT faculty collaborated with other NSF STTE grant recipients to discuss lessons learned and develop tools for broader interdepartmental collaboration on the issue of sustainability.

- **HBA Mentoring Sessions**: BCT hosted representatives from the Home Builders Association who provided mentoring luncheons for our students, where they were able to ask questions of a panel of industry experts. Topics included interviewing skills, best communication practices, and job finding skills.
• **Golf Tournament Planning Committee:** BCT hosted the PCC Foundation Golf Tournament Planning Committee in the BCT shop in May. Students were invited to attend and meet the members of the committee.

**Recommendations**

8. **A.** Identify recommendations related to teaching and learning that derive from results of the assessment of student learning outcomes (course, degree, certificate and/or College Core Outcomes).

See Appendices A and B for assessment plans. As noted in section 2 B iv above, BCT is currently evaluating the results of our first (2011-1012) assessment plan.

8. **B.** Identify recommendations relevant to areas such as maintaining a current curriculum, professional development, access and success for students, obtaining needed resources, and being responsive to community needs. For recommendations that require additional funding, present them in priority order.

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.
   b. Installation of the new bathroom facilities.
   c. Construction of new access to the BCT worksite.
   d. Construction of the East/West concrete wall separating BCT from the proposed greenspace.
   e. Construction of the North/South concrete wall separating BCT from the proposed grounds Landscape Maintenance area.
   f. Lighting and adequate power at the revised worksite.
   g. Any other requirements agreed upon in the bond meetings and minutes.

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 timeslots that are not utilized by BCT courses.

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.

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.

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.
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.

7. **ALUMNI TRACKING ASSISTANCE**: Begin with adopting the pilot described above that was developed by Todd Sanders and Paul Wild.

8. **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.

**Appendix A**

**Hands-On BCT Assessment Plan**

Annual Report for Assessment of Outcomes 2011-2012

Please address the questions below send to learningassessment@pcc.edu by June 22, 2012; with Annual Report in the subject line

Note: Information provided in this report may be inserted into or summarized in Section 2C (LDC/DE)) or 6B (CTE) of the Program Review Outline.

1. Describe changes that have been implemented towards improving students’ attainment of outcomes that resulted from outcome assessments carried out in 2010-2011. These may include but are not limited to changes to content, materials, instruction, pedagogy etc. The current academic year, 2011-2012 is the first year of assessment tool usage in the BCT department.

For **each outcome assessed this year**:

2. Describe the assessment design (tool and processes) used. Include relevant information about:
   - The nature of the assessment (e.g., written work, project, portfolio, exam, survey, performance etc.) and if it is direct (assesses evidence mastery of outcomes) or indirect (student’s perception of mastery). Please give rationale for indirect assessments (direct assessments are preferable).
   - The student sample assessed (including sample size relative to the targeted student population for the assessment activity) process and rationale for selection of the student sample. Why was this group of students and/or courses chosen?
   - Any rubrics, checklists, surveys or other tools that were used to evaluate the student work. (Please include with your report). Where appropriate, identify benchmarks.
   - How you analyzed results, including steps taken to ensure that results are reliable (consistent from one evaluator to another.

The AAS Building Construction Technology degree currently has 6 outcomes. These outcomes are:
1. Safely construct and finish concrete foundations and flatwork systems by interpreting construction documents, estimating costs, and completing projects to code.
2. Safely construct various residential floor, wall, and roof framing systems by interpreting construction documents, estimating costs, and completing projects to code.
3. Safely construct various residential interior and exterior wall and roof coverings, millwork, cabinetry, and finishes by interpreting construction documents, estimating costs, and completing projects to code.
4. Apply competence in tool and job site safety, applied mathematics, estimating, building codes, and construction surveying. Use mathematics and estimating skills to effectively estimate material quantities and labor costs for a residential structure.
5. Practice the efficient use of natural and man-made resources in residential building construction.
6. Read, understand, and generate construction documents, and communicate in the construction environment using effective written and oral communication.

In the tool development stage of the assessment process, it became clear to faculty that these outcomes are overly broad, overreaching in the expectations placed upon students, and difficult or problematic to measure effectively. We chose to work on the development of tools which we as faculty believed were effective and important, and to revisit the outcomes once the tools were identified for the task.

We identified the following tools, and developed them toward the outcomes listed above. We then revisited the outcomes, and will propose to the college that the outcomes be revised to the following:

The AAS BCT Hands-On degree will modify our 6 outcomes, based upon our work on appropriate assessment tools. These proposed outcomes, with assessment tools utilized, are:

7. Interpret construction documents to build concrete foundation and flatwork systems to Oregon code standards.
   Direct Assessment tool 1: Instructor completes sheet documenting accuracy of each completed foundation (competency) in BCT 127.
   Direct Assessment tool 2: Instructor Observation of student's lab work performance, based on the following criteria:
   - Students work collaboratively in small group settings.
   - Students are evaluated based on actively participating and quality workmanship.
   - Students are not marked down because of a slow work tempo or any workmanship errors, providing student willingly makes corrections.

8. Interpret construction documents to build residential floor, wall and roof framing systems to Oregon code standards
   Direct Assessment tool 1: Instructor completes sheet documenting accuracy of floor, wall, and roof systems (competency) in BCT 120, 121, 122, and 123
   Direct Assessment tool 2: Instructor Observation of student's lab work performance, based on the following criteria:
   - Students work collaboratively in small group settings.
• Students are evaluated based on actively participating and quality workmanship.
• Students are not marked down because of a slow work tempo or any workmanship errors,
  providing student willingly makes corrections.

9. Interpret construction documents to build various residential interior and exterior wall and roof coverings, millwork, cabinetry and finishes to Oregon code standards

  Direct Assessment tool 1: Instructor completes sheet documenting accuracy of interior and exterior wall and roof coverings, millwork, cabinetry and finishes (competency) in BCT 128, BCT 203, and BCT 219.
  Direct Assessment tool 2: Instructor Observation of student's lab work performance, based on the following criteria:
  • Students work collaboratively in small group settings.
  • Students are evaluated based on actively participating and quality workmanship.
  • Students are not marked down because of a slow work tempo or any workmanship errors,
    providing student willingly makes corrections.

10. Use mathematic and estimating skills to effectively estimate material quantities and labor costs for a residential structure.

  Direct Assessment tools: Portfolio final exam project in BCT 204B: students estimate a residential structure and instructor compares student results with instructor results.

11. Practice the efficient use of natural and man-made resources in residential building construction.

  Direct Assessment tool: Embedded question in BCT 206; “Wood and steel are both used as structural materials in residential and commercial construction. Compare and contrast the proper uses and typical application of these natural and man-made materials. Consider wall assembly, embodied energy, air sealing and leakage, thermal bridging, and any other aspects you care to add.”

12. Read, understand and generate construction documents, and communicate in the construction environment using effective written and oral communication skills.

  Direct Assessment tool: Portfolio project in ARCH 110; Students read and interpret information to generate construction drawings for a small house.

The student samples assessed were entire classes. The courses chosen were selected because they are required courses for the BCT Hands-on AAS degree, and because, in all cases, the courses are providing summative learning experiences rather than formative experiences. The learning outcomes we are assessing are broad and interrelated, and the assessment tools developed for each of these courses require students to apply knowledge and skills from other formative classes, in addition to the content from the course in question, to produce the highest level of work. Students who are ‘drop in' students, and not degree seeking, were also assessed. Results were reviewed by the faculty member who taught the course.
3. Provide information about the results (i.e., what did you learn about how well students are meeting the outcomes)?
   - If scored (e.g., if a rubric or other scaled tool is used), please report the data, and relate to any appropriate benchmarks.
   - Results should be broken down in a way that is meaningful and useful for making improvements to teaching/learning. Please show those specific results.

4. Identify any changes that should, as a result of this assessment, be implemented to help improve students’ attainment of outcomes. (These may include, but are not limited to, changes in curriculum, content, materials, instruction, pedagogy etc).

5. Reflect on the effectiveness of this assessment tool and assessment process. Please describe any changes to assessment methodology that would lead to more meaningful results if this assessment were to be repeated (or adapted to another outcome). Is there a different kind of assessment tool or process that the SAC would like to use for this outcome in the future? If the assessment tool and processes does not need to be revised, please indicate this.

1. Interpret construction documents to build concrete foundation and flatwork systems to Oregon code standards.
   - Direct Assessment tool 1: Instructor completes sheets documenting the accuracy of each foundation (competency) in BCT 127
   - Direct Assessment tool 2: Instructor Observation of student’s lab work performance according to the following criteria:
     - Students work collaboratively in small group settings.
     - Students are evaluated based on actively participating and quality workmanship.
     - Students are not marked down because of a slow work tempo or any workmanship errors, providing student willingly makes corrections.

Results: Students work in teams of four to eight students (depending on class size) to form and pour concrete foundations. After the foundations were completed, the instructor checked the foundations for the following:

   A. accuracy in measurements
   B. that the foundation is square (within 1/8”)
   C. that the surface is smooth or not full of “bug holes”
   D. that anchor bolts are where they should be
   E. that beam pockets are where they should be
   F. That foundation vents are where they should be

Students in each group were given a score from 1 to 4 according to the following guidelines:

4—Strong: Exhibits a sound knowledge about forming and pouring concrete foundations.
3—Acceptable: Exhibits average knowledge about forming and pouring concrete foundations.
2—Weak: Exhibits very limited knowledge about forming and pouring concrete foundations.
1—Unacceptable: Exhibits no knowledge about forming and pouring concrete foundations.

Scores were entered into the following Rubric:

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<th>Smooth</th>
<th>Anchor Bolts</th>
<th>Beam Pockets</th>
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As you can see, results were mixed (note that there were three groups, with four students in each group, so each student in the same group has the same scores). All of the groups could have done better vibrating the concrete so the surface was smoother. One group put a beam pocket in the wrong place, and another group did not get the foundation as level as it should have been.

Changes: In the future, the instructor will make sure students check measurements, etc., more carefully before they pour concrete, and will focus more attention on consolidating the concrete so the surface is better.

Information supplied by BCT full-time instructor Kirk Garrison

2. Effectively Interpret construction documents to build residential floor, wall and roof framing systems to Oregon code standards

Direct Assessment tool: Instructor completes sheet documenting accuracy of floor, wall, and roof systems (competency) in BCT 120, 121, 122, and 123

This Assessment not completed for this school year

3. Interpret construction documents to build various residential interior and exterior wall and roof coverings, millwork, cabinetry and finishes to Oregon code standards

Direct Assessment tool: Instructor completes sheet documenting accuracy of interior and exterior wall and roof coverings, millwork, cabinetry and finishes (competency) in BCT 128, BCT 203, and BCT 219

Results from BCT 128:
Critical Thinking and Problem Solving Lab Assignment:

Students were assessed according to their performance level in meeting the following goals:

- (A) Students are to work safely, measuring accurately, cutting and installing a lap siding to building code standards.
- (B) Includes installing lap siding level with the correct lap exposure.
- (C) Includes the installation of weather resistant paper to code standards.
- (D) Includes window installation, flashed to meet mid-term 2009 code standards.
- (E) Includes installation of, inside 90°, outside 90° and outside 45° wall corner boards.
- (F) Includes accurately measuring, marking and cutting siding to fit plant-on obstacles containing arcs and angles.
- (G) Includes effectively communicating with group members to achieve project goals.

Assessment Methods

Instructor Observation of student's lab work performance.

- Students work collaboratively in small group settings.
- Students are evaluated based on actively participating and quality workmanship.
- Students are not marked down because of a slow work tempo or any workmanship errors, providing student willingly makes corrections.

