

Program Self Study
Department of Construction Management
University of Washington

NARRATIVE TABLE OF CONTENTS

	<u>Page</u>
I. Introduction	
A. Name of unit authorized to offer degrees	1
B. College	1
C. Titles of degrees offered	1
D. Brief history of the field and its history at the University of Washington	1
II. Self-Study Assessment	
<i>A. General Self-Evaluation</i>	3
1. What are your unit’s strengths? In what ways is your unit a leader in your field?	3
2. How do you measure the success of your unit as a whole? What teaching, research and service performance criteria are typical in your field? Which units nationally do you consider to be your peers along these dimensions?	7
3. What are your unit’s weaknesses? Where could your unit most use improvement? What challenges or obstacles make it difficult for you to overcome these weaknesses? What further challenges do you foresee in the coming years?	9
4. What changes have occurred in teaching, research and service in your field since the last review that have influenced your conception of the unit’s role? What pressures, internal and external, have caused significant changes, and what further pressures and changes do you anticipate in the next ten years? What changes have taken place in relationships between your field and other related fields? Which (if any) of these have had an impact on your unit?	11
5. Do you observe differences between your view of your role and college and university expectations of your unit? If so, what are these? Do you see any ways to resolve these differences?	12

6. Do faculty participate in the process of unit governance, self-study, and strategic planning? How do your faculty participate in governance and strategic planning?	13
7. Is mentoring junior faculty identified as a priority? Outline your unit's approach to mentoring junior faculty, graduate students, and undergraduate students.	13
<i>B. Teaching</i>	14
1. For each faculty member in your department, list: number of courses taught per year, number of credits taught, and total student credit hours.	14
2. How are teaching responsibilities allocated?	14
3. Other than classroom teaching, how are faculty involved in undergraduate student learning and development?	14
4. How do faculty involve undergraduate students in research and scholarship?	15
5. How does the department evaluate the instructional effectiveness of faculty?	15
6. Please summarize the data you collect, possibly using OEA or CIDR, to evaluate the impact of your teaching on student learning?	15
7. What procedures, such as mentoring junior faculty, does the department use to help improve undergraduate teaching and learning?	16
8. How does the unit track and promote innovations and best practices in undergraduate and graduate student learning?	16
<i>C. Research and Productivity</i>	16
1. How does your unit balance the pursuit of areas of scholarly interest by individual faculty with the goals and expectations of the department, school, college, and university? How are decisions involving promotion, salary, and retention made?	16
2. How are junior faculty members mentored in terms of research and creative productivity?	17
3. What has been the impact of your research on your field and more broadly over the past five years?	17

4. In what ways have advances in your discipline, changing paradigms, changing funding patterns, new technologies, or other changes influenced research, scholarship, or creative activity in your unit?	17
5. What variations exist among your faculty in terms of methodologies, paradigms, or subfield specializations? Are faculty offices all in the same building, or are they geographically dispersed? What strengths and weaknesses for the unit as a whole are generated by differences among its faculty? Do any of these differences generate obstacles to communication? If so, what strategies has the unit developed to promote communication between different constituencies, and how successful have these strategies been?	18
6. What impediments to faculty productivity exist, and do you see ways of reducing these?	19
7. What steps has your unit taken to encourage and preserve productivity on the part of all segments of your staff? How are staff recognized and rewarded? What programs are in place to support professional development of staff?	19
<i>D. Relationships with Other Units</i>	19
1. In what ways do you collaborate with units at other institutions or at the University of Washington? What are the impacts of these collaborations? Do members of your unit engage in or have opportunities to engage in interdisciplinary research? Do ties with other units or other kinds of interdisciplinary opportunities aid you in recruiting new faculty and graduate students? Do you face impediments to developing interdisciplinary research or connections with other units? Describe your unit's relationships with other units and work with other units to plan future initiatives.	19
2. How could the university aid you in strengthening such ties?	20
3. There is an expectation of faculty participation in the governance of the Department, the College, and the University. How do faculty members within your unit meet this expectation? How is participation in shared governance encouraged and valued?	21
<i>E. Diversity</i>	21
1. Describe for your unit the inclusion of underrepresented groups for students (by entering cohort), faculty (by rank), and staff.	21
2. Provide data comparing the teaching loads and other duties of any members of underrepresented groups in your unit to others of comparable professorial rank.	21

3. What steps, including outreach and recruitment, has your unit taken to ensure an environment that values diversity and supports all faculty, students, and staff, including members of underrepresented groups? Have you been able to retain students and faculty from these groups once you have recruited them? What factors aid or impede your efforts to recruit and retain members of underrepresented groups? Is there anything the University can do to help you with recruitment and retention? 22

