Architectural Design & Drafting

2013 Program Review

Portland Community College
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# Architectural Design & Drafting

## 2013 Program Review

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Purpose of Program/Discipline Review

- Inform the college community about the Department of Architectural Design & Drafting, a Career and Technical Education (CTE) program at Portland Community College.

- Give Subject Area Committees (SACs) an opportunity to study specific topics related to the enhancement of student learning.

- Provide a forum for each SAC’s findings to be communicated to Administration, during which the SAC and Administration can explore and determine ways to address the recommended improvements (including timelines and “check-in” points for follow-up actions between reviews).

- Create written records of what is working well, what can be improved, and specific plans for implementing chosen improvements.

- Collect information that will contribute to institutional assessment and improvement.
1. **Program/Discipline Overview**

   **A. What are the educational goals or objectives of this program/discipline?**

   The educational goal of the Architectural Design & Drafting program at PCC is to prepare students for entry-level careers in architecture and drafting.

   We continuously challenge our students to combine all components of the design process to produce professional quality work enabling them to stand out in a competitive field as they seek employment.

   **Our primary goal is to continue to teach and develop curricula that support learning for students.** Being part of a rapidly changing profession that interfaces with the construction industry, ever-changing CAD software, building codes and sustainable design practices, the main goals of faculty remain teaching curricula to meet degree outcomes of the program and participating in professional development education, as related to industry changes.

   **Our secondary goal is to support the Sustainable Building Certificate** by creating connections with sustainable practitioners. This allows faculty to stay current with industry best practices, and provides resources for instruction and curriculum.

   **A third goal is to collaborate with other departments at the college**, including Interior Design, Building Construction Technology and Landscape Technology, as we seek to bridge disciplines and broaden the learning experiences we offer our students. We hold an especially close relationship with Interior Design in that our degree programs are overlapping.

   **How do these compare with national or professional program/discipline trends or guidelines?**

   We strive to meet standards set forth by the **American Institute of Building Design (AIBD)** through its **National Council of Building Designer Certification (NCBDC)**. If design is a pattern language, the standards set forth by the NCBDC are the dictionary. There is great value placed upon graphic conventions, representations and standards in our field, and those set forth by the AIBD form the basis for the graphic language we teach our students.

   There are somewhat different graphic languages for residential design (where the standards vary somewhat) and for commercial design (where they are quite consistent). We have to navigate both of these in our program; more of our recent graduates have tended to pursue the public/commercial design route.

   A locally created rubric based on the standards set forth by the National Council of Building Designers is the annual **Technical Skills Assessment (TSA)**, created by our Subject Area Committee (SAC). This is required by the
State of Oregon and documents that we are teaching students the things we need to be teaching them, and that they are well equipped to pursue employment upon graduation, as measured by the skills they demonstrate in the Capstone project of the 2\textsuperscript{nd} year design studios.

**Have they changed since the last review, or are they expected to change in the next five years?**

The goals of the program have remained consistent in the past five years. However, the complexity of the design profession has not. In response, our faculty training and professional development have expanded and grown in new directions, and the skills we ask our students to learn, while consistent, can be seen to be in a constant state of flux as technology and software advance.

Also, the economic climate has seen massive change, if not outright upheaval, in the past 5 years, and even as we sense we’re coming out of the recession, the future is far from certain. It is vital that the depth and breadth of our students’ work rise to meet the increased expectations of potential employers. We anticipate continuous curriculum revisions to keep up with ever-evolving technology and global and societal shifts in the next five years.

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

A lot has happened since April 2009. We’ve been an active department, and while it’s hard to believe it’s been 4.5 years since our last formal review, the changes we’ve made have been both prolific and exciting.

This report goes into considerable detail reviewing all that’s happened in our world. **Here are some of those things, in brief:**

- We’ve responded to a previously unmatched surge in enrollment.
- We’ve updated the Sustainable Building and NKBA Kitchen and Bath Certificates, kept up with technological trends in these fields, and broadened the scope of electives we offer.
- We’ve welcomed a new full-time faculty member and hired new tutoring and support staff.
- We’ve extended lab hours and provided new software and upgrades.
- We’ve created new courses and made a host of course revisions and upgrades.
- We’ve implemented Distance Learning tools into our classrooms.
- Our Student Support Specialist has found a multitude of new ways to reach out to students as we seek to improve retention.
- We’ve completed site visits and assessments with area high schools with whom we have PARTEC articulations.
- We’re seeing ongoing changes in our ST building as the construction/bond work steadily moves along.
C. Were any of the changes made as a result of the last review? If so, please describe the rationale and result.

In the administrative response of October 20, 2010, to our most recent program review of April 2009, we heard the following key points, and responded as noted:

- “I encourage you to continue to monitor your growth, to make changes, to update courses, to add enhancements, but to do so very conscientiously so that the program is able to sustain itself in periods of retrenchment as well as in periods of growth. I would also caution you to work hard to maintain a balance between growth and connectivity with your students. When a technical program is growing and changing, there is a lot for the entire Faculty – FT and PT – to learn and to do. You’ve had at least three new software programs that you’ve recently introduced to your program. While doing so is necessary to keep it vital, bear in mind that the time it takes for Faculty to learn how to use and teach this software has to come from somewhere. And it can often mean less time and energy spent with students. Consider how you might maintain a healthy balance between keeping the curriculum vital and spending time with students who need your personal attention. Both are important. Individually and collectively making a conscientious decision to give one emphasis over the other from term to term might be one way to maintain that important balance.”

The growth and direction of the program, and the accordant changes in curricula, staffing and their impact on students, forms the crux of everything we’ve done over the past 5 years, and will continue to do going forward. As such, it’s impossible to summarize in brief. The good news is that we’re responding to this recommendation in some form on each page of this report.

- “You’re at a critical point right now. You have a wide range of focuses – locally, your immediate curriculum and collaborative efforts; regionally, the relationships you maintain with the industry partners that your program supports; nationally, your current and future involvements with the NSF.”

We see our program as being in tune with each of these focuses: while it can’t be said that what we’ve done over the past 5 years was in direct response to this statement, it strikes us that it’s an apt synopsis of what we’re trying to achieve. Certainly, our emphasis remains on the local and immediate, in the sense that the curricula is always in revision and the student remains the focus of the day-to-day, but we have worked to maintain and grow regional relationships and to respond to national trends and influences in the fields of architecture and sustainable design. See Section 3E (Curricular Changes) for a list of specific changes we’ve made to course content.

- “You will continue the momentum you’ve already established if you keep your primary goals in mind at all times. Maintain what your Division Dean calls your ego-free collaboration. It is exemplary!”

It is our hope that this report can help prove that our momentum and penchant for collaboration are still headed skyward ;)

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2. **Outcomes and Assessment:** reflect on learning outcomes and assessment, teaching methodologies, and content in order to improve the quality of teaching, learning and student success.

   **A. Course-Level Outcomes:** 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.

Since the last Architecture Program Review, we have implemented changes in some key areas of assessment. Most directly, the Department of Architectural Design & Drafting reviews the work of each graduating student: starting after the fall 2012 term with the work produced in ARCH 201 (Residential Studio), again after the spring 2013 term with the work produced in ARCH 203 (Residential Renovation Studio), and continuing forward each fall and spring. These courses best represent an Architectural Capstone project.

From previous assessments, we believed that students needed more of the following:

1. **Interaction and communication with clients,** per the 4th degree outcome in the AAS in Architectural Design & Drafting degree, ‘Communicate with design professionals, clients, and engineers, using industry specific terminology and graphics’.

   *Virtually all our courses address graphic conventions and terminology.* As an example, we’ve created a greater role for professionals in the recently revamped ARCH 202 (Commercial Design Studio) course, where students have ‘real’ clients for a specific site in a Portland neighborhood, and receive feedback from guest architects along the way and at the final review. They learn terminology and trade-speak, as well as its graphic language, and apply it to their projects.

2. **The ability to produce high-quality architectural drawings** using a range of computer-aided drafting software, per the 2nd degree outcome, ‘Produce architectural drawings using a range of computer-aided drafting software. Select and recommend building systems, structural systems, construction materials, and structural components responsive to the building’s design’.

   *Most of our courses focus on architectural production through software.* We have continuously upgraded software for all our courses, and always use the latest (now 2014) iterations of Autocad, Revit and SketchUp, as well as InDesign and Photoshop. As an example, in both the ARCH 201 and 203 (Capstone) courses, each student is required to use Autocad and/or Revit, plus the structural design software Forte. We have little doubt our graduates are well-equipped for the job market due to their relevant and current software skills.
3. **The ability to complete all phases of the design and documentation process** with consideration of its impact on the natural environment, per the 5th degree outcome, ‘Complete all phases of the design and documentation process with consideration of its impact on the natural environment’.

Framing architectural design through its impact on the natural environment is a relatively new trend in the field. Portland is a leader in this area and it is incumbent on all of us at PCC to consider more than just the needs and conditions of one building, site or client: good design is all a matter of how it integrates into the greater whole.

**To this end, all instructors have updated their lectures and course materials to reflect current best practices** of sustainable design, community development, landscape design and site planning. Some clear examples of courses where instructors have introduced principles of sustainability include ARCH 110 (Introduction to Architectural Design), ARCH 126 (Introduction to Autocad), ARCH 113 (Site Planning), ARCH 124 (Introduction to Building Systems), ARCH 134 (Energy Conservation Codes), ARCH 204 (Green Residential Studio), ARCH 224 (Active and Passive Building Systems) and ARCH 256 (Detail Drawing with Autocad).

A second example of assessment-driven changes came about through the [June 2012 Assessment Report](#). We focused on improvement in the following areas:

1. **Selection and recommendations of building systems**, structural systems, construction materials, and structural component responsive to the building’s design, per the 3rd outcome in the AAS in Architectural Design & Drafting degree:

   Select and recommend building systems, structural components, construction and finish materials, and lighting responsive to a residential building’s design and interior systems.

   In 2010-11, our CTE assessment targeted a more focused overview of building systems in our ARCH 124 class. This change was made in Spring 2011, and has since been implemented by 6 different instructors, with good success as measured by student performance in more advanced classes. Specifically, faculty have noticed improvement in the second course of this sequence, ARCH 224, and faculty who instruct the revised course have reported good feedback on the curriculum and from students. Therefore, we believe we’ve built a solid foundation to meet Outcome 3.