Rubric Scoring

(4) Strong: Exhibits a sound knowledge of codes, siding materials, methods and demonstrates accurate installation skills.

(3) Acceptable: Exhibits average knowledge of codes, siding materials, methods, with occasional installation errors.

(2) Unacceptable: Exhibits very limited knowledge of codes, siding materials, methods, with frequent installation errors.

(1) Weak: Exhibits no visible knowledge of codes, siding materials, methods and very weak installation skills.

Results Rubric Scoring

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Student assessment is based on subject knowledge and workmanship for each of the assigned lab projects. Points are awarded based on the above rubric scoring that best describes their lab work performance.

**Annual Report Summary**

Each student's carpentry skills, workmanship quality, and knowledge of proper application techniques were observed during the lab exercises.

- **Student average rubric score = 3.67.**
- The average score is exceptionally high which reflects the fact there was a high percentage of motivated students.
- Many of this terms students also brought with them previously developed construction skills.
- The results indicated there were no lab assignment areas where course modifications were needed to help improve the student's attainment of program outcomes.
- I attribute this to that fact that I have been teaching this same BCT hands-on course for over eight years.
- Assessing student comprehension based upon course subject lecture exams and lab assignment performance results has been done each year I instructed this course.
- From the first classes instructed many changes have been implemented in both the lecture and lab portions of my classes.
- Each year lecture presentations are upgraded or modified to reflect new materials, current trends or code changes.
- Lab exercise assignments are also modified to address new subject matter presented in the lectures.

Results from BCT 203:

This assessment measures the student's ability to accurately measure cut and install interior finish trims. Each student assembles a 24' x 30” project board with 4” tall walls. The walls are arranged to provide corners that typically appear in residential homes. This assessment evaluates the student’s first moulding application of a 2 1/4” colonial baseboard.
Critical Thinking and Problem Solving Lab Assignment:
Students are assessed according to their performance level in meeting the following goals:

- (A) Students are to work safely, measuring accurately, cutting and installing an inside capped corner
- (B) Includes installing an outside 90° miter joint.
- (C) Includes the installation of an outside 45° miter joint.
- (D) Includes the installation of miters to stop moulding mid-wall.
- (E) Includes installation of, outside 90° 3/4” round corners.
- (F) Includes installation of 30° and 45° mid-wall splices.
- (G) Includes effectively interpreting drawings to achieve project goals.

Assessment Methods
Instructor Observation of student's lab work performance.
- Student's choosing proper tool and degree saw settings.
- Student's placing mouldings in proper cutting position to make miter cuts.
- Student's measurement to achieving proper fit miters for quality workmanship.
- Students are not marked down because of a slow work tempo but are expected to achieve an accurate industry standard miter fit. Students are marked down for taking over two attempts or they are unwillingly to makes corrections.

Rubric Scoring

(4) Strong: Exhibits a sound knowledge of miter angles, finish materials, cutting methods and demonstrates accurate installation skills.
(3) Acceptable: Exhibits fair knowledge of miter angles, finish materials, cutting methods, with occasional installation errors.
(2) Unacceptable: Exhibits very limited knowledge of miter angles, finish materials, cutting methods with frequent installation errors.
(1) Weak: Exhibits no visible knowledge of miter angles, finish materials, cutting methods with very weak installation skills.

Results Rubric Scoring

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<th>Student</th>
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</table>
Information supplied by BCT full-time instructor Robert Steele

4. **Use mathematic and estimating skills to effectively estimate material quantities and labor costs for a residential structure.**
Direct Assessment tools: Portfolio final exam project in BCT 204B: students estimate a residential structure and instructor compares student results with instructor results.

This Assessment not completed for this school year

5. Recognize the appropriate use of natural and man-made resources in residential construction.

Direct Assessment tool: Embedded question in BCT 206: “Wood and steel are both used as structural materials in residential and commercial construction. Compare and contrast the proper uses and typical application of these natural and man-made materials. Consider wall assembly, embodied energy, air sealing and leakage, thermal bridging, and any other aspects you care to add.”

Results: Student outcomes were fairly good. Most students described wood as a rapidly renewable resource, and that if the FSC label was selected for sourcing dimensional lumber, environmental impact could be reduced. There was awareness that blocking & other short pieces of material should not be cut from full pieces of lumber. Additionally, they could describe the need to conserve lumber on the construction site by:

a) Developing detailed framing layouts
b) Optimizing building layout to correspond with standard material dimensions
c) Storing materials on a level surface under cover

Students could also identify that best practices would not include cutting required blocking & other short pieces at the job site using full pieces of lumber.

2/3 of my class were able to identify most, or all, of the following attributes of TJI's:

a) Engineered wood products can significantly reduce sawn lumber use, and therefore conserve resources
b) Permit twice the insulation capacity, due to the depth of the web, and therefore increase energy performance of the structure
c) Reduced cost due to less dimensional lumber required
d) Increase overall strength
e) Create truer, straighter surfaces
f) Lighter to handle & easier on construction crews

Regarding the use of steel, most students recognized that steel is highly recyclable, as well as itself likely recycled content. However, there is a higher embedded energy content to steel, and it is more problematic concerning energy performance due to increased thermal
Both material choices were identified to have similar challenges/opportunities when designing for disassembly, and that durability is possible with both, albeit with vulnerability to moisture damage that can compromise strength.

**Changes:** The exam design for this assessment was by selection & matchup, rather than discussion. As such, students demonstrated abilities to recognize, identify, and select appropriate choices. To assess for higher levels of learning outcome -- abilities to generalize, summarize, distinguish and differentiate -- test questions would need to be modified.

**Reflection:** I have formative assessment throughout this course, in the form of ungraded quizzes either handed out, or uploaded to D2L. These have helped students track their own learning from the course, as well as guide them to the themes & fundamentals that they will see in the two summative exams for this course. I am pleased with the results of those tools. But, using a different assessment design than that described above, would likely demonstrate competence & learning outcomes to higher cognitive levels. I will explore other test questions for future classes -- both as formative quizzes, and summative exams.

Information provided by Part-time Instructor Paul Sammons

6. **Demonstrate basic ability to read, interpret and generate construction documents.**  
   Demonstrate oral communication skills necessary in the construction environment.
   
   Direct Assessment tools: Portfolio project in ARCH 110; Students read and interpret information to generate construction drawings for a small house.

**Results:** Results of this assessment tool were very good. All students demonstrated the ability to meet the standard for the assignments. All students revise work after editing from the Instructor. The standard for this tool is reasonable for the students in the course. The students worked on in-class assignments to prepare for the assessment. The instructor made copies of each of the assignments and demonstrated what individual students could work on to improve, since all students begin and end at different levels based upon their incoming skills.

**Changes:** Changes to this assessment tool have not been identified. The Instructor recently modified the presentation of the material to better reflect the way the students learn the material, including a new project developed by the ARCH faculty, which is a better project than in years past.

**Reflection:** This is the appropriate tool for assessing this outcome. BCT will look at the assessment tools developed by the ARCH faculty for similar outcomes and adopt any tools that appear useful to the program and the students.

Information provided by Part-time Instructor Hilary Campbell

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**Appendix B**

**Construction Management Assessment Plan**

Annual Report for Assessment of Outcomes 2011-2012
Describe changes that have been implemented towards improving students’ attainment of outcomes that resulted from outcome assessments carried out in 2010-2011. These may include but are not limited to changes to content, materials, instruction, pedagogy etc.

The current academic year, 2011-2012 is the first year of assessment tool usage in the BCT department.

For each outcome assessed this year:

Describe the assessment design (tool and processes) used. Include relevant information about:

- The nature of the assessment (e.g., written work, project, portfolio, exam, survey, performance etc.) and if it is direct (assesses evidence mastery of outcomes) or indirect (student’s perception of mastery). Please give rationale for indirect assessments (direct assessments are preferable).
- The student sample assessed (including sample size relative to the targeted student population for the assessment activity) process and rationale for selection of the student sample. Why was this group of students and/or courses chosen?
- Any rubrics, checklists, surveys or other tools that were used to evaluate the student work. (Please include with your report). Where appropriate, identify benchmarks.
- How you analyzed results, including steps taken to ensure that results are reliable (consistent from one evaluator to another).

The AAS Construction Management degree currently has 6 outcomes. These outcomes are:

1. Use research and memorization to demonstrate a basic understanding of residential and commercial construction codes, materials and methods.
2. Effectively apply mathematics, residential/commercial building codes; construction surveying, and basic engineering principles to the management of a construction project
3. Practice the efficient use of natural and man-made resources in both residential and commercial construction.
4. Effectively communicate in the construction environment by reading, interpreting and generating construction documents. Practice effective oral communication skills in the construction environment.
5. Manage a construction project by applying effective estimating, scheduling, job costing and business principles.
6. Identify safe construction practices and participate in the management of a hypothetical construction company's OSHA safety compliance program.

In the tool development stage of the assessment process, it became clear to faculty that these outcomes are overly broad, overreaching in the expectations placed upon students, and difficult or problematic to measure effectively. We chose to work on the development of tools which we
faculty believed were effective and important, and to revisit the outcomes once the tools were identified for the task. We identified the following tools, and developed them toward the outcomes listed above. We then revisited the outcomes, and will propose to the college that the outcomes be revised to the following:

The AAS Construction Management degree will modify our 6 outcomes, based upon our work on appropriate assessment tools. These proposed outcomes, with assessment tools utilized, are:

1. Demonstrate a basic understanding of residential and commercial construction codes, materials and methods.
   Direct Assessment tool: Embedded question in ARCH 133 requiring students to navigate the building code to solve a problem related to a materials compliance issue.

2. Effectively apply mathematics and basic engineering principles to solve problems encountered on construction projects.
   Direct Assessment tool: Embedded question in BCT 222; Calculate the appropriate beam size for a simply supported beam.

3. Recognize the appropriate use of natural and man-made resources in both residential and commercial construction.
   Direct Assessment tool: Embedded question in BCT 206; Wood and steel are both used as structural materials in residential and commercial construction. Compare and contrast the proper uses and typical application of these natural and man-made materials. Consider wall assembly, embodied energy, air sealing and leakage, thermal bridging, and any other aspects you care to add.

4. Demonstrate basic ability to read, interpret and generate construction documents. Demonstrate oral communication skills necessary in the construction environment.
   Direct Assessment tools: Portfolio project in ARCH 110; Students read and interpret information to generate construction drawings for a small house. Portfolio project in BCT 222; Students prepare a written and oral presentation on a bridge design proposal for the Willamette River.

5. Demonstrate basic estimating, scheduling, job costing and business principles typically encountered on a construction project.
   Direct Assessment tool: Portfolio project in BCT 225; Students prepare a Scope of Work, Letter of Intent, Schedule, and Estimate. Students work in groups of three to conduct peer review of projects.

6. Identify safe construction practices typically used in a construction company's OSHA safety compliance program.
   Direct Assessment tool: Portfolio Project in BCT 130; Students prepare a Safety Plan for their hypothetical company and present it to the class.

The student samples assessed were entire classes. All courses were chosen because they are required courses for the BCT CM AAS degree. The courses were selected because, in all cases, the courses are providing summative learning experiences rather than formative experiences. The learning outcomes we are assessing are broad and interrelated, and the assessment tools developed for each of these courses require students to apply knowledge and skills from other
informative classes, in addition to the content from the course in question, to produce the highest level of work. Students who are 'drop in' students, and not degree seeking, were also assessed. Results were reviewed by the faculty member who taught the course. A debriefing was held between the faculty member and the Construction Management Program Director and BCT Co-Chair, Shannon Baird.