4. Does your unit work with the Graduate Opportunity Minority Achievement Program (GO-MAP) or Office of Minority Affairs (OMA) on student recruitment and retention? How is your unit involved in collaborative or university-wide efforts to increase the diversity of students and faculty? 22

5. Has the increased diversity of the student body and/or faculty in your department generated any changes in your curriculum? In your unit's academic culture or climate? 23

F. Degree Programs 23

1. Master's Degree Program 23

a. Show the relationship of master's degree program to the undergraduate program in your unit. Describe the objectives of your master's degree programs in terms of student learning of the content of your field, professional skills, skills for lifelong learning, and other relevant outcomes, as well as its benefits for the academic unit, the University, and the region. Compare your objectives with those for programs at institutions you think of as peers. 23

b. Describe the standards by which you measure your success in achieving your objectives for master's programs. Using these standards, assess the degree to which you have met your objectives. Indicate any factors that have impeded your ability to meet your objectives and any plans for overcoming these impediments. 26

c. How are you staying informed of the career options that graduates of your program typically pursue and the success they are obtaining? How are you using this information in department planning? 26

2. Undergraduate Program 27

a. Describe the objectives of your undergraduate program in terms of student learning of the content of your field, professional skills, skills for lifelong learning, and other relevant outcomes, as well as its benefits for the department, University, and region. 27

b. Describe the standards by which you measure your success in achieving your objectives for your undergraduate program. Using these standards, assess the degree to which you have met your objectives. Indicate any factors that have impeded your ability to meet your objectives and any plans for overcoming these impediments.	28
c. In what ways have you been able to involve undergraduates in research programs in your unit? How do you assess the results? What other teaching innovations have your faculty undertaken or are your faculty considering?	29
d. Indicate the steps the unit has taken to comply with state-mandated accountability measures (i.e., reduced time to degree; increased graduate efficiency index; increased retention rate). Have these steps improved the quality of student learning in your program? Why or why not? Do you envision further steps to increase compliance with state-mandated accountability measures?	29
e. How are you staying informed of the career options that graduates of your program typically pursue and the success they are obtaining? How are you using this information in departmental planning?	30
<i>G. Graduate Students</i>	30
1. Recruitment and Retention	30
a. Describe recruitment/outreach programs to attract graduate students. Specifically address outreach to underrepresented groups. Describe the measures you use to assess the success of your efforts. How successful have they been?	30
b. What are your retention rates for your master's programs? To what do you attribute attrition? What steps are taken to minimize attrition?	30
2. Advising, Mentoring and Professional Development	31
a. In what ways do you communicate academic program expectations to students? Such information should include: timelines, phases and benchmarks of the degree program; procedures for committee formation; coursework, exam, and presentation; and scholarly integrity.	31
b. In what ways do you inform students of your unit's graduation and placement record? Such information should include time to degree;	

average completion rates; and employment of graduates two and three years after degree completion.	32
c. Please attach an example of your departmental mentoring/advising plan.	32
3. Inclusion in Governance and Decisions	32
a. In what ways do you include graduate students in the governance of your department?	32
b. Please describe your grievance process and characterize the nature of any grievances that have been lodged over the past three years.	32
4. For Graduate Student Service Appointees, please describe:	33
a. Appointment process.	33
b. Average duration of appointment.	33
c. Mix of funding among various appointments.	34
d. In what ways are graduate student service appointees supervised?	34

**Self Study
Department of Construction Management
University of Washington**

NARRATIVE

I. Introduction

A. Name of unit authorized to offer degrees: Department of Construction Management

B. College: College of Architecture and Urban Planning

C. Titles of degrees offered:

Master of Science in Construction Management

Bachelor of Science in Construction Management

D. Brief history of the field and its history at the University of Washington:

Construction management is a multi-dimensional professional field that involves the planning and construction of man's built environment. Some construction managers identify project criteria and scope, select design teams to develop detailed plans and specifications, and select skilled construction teams to create facilities described in the plans and specifications. Other construction managers analyze project plans and specifications, determine the means and methods of construction, develop project budgets, and plan work sequences to construct projects efficiently. Still other construction managers are responsible for managing construction firms.

The construction management program at the University of Washington had its beginning during the 1950's when students created their own individual programs from existing university courses. Students pursuing these studies were awarded bachelor of arts degrees from the College of Arts and Sciences. In October 1962, a decision was made to discontinue the bachelor of arts

option within the College of Arts and Sciences and to replace it with a similar program in the College of Architecture and Urban Planning. In May 1963, the Board of Regents approved the curriculum and created a program entitled Building Technology and Administration. The first course was offered to 31 students during the winter quarter 1964. The first six graduates were granted bachelor of science degrees in June 1965.