   Also, based on assessment for 2011-12 and 2010-11, our SAC revised our Structures courses, ARCH 121 (Structures 1), ARCH 122 (Structures 2), and ARCH 123 (Structures 3). Program Chair Elizabeth Metcalf revised ARCH 121 prior to teaching it in the Spring 2012 term, and worked with an adjunct to revise ARCH 122 prior to the Summer 2012 term and ARCH 123 before the Fall 2012 term.

   An overview of these revisions is as follows:

   - **ARCH 121 (Structures 1)**: Basic structural content is covered in more depth, and focuses on terminology, identification of structural components and basic load path analysis.

   - **ARCH 122 (Structures 2)**: While Structures 1 provides a base to build students’ abilities to conduct analysis and calculations for wood frame buildings, this Structures 2 course includes more application and in-class practice; the class format was changed from lecture only to lecture/lab.
- **ARCH 123 (Structures 3):** This course includes calculations for concrete and lateral design, and more application and in-class practice; the class format was changed from lecture only to lecture/lab.

2. **Communication with design professionals,** clients, and engineers, using industry specific terminology and graphics, per the 4th outcome in the AAS in Architectural Design & Drafting degree: *Communicate with design professionals, clients, and engineers, using industry specific terminology and graphics.*

   Nearly all our courses address graphic conventions and terminology. As an example, we are in the process of adding a new elective course to improve student’s graphic presentation of projects, in the process introducing new software. ID 128 (Digital Rendering and Presentation), using Photoshop and InDesign, was first offered in the 2011-12 academic year (as ID 199). We’ve found students use these important software programs to build better portfolios, and the skillsets learned certainly add to their marketability.

3. **Completion of all phases of the design and documentation process** with consideration of its impact on the natural world, per the 5th outcome in the AAS in Architectural Design & Drafting degree: *Complete all phases of the design and documentation process with consideration of its impact on the natural environment.*

   All our courses address the impact of architecture on the natural world. As an example, the term project in the ARCH 224 (Active and Passive Building Systems) course was revised to better coordinate with the design studios. The curriculum was redesigned to conduct two reviews of the class project, as was initially targeted through the assessment of 2010-11. This has proven helpful in increasing critical thinking and improving the quality of projects.

   *Most importantly, we have the right people speaking to these important topics in the classroom, as we’ve assembled a faculty with tremendous green credentials.*

Additionally, and separately from the above 3 direct assessment-driven changes, **we expanded our guest speaker pool,** also as proposed in the 2010-11 assessment. Through work on our NSF (National Science Foundation) grant, new industry contacts have been made, creating field trip opportunities and guest speakers.

Also, one of our long-time adjuncts retired in spring 2012, leading to expansion in our Adjunct pool, also increasing industry contacts.

For the 2011-12 year, **we extended peer assessment from 2010-11** (ARCH 200) into ARCH 101 (Introduction to Residential Design), as proposed in the 2010-11 assessment, and found this to be an extremely useful tool in meeting several of the outcomes assessed this year. Students in this class are required to design a basic structural system and select building materials based on their environmental impact. Peer assessment seems to work well in this application, as those with more advanced skills assist those new to the topic. Presenting one’s work to peers also requires use of industry specific terminology.

In the (perhaps unsuccessful) interest of brevity, we have focused only on the past 2 assessments here. The **2010-11** and **2009-10** assessment reports are available for review via the PCC web site.
B. Addressing College Core Outcomes

i. Describe how each of the College Core Outcomes is addressed in courses, and/or aligned with program and/or course outcomes.

Following are the College’s Core Outcomes and a narrative description of how we are addressing each:

**Communication**
Communicate effectively by determining the purpose, audience and context of communication, and respond to feedback to improve clarity, coherence and effectiveness in workplace, community and academic pursuits.

The hands-on portion of our classes is sacrosanct. Hands-on learning means identifying the target audience for a project, communicating visually through design and drawing, and verbally through interaction with classmates, instructors and clients. Students justify and defend design decisions through project review and discussion. *Courses extensively engaged in graphic communication are ARCH 100, 101, 110, 111, 112, 113, 126, 127, 136, 201, 202, 203, 204, 237 and 247.*

**Community and Environmental Responsibility**
Apply scientific, cultural and political perspectives to natural and social systems and use an understanding of social change and social action to address the consequences of local and global human activity.

Architecture is inseparable from natural and social systems. All our courses take these systems into account, and seek to address social change through good design. We offer cross-discipline coursework with the Department of Building Construction Technology, and our Sustainable Building Certificate requires cross-collaboration with Landscape Technology, Environmental Science and Sociology. This broadens viewpoints and reemphasizes the far-reaching nature of true sustainability and social responsibility. *Courses extensively engaged in community and environmental responsibility are ARCH 124, 131, 204, 224 and 256.*

Additionally, PCC's [2013 Climate Action Plan](#) outlines efforts of the Department of Architecture to develop and implement sustainability in curricula as follows:

> "Sustainable design and construction concepts are embedded in all applicable courses, including Design, Building Systems, and Residential Codes. Sustainable content includes energy efficient design and analysis, passive solar design, sustainable materials analysis and selection, daylight design, alternative energy sources, water harvesting concepts, and embodied energy and cost benefit analysis.

*Sustainable design and construction concepts are embedded in all applicable courses, including Design, Building Systems, and Residential Codes. Sustainable content includes energy efficient design and analysis, passive solar design, sustainable materials analysis and selection, daylight design, alternative energy sources, water harvesting concepts, and embodied energy and cost benefit analysis." (2013 Climate Action Plan, p. 30)
**Critical Thinking and Problem Solving**

Identify and investigate problems, evaluate information and its sources, and use appropriate methods of reasoning to develop creative and practical solutions to personal, professional and community issues.

Every studio project goes through a term-long process of analysis and critique. Each student’s work has been thoroughly vetted for compliance with planning and building codes, structural design and architectural conventions. A multitude of design problems have been addressed and resolved along the way.

*Courses extensively engaged in critical thinking and problem solving are ARCH 101, 121, 122, 123, 124, 131, 132, 133, 201, 202, 203, 204 and 224.*

**Cultural Awareness**

Use an understanding of the variations in human culture, perspectives and forms of expression to constructively address issues that arise out of cultural differences in the workplace and community.

The department’s instructor pool reflects a broad segment of cultures and experiences, and lectures internationalize the curriculum. We take advantage of the community college’s greatest strength - its diversity - by encouraging students’ voices and sharing experiences. This diversity of experience manifests itself in some important ways, as in the study of European co-housing communities in the Green Residential Studio or in the inclusion of Far Eastern design concepts in the Principles of Architectural Design class.

*Courses extensively engaged in cultural awareness are ARCH 113, 124, 200, 204 and 224.*

**Professional Competence**

Demonstrate and apply the knowledge, skills and attitudes necessary to enter and succeed in a defined profession or advanced academic program.

All design studios employ actual local sites, mandate the use of applicable building and planning codes and employ the use of architectural conventions and norms. Software skills are those the industry uses and seeks. Student portfolios reflect well on our emphasis on industry standards, and in some cases move well beyond a demonstrated aptitude for professional competence.

*Courses extensively engaged in professional competence are ARCH 201, 202, 203 and 204.*

**Self-Reflection**

Assess, examine and reflect on one’s own academic skill, professional competence and personal beliefs and how these impact others.

Coursework includes regular ‘public’ project reviews and critiques. Students gain feedback from instructors, classmates and professionals, and in the process continuously analyze their own workflows and skills, and gain an understanding of their own strengths and weaknesses. This enables them to seek strategies for improvement to move forward.

*Courses extensively engaged in self-reflection are ARCH 100, 101, 201, 202, 203 and 204*
Update the Core Outcomes Mapping Matrix for your SAC as appropriate.

Our Core Outcomes Mapping Matrix has been updated, reflecting the changes we mention above.

For Career and Technical Education Programs: Degree and Certificate Outcomes

List your degree and certificate student learning outcomes, showing the alignment with the college core outcomes, and identify the strategies that are in place to assess the degree and certificate outcomes.

AAS: Architectural Design and Drafting

Student Learning Outcome 1: Design a residential or small commercial building responsive to site conditions, user requirements, codes and construction standards, and aesthetic considerations.

Aligns with College Core Outcomes: 1-Communication, 2-Community and Environmental Responsibility, 3-Critical Thinking and Problem Solving, 4-Cultural Awareness, 5-Professional Competence and 6-Self-Reflection

Strategies in place to assess this outcome: Work is assessed measuring students’ ability to match industry norms, practices and methods. Rubrics, markups of drawing sets and presentations are used to assess student work.

Student Learning Outcome 2: Produce architectural drawings using a range of computer-aided drafting software. Select and recommend building systems, structural systems, construction materials, and structural components responsive to the building’s design.

Aligns with College Core Outcomes: 1-Communication and 5-Professional Competence

Strategies in place to assess this outcome: Work is assessed measuring students’ ability to master software and understand building and structural systems. Feedback from colleagues, tests and design reviews are used to assess student work.

Student Learning Outcome 3: Produce a set of construction documents that describe the construction requirements for a building, using accepted industry practices.

Aligns with College Core Outcomes: 1-Communication, 3-Critical Thinking and Problem Solving and 5-Professional Competence

Strategies in place to assess this outcome: Work measures students’ abilities to match industry norms, practices and methods. A common graphic language based on industry standards is taught.

Student Learning Outcome 4: Communicate with design professionals, clients, and engineers, using industry specific terminology and graphics.

Aligns with College Core Outcomes: 1-Communication and 6-Self-Reflection

Strategies in place to assess this outcome: Students collaborate with professionals in many courses, and learn specific terminology and graphic methods. Designs and projects are reviewed and assessed, and the workplace loop of designer/draftsperson is closely approximated.

Student Learning Outcome 5: Complete all phases of the design and documentation process with consideration of its impact on the natural environment.

Aligns with College Core Outcomes: 2-Community and Environmental Responsibility and 4-Cultural Awareness

Strategies in place to assess this outcome: Students incorporate energy efficiency and sustainability into their designs. Designs are tested for performance through energy modeling; students compare their building’s performance to industry norms and benchmarks.
AAS: Architectural Design and Drafting: Residential

**Student Learning Outcome 1:** Design a residential building responsive to site conditions, user requirements, codes and construction standards, and aesthetic considerations.