A select sub-committee formed from members of the Industry Advisory Board will meet and review the results in an upcoming meeting.

Prepared by Full Time Instructor Shannon Baird

6. Provide information about the results (i.e., what did you learn about how well students are meeting the outcomes)?
   • If scored (e.g., if a rubric or other scaled tool is used), please report the data, and relate to any appropriate benchmarks.
   • Results should be broken down in a way that is meaningful and useful for making improvements to teaching/learning. Please show those specific results.

7. Identify any changes that should, as a result of this assessment, be implemented to help improve students’ attainment of outcomes. (These may include, but are not limited to, changes in curriculum, content, materials, instruction, pedagogy etc).

8. Reflect on the effectiveness of this assessment tool and assessment process. Please describe any changes to assessment methodology that would lead to more meaningful results if this assessment were to be repeated (or adapted to another outcome). Is there a different kind of assessment tool or process that the SAC would like to use for this outcome in the future? If the assessment tool and processes does not need to be revised, please indicate this.

1. Demonstrate a basic understanding of residential and commercial construction codes, materials and methods.

   Direct Assessment tool: Embedded question in ARCH 133 requiring students to navigate the building code to solve a problem related to a materials compliance issue.

   Results: The final exam question that was used was the following: "Can foam plastic trim, 9/16" thick and 8" wide, be used in more than 8% of the wall area where it is to be attached? If it can, what is the maximum flamespread index? If it cannot, what must change in order for the installation to meet the requirements? Answer: No, the thickness of the foam plastic must be no thicker than 1/2, OSSC 806.3, 2604.2.2, 2604.2.3 & 2604.2.4.

Four code sections, found in two different chapters needed to be addressed in order to arrive at the correct answer. This question required the student to do a little "digging".

55% (6) of the class got the question correct.
9% (1) of the class received partial credit for their answer.
27% (3) of the class navigated the code sections correctly, but failed to arrive at the correct answer.
9% (1) of the class did not provide an answer to the question.

Information Provided by Part-time Instructor Jim Sayers
2. Effectively apply mathematics and basic engineering principles to solve problems encountered on construction projects.

*Direct Assessment tool: Embedded question in BCT 222; Calculate the appropriate beam size for a simply supported beam*

**Results:** Results of this assessment tool were mixed. The standard for this tool is high for some of the students in the course. The students worked on in-class assignments and had homework problems to prepare for the assessment. Due to the heavy workload in the class, and no math prerequisite requirement for the course, the Instructor opted to make the assessment tool an extra credit problem on the final exam rather than a credit problem. This resulted in a smaller sample size, which is problematic. Only half of the class chose to attempt the problem. Nearly all students who attempted the problem were able to perform the first basic functions, but only half of those who attempted were able to successfully size the beam, and check the results. Some students demonstrated that they 'could' solve the problem, but due to simple mathematical errors or mistakes in reading information on charts, were unable to complete the problem without error.

**Changes:** Changes to this assessment tool have been identified. The assessment tool must be mandatory. The Instructor must modify the presentation of the material to better reflect the way the students learn the material. The first improvement will be to further 'frame' the math problem as a 'building problem' and not a 'math problem'. The Instructor must improve delivery to reach the 'sceptical' student who is not confident they can do this 'kind' of math. The outcome and the assessment are demanding quite a lot from a 3 credit 'survey' type course. Some students suggested developing an introductory course and then an advanced course, which might have some merit, but it would also be adding additional credits to a degree that may not utilize the education at that level in private industry.

**Reflection:** This still appears to be the appropriate tool for assessing this outcome. The fact is it is a demanding outcome goal. The tool does not require revision, although as mentioned, it must be administered to every student in the class.

Information provided by Full time Instructor Shannon Baird

3. Recognize the appropriate use of natural and man-made resources in both residential and commercial construction.

*Direct Assessment tool: Embedded question in BCT 206; Wood and steel are both used as structural materials in residential and commercial construction.*

*Compare and contrast the proper uses and typical application of these natural and man-made materials. Consider wall assembly, embodied energy, air sealing and leakage, thermal bridging, and any other aspects you care to add.*

**Results:** Student outcomes were fairly good. Most students described wood as a rapidly renewable resource, and that if the FSC label was selected for sourcing dimensional lumber, environmental impact could be reduced. There was an awareness that blocking & other short pieces of material should not be cut from full pieces of lumber. Additionally, they could describe the need to conserve lumber on the construction site by:

a) Developing detailed framing layouts
b) Optimizing building layout to correspond with standard material dimensions
c) Storing materials on a level surface under cover

Students could also identify that best practices would **not** include cutting required blocking & other short pieces at the job site using full pieces of lumber.
2/3 of my class were able to identify most, or all, of the following attributes of TJI's:

a) Engineered wood products can significantly reduce sawn lumber use, and therefore conserve resources
b) Permit twice the insulation capacity, due to the depth of the web, and therefore increase energy performance of the structure
c) Reduced cost due to less dimensional lumber required
d) Increase overall strength
e) Create truer, straighter surfaces
f) Lighter to handle & easier on construction crews

Regarding the use of steel, most students recognized that steel is highly recyclable, as well as itself likely recycled content. However, there is a higher embedded energy content to steel, and it is more problematic concerning energy performance due to increased thermal bridging. Both material choices were identified to have similar challenges/opportunities when designing for disassembly, and that durability is possible with both, albeit with vulnerability to moisture damage that can compromise strength.

Changes: The exam design for this assessment was by selection & matchup, rather than discussion. As such, students demonstrated abilities to recognize, identify and select appropriate choices. To assess for higher levels of learning outcome -- abilities to generalize, summarize, distinguish and differentiate -- my test questions would need to be modified.

Reflection: I have formative assessment throughout this course, in the form of ungraded quizzes either handed out, or uploaded to D2L. These have helped students track their own learning from the course, as well as guide them to the themes & fundamentals that they will see in the two summative exams for this course. I am pleased with the results of those tools. But, using a different assessment design than that described above, would likely demonstrate competence & learning outcomes to higher cognitive levels. I will explore other test questions for future classes -- both as formative quizzes, and summative exams.

Information provided by Part-time Instructor Paul Sammons

4. Demonstrate basic ability to read, interpret and generate construction documents.
   Demonstrate oral communication skills necessary in the construction environment.

   Direct Assessment tools: Tool 1: Portfolio project in ARCH 110; Students read and interpret information to generate construction drawings for a small house.
   Tool 2: Portfolio project in BCT 222; Students prepare a written and oral presentation on a bridge design proposal for the Willamette River.

Tool 1 Assessment:
Results: Results of this assessment tool were very good. All students demonstrated the ability to meet the standard for the assignments. All students revise work after editing from the Instructor. The standard for this tool is reasonable for the students in the course. The students worked on in-class assignments to prepare for the assessment. The instructor made copies of each of the assignments and demonstrated what individual students could work on to improve, since all students begin and end at different levels based upon their incoming skills.

Changes: Changes to this assessment tool have not been identified. The Instructor recently modified the presentation of the material to better reflect the way the students learn the material,
including a new project developed by the ARCH faculty, which is a better project than in years past.

**Reflection:** This is the appropriate tool for assessing this outcome. BCT will look at the assessment tools developed by the ARCH faculty for similar outcomes and adopt any tools that appear useful to the program and the students.

Information provided by Part-time Instructor Hilary Campbell

**Tool 2 Assessment:**

**Results:** Results of this assessment tool were very good. All students demonstrated the ability to meet the standard for the assignments. All students presented projects orally to the class, and fielded questions. The standard for this tool is reasonable for the students in the course. The students worked on the assignment outside of class to prepare for the assessment. The individual presentations allowed students an opportunity to learn from one another.

**Changes:** Changes to this assessment tool have not been identified.

**Reflection:** This is the appropriate tool for assessing this outcome. Students present in other BCT classes as well, but this type of presentation is similar to the types of presentations students may encounter in private industry.

Information provided by Full time Instructor Shannon Baird

5. Demonstrate basic estimating, scheduling, job costing and business principles typically encountered on a construction project.

**Direct Assessment tool:** Portfolio project in BCT 225; Students prepare a Scope of Work, Letter of Intent, Schedule, and Estimate. Students work in groups of three to conduct peer review of projects.

**Results:** Results of this assessment tool were good. All students demonstrated the ability to meet the standard for the assignments. Some students required a second attempt after editing from the Instructor and their peers in the group reviews. The standard for this tool is reasonable for the students in the course. The students worked on in-class assignments and had homework problems to prepare for the assessment. The group work was very beneficial. The instructor made copies of each of the assignments and posted three or four examples of the better work and the variety of approaches to each problem, which was useful for students to learn from one another.

**Changes:** Changes to this assessment tool have been identified. The Instructor must modify the presentation of the material to better reflect the way the students learn the material. The schedule portion and the estimating portion of the problem were less rigorous than similar projects that the students complete in the individual scheduling class and estimating classes. There may be a reason to change the assessment of those outcomes to those classes, but it is a nice summative project students work on in this class. The assignments can be very challenging for students who register for this class but have not taken the program. Those students struggled, so that leads to a possible idea of a prereq.

**Reflection:** This still appears to be the appropriate tool for assessing this outcome. As mentioned, we may want to assess in the other classes for scheduling and estimating, and we may want to examine a prereq for the class.

Information provided by Full time Instructor Shannon Baird

6. Identify safe construction practices typically used in a construction company's OSHA safety compliance program.
Direct Assessment tool: Portfolio Project in BCT 130; Students prepare a Safety Plan for their hypothetical company and present it to the class.

6. Direct assessment tool: Each student is required to author a safety policy (accident and illness prevention program) covering procedures and rules that apply to a company they plan to start or one where they are currently employed. The midterm is a Chemical Hazard Communications program covering ten chemicals/products used in their business along with the Material Safety Data Sheets for the products. The midterm is an oral presentation of their program along with the knowledge gained from the MSDS. Students are usually surprised about the dangers associated from the products they use. The final is a complete safety policy covering general work rules for the various trades associated with their company. The midterm is blended into the final project.

Results: The students are provided with OR-O.S.H.A. laws, rules, program directives and publication by the instructor. The Oregon materials, the textbook and lectures provides all of the information needed to successfully complete the final project. Students are cautioned not to “google” information. The overall result has been very good as each student must research their safety needs and verbalize their company’s requirements to the class. The final exam was geared to making students comfortable with public students. Three of the students did general industry presentations that benefited everyone.

Changes: Some of the students have suggested that this class be taught in their first year so that they can be better prepared for the future.

Attached is a copy of the final exam sign in sheet. This sheet verifies the student’s participation in the final exam process / attendance and some

Helpful comments. Also attached are a couple of final presentations. You will notice that the O.S.H.A. codes are absent from the presentations in general. All students were cautioned about the dangers of trying to duplicate all of the codes in their policies but instead refer to them as needed.

Information provided by Part-time Instructor Bruce Poinsette

Appendix C
CORE OUTCOME MAPPING
SAC Building Construction Technology

<table>
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<th>Mapping Level Indicators:</th>
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<td>0- Not Applicable</td>
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<td>1- Limited demonstrated or application of knowledge and skills.</td>
<td>2- Community and Environmental</td>
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<tr>
<td>2- Basic demonstrated or application of knowledge and skills.</td>
<td>3- Critical Thinking and Problem Solving</td>
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<td>3- Demonstrated comprehension and is able to apply essential knowledge and skills.</td>
<td>4- Cultural Awareness</td>
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<td>4- Demonstrates thorough, effective and/or sophisticated application of knowledge and skills.</td>
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Appendix D
Oregon Construction Employment

[Graph showing Oregon construction employment (seasonally adjusted) from 1988 to 2016]
# Oregon Construction Employment (seasonally adjusted)

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Portland Metro Economic Indicators
November 2012

Unemployment Rates - October
October 2012 (Seasonally adj.)