The present department was created by the Board of Regents in August 1968 and given the title of the Department of Building Construction. In April 1994, the Board of Regents approved the curriculum and authorized the creation of a Master of Science in Building Construction program. The first graduate courses were offered during the autumn quarter 1994 with an initial enrollment of ten graduate students. Also in 1994, the department developed the Certificate Program in Construction Management with UW Extension. In 1996, the Board of Regents changed the name of the department to the Department of Construction Management and the degrees offered to Bachelor of Science and Master of Science in Construction Management. The first Master of Science in Construction Management degree was awarded in June 1997. In 2002, the department developed a self-sustaining online graduate program in cooperation with the Department of Civil and Environmental Engineering and UW Extension. Undergraduate enrollment is about 90 (45 in each class), resident graduate enrollment is about 50, and there are about 15 construction management students in the online program.

The department participates in the college interdisciplinary Ph.D. program. One construction management Ph.D. student was admitted in 2005, and a second was admitted in 2006. Successful students earn a Ph.D. in the Built Environment. Since the program is not administered by the Construction Management Department, it is not addressed in this self study.

II. Self-Study Assessment

A. General Self-Evaluation

1. What are your unit's strengths? In what ways is your unit a leader in your field?

Unit Strengths

The strengths of the Department of Construction Management are

- The quality of its students
- The reputation of its educational programs
- The quality and engagement of its faculty
- The close relationship between the department and the construction industry
- Its evolving research enterprise

Over the past five years, admission to the undergraduate program has become highly competitive, and the quality of students admitted has significantly increased. Because of the department's reputation for the quality of its graduates, industry-recruiting activity has also increased over the same time period. During the past three years, most of our graduates have received multiple employment offers. Most of our graduate students are either working professionals, military officers, or international students. For those few master's degree graduates seeking employment, the department has been able to facilitate their placement.

All courses in the undergraduate and graduate programs are taught by full-time faculty or by part-time highly-qualified industry professionals. Teaching assistants may be used to assist with the evaluation of student work, but teaching assistants are not used to deliver instruction. Student advising is handled by full-time faculty, and the normal teaching load for full-time faculty members is four courses per academic year to ensure that they have adequate time for research and scholarly work.

The department enjoys a close relationship with the construction industry through its Industry Advisory Council (Appendix Q); participation in industry associations such as Associated General Contractors of Washington, Associated Builders and Contractors of Western Washington, Mechanical Contractors Association of Western Washington, Puget Sound Chapter of National Electrical Contractors Association of America, Master Builders of King and Snohomish Counties, Construction Management Association of America, Design Build Institute of America, American Concrete Institute, National Association of Women in Construction, the Construction Institute of the American Society of Civil Engineers, and the Association for the Advancement of Cost Engineering; and contact with its alumni. Industry professionals serve as part-time lecturers, guest speakers, as well as advisors and jury members in the Capstone course.

Leadership in Field

Leadership in Construction Education

The quality of the educational experience provided by the department has improved over the past five years as two new faculty members have been hired and the curriculum has been strengthened to emphasize technical, managerial, and communication skills. The number of high-quality applicants to our undergraduate program has increased over the period, while the number of applicants to our graduate program has remained about the same.

Construction management students participate in national and regional student competitions sponsored by the Associated Schools in Construction, the Associated General Contractors of America, the Associated Builders and Contractors, and the Mechanical Contractors Association of America. Graduate student teams (4 students) took first place in national student competitions in 2002 and 2005 and second place in 2006. Undergraduate student teams (6 students) took first place in the national mechanical contractors competition in

2001 and second place in 2005. An undergraduate student team (4 students) took second place in the 2006 national student competition sponsored by the Associated Builders and Contractors. Undergraduate student teams (6 students) took first place in regional (Washington, Oregon, and California) design-build competitions in 2002, 2003, 2004, and 2006. Undergraduate student teams (6 students) took first place in regional commercial construction competitions in 2003, second place in 2006, and third place in 2001 and 2002. Undergraduate student teams (6 students) took first place in regional residential construction competitions in 2005 and 2006 and second place in 2003. Undergraduate student teams (6 students) took second place in heavy civil construction competitions in 2001 and 2003 and third place in 2002, 2004, and 2006.

Leadership in Research

The department is aggressively pursuing research opportunities, capitalizing on the expertise of recent faculty hires. The focal point of these initiatives will be the Pacific Northwest Center for Construction Research and Education (Appendix R), when construction is completed.

Professor Nematı received a \$100,000 grant from the Federal Highway Administration and the Innovative Pavement Research Foundation to study accelerated construction of urban intersections with Portland cement pavement.