*Aligns with College Core Outcomes:* 1-Communication, 2-Community and Environmental Responsibility, 3-Critical Thinking and Problem Solving, 4-Cultural Awareness, 5-Professional Competence and 6-Self-Reflection

*Strategies in place to assess this outcome:* Work is assessed measuring students’ ability to match industry norms, practices and methods. Rubrics, markups of drawing sets and presentations are used to assess student work.

**Student Learning Outcome 2:** Produce architectural drawings using manual and computer-aided drafting.

*Aligns with College Core Outcomes:* 1-Communication and 5-Professional Competence

*Strategies in place to assess this outcome:* Work is assessed measuring students’ ability to master software and understand building and structural systems. Feedback from colleagues, tests and design reviews are used to assess student work.

**Student Learning Outcome 3:** Select and recommend building systems, structural components, construction and finish materials, and lighting responsive to a residential building’s design and interior systems.

*Aligns with College Core Outcomes:* 1-Communication, 3-Critical Thinking and Problem Solving and 5-Professional Competence

*Strategies in place to assess this outcome:* Work measures students’ abilities to match industry norms, practices and methods. A common graphic language is taught.

**Student Learning Outcome 4:** Produce a set of construction documents that describe the construction requirements for a residential building, using accepted industry practices.

*Aligns with College Core Outcomes:* 1-Communication, 3-Critical Thinking and Problem Solving and 5-Professional Competence

*Strategies in place to assess this outcome:* Work measures students’ abilities to match industry norms, practices and methods. A common graphic language is taught.

**Student Learning Outcome 5:** Communicate with design professionals, clients, and engineers, using industry specific terminology and graphics.

*Aligns with College Core Outcomes:* 1-Communication and 6-Self-Reflection

*Strategies in place to assess this outcome:* Students work with actual clients and respond to their needs. Designs are assessed through feedback from the client, with instructor and classmate input along the way. This is the truest appropriation of the designer/client experience we can create.

**Student Learning Outcome 6:** Complete all phases of the design and documentation process with consideration of its impact on the natural environment.

*Aligns with College Core Outcomes:* 2-Community and Environmental Responsibility and 4-Cultural Awareness

*Strategies in place to assess this outcome:* Students incorporate energy efficiency and sustainability into their designs. Designs are tested for performance through energy modeling; students compare their building’s performance to industry norms.
Student Learning Outcome 1: Acknowledge the negative impact of building on the environment; develop a commitment to create built solutions that lessen or reverse such impact.

Aligns with College Core Outcomes: 2 - Community and Environmental Responsibility

Strategies in place to assess this outcome: Students analyze building performance. Established 3rd-party certification systems are used to assess existing and proposed buildings; students rate possibilities using these guidelines.

Student Learning Outcome 2: Analyze sites for their assets related to natural systems, and how these systems may work in collaboration with the built environment.

Aligns with College Core Outcomes: 2 - Community and Environmental Responsibility and 3 - Critical Thinking and Problem Solving

Strategies in place to assess this outcome: Students analyze sites and landforms. Rubrics and markups of drawing sets are used to assess student work.

Student Learning Outcome 3: Understand and apply standardized analysis, ie LEED (Leadership for Energy and Environmental Design) to site and buildings for evaluation of integration of sustainable systems.

Aligns with College Core Outcomes: 2 - Community and Environmental Responsibility and 3 - Critical Thinking and Problem Solving

Strategies in place to assess this outcome: Students analyze building performance. Established 3rd-party certification systems are used to assess existing and proposed buildings; students rate possibilities using these guidelines.

Student Learning Outcome 4: Design passive technologies as part of building design; including structural, heating, cooling, daylighting, and water systems.

Aligns with College Core Outcomes: 1 - Communication, 3 - Critical Thinking and Problem Solving and 5 - Professional Competence

Strategies in place to assess this outcome: Students analyze technology through examination of past, current and likely future best practices. Team and individual solutions are created and tested.

Student Learning Outcome 5: Select and specify appropriate building materials and finishes that are from recycled, renewable or natural sources, and lend to energy efficiency.

Aligns with College Core Outcomes: 1 - Communication, 2 - Community and Environmental Responsibility and 3 - Critical Thinking and Problem Solving

Strategies in place to assess this outcome: Students analyze materials and finishes through examination of their life-cycles. Team projects and individual analyses are assessed through rubrics and projects to measure student competence.

Student Learning Outcome 6: Select and specify appropriate building materials and finishes, with consideration of embodied energy in their production and transport, and operating energy of system components.

Aligns with College Core Outcomes: 1 - Communication, 2 - Community and Environmental Responsibility and 3 - Critical Thinking and Problem Solving

Strategies in place to assess this outcome: Students analyze materials through examination of their sources. They learn whole-systems thinking, where the embodied energy in systems is taken into account. Every choice impacts energy use.
Student Learning Outcome 7: Perform Life Cycle Analysis, comparing current construction standards with sustainable building systems and materials.

Aligns with College Core Outcomes: 1- Communication, 2-Community and Environmental Responsibility, 3-Critical Thinking and Problem Solving and 5-Professional Competence

Strategies in place to assess this outcome: Students analyze construction techniques through examination of past, current and likely future best practices. Team and individual projects are tested through online calculators and modeling programs and compared to benchmarks. Students see how even minor decisions can have big impacts.

Student Learning Outcome 8: Develop techniques for researching and identifying materials sources, and analyzing compatibility with sustainable building goals.

Aligns with College Core Outcomes: 2-Community and Environmental Responsibility and 3-Critical Thinking and Problem Solving

Strategies in place to assess this outcome: Students analyze materials through examination of their sources. They learn whole-systems thinking, where the embodied energy in systems is taken into account. Every decision is tested for its true ‘sustainability’.

Student Learning Outcome 9: Provide students with Service Learning opportunities, providing information, research, and design services to non-profit groups.

Aligns with College Core Outcomes: 1-Communication, 2-Community and Environmental Responsibility, 4-Cultural Awareness and 5-Professional Competence

Strategies in place to assess this outcome: Students are connected with internships and potential employers, using their portfolios to gain entry into the marketplace.
ii. Describe the assessment design and processes that are used to determine whether students have met the outcomes of their degree or certificate

As detailed above in Section 2A (Course-level Outcomes), the Department of Architectural Design & Drafting reviews the Capstone projects of all graduating students from the ARCH 201 or ARCH 203 studios, whichever is taken last. These are the Architectural Capstone courses. Each class culminates in a final design review and the work becomes an important part of the students’ portfolios as they move forward to graduation and employment.

The assessment addresses all 5 of the Department’s outcomes, with a particular emphasis on outcomes 2 and 3. Detailed reviews and summaries of each students’ work are called the ‘Degree Outcome Assessments’, and comprise scoring worksheets for degree outcome objectives 2 and 3. This assessment form is divided into 15 categories, and student is assessed on a scale of 2-5 as noted in the document.

iii. Summarize the results of the assessments of these outcomes.

The maximum score of each individual student assessment is 80, across the 15 categories. The scores of the most recent (12) graduates range from 57 to 76, which indicates mostly positive results, overall and individually.

If there are any broad areas of improvement that can be drawn from the data, as measured by the lower student assessment scores, they can be categorized these as follows:

- Assessment Categories 2-4: drawing set organization and coordination
  Some projects showed minor deficiencies in drawing set organization and coordination. We can do a better job at making expectations absolutely clear and consistent.

- Assessment Categories 9 and 10: foundation and framing plans
  Structural understanding is in some ways the pinnacle of architectural design, and always among the most difficult material to grasp. We need to re-re-emphasize key lessons in the Structures courses and apply these to studios.

- Assessment Categories 11 and 12: building sections
  Structural concepts are most directly tested in section drawing. If a project hasn’t been thought through, this is where it shows.

It is important to note that there are no general deficiencies identified in the above, or in any other, categories. It is merely the case that the average scores are slightly lower in these areas than in the others. This isn’t a surprise, as these are areas requiring considerable industry-specific and technical knowledge, both in the academic and professional realms. As such, it behooves us to redouble our attention to these areas as we move forward.
iv. Identify and give examples of assessment-driven changes that have been made to improve students’ attainment of degree and certificate outcomes.

Addressing these crucial areas of competence, we saw fit to implement curriculum updates to some courses that overlap with the content we offer in ARCH 201 and ARCH 203, the Capstone courses.

These changes affect virtually all classes in the curriculum. For example, ARCH 256 (Detail Drawing with Autocad) was modified to include more details showing standard construction techniques, as well as ‘energy-efficient’ details, as certified by the Energy Trust of Oregon.

The same ARCH 256 course, as well as ARCH 111 (Introduction to Residential Construction Documents), have been revised to include a more stringent focus on structural drawings (floor framing, roof framing, foundation plans), building sections and details, as well as more instructor time devoted to teaching the ‘how-to’ of software. ARCH 256 requires students do intensive building sections and details of multiple types of construction. ARCH 111 stresses floor framing, roof framing and foundation plans, and the ARCH 201 Studio course asks that students apply these lessons to a building of their own design. We’ve found that by the time the students reach the studio series (200 level) courses, they’re better equipped to handle structural design.
3. Other Curricular Issues

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

Since our last program review, ARCH 132 (Residential Building Codes) and 133 (Commercial Building Codes) have been substantially updated into a Distance Learning modality. Distance Learning has proven to work well for these courses. In the most recent year, Fall 2012 to Spring 2013, we enrolled 21 students in the on-campus version of ARCH 132, and 23 in the DL version. Student success rates were 91% and 87%, respectively, seeming to indicate a near-equal learning experience. ARCH 133 had 51 DL enrollments in 2012-2013 (up from 42 in 2011-12 and from 26 in 2010-11); this course moved to a DL-only format after spring 2011.