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<tr>
<td>2009</td>
<td>10.9%</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>10.1%</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>8.9%</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>7.9%</td>
<td></td>
</tr>
</tbody>
</table>

Employment Growth
% increase on a year earlier - Q2 2012
Portland Region (Oregon portion only)

<table>
<thead>
<tr>
<th>Sector</th>
<th>% Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Industries</td>
<td>2.2%</td>
</tr>
<tr>
<td>Government</td>
<td>-1.8%</td>
</tr>
<tr>
<td>Health Care</td>
<td>2.1%</td>
</tr>
<tr>
<td>Retail</td>
<td>2.0%</td>
</tr>
<tr>
<td>Construction</td>
<td>5.3%</td>
</tr>
<tr>
<td>High Tech Mfg</td>
<td>2.3%</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>2.6%</td>
</tr>
</tbody>
</table>

Labor Trends
For the Portland Metro region, the October unemployment rate of 7.9% percent is down a full point from a year ago. However, the rate has declined only slightly since the beginning of the year.

Payroll tax data shows that job growth over the last year occurred in almost every private sector industry in the Portland region. The construction industry is growing the fastest, while government employment continues to decline.

Excluding the government numbers, the private sector grew by a more impressive 2.5 percent.

Real Estate Trends
Residential construction building permits grew strongly in the first ten months of 2012, compared to the same period last year, suggesting robust momentum in the residential construction sector.

The region saw permits for 724 units filed in October, up from what it was in October of last year. Permit numbers jump around every month, but the average over the last three months, displayed here, show a strong upward trend. Permits have averaged 782 permits a month over the last three months.

Permits are up strongly around the region, with the strongest growth in Portland, Oregon City, Hillsboro and Vancouver.

Residential Building Permits
Portland Metro region - 3 month average

<table>
<thead>
<tr>
<th>Month</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan-08</td>
<td></td>
</tr>
<tr>
<td>Jan-10</td>
<td></td>
</tr>
<tr>
<td>Jan-12</td>
<td></td>
</tr>
</tbody>
</table>

Housing Permits by City
First 9 months of 2012 over same period in 2011

<table>
<thead>
<tr>
<th>City</th>
<th>Permits Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portland</td>
<td>1,851</td>
</tr>
<tr>
<td>Vancouver</td>
<td>699</td>
</tr>
<tr>
<td>Gresham</td>
<td>52</td>
</tr>
<tr>
<td>Hillsboro</td>
<td>377</td>
</tr>
<tr>
<td>Beaverton</td>
<td>103</td>
</tr>
<tr>
<td>Lake Oswego</td>
<td>70</td>
</tr>
<tr>
<td>McMinnville</td>
<td>37</td>
</tr>
<tr>
<td>Oregon City</td>
<td>355</td>
</tr>
<tr>
<td>Tualatin</td>
<td>13</td>
</tr>
<tr>
<td>West Linn</td>
<td>73</td>
</tr>
<tr>
<td>Forest Grove</td>
<td>135</td>
</tr>
<tr>
<td>Oregon</td>
<td>8,200</td>
</tr>
<tr>
<td>USA</td>
<td>598,500</td>
</tr>
</tbody>
</table>

Workforce with College Degree
2011 US Census by City

<table>
<thead>
<tr>
<th>City</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portland</td>
<td>43.3%</td>
</tr>
<tr>
<td>Beaverton</td>
<td>53.6%</td>
</tr>
<tr>
<td>Hillsboro</td>
<td>36.3%</td>
</tr>
<tr>
<td>Vancouver</td>
<td>28.7%</td>
</tr>
<tr>
<td>Gresham</td>
<td>21.3%</td>
</tr>
</tbody>
</table>

Lifetime Earnings by College Major
Millions of $

<table>
<thead>
<tr>
<th>Major</th>
<th>Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Education</td>
<td>$1.0</td>
</tr>
<tr>
<td>Arts</td>
<td>$2.0</td>
</tr>
<tr>
<td>Psychology</td>
<td>$2.1</td>
</tr>
<tr>
<td>Literature</td>
<td>$2.1</td>
</tr>
<tr>
<td>Biology</td>
<td>$2.3</td>
</tr>
<tr>
<td>Social Science</td>
<td>$2.4</td>
</tr>
<tr>
<td>Business</td>
<td>$2.6</td>
</tr>
<tr>
<td>Computers</td>
<td>$3.1</td>
</tr>
<tr>
<td>Engineering</td>
<td>$3.5</td>
</tr>
</tbody>
</table>

College Majors
Last month, the US Census released an excellent report on the value of specific college majors.

www.census.gov/prod/2012pubs/acsbr11-04.pdf

The average American with a bachelor’s degree can expect to earn about $2.4 Million in their career. However, those with degrees in engineering can expect to earn much more than those who study education and the arts.

The average high school grad earns $1.4 million. Even a degree in the arts can increase lifetime earnings by half a million dollars.

Want to join the distribution list?
Have questions? E-mail me!

Christian Kaylor
Christian.R.Kaylor@state.or.us
### Portland Economic Indicators

#### December 2012

<table>
<thead>
<tr>
<th>Unemployment Rates - November</th>
</tr>
</thead>
<tbody>
<tr>
<td>November 2012 (Seasonality adj.)</td>
</tr>
<tr>
<td>September 2009: 10.9%</td>
</tr>
<tr>
<td>November 2009: 10.9%</td>
</tr>
<tr>
<td>December 2009: 10.0%</td>
</tr>
<tr>
<td>January 2010: 8.7%</td>
</tr>
<tr>
<td>February 2010: 7.8%</td>
</tr>
<tr>
<td>Portland Metro: 10.9%</td>
</tr>
<tr>
<td>US: 10.0%</td>
</tr>
</tbody>
</table>

#### Employment Growth

- % increase on a year earlier - Q3 2012
- Portland Region (Oregon portion only)

- All Industries: 2.1%
- Government: -0.9%
- Health Care: 1.6%
- Retail: 1.7%
- Construction: 3.9%
- High Tech Mfg: 2.1%
- Manufacturing: 2.5%

#### Labor Trends

For the Portland Metro region, the November unemployment rate of 7.8 percent is down almost a full point from a year ago. However, the rate has declined only slightly since the spring.

Payroll tax data shows that job growth over the last year occurred in almost every private sector industry in the Portland region. The construction industry is growing the fastest, while government employment continues to decline.

#### Real Estate Trends

Residential construction building permits grew 50 percent in the first eleven months of 2012, compared to the same period last year, suggesting robust momentum in the residential construction sector.

The region saw permits for 488 units filed in November, very close to what it was in November of last year. Permit numbers jump around every month, but the average over the last three months, displayed here, show a strong upward trend. Permits have averaged 700 units a month over the last three months.

71 percent of permits issued so far in 2012 were for condos or apartments with five or more units in the City of Portland. While single family dwellings dominate construction in suburbs.

#### Residential Building Permits

Portland Metro region - 3 month average

### Housing Permits by City

First 11 months of 2012

<table>
<thead>
<tr>
<th>City</th>
<th>Permits</th>
<th>5 Units</th>
<th>% 5 Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portland</td>
<td>2,274</td>
<td>1,612</td>
<td>71%</td>
</tr>
<tr>
<td>Vancouver</td>
<td>459</td>
<td>162</td>
<td>35%</td>
</tr>
<tr>
<td>Gresham</td>
<td>60</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Hillsboro</td>
<td>510</td>
<td>332</td>
<td>64%</td>
</tr>
<tr>
<td>Beaverton</td>
<td>162</td>
<td>32</td>
<td>20%</td>
</tr>
<tr>
<td>Lake Oswego</td>
<td>83</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>McMinnville</td>
<td>42</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Oregon City</td>
<td>390</td>
<td>117</td>
<td>30%</td>
</tr>
<tr>
<td>Tualatin</td>
<td>14</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>West Linn</td>
<td>85</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Forest Grove</td>
<td>156</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Oregon</td>
<td>10,361</td>
<td>3,862</td>
<td>35%</td>
</tr>
<tr>
<td>USA</td>
<td>749,110</td>
<td>248,566</td>
<td>32%</td>
</tr>
</tbody>
</table>

#### Demographic Trends

From the 1950’s to the 1980’s, population growth stalled in the city of Portland as the suburban grew. Over the last five years the region has seen that trend reverse as the city of Portland grew at more than twice the rate of the rest of the region.

The city of Portland’s rapid population growth is dominated by younger adults with college degrees. While in some suburbs, the majority of population growth is older people. Across the region, one third of the population growth is 65 years or better. Most of this has little to do with moving trucks and more to do with Baby Boomers aging into senior status.

Want to join the distribution list?
Have questions? E-mail me!

Christian Kaylor
Christian.R.Kaylor@state.or.us
Occupational Summary

Construction Laborers
(47-2061)
Oregon Statewide

Description: Perform tasks involving physical labor at building, highway, and heavy construction projects, tunnel and shaft excavations, and demolition sites. May operate hand and power tools of all types, all instruments, earth tampers, cement mixers, small mechanical hoists, surveying and measuring equipment, and a variety of other equipment and instruments. May clean and prepare sites, dig trenches, set braces to support the sides of excavations, erect scaffolding, clean up rubble and debris, and remove asbestos, lead, and other hazardous waste materials. May assist other craft workers. Exclude construction laborers who primarily assist a particular craft worker, and classify them under "Helpers, Construction Trades" (47-3011 through 47-3016).

Employment Projections

<table>
<thead>
<tr>
<th>Region</th>
<th>Employment 2010</th>
<th>Projected Annual Openings 2020 Growth</th>
<th>Replacement</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oregon</td>
<td>7,850</td>
<td>9,760</td>
<td>191</td>
<td>262</td>
</tr>
<tr>
<td>Statewide</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Wages

<table>
<thead>
<tr>
<th>Region</th>
<th>Median</th>
<th>Avg</th>
<th>Middle Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oregon</td>
<td>$15.90</td>
<td>$35,470</td>
<td>$12.45 - 20.54</td>
</tr>
<tr>
<td>Statewide</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Industries of Employment

<table>
<thead>
<tr>
<th>Industry</th>
<th>2010 Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>5,919</td>
</tr>
<tr>
<td>Administrative and Support and Waste Management</td>
<td>661</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>124</td>
</tr>
<tr>
<td>Real Estate and Rental and Leasing</td>
<td>100</td>
</tr>
</tbody>
</table>

Occupations with Similar Skills

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Skill Overlap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cement Masons And Concrete Finishers</td>
<td>33%</td>
</tr>
</tbody>
</table>

Statewide Employment Analysis: Employment in this occupation in 2010 was much larger than the statewide average for all occupations. This occupation is expected to grow at a somewhat faster rate than the statewide average growth rate for all occupations through 2020. The total number of job openings is projected to be much higher than the statewide average number of job openings for all occupations through 2020. Reasonable employment opportunities exist.

Educational Requirements: There are typically no educational requirements for this occupation. Those with a high school diploma or equivalent have a competitive advantage in the labor market. In addition, moderate-term on-the-job training is typically needed, once employed, to attain competency in the skills needed in this occupation.
**Occupational Summary**

The **Occupational Information Center** is located on QualityInfo.org, a website of the Oregon Employment Department.