Professor Rojas received a \$60,000 grant from the New Horizons Foundation to develop techniques for encouraging the millennium generation to join the mechanical construction industry and a separate \$60,000 grant from the Electrical Contracting Foundation to develop techniques for encouraging the millennium generation to join the electrical construction industry. He received a \$74,000 grant from the Electrical Contracting Foundation to determine best safety practices for the electrical construction industry. He received a \$30,000 grant from the National Science Foundation and the Construction Industry Institute to create a virtual community of

scholars, a \$24,000 UW Royalty Research Fund grant for evaluating a general-purpose situational simulation environment for construction education, and a \$436,000 grant from the United States Department of Education to develop situational simulations for problem-based learning by construction management students.

Professor Abdel Aziz received a \$50,000 grant from the Washington State Department of Transportation (WSDOT) for performance analysis and forecasting for WSDOT highway projects. He was also appointed by the National Transportation Research Board to a National Cooperative Highway Research Program oversight committee for performance-based contracting for maintenance.

Professor Schaufelberger received a \$50,000 grant from the Electrical Contracting Foundation to study human resource management in the electrical construction industry and an \$18,000 grant from the Associated General Contractors of Washington to study the impact of project labor agreements on public projects in Western Washington. He also receives annual grants from the Associated General Contractors Association of Washington to study the impact of the construction industry on the economy of the State of Washington.

Leadership in Scholarship

Department faculty members have demonstrated leadership in scholarship by presenting papers at conferences and by publishing journal articles and books. Professors Abdel Aziz, Daniali, Dossick, Nemati, Rojas, and Schaufelberger have presented papers at national conferences conducted by the American Concrete Institute, American Society of Civil Engineers, and American Society of Engineering Education as well as two international conferences: International Conference on Construction Engineering and Management and Joint International Conference on Computing and Decision Making in Civil and Building Engineering. They also

have published peer-reviewed papers in national journals. The department's productivity in the production of scholarly work will improve as we strengthen our research activities. In spite of limited travel budgets, the department uses its discretionary funding to finance faculty member participation in technical conferences.

2. How do you measure the success of your unit as a whole? What teaching, research and service performance criteria are typical in your field? Which units nationally do you consider to be your peers along these dimensions?

Measures of Success

Criteria used by the department to measure its performance include the following:

- Quality and quantity of graduates from undergraduate and graduate programs.
- Accessibility of programs to both working professionals and full-time students.
- Success of graduates and feedback from industry.
- Quality and relevance of research and scholarly work.
- Faculty participation in college and university councils and committees and professional organizations.

The department has placed virtually all of its bachelor's degree graduates for the past ten years and master's degree graduates looking for employment during the past seven years. The demand for graduates has far exceeded the number available, particularly during the past three years. Additional students cannot be accommodated until additional faculty resources are obtained. Most graduates find positions in California, Oregon, Washington, and Hawaii, but a few have pursued careers in other states. All graduate courses are offered in the evening or online to accommodate working professionals. Personal contacts with alumni and their employers indicate that most have been very successful. Most alumni attribute their success to their educational experience at the University of Washington. Industry leaders have provided

feedback to the department regarding the quality of the graduates from the program (Appendix T). The Industry Advisory Council (Appendix Q) helps the department ensure that the curriculums remain current. The volume of research activity and the production of scholarly work has increased over the past three years, and should increase to higher levels in future years, as new faculty members develop their research agendas. Department faculty members serve in the Faculty Senate and on numerous university committees. Others work with industry groups such as the Associated General Contractors of Washington Education Foundation and the Puget Sound Chapter of the National Electrical Contractors Association of America by participating in their professional continuing education programs.

Typical Teaching, Research, and Service Performance Criteria

The distribution of faculty effort in most construction management programs that have a graduate program is 40% teaching, 40% research, and 20% service. This is a nominal goal for most faculty members in our department. Some may have a higher weighting for teaching or research, but the primary faculty effort is expected in those two areas. Expected teaching loads for full-time faculty members were reduced from five to four courses per year in 2002 to encourage more productivity in research and scholarly work. Teaching loads can be reduced further, if faculty members have specific research projects and wish to buy out their time.

Peer Construction Programs

The construction programs at the following institutions are considered as peers:

- Auburn University
- Colorado State University
- Texas A&M University

- University of Florida

All of these programs have both graduate and undergraduate programs. Total enrollment in each of these programs exceeds the enrollment in the UW construction management programs.

3. What are your unit's weaknesses? Where could your unit most use improvement? What challenges or obstacles make it difficult for you to overcome these weaknesses? What further challenges do you foresee in the coming years?