In response to this success, we offer ARCH 161 (Residential Print Reading) and 162 (Commercial Print Reading) in Distance Learning modalities. These are courses well suited for DL. ARCH 161 had 73 enrollments in 2012-13 (up substantially from 40 in 2011-12, the first year in which it was offered as a DL course), and ARCH 162 had 26 enrollments in 2012-13 (up from 23 in 2011-12 and 24 in 2010-11). Success rates for these courses are high, at 85% for the ARCH 161 students and 96% for the ARCH 162 students in 2012-13. It should be noted that we will commence teaching ARCH 161 in Spring 2014 as a sort of hybrid course; we’ve found that some students really value the personal interaction and additional attention the classroom setting offers, and some need help with using DL.

The Department discussed accessibility guidelines for adopting publishers’ content at its all-faculty meeting during In-Service week in September 2013 and is aware of the important issues surrounding how these guidelines relate to Distance Learning.

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.

Inquiry-Based Learning has been integrated into our curriculum over the last few years, with many positive results. Our faculty has found that Inquiry-Based Learning results in deeper understanding of course materials while students actively construct new knowledge. Implementation of Inquiry-Based Learning has been most actively developed in ‘lecture’ type courses (such as ARCH 113, 121, 124, 131, 132, 133, 200, 224 and 256). Inquiry-Based Learning is useful in courses requiring review of large amounts of technical information, as well as for development of problem-solving tools. It is also used for lecture-type courses meeting in block schedules (3-4 hours, once weekly), as it keeps student engagement in the subject material at a high level. Faculty members recognize the value in Inquiry-Based learning’s ability to encourage development of problem-solving skills over memorization of facts.
**Service Learning** has been successfully used in several classes, where students have designed housing prototypes for Habitat for Humanity and conducted energy analyses for area schools. We try to involve members of the community in our studios, as we invite stakeholders to participate in design reviews in ARCH 202 (where student designs for Hillsdale’s town center in 2013 were presented to, among others, the property owner, architects from the Hillsdale Design Review board and the executive director of the non-profit Hillsdale Main Street) and ARCH 203 (where students do remodel designs for actual clients; several of these have been built in the past).

Our program continues to **internationalize the curriculum.** Internationalization is defined as ‘a process that transforms the curriculum and the campus community by advancing intercultural competence, deepening comparative knowledge of peoples and cultures, and encouraging global learning as essential to understanding the complexity of issues in the world today.’

Adjunct faculty member Dorothy Payton has been a member of the PCC China Cohort since 2010, as one of 12 PCC faculty members, who are part of a consortium of 72 faculty nationwide working under the Title VI Grant for the Asian Studies Development Program, which is administered through the East West Center at the University of Hawaii. The group’s goal is to introduce materials into the curriculum at the undergraduate level about China, leading to an enhanced sense of global citizenship and intercultural awareness.

Dorothy is developing course materials around China for ARCH 200, incorporating Feng Shui, Tangram, a sketching field trip to Lan Su Yuan, and a focus on I.M. Pei and some of his work in China, France and Washington, D.C.. She has also introduced a Chinese client with specific Chinese activities and art collections into the ID 236 Lighting Design course.

*An example: Dorothy has integrated China-related materials into ARCH 110 (Introduction to Architectural drawing). She uses an origami project to develop visualization and graphic instructions (print reading) to take a 2D drawing and piece of paper and make it into a 3D box, in the process referencing our dice orthographic drawings and axonometrics.*

Adjunct faculty member Rebeca Cotera, who earned her undergraduate degree in architecture in Mexico, where she was raised, is fluent in Spanish, with French capabilities. Adjunct faculty member Severin Villiger grew up in Switzerland and is fluent in German.

Full-time faculty member Peter Gramlich spent time in Europe in June 2012, publishing a paper entitled ‘**The Swiss Countryside: A Case Study in Sustainable Development**’ in the Sept/Oct 2012 *Oregon Planners’ Journal* and compiling research on sustainable communities that has since been implemented into the curricula for ARCH 113, 131 and 204. He was raised in Germany and remains fluent in the language.

**C. Are there any courses in the program that are offered as Dual Credit at area High Schools?** If so, describe how does the SAC develops and maintains relationships with the HS faculty in support of quality instruction. Please note any best practices you have found, or ideas about how to strengthen this interaction.

As noted on PCC’s [website](http://www.pcc.edu), students can earn PCC credits in Career & Technical Education courses, leading to an Associate’s degree or certificate in programs. Ours is one of these. Many other PCC departments participate in this statewide effort, as do several other colleges.
There is also a Wiki Space page for our department’s Dual Credit program: it includes curriculum information, professional development opportunities and a discussion forum.

Adjunct faculty member Rebeca Cotera is the architecture department's liaison with high schools with whom we have articulations. She performs assessments and has provided high school teachers with examples of our student projects and shared our curricula. We have found that the best practice for developing relationships with high school faculty in our discipline is through direct engagement. Since so much of the learning is lab-based (and software-based, Autocad in particular), Rebeca has found it valuable to spend time getting to know the high school instructors and seeing how they and their students work.

D. Does the SAC plan to develop any additional Dual Credit agreements with area high schools? If so, please describe. If not, what does the SAC see as barriers to developing further dual credit agreements.

It will soon be mandatory for all high school students to acquire 8 college credits before graduating. Three of our courses are offered at a variety of high schools (taught by their teachers): these are ARCH 101 (Introduction to Residential Design), ARCH 111 (Introduction to Residential CD), and ARCH 126 (Introduction to Autocad).

We expect to continue to develop the dual-credit agreements into the future, although a potential impediment is the level of qualifications high school instructors are required to meet.

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

Changes to course content made since the last program review, as the result of a number of factors, are motivated by:

- The desire for stronger skill set development in CAD classes for ARCH students.
- The Introduction of new CAD energy modeling tools to analyze energy efficiency in homes. Content changes include introduction to energy modeling tools in ARCH 124, 127, 204 and 224.
- Instructor assessment of student skill sets in their second-year studios (ARCH 201, 202, and 203) identified the need to adjust work in some pre-requisite courses. The commercial design courses (ARCH 102, 112 and 202) were reorganized such: the 112 evolved from 3 credits to 4, the 3-credit 102 was folded into the 202, and the 202 was reduced from 6 credits to 4.
- The need to implement new CAD tools from industry into various course projects. Content changes include use of Sketch-Up as a design tool for ARCH 101, and as an energy modeling tool for ARCH 224 effective 2009.
- Professional development of the faculty led to updated curricula in response to recent building code changes. Content changes are made annually and per Oregon Code to various courses, such as ARCH 111, 112, 123, 132, 133, 201, 202 and 203.
The direct response to student needs.

We’ve long heard the cost of textbooks is too high. In response, we’ve created a custom textbook at a reduced cost to students for ARCH 121 and 124 and a course manual for ARCH 161, as noted below. We’ve waived textbooks in software courses and instead use web-based learning (www.lynda.com) as required reading: this may take the form of watching short videos. This reduces students’ expenses and also responds to their greater tendency toward visual learning.

Additionally, specific changes to course content are as follows:

**ARCH 101 (Introduction to Residential Design);** most recent course revisions incorporated spring 2013. Curriculum revisions revolved around updating the course to reflect shifting demographics (the homes are designed for three generations of users), the mandating of universal design (accessible kitchen and baths; planning for future changes in occupants’ abilities; increased hallway and door widths) and a deeper focus on green building practices (through alternative wall material options, for instance).

**ARCH 110 (Introduction to Architectural Drawing);** most recent course revisions spring 2013. The term project has been redesigned to feature a high-performance house with modular dimensions and photovoltaic panels.

**ARCH 111 (Introduction to Residential Construction Documents);** most recent major course revisions winter 2011. Curriculum revisions reflect focus on lessons derived from an actual permitted and built home. Students are required to draw floor plans, structural plans, elevations, sections and details. Since the course is a key prerequisite for the studios, understanding of the structural systems is especially important. Each term since these major modifications, further enhancements and revisions to all the assignments have been done, per new features in the software and per student feedback.

**ARCH 113 (Site Planning);** curriculum development grant awarded in spring 2012. Curriculum was overhauled to reflect current trends in site planning and building siting, and to use CAD software to draw site plans.

**ARCH 124 (Introduction to Building Systems);** most recent course revisions summer 2013. Curriculum revisions in addition to those made after the 2011-12 assessment reflect changes in building systems. Updates include new information on mechanical ventilation (per recent code changes), windows (including NFRC labels and glazing types), insulation and thermal bridging, refrigerant-based technology and heating systems (with high-efficiency stoves, masonry heaters and pellet fuel heaters).

**ARCH 126 (Introduction to Autocad) and ARCH 136 (Intermediate Autocad);** most recent major course revisions summer 2013. Curriculum was overhauled to include detailed written and graphic ‘how-to’ instructions for all assignments. Each term since these major modifications, further enhancements and revisions to all these assignments have been done, per new features in the software and per student feedback. Revisions are essentially constant in these 2 courses, with the annual software upgrades and revisions to all handouts and course materials. Also, one new assignment per course was added to incorporate building envelope integrity and energy efficiency; detailed written and graphic ‘how-to’ instructions were done.

**ARCH 127 (Introduction to SketchUp);** most recent revisions fall 2013. Course material and assignments revised to use Sketch Up as a concept modeling program and to consistently show project progress using Layout as a presentation technique tool. Beyond those, course material and assignments were updated to reflect the latest software.
ARCH 132 (Residential Building Codes); most recent revisions 2013. Course material revised to include building code analysis projects, and ‘study quizzes’ were added to course content. A series of study slides was created for the in-classroom version of the course.

ARCH 133 (Commercial Building Codes); most recent revisions 2013. Course material revised to include a series of slides for each week to this online class to illustrate the written building code, and ‘study quizzes’ were added to course content.

ARCH 161 (Residential Print Reading); most recent course revisions 2013. Instructor deleted use of textbook and wrote a ‘course manual’ that will be available online and free to students. The course studies floor plans, and the course manual will highlight house plans from Portland area homes that exhibit high-performance and energy efficient homes. The designer of each home use is also highlighted with a bio and the work they do.

ARCH 202 (Commercial Studio); curriculum development grant awarded in winter 2012. The Department revised program course loads in 2012, and folded the 3-credit ARCH 102 (Architectural Graphics 2) course into the (previously 6-credit) ARCH 202 (Commercial Design Studio) course. The curriculum revision reflects the redistribution of credits in the program. Specifically, the retooled 4-credit ARCH 202 became a synthesis of the 102 and previous 202; students design a mixed-use building for an urban site in Portland. This includes schematic design, design development and the application of planning and building codes to create construction documents. It is an intense studio required for those students pursuing the AAS Degree in Architectural Design & Drafting.