### Construction Managers

**11-9021**

Oregon Statewide

Description: Plan, direct, coordinate, or budget, usually through subordinate supervisory personnel, activities concerned with the construction and maintenance of structures, facilities, and systems. Participate in the conceptual development of a construction project and oversee its organization, scheduling, and implementation. Include specialized construction fields, such as carpentry or plumbing. Include general superintendents, project managers, and constructors who manage, coordinate, and supervise the construction process.

<table>
<thead>
<tr>
<th>Region</th>
<th>Employment Projections</th>
<th>Wages</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2010</td>
<td>Projected Annual Opns</td>
</tr>
<tr>
<td></td>
<td>2,480</td>
<td>3,049</td>
</tr>
<tr>
<td></td>
<td>3,049</td>
<td>57</td>
</tr>
<tr>
<td></td>
<td>75</td>
<td></td>
</tr>
</tbody>
</table>

**Statewide**

#### Current Job Openings

<table>
<thead>
<tr>
<th>Job Title</th>
<th>Location</th>
<th>Order Number</th>
<th>Wage Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control Room Manager</td>
<td>Vancouver</td>
<td>936637</td>
<td>DOE</td>
</tr>
<tr>
<td>Redesign Project Manager</td>
<td>Portland</td>
<td>936291</td>
<td>Neg.</td>
</tr>
<tr>
<td>Data Services Manager</td>
<td>Portland</td>
<td>936268</td>
<td>$3,260/mo to $4,564/mo</td>
</tr>
<tr>
<td>Electrical Project Manager</td>
<td>Bend</td>
<td>93586</td>
<td>$17.50/hr to $20.50/hr DOE</td>
</tr>
<tr>
<td>Construction Coordinator</td>
<td>Portland</td>
<td>93586</td>
<td>DOE</td>
</tr>
<tr>
<td>Maintenance Project Coordinator</td>
<td>Portland</td>
<td>936506</td>
<td>DOE</td>
</tr>
<tr>
<td>Mgr. - Tenant Construction Manager - 47723</td>
<td>Portland</td>
<td>934709</td>
<td>DOE</td>
</tr>
<tr>
<td>Director of Construction Cost Manager - Construction - Portland</td>
<td>Portland</td>
<td>934196</td>
<td>DOE, Neg.</td>
</tr>
<tr>
<td>Construction Safety Manager - 2012102215614786</td>
<td>Portland</td>
<td>932381</td>
<td>DOE</td>
</tr>
<tr>
<td>Facilities Project Manager</td>
<td>Beaverton</td>
<td>928614</td>
<td>DOE</td>
</tr>
</tbody>
</table>

#### Industries of Employment

- **private sector only**
  - **Construction: 1,535**
  - **Professional, Scientific, and Technical Services: 78**
  - **Real Estate and Rental and Leasing: 45**
  - **Health Care and Social Assistance: 39**
  - **Management of Companies and Enterprises: 26**

**Occupations with Similar Skills**

- **Supervisors And Managers Of Construction Trades And Extraction Workers: 32%**

Statewide Employment Analysis: Employment in this occupation in 2010 was somewhat larger than the statewide average for all occupations. This occupation is expected to grow at a somewhat faster rate than the statewide average growth rate for all occupations through 2020. The total number of job openings is projected to be somewhat higher than the statewide average number of job openings for all occupations through 2020. Reasonable employment opportunities exist for trained workers.

Educational Requirements: Workers typically need an Associate's degree and more than five years of related work experience to enter this occupation. Those with a Bachelor's degree have a competitive advantage in the labor market.
Occupational Summary

The Occupational Information Center is located on QualityInfo.org, a website of the Oregon Employment Department.

Cost Estimators
(13-1051)
Oregon Statewide

Description: Prepare cost estimates for product manufacturing, construction projects, or services to aid management in bidding on or determining price of product or service. May specialize according to particular service performed or type of product manufactured.

### Employment Projections

<table>
<thead>
<tr>
<th>Region</th>
<th>Employment</th>
<th>Projected Annual Openings</th>
<th>2010</th>
<th>2020 Growth</th>
<th>Replacement</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oregon</td>
<td>2,009</td>
<td></td>
<td>3,564</td>
<td>69</td>
<td>62</td>
<td>131</td>
</tr>
<tr>
<td>Statewide</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Current Job Openings

<table>
<thead>
<tr>
<th>Job Title</th>
<th>Location</th>
<th>Order Number</th>
<th>Wage Offered</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction Estimator</td>
<td>Siletz</td>
<td>936153</td>
<td>$15.00/hr DOE</td>
<td></td>
</tr>
<tr>
<td>Estimator I- Naes</td>
<td>Hillsboro</td>
<td>939433</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Contractors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>West Division</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Estimator</td>
<td>Clackamas</td>
<td>953292</td>
<td>DOE $15.00/hr to</td>
<td></td>
</tr>
<tr>
<td>Estimator</td>
<td>Seaside</td>
<td>931985</td>
<td>$25.00/hr DOE</td>
<td></td>
</tr>
<tr>
<td>Estimator Electrical</td>
<td>Portland</td>
<td>930321</td>
<td>$14.00/hr to</td>
<td></td>
</tr>
<tr>
<td>AutoCAD / Purchasing</td>
<td>Portland</td>
<td>929859</td>
<td>$18.00/hr DOE, Neg.</td>
<td></td>
</tr>
<tr>
<td>Electrical Senior</td>
<td>Milwaukee</td>
<td>925968</td>
<td>$75,000/yr to $55,000/yr DOE</td>
<td></td>
</tr>
<tr>
<td>Estimator</td>
<td>Hillsboro</td>
<td>924654</td>
<td>$50,000/yr to $100,000/yr DOE</td>
<td></td>
</tr>
<tr>
<td>Mechanical Q/R</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical Quantity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Surveyor / Estimator</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sheet Metal Estimator</td>
<td>Portland</td>
<td>923450</td>
<td>$30,000/yr to $65,000/yr DOE, Neg.</td>
<td></td>
</tr>
<tr>
<td>Printing Cost Estimator</td>
<td>Portland</td>
<td>921449</td>
<td>$18.00/hr to $20.00/hr DOE</td>
<td></td>
</tr>
</tbody>
</table>

### Wages

<table>
<thead>
<tr>
<th>Region</th>
<th>Median Hourly</th>
<th>Average Annual</th>
<th>Middle Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oregon</td>
<td>$29.79</td>
<td>$64,315</td>
<td>$21.69 - 38.88</td>
</tr>
<tr>
<td>Statewide</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Industries of Employment

<table>
<thead>
<tr>
<th>Industry Description</th>
<th>2010 Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Private sector only</td>
<td></td>
</tr>
<tr>
<td>Construction</td>
<td>1,902</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>375</td>
</tr>
<tr>
<td>Retail Trades</td>
<td>114</td>
</tr>
<tr>
<td>Administrative and Support and Waste</td>
<td>114</td>
</tr>
<tr>
<td>Management and Remediation Services</td>
<td>109</td>
</tr>
<tr>
<td>Other Services (except Public)</td>
<td>95</td>
</tr>
<tr>
<td>Administration</td>
<td></td>
</tr>
<tr>
<td>Wholesale Trade</td>
<td>85</td>
</tr>
<tr>
<td>Professional, Scientific, and Technical Services</td>
<td>25</td>
</tr>
</tbody>
</table>

Statewide Employment Analysis: Employment in this occupation in 2010 was somewhat larger than the statewide average for all occupations. This occupation is expected to grow at a somewhat faster rate than the statewide average growth rate for all occupations through 2020. The total number of job openings is projected to be somewhat higher than the statewide average number of job openings for all occupations through 2020.

Reasonable employment opportunities exist.

Educational Requirements: Workers typically need a Bachelor's degree and one to five years of related work experience to enter this occupation.
# Occupational Summary

The Occupational Information Center is located on QualityInfo.org, a website of the Oregon Employment Department.

## Supervisors and Managers of Construction Trades and Extraction Workers (47-1011)
Oregon Statewide

**Description:** Directly supervise and coordinate activities of construction or extraction workers.

### Employment Projections

<table>
<thead>
<tr>
<th>Region</th>
<th>Employment 2010</th>
<th>2020 Growth</th>
<th>Replacement</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oregon</td>
<td>4,394</td>
<td>5,416</td>
<td>102</td>
<td>113</td>
</tr>
<tr>
<td>Statewide</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

### Current Job Openings

<table>
<thead>
<tr>
<th>Job Title</th>
<th>Location</th>
<th>Order Number</th>
<th>Wage Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior Ship Repair Project Manager #47737</td>
<td>Portland</td>
<td>936270</td>
<td>DOE</td>
</tr>
<tr>
<td>Commercial Ship Repair Superintendent #47722</td>
<td>Portland</td>
<td>936225</td>
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<tr>
<td>Commercial Ship Repair Project Manager #47699</td>
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<td>935986</td>
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<td>Construction Manager</td>
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<tr>
<td>- Construction Management, Residential</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Construction Manager</td>
<td>Beaverton</td>
<td>934057</td>
<td>DOE, Neg.</td>
</tr>
<tr>
<td>Superintendent / Foreman</td>
<td>Hillsboro</td>
<td>934907</td>
<td>$20.00/hr to $25.00/hr DOE, Neg.</td>
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<tr>
<td>Manager, Construction - A (Self Perform)</td>
<td>Beaverton</td>
<td>933676</td>
<td>DOE</td>
</tr>
<tr>
<td>Operations Manager Needed for Reputable Roofing Company</td>
<td>Portland</td>
<td>934587</td>
<td>DOE</td>
</tr>
<tr>
<td>Manager - Building Services</td>
<td>Hillsboro</td>
<td>932378</td>
<td>DOE</td>
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<tr>
<td>Assistant Project Manager - Electrical Construction</td>
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<td>$40,000/yr to $60,000/yr DOE</td>
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### Wages

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<tr>
<th>Region</th>
<th>Median Hourly</th>
<th>Median Annual</th>
<th>Median Middle Range</th>
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<tbody>
<tr>
<td>Oregon</td>
<td>$29.78</td>
<td>$62,292</td>
<td>$23.10 - 35.82</td>
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<td>Statewide</td>
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### Industries of Employment

Private sector only

<table>
<thead>
<tr>
<th>Industry</th>
<th>2010 Employment</th>
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<tbody>
<tr>
<td>Construction</td>
<td>3,366</td>
</tr>
<tr>
<td>Administrative and Support and Waste Management and Remediation Services</td>
<td>106</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>84</td>
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<tr>
<td>Utilities</td>
<td>38</td>
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### Occupations with Similar Skills

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Skill Overlap</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supervisors And Managers Of Mechanics, Installers, And Repairers</td>
<td>39%</td>
</tr>
<tr>
<td>Supervisors And Managers Of Transportation Helpers, Laborers, And</td>
<td>32%</td>
</tr>
<tr>
<td>Material Mover</td>
<td></td>
</tr>
<tr>
<td>Construction Managers</td>
<td></td>
</tr>
<tr>
<td>Supervisors And Managers Of Production And Operating Workers</td>
<td></td>
</tr>
</tbody>
</table>

Statewide Employment Analysis: Employment in this occupation in 2010 was much larger than the statewide average for all occupations. This occupation is expected to grow at a somewhat faster rate than the statewide average growth rate for all occupations through 2020. The total number of job openings is projected to be much higher than the statewide average number of job openings for all occupations through 2020. Reasonable employment opportunities exist for trained workers.