The primary weaknesses of the department are:

- Lack of faculty
- Lack of facility for hands-on educational experiences for students
- Lack of research/scholarly work productivity
- Lack of diversity among faculty and students

The department limits undergraduate enrollment because of the lack of sufficient faculty resources to accommodate additional students. More students apply to the program each year than can be accommodated with existing faculty resources. Admission is limited to 50 each year. With two additional faculty members, the number could be increased to 75 per year. The industry would like to hire more graduates from the program, and additional students seek admission, but the department is unwilling to reduce the quality of its programs by increasing class sizes to accommodate them without additional faculty resources.

The department currently has no laboratory facilities for student learning, but has embarked on a fund-raising effort to develop 28,000 square feet of space at Sand Point to create the Pacific Northwest Center for Construction Research and Education. Please see Appendix R for a discussion of the center. When construction at Sand Point is completed, space will be available for students to construct building components and to have other hands-on learning experiences. The exact timing for the completion of the project is unknown and depends on

department fundraising activity. Construction of Phase I of the project started in August 2006, and is scheduled for completion in November 2006. Two additional construction phases are planned to complete the development of the space.

Until 2002, the primary focus of the department was on teaching. Two new faculty members have been hired who are interested in research, faculty teaching loads have been reduced, and teaching assistants have been hired to help faculty with the evaluation of student work. This coupled with an additional faculty hire, that has just been advertised, should allow the faculty to increase its research and scholarly work productivity. The development of the Pacific Northwest Center for Construction Research and Education at Sand Point will provide facilities that faculty and students can use to support their research activities.

The lack of diversity among the faculty and students is a major concern. The department has one Hispanic associate professor and one female assistant professor. A position was offered to another female faculty candidate in 2005, but she declined the offer. The department hopes to attract a diverse pool of applicants for its vacant position. Few minority or female students apply for admission to the undergraduate program. The department advertises its program to high schools, community colleges, and within the university. The percentage of female graduate students typically is near 20% while the percentage of females in the undergraduate program usually is about 10%. The percentage of minority students in both programs is about the same, usually about 2-3%.

The lack of faculty participation in the supervision of graduate student theses and research projects was an issue in the last Program Review (2001). Most of the graduate students were supervised by the graduate program coordinator, Professor Schaufelberger. To solve this issue, Professor Rojas became the graduate program coordinator beginning Autumn Quarter

2004, and additional faculty members are participating in the supervision of graduate students theses and research projects. Progress has been slow, but will improve as new students are assigned to work with other faculty members.

4. What changes have occurred in teaching, research and service in your field since the last review that have influenced your conception of the unit's role? What pressures, internal and external, have caused significant changes, and what further pressures and changes do you anticipate in the next ten years? What changes have taken place in relationships between your field and other related fields? Which (if any) of these have had an impact on your unit?

Changes since Last Review

A major change that is continuing to evolve is the maturing of construction management as a recognized profession. The number of universities offering degrees in construction management continues to grow, both in the United States and in other countries; the number of undergraduate construction management students has significantly increased, with some programs accommodating 400-600 students; and industry demand for graduates has greatly increased. Much of this demand is a result of the competitive nature of the industry, the technical and business skills needed for success, and the level of construction activity across the world. Purchasers of construction services are more sophisticated, and they demand high quality projects that must be completed in short periods of time. This requires skilled construction managers, placing increased pressure on the educational institutions to educate them.

Another major change has been the increased use of automation for construction management. This is particularly true for the use of web-based systems for project management and collaboration. Interest in sustainable construction practices has also increased during the past 5 years. Both web-based project management and sustainable construction have been added to our curriculum.

Anticipated Changes over Next Decade

One major change anticipated over the next decade is the increased use of building information models (BIM), which are three-dimensional computer-based models that are used for project planning, design, construction, and maintenance. A result will be a more collaborative approach to the design, construction, and management of buildings and infrastructure. The other major change will be the use of new construction materials and techniques. The Pacific Northwest Center for Construction Research and Education will be a focal point for the department's research into these areas. Curriculum will need to be reviewed to incorporate research findings and changes in industry practices. These anticipated changes also will generate increased demand for continuing education programs.

Relationship Changes with Related Fields

The primary changes with related fields will result from increased collaboration among users, designers, constructors, and maintainers in the delivery of construction projects and a greater sensitivity to sustainability and cost-efficiency. Also, visualization technology will be increasingly used as education and planning tools. This will lead to closer collaboration with the College of Education as well as the Departments of Architecture, Civil and Environmental Engineering, and Mechanical Engineering.

5. Do you observe differences between your view of your role and college and university expectations of your unit? If so, what are these? Do you see any ways to resolve these differences?

We believe that the department's view of its roles are in alignment with the priorities of both the college and university. These priorities are imbedded in our strategic plan (Appendix F). Our

research productivity has been less than desired, but should improve as recent faculty hires develop their research agendas, and we obtain funding for additional faculty members and graduate assistants. We believe significant productivity improvement can be achieved when the Pacific Northwest Center for Construction Research and Education is operational at Sand Point (Appendix R).