ARCH 204 (Green Residential Studio); curriculum development grant awarded in summer 2011. Curriculum revisions revolved around updating course material to reflect technology and trends in sustainable building and design. Students build on their understanding of established national (LEED, Living Building Challenge) and Northwest (Energy Star/Earth Advantage) building rating methods, as first introduced in ARCH 131, in a group design application.

ARCH 237 (Introduction to Revit Architecture); most recent major course revisions 2013. Revisions are essentially constant, with the annual software upgrade and revisions to all handouts and course materials.

ARCH 247 (Intermediate Revit Architecture); complete course redesign fall 2013. Revisions are essentially constant, with the annual software upgrade and revisions to all handouts and course materials.

ARCH 256 (Detail Drawing with Autocad); most recent course revisions spring 2013. Curriculum revisions reflect changes in building systems. Updates include new information on structural detailing/lateral forces, controlling water and modifying air movement through detailing, controlling heat flow through detailing and detailing fire-resistant assemblies.
4. Needs of Students and the Community

A. How is instruction informed by student demographics?

Per information provided by PCC’s Office of Institutional Effectiveness, a brief summary of our student demographics is as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>New CRNs</th>
<th>Total Students</th>
<th>Full-Time Equivalents</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008-09</td>
<td>130</td>
<td>785</td>
<td>185.7</td>
<td>0.7% decrease from 07-08</td>
</tr>
<tr>
<td>2009-10</td>
<td>136</td>
<td>863</td>
<td>225.1</td>
<td>21.3% increase from 08-09</td>
</tr>
<tr>
<td>2010-11</td>
<td>141</td>
<td>787</td>
<td>204.2</td>
<td>9.3% decrease from 09-10</td>
</tr>
<tr>
<td>2011-12</td>
<td>139</td>
<td>798</td>
<td>201.7</td>
<td>1.2% decrease from 10-11</td>
</tr>
<tr>
<td>2012-13</td>
<td>126</td>
<td>771</td>
<td>167.7</td>
<td>16.9% decrease from 11-12</td>
</tr>
</tbody>
</table>

- The **big enrollment surge came in 2009-10**; this coincides with the height (valley?) of the recession.

- Since then, we’ve seen a **return to greater consistency** in enrollment. The larger drop in 2012-13 is probably impacted by some new college policies: deletion for non-payment, stricter drop deadlines and the financing of Pell Grants for 3 terms rather than 4. While these may impact overall enrollment in a negative way, we believe they help the program by introducing higher standards and efficiencies.

- Our students span a wide age range, and are typically older than the average PCC student. **Almost 55% of our 2012-13 students are over 30.** This is up from 51.4% two years earlier, in 2010-11.

- Almost 75% of our 771 students in 2012-13 were between 21-50 years old. The largest population group is within the 31-40 age group at 24.5%.

- 78.7% of our students in 2012-13 are of white non-Hispanic origin, 7.4% are Hispanic, 6.8% are of Asian origin, 4.2% are multi-racial, and 1.2% are African-American. The percentage of non-white students has increased by 2% since 2011-12. The numbers generally reflect the (not very) diverse demographics seen in the Portland metro area.

- We have slightly more male than female students; 54.0% to 46.0% in 2012-13.

- The percentage of students who are degree-seeking has held steady at 88.1% in 2012-13.

- Most of our students have already attended college before beginning our program: **83% have done previous college coursework.** A high percentage of our students already have a college degree: 26% of respondents to a recent informal, internal survey have previously earned bachelor’s and/or master’s degrees.
- The majority of our students attend PCC part time (11 credits or less), and work and/or parent outside of school.

This particular set of demographics creates, and mandates, a wide range of learning styles and interests, reflects a broad spectrum of abilities, and results in a variety of output, for which no one method of assessment is likely to suffice. So this variety of previous college background, work experience and socio-economic/cultural mix has greatly affected instruction methods in our courses. In non-studio format classes, instruction has been augmented with inquiry-based learning where students learn directly from each other in small groups. Often, students who have industry work experience are uncertain in the classroom until they realize how much they can add to the group discussion. When managed right, this is a huge asset of the community college.

In addition, informal student learning communities take shape as students work together outside of class on projects and come to share experience and interests. This is supported by setting aside an open lab for work on class projects. Service learning is another tool that is used in various classes as a means to engage our diverse student body in a variety of opportunities outside the classroom.

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

The noteworthy change in our demographics at the last review in 2009 was the increase in the number of students with past college coursework and degrees. This continues to be a great strength, in that it elevates the level of discussion and inquiry in our courses and enriches all of us collectively.

An important trend seen since the last review in 2009 is an increase in enrollment, both at PCC in general and in our department in particular. Per numbers provided by PCC's Office of Institutional Effectiveness, while there was a 5% drop in 2012-13 in college-wide enrollment from its peak of close to 95,000 in 2011-12, there has been a net gain of 3% in college-wide enrollments since 2008-09, and a nearly 16% increase at our Sylvania campus.

We reflect this trend in our department: though the pace of growth in enrollment has tailed off over the past year or so, we have seen a surge in students since the recession, generally accepted as the period of economic slowdown commencing around December 2007 and slowly working its way back. This makes sense in our field, as the building trades were hit hard by the recession, and employment has not yet rebounded to levels seen in the mid 2000s. We have many students who are former tradespersons, looking to acquire new skills that will make them more marketable and help to distinguish them in the job search. This trend is illustrated by the fact that 55% of our students are over 30.

Instruction has to take this shifting demographic into account. We often see older students struggle to master software, at least in comparison to their younger counterparts, who are generally more technologically savvy. This is the proverbial ‘technological divide’. So we incorporate a lot of lab time, using hands-on learning, including weekend lab hours. Instructors are always available during class to help with software and concepts, and we’ve hired a new, half-time CAD tutor and have newly funded casual employee positions for this purpose as well (See Section 6C, Tutoring Support, below). These have had a massive impact on student learning.

The age diversity also motivates instructional methods in the lecture portion of classes. We strive to encourage discussion; older students have so much to offer in the way of experience and construction practices. Managed correctly, the classroom becomes a discussion forum, and everyone can be both student and teacher.
C. Describe current and projected demand and enrollment patterns. Include discussion of any impact this will have on the program/discipline.

Reiterating the trends outlined above, enrollment in general has been high, and we sense there’s a strong demand for the training and skills we offer. That does not, however, equate to stating that we aim to necessarily increase demand or seek increases in enrollment; there is no one FTE number we aspire to ‘achieve’.

The Portland market in 2013 can only hire a finite number of graduates and it is not professionally or academically responsible to produce more graduates than the job market can reasonably absorb. Allowing our program to uphold the quality of a managed program size, as we feel we have now, will best serve our graduates as they leave PCC to enter the market. We recommend that enrollment targets be determined by what best supports program quality, retention and job placement.

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

Strategies for support are provided to all students and we do not view these specifically to facilitate access or diversity. Instructors and tutors support all students.

We offer multiple class scheduling options to provide flexibility for students’ work schedules and lives outside the classroom. Students have the ability to select classes during multiple times of the day or week which helps accommodate childcare and work schedules. The recession has affected our scheduling: people are less likely to work days and take classes at night (the traditional model upon which CTE programs in community colleges have been based), and generally have more time during the days for classes. So our studio courses are offered days (on mornings for the first time in 2013), though we do make accommodations for those students who work full-time.

We continue to schedule both day and evening sections of our introductory and ‘early term’ courses so as to accommodate the most possible schedules. We have advising and scheduling options that allow students to spread the two-year program classes across three years. This provides greater access for students who work part-time.

Our Sylvania Design Arts Facebook and Spaces pages, built and managed by Student Support Specialist Arlene McCashew, create a digital outreach that hasn’t previously been available, and go a long way toward increasing student engagement. Arlene regularly comes into the classroom to talk about grad plans and to generally get students to feel like they have a say and a stake in their education.

E. Describe the methods used to ensure faculty members are working with Disability Services to implement approved academic accommodations.

We extend student testing time for students and make course materials available in advance for those students who have DS accommodation requirements. We’ve had ASL interpreters in the classroom as requested by the Office of Disability Services. Typically, instructors work with counselors from Disability Services via e-mail or in person to find the best strategy for meeting student-requested accommodations.
The Department discussed accessibility guidelines for adopting publishers’ content at its all-faculty meeting during In-Service week in September 2013 and is aware of the important issues surrounding how these guidelines relate to Distance Learning.

Recent updates to our DL courses have included accessibility-required changes. We are aware of the recently created SAC disability study that seeks to identify accessibility barriers for online classes unique to areas of study.

While not directly an example of working with Disability Services, it may be worth mentioning that much of our coursework includes exposure to accessible and universal design. Students are made aware of ADA-based code requirements, and of best practices in residential and commercial architecture, where proper design commonly aspires to be universal, accessible or at least ‘adaptable’.

F. 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.

Specific curriculum changes, including changes to course content and degree requirements, have been outlined in Sections 3A and 3E above. In addition to those, we can report that changes have evolved from the following sources:

- Student feedback, both ‘official’ through end-of-term evaluations and unofficial through dialogue and discourse, continues to shape teaching methodology.

  An example: students in 200-level design studios expect that instructors be well-versed in Revit (and not only Autocad) software, so as to help them through the challenges that come with applying software to design. The instructor of the Fall 2013 Residential Studio, Peter Gramlich, took a PCC Revit course (taught by resident expert Severin Villiger) in the summer and is now capable of working through Revit issues as he teaches ARCH 201 for the first time. Faculty members Denise Roy and Anne Marie Kuban also took the summer 2013 Revit course.

- New software tools currently being used in industry have generated new courses.

- The NKBA learning requirements, from the kitchen design industry, have influenced new content in several courses.

- New energy modeling tools to analyze energy efficiency in homes have been implemented into several courses.
5. Faculty: reflect on the composition, qualifications and development of the faculty

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

The Architectural Design & Drafting Program has three full-time faculty members; Elizabeth Metcalf is the Department Chair with an instructional load of 0.75 and a release of 0.25. Denise Roy is a full-time faculty member with an instructional load of 1.0. Peter Gramlich joined the department in Fall 2010 as a full-time faculty member with an instructional load of 1.0, and has been the SAC Chair for the past 2 years.