Educational Requirements: Workers typically need a high school diploma or equivalent and more than five years of related work experience to enter this occupation. Those with a postsecondary non-degree award have a competitive advantage in the labor market.

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December 7, 2012
Appendix D

BCT Advisory Committee Minutes

CONSTRUCTION HAS A PLACE FOR EVERYONE
BUILDING CONSTRUCTION TECHNOLOGY
ADVISORY COMMITTEE MEETING
May 04, 2012
Sent to Academic Services 6/5/12

ATTENDING:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greg Olson, Olson &amp; Jones Construction, Chair</td>
<td>Shannon Baird, PCC, Co-Chair</td>
</tr>
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<td>Nathan Young, Nathan D. Young Construction, Vice-Chair</td>
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<tr>
<td>Howard Radin, Artisan Renovations</td>
<td>Bob Steele, PCC, Faculty</td>
</tr>
<tr>
<td>Spellman, Kevin, Consultant &amp; PCC Instructor</td>
<td>Erika Heider, PCC, Division Dean</td>
</tr>
<tr>
<td>Larry Mock, Cascade Custom Remodel &amp; Construction, LLC</td>
<td>Annette Murphy, PCC, Learning Skills Specialist</td>
</tr>
<tr>
<td>Katie Coulson, Skanska</td>
<td>Toby Harper, PCC, BCT Technician</td>
</tr>
<tr>
<td>Frank Rossi, Olson &amp; Jones Construction &amp; Recent Alumni</td>
<td>Niki Steele, PCC, Admin Support</td>
</tr>
<tr>
<td>Mike Bair, Weyerhaeuser Corp.</td>
<td></td>
</tr>
<tr>
<td>Derrick Beneville, Hoffman Construction</td>
<td></td>
</tr>
</tbody>
</table>

**Student Guests Attending:**

- Eduardo Munez (President of the AGC Student Chapter)
- Ian Powell (President of the HBA Student Chapter)

The meeting was called to order at 7:00 AM by Greg Olson, Chair.

Introductions were given around the table. Derrick Beneville, Project Manager with Hoffman Construction, is a newly attending Advisory Committee member. Student guests attending were Eduardo Munez, President of the AGC Student Chapter, and Ian Powell, President of the HBA Chapter.

**Approval of Prior Meeting Minutes - Chair**

Greg called for a motion to approve the minutes of the February 17, 2012 with the following correction:

*Page 4 (second paragraph) should read “Mel Duncan asked that Shannon give her 3-4 months’ notice so she can schedule him to speak regarding internships at a Home Builders Association event.”*

Larry Mock made the motion to approve the minutes with the above correction noted. Nathan Young seconded the motion and the motion carried to approve the February 17, 2012 minutes as corrected.

**Enrollment Report – Kirk**

Kirk reported overall enrollment in Building Construction Technology Spring 2012 has stayed even with Fall 2011 and Winter 2012 numbers. The Construction Management Program continues to show strong enrollment.
We have good numbers this Spring Term in BCT 106 (Hand and Power Tool Safety) and BCT 104 (Construction Math), which are both entry courses to the hands-on cohorts. Therefore, for Fall term 2012 we anticipate numbers at least equal to this year. The department is strategizing for solutions to increase these enrollment numbers for hands-on students in the next academic year.

**Bond General Update Including BCT Yard – Kirk**
We are adding a second egress for the campus that will cut through the BCT construction yard. There is no change to what was previously reported and this project is still scheduled to complete in the summer of 2013.

**PCC Foundation Golf Invitational (Wednesday) September 19, 2012 - Shannon**
- The golf tournament at Heron Lakes raised $105,000 for student scholarships and grants last year.
- This fall the tournament is set for September 19, 2012 (Wednesday) at the Heron Lakes Golf Course.
- We are soliciting more of our students to get involved and volunteer and participate in the event which is occurring the week before classes start in the fall.
- Golf Tournament planning meeting for the event will be held in the BCT Shop on 5/9 at 8:00 AM and the committee members are welcome to attend.
- Shannon encouraged all of the board members to participate in the golf tournament as a great networking opportunity and a show of support for our program. Nathan Young and Katie Coulson described their positive experiences as past participants in the event.

**Update on St. Helens High School (Joe Mauck, Construction Instructor) – Kirk**
Joe Mauck, with the construction program at St. Helens High School, previously reported to the committee about his program. He solicited the Advisory Committee’s help and expertise in evaluating his curriculum and also encouraging industry partners to come out and talk with his students. Kirk forwarded an email to the committee with a video of what he is currently offering. He is doing amazing things with very small dollars. Kirk thanked those who have helped and encouraged those who haven’t yet had an opportunity to visit Joe’s class.

Larry Mock reported on his trip out to St. Helens to talk with Joe’s students who were currently learning framing skills. He spoke to the class for thirty minutes and then had students ask questions. Students were engaged and eager to learn about the industry.

**CCB (Construction Contractors Board) Licensing – Kirk**
Kirk reported on progress in offering CCB licensing for Building External Shell Training (BEST) which will be required for all contractors. Kirk thought he had the skills to develop this, but realized that he needed more help and brought in Dan Saddler to assist with this project. Unfortunately, Dan has not had the time to devote to the project that Kirk had initially hoped for. In addition, Kirk recently received an email from Rob Yorke, who is on the CCB committee to approve or disapprove providers of BEST courses, stating that he did not think contractors would take the course unless it was offered online. Kirk asked Greg Olson and the committee if they felt it was still worthwhile to pursue becoming a provider and, if so, what are our options going forward. Discussion was as follows:
- CCB Core courses require us to be an approved provider. Elective continuing education courses can be offered by non-approved providers; the BEST course is a core course requiring that we submit the course to the CCB and be an approved provider.
• The hope was that we could morph our current shell training, tweaking it to a three-hour course and offer it to contractors providing us with an opportunity to partner with associations that we are looking to continue relationships with.
• BEST course will always be required for contractors and this is a need we can fill. Marketing the course can remind contractors that our program exists, and inform them that our program may have additional courses they might be interested in taking.
• Some members felt that if it was online or had an online element it could work. Greg noted if we want high quality work in the field it is best for individuals to physically experience the curriculum.
• The idea of offering contractors an opportunity to take a short module within our Exterior Finish course that would be developed as part of the curriculum for Exterior Finish was proposed. This would allow our current students to complete the requirement for BEST training for the CCB within a required course for their degree.
• We need to understand where the CCB is going toward requirements in the future for BEST once contractors have been through this first iteration of the course. We need to be developing the renewal course looking to the future and the next curriculum that these contractors will be required to complete regarding external shell training. Greg will get in touch with CCB to get contact information on who could clarify the future training curriculum.
• There are funds available through the college to develop online courses, but instructors must first complete training to become an online instructor before they are allowed to develop a new course for online delivery.
• We need a champion to take on developing this training for submission to CCB to certify it as an approved provider for BEST training. Our full-time instructors do not have the necessary available time to complete this. Possibly an adjunct faculty member could take on curriculum development for this project and help us get it filed for approval with the CCB.

Construction Management Contractors Roundtable – Derrick Beneville
In April BCT sponsored a Contractors Roundtable for Construction Management students. Representatives from Fortis, Howard S. Wright, In-Line, Hoffman, Walsh, and Skanska were all invited to discuss a topic and meet with students to discuss their companies, internship opportunities, and individual student goals. Thirty of our management students attended. This event was modeled after similar events offered at OSU and we will offer it again in six months for next year’s second year Construction Management students.

Shannon noted that the department has taken the prior Build Your Future Event and split it off into separate roundtable events for management and residential hands-on students. Hands-on students have had similar roundtable events where the Home Builders Association members have been providing mentoring luncheons for the students that have included seminars on topics such as interviewing skills, best communication practices, and job finding skills, as well as an opportunity to engage with builders in roundtable form to ask questions and network.

Student Chapter Updates Presented by Eduardo Munoz and Ian Powell:
AGC (Associate General Contractors) Student President – Eduardo Munoz
HBA (Home Builders Association) Student President – Ian Powell

Eduardo and Ian jointly provided updates and highlights on events and volunteer efforts that the AGC and HBA Student Clubs have participated or are planning for this academic year:
• 2011 AGC Summer Convention – Management students and Shannon attended the AGC summer convention at Salishan in August 2011. Two students were awarded scholarships that covered their
accommodation expenses in exchange for assisting in the preparation for the event, and breakdown afterward.

- PCC Foundation Golf Tournament in September – Student chapter members volunteered and/or participated in the tournament which raised $105,000 in scholarship money for the Foundation.
- Annual Associated General Contractors Business Meeting – Construction Management students attended the meeting in January and presented the student chapter grant request for funding to purchase 5 laptop computers. The grant was approved, and the student chapter was also awarded $1,000 for club activities.
- BCT and Management student chapters completed two volunteer construction projects this year in partnership with REFIT. The first project constructed a ramp for a family with a handicapped child who could only become eligible for an electric wheelchair for the child if the home was accessible by the chair. The second project installed French doors to a bedroom, a deck, and a ramp, to provide egress from the bedroom for a bed-ridden child. Life safety requirements were going to force the child to be relocated out of the family home without these renovations. The students described this life experience with great enthusiasm, and were tremendously grateful for the leadership Ken Lawler who proved to be an excellent mentor to them throughout the project. The chapters want to continue their relationship with REFIT as these projects have provided rewarding and valuable learning experiences.
- BCT Barbeque is scheduled for Tuesday, June 5th, from 4:30-6:30 PM. Last year we were grateful to Howard Radin who provided $350 for food for the barbeque. This year the student chapters have earned enough seed money through their clubs to fund the $900 needed for the barbeque. The students invite all of the Advisory Committee members to please come to the barbeque and eat and participate in this year-end event with them.

**Rescue Mission Update: Nathan Young**

Nathan updated on the Home Builder Foundation project of a 14,000 SF building remodel to take Portland Rescue Mission from 14 to 42 beds. They are securing donations for 100% of the project. They were delayed by the City of Portland on permits but will be able to pull permits in the near future. Abatement will start in the next week or two. Skanska and other contractors and suppliers are donating a wealth to completion of the project.

Shannon asked if our students could help with this project. Nathan noted that there would be specific opportunities or events where they could help (i.e. when Fisher Roofing installs the roof). Shannon explained that if there are liability technicalities, students can sign a waiver to hold harmless or possibly we can arrange a cooperative educational experience (1 credit = 30 hours) where the college’s workman compensation insurance would cover them while working. Shannon will check with Nancy Pitzer regarding this.

**Current Economic Conditions and Marketing**

Shannon explained that we are gearing up next year for our 5-year program review where we present an assessment of our program to the college and they in turn present it to the State. We will be asking for the committee’s help on that project in reviewing and improving.

In light of that, we have been thinking about the downturn in homebuilding and how it might affect enrollment in our hands-on courses. In the newer Design Build/Remodeling Program staff would like to at least maintain and preferably grow current enrollment by better marketing the cohort to the community. The industry is getting more growth presently in remodeling, and perhaps we should market the program going forward with more emphasis on “Remodeling.”
Derrick wanted clarification as to what the curriculum was. Bob explained that the hands-on curriculum within the Design Build/Remodel is similar to that taken by the BCT degree students. Shannon added that the Design Build/Remodel students have an added value to the BCT degree students in that they may not be the designers, but they get enough knowledge for best practice.