6. Do faculty participate in the process of unit governance, self-study, and strategic planning? How do your faculty participate in governance and strategic planning?

The department's strategic plan was developed during several faculty retreats and is used as the foundation for the department's outcome assessment evaluation. Each faculty member annually identifies his or her accomplishments relative to the strategic plan. Summary data is then reviewed and evaluated in a faculty meeting to determine if adjustments to the plan are needed. All faculty hiring and promotion decisions are made by the faculty, as are any curriculum changes, admission policies, and graduation requirements.

7. Is mentoring junior faculty identified as a priority? Outline your unit's approach to mentoring junior faculty, graduate students, and undergraduate students.

Mentoring junior faculty is a priority for the department. New faculty are monitored by the chair and frequently advised as to actions needed to enhance their teaching, research, and scholarly endeavors. Annual performance reviews are conducted and frequent informal sessions are held to ascertain new faculty members' performance. In addition, new faculty members frequently consult with experienced faculty members both within and outside the department.

Mentoring of graduate students is handled by the graduate program coordinator and individual faculty members. Graduate students often approach their course instructors for career advice. Undergraduate mentoring is less frequent than graduate student mentoring.

Undergraduate students having academic difficulty are mentored by their assigned academic advisors. Those undergraduate students seeking career advice typically approach their course instructors.

B. Teaching

1. For each faculty member in your department, list: number of courses taught per year, number of credits taught, and total student credit hours.

Name	Number Courses	Number of Credits	Student Credit Hours
Professor Daniali	3	11	453
Associate Professor Goldblatt	6	18	621
Associate Professor Nemati	4	12	237
Associate Professor Rojas*	5	9	207
Associate Professor Schaufelberger	6	18	455
Assistant Professor Abdel-Aziz*	4	11	391
Assistant Professor Dossick	3	9	627

* Professors Abdel-Aziz and Rojas teach additional courses during summer quarter for which they receive supplemental compensation.

2. How are teaching responsibilities allocated?

Individual faculty members notify the department chair regarding which courses they prefer to teach. Where possible, the chair accommodates the faculty members' interests. The typical teaching load for an untenured assistant professor is 3 courses per academic year, except they typically are assigned only 2 courses during their initial year of appointment. Tenured faculty members typically are assigned 4 courses per year, unless they buy out their time or undertake an administrative responsibility. For example, the graduate program coordinator is assigned 3 courses, for a one-course release.

3. Other than classroom teaching, how are faculty involved in undergraduate student learning and development?

All department full-time faculty members serve as advisors to a set of assigned undergraduate students and periodically supervise independent studies undertaken by undergraduate students,

who may or may not be the students the faculty members are assigned to advise. Faculty members also serve as advisors to student organizations, such as the Associated Students in Construction and the American Concrete Institute Student Chapter and coaches for the student competition teams.

4. How do faculty involve undergraduate students in research and scholarship?

Few undergraduate students are involved with faculty in research and scholarly activity. A few of the students take independent studies, which involve working with a faculty member in a research endeavor.

5. How does the department evaluate the instructional effectiveness of faculty?

The department uses student evaluations in each course as one measure, conducts peer-review of faculty teaching, and uses student performance in the Capstone Course and feedback from industry jury members. In addition, the chair meets with the graduating students each spring to obtain their overall assessment of individual courses and the curriculum as a whole.

6. Please summarize the data you collect, possibly using OEA or CIDR, to evaluate the impact of your teaching on student learning?

The following average course evaluations are based on student evaluations over the past three years. Copies of the individual course evaluations are in Appendices M and N.

Name	Undergraduate Courses	Graduate Courses
Professor Daniali	3.5	N/A
Associate Professor Goldblatt	4.1	4.7
Associate Professor Nemati	3.8	3.4
Associate Professor Rojas	4.0	4.2
Associate Professor Schaufelberger	4.1	4.2
Assistant Professor Abdel-Aziz	2.9	4.0
Assistant Professor Dossick	3.9	N/A

(Rating scale: 5 – excellent, 4 – very good, 3 – good, 2 – fair, and 1 – poor)

7. What procedures, such as mentoring junior faculty, does the department use to help improve undergraduate teaching and learning?

The department chair discusses course content and student requirements with faculty members who are assigned to teach courses for the first time. The chair also provides feedback to individual faculty members regarding end-of-year discussions with graduating students and review of student evaluations for individual courses. Faculty members are encouraged to participate in CIDR-sponsored workshops to enhance their teaching.