We have 9 current adjunct faculty members teaching ARCH classes: Kelcey Beardsley, Bill Capps, Scott Caufield, Rebeca Cotera, Anne Marie Kuban, Michelle Mueller, Dorothy Payton, Michael Sestric and Severin Villiger. The curriculum encompasses a range of highly technical skills, including CAD, building codes and engineering. The depth of the adjunct faculty provides the requisite teaching breadth and adds consistent expertise to our curricula and program. A happy by-product of the recession is the greater availability of talented people to staff courses; it is still the case that most adjunct faculty members ply their trades and have other professional employment.

Our students frequently overlap with courses taught by Interior Design faculty members: these include Chair and full-time faculty member Amanda Ferroggiaro and adjuncts Ellen Cusick, Robin Fisher and John Thompson (as well as Michelle Mueller and Dorothy Payton, who teach in both Architecture and Interior Design).

Our adjunct faculty members are highly qualified, as defined by holding professional degrees and advanced, terminal master’s degrees. See Section 5B below (Instructor Qualifications) for an overview of faculty qualifications.

Most (6 of 9) adjuncts have been teaching at PCC for 5+ years. Their professional employment occasionally creates scheduling conflicts with their ability to teach day or night sections. In general, the adjunct faculty members express satisfaction with their teaching loads, which vary from 1-3 courses per quarter, and they intend to continue teaching.

The quantity of adjunct instructors is appropriate to both cover our teaching assignments and to allow for varying teaching loads requested. The quality of teaching is generally quite high. The Chair typically conducts both a classroom observation and a student evaluation of each new instructor during their first term teaching. Written and verbal feedback is later provided to the instructor. Previous coursework, syllabi and project samples are reviewed with new instructors to provide clarity in the course content and consistency in its delivery. Course
materials are typically distributed between faculty members digitally; rarely are hard copies or paperwork involved.

New instructors are matched up with an experienced mentor (in a newly funded role); this has helped in learning department norms and standards.

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

We anticipate little to no change or turnover in full-time faculty during the next 5 years. The adjunct faculty pool has also been stable for the last several years, and we found a highly qualified adjunct instructor with a strong engineering background in Scott Caufield. So the adjunct pool is also expected to remain stable. All of these instructors have professional work outside of PCC, providing balance to their teaching jobs.

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

In the past review, in December of 2009, it was evident that we relied (too) heavily on adjunct faculty to provide instruction. That has since been brought back into balance: where the ratio of full-time to adjunct faculty was 2:16 in 2009, it is 3:8 in 2013.

The adjunct instructors have similar educational backgrounds and professional training as the full-time faculty. Most faculty members have professional architecture degrees (B. Arch. or M. Arch).

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

Our faculty is relatively gender-balanced, at 7 women and 5 men. We have two faculty members raised in Europe (Peter, Severin), one in Mexico (Rebeca) and most have a good amount of design and construction experience abroad and in other regions of the US, bringing some cultural diversity to our program.

The faculty reflects student diversity and interests in that we generally echo the makeup of our students. The ratio of women in the program is 46%, and it surely helps these students when they see a good portion of their courses being taught by women.

**B. Report any changes the SAC has made to instructor qualifications since the last review and the reason for the changes.**

The minimum qualifications for Instructor positions in the Department of Architectural Design & Drafting are as follows:

- Bachelor of Architecture degree* and four years recent technical experience in residential/light commercial design is required, or:
- Demonstrated competence is determined on a course-by-course basis. For each course, instructor must have the requisite body of knowledge (via transcripts or formal presentation to committee), and possess five years of professional experience in the area.

* Instructors shall have earned academic credential at a regionally accredited institution.

Those courses that focus on commercial and mixed-use design content (in particular, ARCH 112 and ARCH 202) require that instructors have a professional architecture degree and experience related to commercial projects.

All of our faculty members have professional degrees in architecture (B. Arch. or M. Arch.) from accredited institutions, and many years of professional experience, as well as extensive teaching experience.

These qualifications were last updated in January 2010.

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.

Professional development activities of our faculty typically occur in three areas: building codes, CAD/software and sustainable design. Faculty participation in conferences, workshops and internships has and continues to impact a variety of instructional and curricular changes.

Here is a summary of our faculty’s recent professional development activities:

- **Elizabeth Metcalf** has been a Sustainable Building Advisor (SBA) since 2004. In 2009, she attended the National ACI Conference, Oregon Building Officials Association Winter Institute, and the Affordable Comfort, Inc.’s Northwest Home Performance Conference. In 2010, she attended the Green Day Forum, Energy & Environmental Building Alliance (EEBA) Conference and the Oregon Building Officials Association Spring Institute. She completed the following Earth Advantage Institute Classes in 2010:
  - Building High Performance Walls and Roofs
  - Creating a Green Home: Addition, and Remodel
  - Creating a Not So Big Inspired Home: Right Sizing the American Dream
  - Applying LEED for Homes to your Project

- In 2011, Elizabeth attended the Affordable Comfort, Inc.’s Energy Upgrade Northwest Conference, the EEBA’s Education Series, the Oregon Building Officials Association Fall Institute and the JLC Live Conference. In 2012, she attended the Cascadia Green Building Council’s ‘Build Small Live Large’ conference and the JLC Live Conference. Finally (for now!), Elizabeth attended the Kitchen and Bath Industry Show in New Orleans in 2013.

- Elizabeth continues to keep up to date on software releases, attending AutoCad and Revit update training in 2009, 10 and 11, and Revit training in 2012 and 13.

- **Denise Roy** has been a Certified Sustainable Homes Advisor since March 2009. She steers our co-op program and retains extensive industry contacts, and attends many local, state and national conferences, most recently in Washington, D.C., in October 2013.
Denise has been working on an extensive project funded by the National Science Foundation, and is the co-principal investigator for this NSF grant. Over the past 3 years she has focused on the Summer Sustainability Institute, which entails training for teachers of grades 9-12, plus college instructors. Denise led presentations and local tours over the last three summers to this week-long institute, which has drawn attendees from Oregon, Washington, Idaho, California, Montana and Illinois.

Denise has applied her research on high-performance homes into case studies (2-4 page summaries of about 50 buildings) that will be posted on the LOCATE website. She coordinates with PCC's video team to develop videos for these homes, featuring interviews with the designers, builders and homeowners. These resources will be posted online for PCC classroom use and are also available for other instructors to use, no matter their location.

Denise has attended the National Science Foundation’s annual conference (sponsored by the American Association of Community Colleges) in October 2010 and October 2013, where she presented various projects (including case studies, the ARCH 161 print reading manual and videos). She completed a PCC Revit course in the summer of 2013.

Peter Gramlich has been a LEED AP (Accredited Professional) since June 2009, completed the 2010 Summer Sustainability Institute prior to commencing his employment at PCC, presented at the 2012 SSI, and teaches Sustainable Community Development courses in the MBA in Sustainable Business program at Marylhurst University. He was published in the Sept/Oct 2012 edition of the Oregon Planners’ Journal. He completed Revit training courses in 2010 and 2011 and a PCC Revit course in the summer of 2013.

Dorothy Payton is a longtime LEED AP and earned her CAPS (Certified Aging in Place Standards) certification in 2011. She began a 2-year tenure as co-Director of PCC’s Teaching Learning Center in June 2012.

Michelle Mueller is a LEED AP and earned her CAPS (Certified Aging in Place Standards) certification in 2011.

Rebeca Cotera completed the 2013 Summer Sustainability Institute.

Anne Marie Kuban renewed her California architects’ license in February 2013, and is pursuing ongoing NCARB certification. She earned her LEED AP credential in 2008 upgraded her association to LEED AP in Building Design & Construction (BD+C) in May 2013. She completed a PCC Revit course in the summer of 2013.

Severin Villiger also teaches in the Department of Art & Interior Design at Marylhurst University, where he specializes in graphics, 3D modeling and animation work.

Bill Capps was a Delmar Learning Reviewer for the most recent edition of Alan and Janis Jefferies’ book ‘Residential Design, Drafting and Detailing’ in 2012. He is a longtime member of the American Institute of Building Designers, was a founding member of the Universal and Sustainable Design Committee of the AIBD, and was an invited member of the Portland Green Building Code Technical Advisory Group in 2009. He completed the 2013 Summer Sustainability Institute.
- **Michael Sestric** was an invited member of the Portland Green Building Code Technical Advisory Group in 2009.

- **Kelcey Beardsley** completed the 2013 Summer Sustainability Institute.

Following is a summary of the instructional and curricular changes impacted by our faculty’s ongoing professional development activities. Note that these are in addition to, and in some cases overlap with, those revisions outlined in Section 3E (Curricular Changes) above.

- Faculty members attend frequent training in CAD updates and new software releases. *Content changes include ongoing updates to Autocad-based courses ARCH 111, 112, 126, 136 and 256; to SketchUp course ARCH 127, to Revit courses ARCH 237 and 247, as well as all the studios and courses with lab components that employ these software programs.*

- Faculty attendance at industry seminars and workshops has resulted in implementation of new energy modeling tools to analyze energy efficiency in homes. *Content changes include introduction to energy modeling tools in ARCH 124, 127, 204 and 224.*

- Faculty training and participation in industry internships has resulted in updated curricula in response to emerging industry practices. *Content changes related to sustainable practices have gone into effect in ARCH 101, 113, 124, 131, 204 and 224. Content changes in ARCH 111 and 112 related to ‘best practices’ and energy efficient detailing in buildings carry over into the studio courses: ARCH 201, 202 and 203.*

- Faculty members attend annual training in response to building code updates and changes. *Content changes in ARCH 201, 202 and 203 reflect updates in seismic design requirements in new building codes. The most recent version of the ORSC (Oregon Residential Specialty Code) is 2011; this is the current Code we teach.*
6. Facilities and Support

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

The Architectural Design and Drafting department has distinguished itself as an innovative and successful program, due in large part to its facilities. Computer lab facilities are needed for most of the classes we offer. The rooms we currently use with computer resources (ST 236, ST 238, ST 240 and ST 205) have usually been heavily scheduled, especially for evening classes.