The following input was provided:

- **Derrick Beneville:** Design build in the commercial side looks like a delivery system. The word remodel already denotes that they do design and building. He would tie it to the curriculum and suggest Remodeler and Custom Homebuilder.
- **Katie Coulson:** Likes just remodeler as design build is confusing. Definitely remodeling is where the market is.
- **Larry Mock:** Remodeling and residential builder have a lot in common. There is a huge difference in the emotional connection. People and communication skills are needed.
- **Greg Olson:** Agrees that custom builder but not spec builder would go with this description.
- **Nathan Young:** This market is client driven. Remodelers that are still in business are those that do design build. This allows them to do something better or different to stay in the market place.
- **Howard Radin:** The design build part is still important. Custom Homebuilder and Design Build/Remodeling share the same type of service that is provided to a client. You learn people skills on the job—it takes years to get good client skills.

Shannon further explained that there are two tiers of education within the degrees including the technical training (hands-on) and then the kitchen/bath. Client management is covered in all of the Construction Management courses. Those that come into Construction Management are older and are looking for client communication skills. Hands-on students are younger and looking for more hands-on skills.

Erika Heider noted that we might need to specifically look at catalog descriptions of courses and degrees in the program. Does Design/Build mean something for the student registering for one or two classes in kitchen remodeling? What does this look like from the student’s point of view? Do we have a certificate for particular courses for those not pursuing the degree and what does it mean to the student in their career path if they have taken the course?

- **Katie Coulson:** Perhaps they take one degree option and get an add-on certificate.
- **Ian Powell:** As a student in the program he is seeking both the BCT and Design Build/Remodel degrees; he has seen students go further to obtain both AAS degrees to promote themselves with a leg up in the job marketplace. It is easy to extend to get both degrees and offers him extra design skills that he needs. In terms of promoting the cohort, he feels it should be marketed as a Remodeling Program.
- **Eduardo Munez:** Has promoted program to students at the high schools. The name needs to show them what the degree is all about.
- **Toby Harper:** On career day he got several questions from high school students about what Design/Build Remodel degree actually encompassed.
- **Larry Mock:** In the degree description need less emphasis on “just” kitchen and bath. Remodeling is about more than kitchen and bath. Promote as Custom Residential and Remodeling.
- **Mike Bair:** Agrees and sees the student looking at in a broader spectrum. Likes Remodeling and Custom Homebuilder

We will move forward on this and send recommendations to you and ask for your comments.

**Learning Assessment/Technical Skills Assessment Reports due in June—Kirk**
As previously reported the department is feverishly working on revising our accreditation assessments and combine those with the technical skills assessments; this work is still in progress. We want to be sure committee members are involved in this process and will come up with information to send you soliciting some volunteers to set up a subcommittee to help on the program review. We want you to know that we value your input and to never hesitate to contact us with your ideas or comments.

Erika Heider added that when the NW Accreditation Committee reviews our program they look specifically for industry advisory committee input for Career Technical Education Programs. Their input is critical and so valuable to this process.

**Spencer Hinkle Retirement/Temporary Full Time Faculty Appointment – Erika Heider**

Spencer is on sabbatical in Spring Term and will be back in the Fall Term to teach full-time. He will be retiring at the end of Fall Term. We have received permission to direct appoint a two-term full-time faculty for Winter and Spring Terms 2013. We are in the process of getting feedback for candidates for the temporary position from our part-time faculty pools, including those at other campuses. We are looking for an individual who can help in every area including Construction Management, Design/Build Remodel, NKBA certification, and VectorWorks. This will involve an abbreviated version of a search and a teaching demonstration. The hire for the temporary faculty for the Winter and Spring of 2013 should be completed by the end of June 2012.

Next winter we will go out for a permanent hire for the position with a start date of the Fall 2013. We are currently in good shape with two full-time faculty in the hands-on side of the program. We will be looking for a champion to assist with Construction Management, Design/Build/Remodel (NKBA certification), and VectorWorks.

**Special Announcements:** Shannon has certificates to be delivered to Jim Kreipe and Mel Duncan extending the department’s sincere appreciation for their valuable years of service to our program and to the committee. The department thanked Erika Heider for her astounding effort and support as our Interim Dean over the last year. She not only was dealing with five technical programs but all of the lower divisions transfer sciences at Rock Creek and has done a fantastic job for the Science and Technology Division. The department also extended thanks to Niki Steele who has been their administrative assistant for the last 10 years. Building Construction Technology will move to a new division on July 1st under Karen Sanders, Division Dean, with new administrative assistant support assigned to the program.

**Other Business:**

Larry Mock announced that he is affiliated with a volunteer project for the NAMI Multnomah, National Alliance for the Mentally Ill which is an 8,000 SF building in need of painting and repair work on drywall. He will give Shannon a call to see if this could be an opportunity for our students to volunteer.

**Set Next Meeting Date – Greg**

Next Meeting was set for Friday October 26, 2012 at 7:00 AM - Adjourn Meeting 8:50 AM
CONSTRUCTION HAS A PLACE FOR EVERYONE  
BUILDING CONSTRUCTION TECHNOLOGY  
ADVISORY COMMITTEE MEETING  
October 26, 2012  
Sent to VPASA Office: January 8, 2013

Attending:

<table>
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<tr>
<th>Name</th>
<th>Organization/Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greg Olson, Olson &amp; Jones Construction, Old Chair</td>
<td>Shannon Baird, PCC, Co-Chair</td>
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<td>Nathan Young, Nathan D. Young Construction, Chair</td>
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<td>Karen Sanders, PCC, Division Dean</td>
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<td>Joe Mauck, St. Helens High School</td>
<td>Annette Murphy, PCC, Learning Skills Specialist</td>
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<td>Scott Work, Skanska</td>
<td>Nancy Pitzer Co-Op Ed. Student Employment</td>
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<td>Frank Rossi, Olson &amp; Jones Construction &amp; Recent Alumni – New Vice-Chair</td>
<td>Shawna Poppe, PCC, Admin Support</td>
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<td>Mike Bair, Weyerhaeuser Corp.</td>
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<tr>
<td>Derrick Beneville, Hoffman Construction</td>
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<tr>
<td>Grant Bennett, College Architect</td>
<td></td>
</tr>
<tr>
<td>Rob Yorke, Yorke and Curtis Inc.</td>
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</tr>
</tbody>
</table>

The meeting was called to order at 7:00 AM by Greg Olson, Chair.

Chair Olson facilitated participant introductions.

**College Updates**

Over the summer PCC Rock Creek completed an instructional reorganization. As a result, Building Construction Technology moved out of the Science & Technology Division and into the Business, Applied Technology, and College Preparation division. Shannon extended a welcome to the new Division Dean, Dr. Karen Sanders, and introduced Shawna Poppe, the new Program Administrative Assistant.

**Approval of Prior Meeting Minutes**

Motion was made to approve the May 4, 2012 minutes with no corrections. Motion passed.

**Position Nominations**
Nathan Young moved into the chair position. The committee thanked Greg Olson for his service to the committee over the last year. Frank Rossi was nominated and voted in as the new vice-chair.

**Enrollment Trends**

**Enrollment: Hands-On Program:** Kirk reported that enrollment is slightly down as compared to last year, which is representative of the college as a whole. For example, in fall 2011 the Tool Safety class started with 25 and for fall 2012 only 19 are enrolled. College-wide, for fall term, enrollment is down by 3%. This is a change from the huge enrollment growth the program and college has seen over the last 2-3 years.

**Enrollment: Construction Management Program:** Shannon reported that enrollment in the management program is also slightly down. He talked about the fact that there are many students in the first year who seem to be just feeling out the program – i.e. they aren’t sure if they want to commit to getting the degree. This trend is different from past years.

**Enrollment Trends: Discussion**

Kirk and Shannon reported that when asked about possible reasons for this downturn in enrollment, students said that there are more employment opportunities, so for financial reasons more individuals are choosing to go back to work rather than come to school. Some of the framing students reported that they wouldn’t be coming back this second year because they needed to work in unrelated fields because they have bills to pay.

Bob said 16 years ago we had a trend of second year students not returning, and it was due to a wide variety of reasons. For example, students would get jobs in the summer, and the employer would ask them to stay because they needed them.

Derrick mentioned that when comparing the participants at last April’s Roundtable with the one a couple of weeks ago, more of the students seemed to be working and going to school, not just going to school.

Nancy mentioned that she has noticed that because the program is at night, most of the management students are able to work during the day and attend school at night. They can afford to come to school because they have money coming in.

Nathan mentioned that he recently attended an HBA meeting, and one of the themes that came out of the meeting was an expectation that the economy will pick up in the next 5 years.

The program will continue to evaluate the enrollment numbers to see if this year is an anomaly or a trend. Faculty and staff will also work on both increasing enrollment and overall student retention.

**Contractor’s Roundtable**

Shannon also reported on the Contractors Roundtable held early fall term (October 23, 2012). The event was targeted at the Mechanical, Electrical, Plumbing class and had great representation from
industry partners including Anderson, Hoffman, Skanska, Howard S Wright, Inline, Walsh, and Fortis. The session included presentations on ‘real life’ job site experiences, discussions of some of the challenges faced by contractors on site, through real life case studies. The industry members also shared information about their companies and engaged the students in discussions around short and long term goals.

Derrick Beneville, member of the Advisory Committee, represented Hoffman Construction at the Roundtable. He shared that he had a very positive experience and expressed that he thought it was valuable for the students as well.

Shannon expressed his thank you to everyone who participated in the Roundtable, and also expressed that it was a wonderful opportunity for the students to learn more about the industry and possible career opportunities.

**Program Review Process and Participation**

Kirk and Shannon gave an overview of the program review process. The key points included:

- The last program review was in 2005 and the program has changed a lot since then. In 2005 the program included both the hand-on and management tracks, but did not include the design-build/remodeling degree.
- The college provides an outline for the required report. We are being asked to both describe the current program as well as discuss our future vision.
- In preparation for the review (which will take place in February 2013) the program has recently completed several revisions to the course descriptions and course outcomes for several of the courses in all three degree areas.
- The Advisory Committee’s input is important for the review to help us answer the following question:
  - How do we see the industry 5 years from now?
  - Are there any skills that you are looking for in your employees today that you weren’t looking for 5 years ago? If so, what are they?
  - What has been the impact of the economy on enrollment and the types of students entering and graduating from the program?
  - Is there anything that we don’t have in the program that we should? Additional courses, additional content etc..?

**Small Group Discussions:**

The Committee broke into two groups: Hands-on and Design/Build Remodeling & Construction Management

**Hands-on and Design/Build Remodeling Group**

*Participants: Karen Sanders, Kirk Garrison, Bob Steele, Nathan Young, Howard Radin, Mike Bair, Joe Mauck*

**Discussion Topics:**

**New Industry Development – Where do you thing this industry is going in the future?**
And do you have any suggested Program changes?

- Kirk shared program review and assessment requirements with the group and explained why Advisory Committee input is critical
- Key question posed to the group = Where is the industry going? Themes that emerged from the discussion were:
  - The different sectors, commercial, residential and government, have all declined at different rates and they will be coming back at different rates. This is an important trend to watch because it could help inform how the Program advises students regarding employment opportunities
  - Things are slowly improving and in 24-36 months there will be a need for more workers than are trained. The industry will be looking for skilled workers with a variety of expertise, not just for bodies to fill vacancies
  - Future workers will need to have a broad understanding of the industry, how all the different specialties fit together in the big picture. Systems integration is key.
  - Future workers will increasingly be required to be technologically savvy, to be able to adjust to rapidly changing technologies and to be able to critically analyze and evaluate complex situations.
  - Science and technology are playing an ever increasing role in several of the jobs in this industry. One committee member summed it up by stating, “It’s not just about banging nails anymore it’s about science.”
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Bond Construction Update

- FORTIS has been very transparent. They have been giving our students occasional tours, sharing drawings, and giving us a three week look ahead at the plans. That way we can be aware of what's taking place daily.
- FORTIS is going to share their schedule with us for what they have going on here, and we are going to be showing those in class, and using them.
- Multi-Vista software (photographer) is being used to document the construction process/progress. Earth Cam is a tool that some people use is also an available library that you can access via the web and watch the video of a structure going up.