8. How does the unit track and promote innovations and best practices in undergraduate and graduate student learning?

The primary means is by attendance at the annual conferences of the Associated Schools of Construction. At these conferences, faculty members from member universities discuss the challenges and lessons learned regarding individual courses, such as construction materials and methods, cost estimating, project scheduling, project management, and construction law.

C. Research and Productivity

1. How does your unit balance the pursuit of areas of scholarly interest by individual faculty with the goals and expectations of the department, school, college, and university? How are decisions involving promotion, salary, and retention made?

Individual faculty members are encouraged to develop a robust research agenda and actively pursue research grants. Teaching loads are kept to 3 or 4 courses per year to allow sufficient time for all faculty members to engage in research and the production of scholarly work. Success in research and scholarly work is a key element in promotion, salary, and retention decisions, which are made by eligible voting faculty members. The department faculty have

crafted a department policy for promotion and tenure that provides guidance to all faculty members.

2. How are junior faculty members mentored in terms of research and creative productivity?

New faculty members are encouraged to focus on their teaching assignments during their first year with the department and then shift their efforts to research and scholarly work. They are advised to minimize their service activities until after they have achieved tenure. Junior faculty members are reviewed each year, and feedback and advice is provided by the department chair.

3. What has been the impact of your research on your field and more broadly over the past five years?

The impact of our research is beginning to be felt as department faculty members develop their research agendas and produce scholarly work. The primary impact has been the work of Professor Rojas in the use of computer simulation of construction activities, the work of Professor Abdel Aziz in risk assessment, and the work of Professor Nemati in rapid construction of concrete highway intersections.

4. In what ways have advances in your discipline, changing paradigms, changing funding patterns, new technologies, or other changes influenced research, scholarship, or creative activity in your unit?

The primary change that is occurring within the construction management discipline is the adoption of a collaborative process for the delivery of construction projects and the use of three-dimensional building information models for project design and construction. Professor Dossick is developing collaborative relationships with the Department of Architecture to develop research projects and course materials related to the use of building information models. The other change is the increased interest sustainable building practices and the use of LEED

(leadership in energy and environmental design) criteria. Use of building information models and LEED evaluation has been added to the curricula.

5. What variations exist among your faculty in terms of methodologies, paradigms, or subfield specializations? Are faculty offices all in the same building, or are they geographically dispersed? What strengths and weaknesses for the unit as a whole are generated by differences among its faculty? Do any of these differences generate obstacles to communication? If so, what strategies has the unit developed to promote communication between different constituencies, and how successful have these strategies been?

Construction management is a small department, so communication among the faculty is good. Individual faculty members have diverse interests that enhances the strength of the department. Professor Goldblatt primarily focuses on legal issues, project delivery techniques, and dispute resolution. Professors Daniali and Nemati primarily focus on construction materials. Professor Abdel Aziz primarily focuses on risk analysis and public private infrastructure projects. Professor Rojas primarily focuses on visualization and simulation of construction operations. Professor Dossick primarily focuses on building information models and the use of sensors to monitor project performance.

The department is currently temporarily housed on the 5th floor of Condon Hall while Architecture Hall is undergoing major renovation. In the autumn of 2007, the department is scheduled to return to the first floor of Architecture Hall and share a single suite of offices. The diversity of interests among department faculty members adds to the strength of the department and the necessity for collaboration with other faculty members outside the department and at other universities.

6. What impediments to faculty productivity exist, and do you see ways of reducing these?

The primary impediments to faculty productivity are the lack of research grant opportunities and the lack of full-time graduate student research assistants. It is difficult to find funding agencies for construction management research projects. The faculty members are diligent in their pursuit of grant support, but there is much competition for the limited financial support available. The department uses some of its discretionary funds to support faculty research, but its availability is limited. Since the majority of the master's degree students are working professionals, only limited numbers are available to serve as full-time research assistants. This issue may be eased as more construction management students are admitted to the college interdisciplinary Ph.D. program.

7. What steps has your unit taken to encourage and preserve productivity on the part of all segments of your staff? How are staff recognized and rewarded? What programs are in place to support professional development of staff?

The department has only two staff persons. Both are encouraged to take professional development training offered by the university, both to enhance their productivity and to develop their professional skills. The staff members are included in all departmental functions, usually lunches, which are used to develop a collaborative environment within the department.

D. Relationships with Other Units

1. In what ways do you collaborate with units at other institutions or at the University of Washington? What are the impacts of these collaborations? Do members of your unit engage in or have opportunities to engage in interdisciplinary research? Do ties with other units or other kinds of interdisciplinary opportunities aid you in recruiting new faculty and graduate students? Do you face impediments to developing interdisciplinary research or connections with other units? Describe your unit's relationships with other units and work with other units to plan future initiatives.