For the first time in the fall 2013 term, we have set aside one of our classrooms, ST 240, as a continuously open lab from 9 to 6 on Mondays through Thursdays. This room is also used as an open lab one evening a week, as a result of our greater use of ST 205 after the move of the Drafting Department to the Southeast Center in 2011.

The ongoing bond work, of course, has been well under way, and will continue to alleviate space strains. There is to be a new resource room, a new shared design review/critique space, and a relocated materials room with access from all labs. It goes without saying that we’re excited about all of these.

In the past year the CAD labs and facilities have separated from those of the CADD Drafting department, which focuses primarily on mechanical design and drafting. There are four labs, each with 24 student workstations. The typical workstation is configured with Intel quad core i7 processors, advanced graphics cards, and 23” 1920 x 1080 dpi monitors. These large screens were installed in 2012; they make a huge difference for our students.

Software suites for these systems include the most recent releases of AutoCAD (2014), Revit (2014), Trimble Sketch Up (2013), Adobe CS6 (Photoshop, Illustrator, In Design and Acrobat), Forte (a structural design software by Weyerhaeuser), Google Earth and Microsoft Office Suite. Instructor podiums are similarly equipped and have the addition of full PC, DVD, video and audio projection through Digital 1920 x 1080 projection equipment in each lab/classroom, as well as an Elmo at each podium. We’ll soon be ordering tablets for student use.

We have 8 Canon Image Pro-Graf 36” color plotters, 5 Hewlett Packard 11x17 workgroup laser printers, a Ricoh 11x17 color workgroup laser printer, a Hewlett Packard color 11x17 Inkjet printer, a Xerox 11x17 workgroup copy machine, a Xerox 36” large format copy machine, an Epson 11x17 color scanner and a 24” Seal dry mount press available for the students. There are 48 manual drafting stations with Mayline Parallel rules and tilting tops and an additional 20 portable drafting boards. Each classroom offers drafting and computer workstations suitable for persons with disabilities. The department provides an assortment of architectural based lab tools and supplies ranging from a light table, wall construction samples, lighting box, scales, triangles, dividers, parallel rules, tape dispensers, stapler, paper cutters, etc.
B. **Describe how students are using the library or other outside-the-classroom information resources.**

Student use of the library remains low, as most of the information needed for coursework is found on websites and in course reference materials. We integrate library resources and tours into our Intro to Architecture class to make sure that our students have some exposure to these resources. Tony Greiner of Library and Media Resources has stopped by past department meetings to offer instructional support, and various instructors use media services to enrich their classrooms.

C. **Provide information on clerical, technical, administrative and/or tutoring support.**

We’ve made great strides in providing student support. We have 2 highly capable support staff members; Keri Salim (0.5 FTE as CAD Learning Skills Specialist since September 2011; a new position within our Department), and Peter Harrison (0.5 FTE as Instructor Support Tech II since November 2012), who are on site to assist students weekdays and in 4-hour blocks on Sundays. We also have casual employees in the lab Saturdays and Sundays to assist students.

As the **CAD Learning Skills Specialist, Keri Salim** tutors students in Autocad, SketchUp and Revit software used in the Architecture and Interior Design programs. She is typically available during pre-designated open lab hours to assist students. Participation in open lab sessions averages 15 to 20 students, increasing as the term progresses. Keri also schedules one-on-one private sessions for students who need more individualized help.

In addition to tutoring, Keri creates templates and handouts to assist students in key areas, and works with instructors to revise curriculum as needed. She is a graduate of our program and of Oregon State University, with a B.S. in Housing Studies, and periodically attends classes to improve her skillsets.

**Instructor Support Tech Peter Harrison** has a B.S. in Kinesiology and a 1-year certificate in adaptations for persons with special needs. He has worked as an Autocad drafter and consultant since 1986, has been an instructor for the University of Advancing Computer Technology, head of product support for Alan Mascord Design Associates and facilities CAD vendor of choice for Intel. Additional credentials include completion of AutoCAD certification, membership in AIBD, and being a professional designer on Metro’s Tri-County Building Codes Panel for residential construction. He has substituted as a Structures Instructor in the past. Peter joined us in late 2012 after the retirement of Gary Austin from this position.

In addition to these superb support positions, the department is fortunate to currently have **3 federal work study award positions and 3 casual student employees as lab assistants** who, combined, help monitor and run the lab during open hours. The lab offers 67 hours of open study time each week. There is always someone available for students in the lab and we find this resource is heavily utilized.

**Lois Jurhs** joined us as an 0.8 FTE Instructional Administrative Assistant in February 2013. This position was previously an 0.6 FTE. She’s the first point of contact for students in our offices in ST 200, keeps things running smoothly and steers the ship in many ways. Lois is in the office until 6 PM Mon-Thurs, and is thus able to assist students who take evening classes.
D. Provide information on how Advising, Counseling, Disability Services and other student services impact students.

Department advising is done by Perkins funded Student Resource Specialist Arlene McCashew, who advises students on all aspects of their education. This is not a new position in our department, and Arlene filled it in July 2012.

Students are supported in academic planning and goal setting, learning effective study skills, time management, navigating PCC and Financial Aid policy and procedures, facilitating communication between faculty and student; as well as peer to peer communication and resource referral, all on a daily basis.

We have recently provided students the opportunity to make their own appointments with the Resource Specialist through our program Spaces page (see link below). This allows students greater control over scheduling advising appointments, thus increasing student access to support services. We also offer evening and online advising to accommodate our part-time students.

Arlene also provides outreach and support to new and prospective students. She holds regular (2-3 times per month) information sessions, regularly updates new student information packets and advising guides, and works with the PCC web team to update and maintain the program website. She works with the advising and orientation centers throughout the district to facilitate new student registration in the program. Overall, district advisors and orientation coordinators are more aware of our program and new students are able to make informed career decisions and are better prepared in understanding the expectations of the program.

We work closely with the Counseling Office, Disability Services and the Tutoring and Multicultural Centers, to ensure that students get the resources they need to be successful in our program. In an effort to reach our students earlier, in ARCH 124 (an introductory class), we send out CPNs by week four in the term (instead of at midterm as we have in the past). So far, students have responded well and through early intervention and campus wide student support, have been able to work within the boundaries of their individual challenges sooner, and focus on their coursework without the added pressure of looming final project/exam deadlines. We will look at expanding this strategy to all ARCH classes.

Because more than half of our students in the program attend part time and must balance various work and life situations, maintaining student engagement and consequently, persistence can be challenging. This past year, we have adapted our advising focus to increase student engagement through various strategies. One strategy has been to create a Spaces page for students in the department. Here students can access a variety of information and program/industry resources. Not only do students have access to information when they need it, they have a venue to collaborate with one another, and share design ideas when they cannot be on campus: This page helps to foster a cohort model and encourages participation in the program, the industry and the PCC community.

We have also created a Facebook page, where once students ‘like’ the page, they get regular news feeds about PCC and program information, including class changes, registration dates, add/drop deadlines, delete for nonpayment information, industry news and design events. Both students and instructors can and have posted on this page. As of October 2013, there are currently 125 students who have ‘liked’ the Sylvania Design Arts Facebook page.
Our Instructors and our Resource Specialist often engage the students outside the classroom, in computer labs, during classroom presentations and in student lead activities. The Student Chapter of the National Kitchen and Bath Association (NKBA) is one such group that relies on an instructor mentor and the resource specialist to help club members promote their club, engage their peers, and promote/participate in industry activities. Being visible, and actively involved in the student’s day to day activities has a positive impact on students not only in that it helps them to feel more comfortable asking for help when they need it, but it shows them that we are interested in what they are doing and we are invested in their learning process.

Due to the size and nature of our program, we are able to develop and maintain strong connections with our students. Through this, we have determined that some students have difficulty applying various math concepts to the industry specific calculations required in their foundational classes. This precipitously affects student performance in subsequent coursework. Consequently, we have applied for a PCC Foundation mini grant to create applied math videos to complement foundational coursework and provide access to these videos on the student Spaces page. Student feedback about the site is very positive and we will continue to work on meeting student needs and engaging them in various ways.

As mentioned in Section 4E (Needs of Students and the Community/Disability Services) above, faculty members work with Disability Services in a host of ways in order to provide the richest possible learning experience for students. Typically, instructors communicate with Disability Services via e-mail or in person to find the best strategy for meeting student-requested accommodations.

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.

Ours is a program heavy on visual learning, and reliant upon application to practice and understand concepts.

To that end, most courses include both lecture and lab components. A typical division of a class that meets once a week for 4 hours is half lecture, where the instructor outlines the material, and half ‘studio lab’, where the students apply the concepts to their own projects, and have one-on-one reviews with their instructors. This is where the most intensive learning typically takes place: it’s the ‘involve me and I understand’ adage.

Several courses meet twice a week in shorter (2+ hour) time blocks; a common breakdown of these is lecture one day and studio lab the next. Design studios tend to run long (up to 4+ hours 3 days a week for the 6-credit ARCH 201 and 203 studios) to allow ample time for learning and application.

This isn’t meant to imply that there’s no flexibility toward students whose work schedules don’t readily allow for such blocks of time. There is.

An example: we’ve tried to schedule lectures in the 200-level design studios only one day a week, with labs the other two days, so the possibility exists for working students to miss only one day of work, rather than three, without undue impact on their performance in the course.

Of course, there will always be those students who can take only night classes. The lack of lab time and access to sufficient support/tutoring staff continues to be an issue for them. We’ve extended weekend lab hours in an attempt to offer more such services.
7. Career and Technical Education (CTE) Programs: to ensure that the curriculum keeps pace with changing employer needs and continues to successfully prepare students to enter a career field.

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

Developing and maintaining consistent membership in our Advisory Committee has not been very successful. This was the case at the last Program Review in 2009 and has not improved since. While there are many architects, designers, manufacturer’s representatives, and past adjuncts who express interest in the Committee, it’s been consistently challenging to get them to attend meetings. We have offered meetings at varying times of day, but this has not made it easier for busy professionals to get away from work and get to our campus. We are discussing ideas to increase participation. Those who do attend meetings have had an impact on our curriculum and instructional content. Professionals from industry have provided valuable input regarding their use of CAD software, allowing our program to follow suit.