Wrap-Up

- Program Review – Information request
  - The program is being asked to present prevailing wages information in the Program Review. Shannon asked if members of the Advisory Committee would be willing to share this information through the alliance database (so that it would be anonymous.)
  - Information about any hiring trends would also be useful –broken down by commercial and residential would be best.
- The Program Review will take place in February and in January the committee will get an update of where we are in the process.
- Next Meeting was set for Friday January 25, 2013 at 7:00 AM
- Meeting adjourned at 8:40 AM
CONSTRUCTION HAS A PLACE FOR EVERYONE
BUILDING CONSTRUCTION TECHNOLOGY
ADVISORY COMMITTEE MEETING
January 25, 2013

Attending:

<table>
<thead>
<tr>
<th>Name</th>
<th>Position</th>
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<tbody>
<tr>
<td>Greg Olson, Olson &amp; Jones Construction, Old Chair</td>
<td>Shannon Baird, PCC, Co-Chair</td>
</tr>
<tr>
<td>Nathan Young, Nathan D. Young Construction, Chair</td>
<td>Kirk Garrison, PCC, Co-Chair</td>
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<tr>
<td>Howard Radin, Artisan Renovations</td>
<td>Bob Steele, PCC, Faculty</td>
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<td>Spellman, Kevin, Spellman Consulting &amp; PCC Instructor</td>
<td>Spencer Hinkle, PCC, PT Faculty</td>
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<tr>
<td>Joe Mauck, St. Helens High School</td>
<td>Hillary Campbell, PCC, FT Faculty</td>
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<tr>
<td>Scott Work, Skanska</td>
<td>Karen Sanders, PCC, Division Dean</td>
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<tr>
<td>Frank Rossi, Olson &amp; Jones Construction &amp; Recent Alumni – New Vice-Chair</td>
<td>Annette Murphy, PCC, Learning Skills Specialist</td>
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<td>Mike Bair, Weyerhaeuser Corp.</td>
<td>Nancy Pitzer Co-Op Ed. Student Employment</td>
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<td>Derrick Beneville, Hoffman Construction</td>
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<td>Grant Bennett, College Architect</td>
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<td>Rob Yorke, Yorke and Curtis Inc.</td>
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<td>James Metoyer, Olson and Jones &amp; Recent Alumni</td>
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The meeting was called to order at 7:00 AM by Nathan Young, Chair.

Introductions: Alumni James Metoyer, who participated in the Design Build Program, and Hands on Program. He is also participating on the current BCT hiring committee.

Hillary Campbell, who is Spencer Hinkle’s temporary Full-Time replacement, was introduced.

Chair Young facilitated other participant introductions.

**College Updates**
Over the summer PCC Rock Creek completed an instructional reorganization. As a result, Building Construction Technology moved out of the Science & Technology Division and into the Business, Applied Technology, and College Preparation division. Shannon extended a welcome to the new Division Dean, Dr. Karen Sanders, and introduced Shawna Poppe, the new Program Administrative Assistant.

**Approval of Prior Meeting Minutes**
Motion was made to approve the May 4, 2012 minutes with no corrections. Motion passed.
Position Nominations
Nathan Young moved into the chair position. The committee thanked Greg Olson for his service to the committee over the last year. Frank Rossi was nominated and voted in as the new vice-chair.

AGC Student Chapter Activities
AGC Annual Business Meeting: Shannon took three students to the AGC Annual Business meeting which was held in Salem OR on Friday, January 18. AGC offers money for technical support to the Community Colleges each year. This may be used for items such as thermal imaging guns or other classroom technology. PCC did not request any technical support this year as we still have $5000 available from last year’s funding request.

Student Project: Shannon oversaw a student project, in conjunction with Refit, to build a handicap accessible ramp at a home in NE Portland. This project took place over four weekends in November.

Enrollment Trends
Enrollment: Hands-On Program: Kirk reported that enrollment is slightly down as compared to last year, which is representative of the college as a whole. For example, in fall 2011 the Tool Safety class started with 25 and for fall 2012 only 19 are enrolled. College-wide, for fall term, enrollment is down by 3%. This is a change from the huge enrollment growth the program and college has seen over the last 2-3 years.

Enrollment: Construction Management Program: Shannon reported that enrollment in the management program is also slightly down. He talked about the fact that there are many students in the first year who seem to be just feeling out the program – i.e. they aren’t sure if they want to commit to getting the degree. This trend is different from past years.

Enrollment Trends: Discussion
Kirk and Shannon reported that when asked about possible reasons for this downturn in enrollment students stated, “There are more employment opportunities”, so for financial reasons more individuals are choosing to go back to work rather than stay in school. Some of the framing students reported that they wouldn’t be coming back this second year because they needed to work in unrelated fields in order to pay their bills.

Bob said 16 years ago we had a trend of second year students not returning, and it was due to a wide variety of reasons. For example, students would get jobs in the summer, and the employer would ask them to stay because they needed them.

Derrick mentioned that when comparing the participants at last April’s Roundtable with the one a couple of weeks ago, more of the students seemed to be working and going to school, not just going to school.
Nancy mentioned that because the program is at night, most of the management students are able to work during the day and attend school at night. They can afford to come to school because they have money coming in.

Nathan mentioned that he recently attended an HBA meeting, and one of the themes that came out of the meeting was an expectation that the economy will pick up in the next 5 years.

The program will continue to evaluate the enrollment numbers to see if this year is an anomaly or a trend. Faculty and staff will also work on both increasing enrollment and overall student retention.

**Contractor’s Roundtable**

Shannon reported on the Contractors Roundtable held early fall term (October 23, 2012). The event targeted the Mechanical, Electrical, Plumbing class and had great representation from industry partners including Anderson, Hoffman, Skanska, Howard S Wright, Inline, Walsh, and Fortis. The session included presentations on ‘real life’ job site experiences, discussions of some of the challenges faced by contractors on site, through real life case studies. The industry members also shared information about their companies and engaged the students in discussions around short and long term goals.

Derrick Beneville, member of the Advisory Committee, represented Hoffman Construction at the Roundtable. He shared that he had a very positive experience and expressed that he thought it was valuable for the students as well.

Shannon thanked everyone who participated in the Roundtable. This was a wonderful opportunity for the students to learn more about the industry and possible career opportunities.

**Program Review Process and Participation**

Kirk and Shannon gave an overview of the program review process. The key points included:

- The last program review was in 2005 and the program has changed a lot since then. In 2005 the program included both the hands-on and management tracks, but did not include the design-build/remodeling degree.
- The college provides an outline for the required report. We are being asked to both describe the current program as well as discuss our future vision.
- In preparation for the review (which will take place February 22, 2013 from 11:30 – 1:30 at Rock Creek campus) the program has recently completed several revisions to the course descriptions and course outcomes for many of the courses in all three degree areas.
- The Advisory Committee’s input is important for the review to help us answer the following question:
  - How do we see the industry 5 years from now?
  - Are there any skills that you are looking for in your employees today that you weren’t looking for 5 years ago? If so, what are they?
  - What has been the impact of the economy on enrollment and the types of students entering and graduating from the program?
  - Is there anything that we don’t have in the program that we should? Additional courses, additional content etc..?
**Small Group Discussions:**
The Committee broke into two groups: Hands-on and Design/Build Remodeling & Construction Management

**Hands-on and Design/Build Remodeling Group**

*Participants: Karen Sanders, Kirk Garrison, Bob Steele, Nathan Young, Howard Radin, Mike Bair, Joe Mauck*

**Discussion Topics:**

**New Industry Development – Where do you think this industry is going in the future?**

**And do you have any suggested program changes?**

- Kirk shared program review and assessment requirements with the group and explained why the Advisory Committee input is critical.
- Key question posed to the group = Where is the industry going? Themes that emerged from the discussion were:
  - The different sectors, commercial, residential and government, have all declined at different rates and they will be coming back at different rates. This is an important trend to watch because it could help inform how the program advises students regarding employment opportunities.
  - Things are slowly improving. In the next 24-36 months the industry will be looking for skilled workers with a variety of expertise, not just for bodies to fill vacancies.
  - Future workers will need to have a broad understanding of the industry, how all the different specialties fit together in the big picture. Systems integration will be the key.
  - Future workers will increasingly be required to be technologically savvy. They will need to be able to adjust to rapidly changing technologies and to be able to critically analyze and evaluate complex situations.
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- **Next Meeting** was set for **Friday April 26, 2013 at 7:00 AM**
- Meeting adjourned at 8:40 AM

**Program/Discipline Review Logistics:**

- Reviews will be prepared at least every five years. Career and Technical Education programs may work out some degree of synchrony with external accreditation cycles.

- SACs will have access to various profiles (demographic, enrollment, and student success, http://www.pcc.edu/ir/program_profiles/index.html and are encouraged to seek additional data as deemed useful from the Office of Institutional Effectiveness.

Program/Discipline Review October 2011

- Workshops will be held once each term to assist SACs embarking on or in the midst of review preparation. Participation by one or more SAC representatives in at least one workshop is expected in the year before the review.

- SACs will prepare a written report, which will include a narrative section (generally between 15 and 30 pgs) following the 8-point outline above, along with appendices as deemed appropriate to support the narrative. The primary audience is intended to be SAC members, PCC administrators, Northwest Commission on Colleges and Universities representatives, and Advisory Committee members.

- SACs are encouraged to share drafts with their Administrative Liaisons during preparation and will submit an electronic version of the report to one week prior to the scheduled Presentation/Discussion Meeting, so that it can be distributed electronically to the appropriate administrators. The report must be in one file (Word or PDF), and sent to the Dean of Instructional Support.
A Presentation/Discussion meeting will be held to provide an opportunity for the SAC to showcase accomplishments as well as challenges, and engage administrators in discussion relating to future directions. The agenda is designed by the SAC, **not to exceed 90 minutes**, to provide for at least 30 minutes for questions and discussion.

- The Presentation will generally involve several (if not all) SAC members including part-time faculty members, appropriate administrators and others. Some SACs choose to invite different sets of stakeholders, such as support staff, Advisory Committee members, Administrators/Faculty members from other disciplines, and/or current or former students.
  - The SAC notifies and invites SAC members and all other desired stakeholders.

  - The Dean of Instructional support will invite and send the program review to the following administrators: Vice President for Academic and Student Affairs, Campus Presidents, Deans of Instruction, Division Deans with responsibly in the subject area, Director of Institutional Effectiveness, Dean of Instructional Support and others as appropriate. SACs should expect be 6-10 of these administrators to attend.

- The SAC is responsible for securing a room for the presentation (based on the number of invitees and other needs (media, proximity to specialized space etc), and relaying that information to the Dean of Instructional Support, so that other administrators can be informed.

- An Administrator (DOI or Division Dean) will make note of questions, comments or agreements that arise out of the meeting. At the end of the presentation, the group will agree on the timeframe for the Administrative Response.

- The Dean of Instructional Support will post the Program/Discipline Review and the Administrative Response on the Program/Discipline review website: [http://www.pcc.edu/resources/academic/program-review/index.html](http://www.pcc.edu/resources/academic/program-review/index.html)