As outlined in Section 3B (Educational Initiatives) above, an area where we’ve had good success is in inviting professionals in as guest critics for design and studio courses. The ‘real life’ projects we do for specific sites in the Portland area acts as a draw for interested professionals, and we’ve been pleased to see the development of some working relationships between our students and professionals.

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

As a CTE (career technical education) program in Oregon, we believe in the ambitious standards set forth by Oregon’s 40-40-20 initiative, which states that by 2025 all Oregon adults will have earned a high school diploma, 40% of them will have earned an associate’s degree or postsecondary certificate, and 40% will have earned a bachelor’s or advanced degree. So we see the role of CTE programs like ours as increasingly vital to equip the workforce of the future with the practical, relevant skills needed to succeed at well-paying jobs.

To that end, program entry is contingent upon the same requirements as with most other CTE programs at PCC. We frame what we offer to prospective and current students in the context of a job focus, as opposed to striving for specific targets in enrollment, graduation and completion numbers. Our Student Support Specialist, Arlene McCashew, meets with all students to outline the demands and rigors they can expect to see, and to make them aware that the ultimate goal is gainful employment.

Architectural Design & Drafting isn’t a ‘closed’ program per se, where enrollment numbers are capped, but we do offer important benchmarks that must be met for students to graduate. Perhaps the most important of these is that students earn at least a C in all of the major-specific courses to pass, and a B or better in the design
studios to earn the right to be offered a co-op position; we’ve found that in conjunction with the outcome and assessment work we do (as outlined above in Section 2, Outcomes and Assessment), this standard ensures that our graduates are well-equipped to enter the workforce, and that their capabilities reflect well on us.

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.

Historically, many students have met their CWE (internship) requirement simply by getting a job, and many satisfied employers came back to our program to fill additional spots. But over the last 5+ years, we’ve had significantly fewer job requests from prospective employers than we’ve had students to fill jobs. This was and is no doubt a function of the economic recession and the condition of the local building and construction industries. Some economic indicators and anecdotal evidence indicate there’s been a rebound over the past 2 years from the gloomiest days of 2010-11, but competition for good jobs remains fierce, and we worry that there isn’t a position for each person talented and knowledgeable enough to have one.

That said, we have always been open and forthright about the realistic conditions of the market with our students and graduates, while at the same time assisting them as best we can toward finding that job.

Wages for architectural and civil drafters, per the Oregon Labor Market Information System (OLMIS), range from $21.10 to $28.30 per hour in Multnomah and Washington Counties (with the statewide average slightly lower at $19.73 to $27.26) in 2013. These positions are defined as those that “prepare detailed drawings of architectural and structural features of buildings or drawings and topographical relief maps used in civil engineering projects, such as highways, bridges, and public works. Utilize knowledge of building materials, engineering practices, and mathematics to complete drawings.”

Our co-op records indicate graduates typically earn a starting wage of $15.00-$21.00 hourly.

The OLMIS employment forecast anticipates a 19% increase in job growth in our field between 2010 and 2020 in Multnomah and Washington Counties, and a 31% increase statewide. It should be said that these prognostications are far from certain, and will always include some inherent conjecture and speculation. Programs and professions evolve, shift and regenerate themselves: the best we can do is to adapt as the market does. We feel we’re doing that.

The demand remains for competent, skilled drafters. Architectural designers and drafters are hired by firms of all sizes or are self-employed. Employment is also available in the drafting departments of many cities, counties and state or federal agencies. Graduates of the PCC drafting program have worked and are currently working at area design and architectural firms such as Arciform, Suntel Design, Advanced Seismic Hardware, Power Engineering, THA Architecture, Evergreen Engineering, Interface Engineering and Ankrom/Moisan Architects.

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

In previous years, some students left before completing their degrees because they were able to find jobs in the architectural field prior to graduation. This is rarely the case these days!
It is our observation that program attrition and retention are at relatively stable rates. As in any ‘technical’ field, some natural attrition will occur: the coursework isn’t for everyone. Those that struggle along the way are supported better than ever, as noted above in Sections 6A and C (Facilities/Support), but some come to the conclusion that the program, and the commitment required, isn’t for them. Course completion rates in the program, according to PCC’s Office of Institutional Effectiveness, were 80.4% in 2010-11, 80.6% in 2011-12 and 79.2% in 2012-13. (These numbers are defined as the percentage of students in all courses who earn an A, B, C or a P grade, and thus complete the course).

Looking more specifically at the 29 core ARCH courses offered in the AD&D program, the percentage of students who don’t complete a specific course vary from under 6% to close to 30% (in the first-term ARCH 110 course). This probably reflects the reality mentioned above, that some realize they can’t meet the obligations required to succeed in the program. While we don’t have hard data on the specific reasons some students leave before completion, we surmise they’re the typical ones seen across the board in higher education: the difficulty in balancing life/work/college, financial hurdles, constraints of time and transportation, and difficulty in mastering new technology and concepts.

Of these reasons, the one we’re best positioned to address, of course, is the last one: difficulty in grasping new technology and concepts. We feel we’re doing a credible job of that, as outlined in several areas in this report. Of course, there is always room for improvement, and we’re eager and open to any suggestions as to how we can do so.

Students who begin coursework in the Sustainable Building and NKBA Kitchen and Bath certificates typically complete them. This may be due to the likelihood that they’ve already earned degrees, here or elsewhere, and have figured out how to engage the workload and succeed.

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

There are some options to transfer a portion of our coursework to various schools to obtain a bachelor’s degree; however, we do not see or market ourselves as a transfer program. Students pursuing a transfer typically work with a general academic advisor for information about a General Transfer Degree. We’ve lost our OSU transfer option this past year. We’ve begun talking with Marylhurst University about an articulation for an architecture-type degree, perhaps a 4-year non-professional B.S. in Architectural Technology. See the third recommendation under Section 8B (Recommendations) below.

Students who’ve earned their 2-year AAS degrees in Architectural Design & Drafting and hold a Bachelor’s degree have the option to move on to accredited university architecture programs. We’ve had 3 recent grads move on to the University of Oregon’s M. Arch. program after going through our articulation with OSU, and another of our ace students enrolled in the M. Arch. program at UC-Berkeley this past fall. Judging by the amount of requests we get for letters of reference for admission into bachelor’s and graduate degree programs, several of our students have advanced degrees in their viziers.

F. Describe and explain any additional changes that have been made to the program since the last program review.

We should mention that our office workspace has changed dramatically (ST 208 is now ST 200), and restate that the bond work continues all around us, as outlined in Section 6A (Facilities and Support) above. We have visions of grandeur, or at least of snazzy new spaces, in a building that may yet inspire our charges ;-)
8. **Recommendations**

   **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).**

It should first be said that the quality of work the students produce in our program is top notch. As you’ve no doubt picked up from the vignettes in this report, the students exhibit phenomenal energy, remarkable passion and real talent for their craft. We feel the work absolutely holds its own with what one would expect from a professional (4- or 5-year) architecture program, and we know that as we send our graduates into the workforce, they reflect incredibly well on us. To keep this going is the motivation that drives all of us, and it cannot be left unsaid that we’re darned proud of what we do here.

That said, we can always improve, and to not continuously strive to do so would short-change our students.

To this end, improvement is sought in:

- **Updating CWE experiences in a still-slow economy.** As outlined in section 7C (Job Placement Data) above, competition for good jobs remains fierce, and we worry that there isn’t a position for each person talented and knowledgeable enough to have one. This reality is engaged as we seek to fill internships.

- **Tracking of graduates.** The perennial conundrum. Ours was one of the programs included in an NSF grant to create an ‘exit platform’ with a green jobs focus, where graduates registered online and received periodic notices asking them to keep us ‘in the loop’ with regard to their employment and activities. We found very little follow-through, and haven’t devised a better way since.

- **Math skills.** We’ve determined that some students have difficulty applying various math concepts to the industry specific calculations required in their core classes. This negatively affects student performance in subsequent coursework. As outlined in Section 6D (Facilities and Support) above, we have applied for a PCC Foundation mini grant to create applied math videos to complement foundational coursework and provide access to these videos on the student Spaces page.
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.

Recommendation 1: rebirth of the Building Inspection Program

Denise Roy has just begun an inquiry regarding our Building Inspection Program, which has been in suspension since the throes of the recession. She’s contacted a number of building inspection officials, who have indicated there is a need to re-establish our program, as they are looking to fill new positions.

Hearing that there’s an increased demand from industry is exciting news: this could mean a boost to enrollment, and we could develop a degree program as well as several certificates.

Natural curriculum overlap between Architectural Design & Drafting and Building Inspection includes all our courses in building systems and structures.

Recommendation 2: certificate in software programs

It’s occurred to us that there are a large amount of professionals in our program: this includes people from construction backgrounds, as well as those with extensive design experience. Many of them are interested primarily (and at times, only) in learning software and in sharpening their CAD skills. As such, they’re non degree seeking and aren’t interested in following the ‘typical’ course sequencing.

Offering a certificate that acknowledges and showcases their skills in relevant software might give them an edge in the marketplace, and is, we think, something worthwhile for our department to pursue. It would offer as a by-product the ability for us to steer those who might ‘drop in’ for only a few courses toward a more structured education and tangible attainment.

Recommendation 3: articulation with a B.A. or B. S. in Architectural Studies program

Since we recently lost the articulation we had with Oregon State University in Housing Studies, at the moment our students have nowhere to go to get an architecture-related B.A. or B.S. While it may be ideal to someday offer a bachelor’s degree in architecture at PCC, that isn’t realistic at the moment. So we’re curious about other models. An interesting example is provided by PCC’s business program, which is putting together a bachelor’s degree program with Marylhurst University. The model is set for students to take 50-70 credits at PCC, and then have the rest of the program delivered to them at PCC campuses, via Marylhurst instructors. Students will graduate with a B.S. in Business from Marylhurst. Marylhurst is discounting the tuition; if you calculate up to 70 credits at PCC, plus the estimated $26,000 cost of Marylhurst’s tuition, the four-year B.S. degree ends up costing about the same as it would at any of the 4-year universities in the Oregon state system.

This might be a good model if we could build some type of similar articulation, where our graduates could earn an architecture-related degree such as a B.S. in Architectural Technology, or something similar. It could still focus on residential design and software skills, and offer an energy analysis, or other, focus.
We made it!