Faculty members in the department collaborate closely with members of other units on campus as well as with other institutions. The department has close ties with the Department of Civil and Environmental Engineering . Undergraduate and graduate students from civil and environmental engineering routinely take courses offered by the Department of Construction Management. The online master's program in construction engineering (Appendix J) is jointly sponsored by both departments. Professor Goldblatt teaches a course in construction labor relations for the Department of Civil and Environmental Engineering.

The department also has a collaborative relationship with the Department of Architecture with the dual-degree program in which graduates receive undergraduate degrees in both architectural studies and construction management. Professor Dossick is developing collaborative relationships with faculty members in the Architecture Department in the use of building information models for design and project planning. Professor Goldblatt teaches a course in design and construction law for the Architecture Department.

Professor Rojas has developed collaborative relationships with the College of Education and the Human Interface Technology Laboratory in the College of Engineering in research activity in the development of construction visualization and simulation techniques. We anticipate building on these relationships as we develop the virtual construction laboratory at Sand Point (Appendix R). We also plan to collaborate with the Department of Environmental and Occupational Health Sciences in the development of the methods and materials laboratory at Sand Point that will focus on productivity, safety, and health research.

2. How could the university aid you in strengthening such ties?

Both the university and the college encourage interdisciplinary collaboration. The only impediment seems to be identifying appropriate colleagues with whom to work.

3. There is an expectation of faculty participation in the governance of the Department, the College, and the University. How do faculty members within your unit meet this expectation? How is participation in shared governance encouraged and valued?

All faculty members participate in the governance of the department. Professors Daniali, Goldblatt, and Nemati have served on the college council; and Professors Goldblatt, Rojas, and Schaufelberger have served in the Faculty Senate. Professor Schaufelberger chaired the Faculty Council for Facilities and Services for nine years and has represented the Faculty Senate on the University Architectural Commission for seven years. Faculty participation in shared governance is valued and encouraged.

E. Diversity

1. Describe for your unit the inclusion of underrepresented groups for students (by entering cohort), faculty (by rank), and staff.

The department has two administrative staff positions, one of which is filled by an African American female. Two faculty members are from underrepresented groups. One is Associate Professor Rojas, who is Hispanic, and the other is Assistant Professor Dossick, who is female. There are 89 undergraduate students, of which 8 are female. There are 47 graduate students, of which 7 are female and one is African.

2. Provide data comparing the teaching loads and other duties of any members of underrepresented groups in your unit to others of comparable professorial rank.

Faculty teaching loads are shown below. All faculty members have undergraduate students to advise, and Associate Professor Rojas is the graduate program coordinator (3 of his assigned courses are 1-credit colloquiums for Ph.D. students that are offered each quarter).

Name	Number Courses	Number of Credits	Student Credit Hours
Professor Daniali	3	11	453
Associate Professor Goldblatt	6	18	621
Associate Professor Nemati	4	12	237
Associate Professor Rojas* (Hispanic)	5	9	207
Associate Professor Schaufelberger	6	18	455
Assistant Professor Abdel-Aziz*	4	11	391
Assistant Professor Dossick (female)	3	9	627

* Professors Abdel-Aziz and Rojas teach additional courses during summer quarter for which they receive supplemental compensation.

3. What steps, including outreach and recruitment, has your unit taken to ensure an environment that values diversity and supports all faculty, students, and staff, including members of underrepresented groups? Have you been able to retain students and faculty from these groups once you have recruited them? What factors aid or impede your efforts to recruit and retain members of underrepresented groups? Is there anything the University can do to help you with recruitment and retention?

Lack of diversity among students and faculty in construction education programs is a problem across the nation. In fact, it is a problem within the construction industry. Few women envision careers in construction management, but those who do usually are very successful. The department has had more success in recruiting minority and female graduate students than it has in recruiting minority and female undergraduate students. The department actively seeks both full-time and part-time faculty members who can serve as role models for female and minority students. We have been able to make some progress with respect to female faculty members, but have not had much success in recruiting minority faculty members,

4. Does your unit work with the Graduate Opportunity Minority Achievement Program (GO-MAP) or Office of Minority Affairs (OMA) on student recruitment and retention? How is your unit involved in collaborative or university-wide efforts to increase the diversity of students and faculty?

The only students that we have been able to attract through the GO-MAP program were Native Americans. Our few African American students were recruited from within the local

community. We recruit full-time faculty on a national basis, and actively seek members of underrepresented groups.

5. Has the increased diversity of the student body and/or faculty in your department generated any changes in your curriculum? In your unit's academic culture or climate?

There have been no changes in our curriculum due to increased diversity of the student body or faculty, and no changes in the department's academic culture or climate has been noted. Our female students have been our top academic performers for the past decade, and change is not anticipated.

F. Degree Programs

1. Master's Degree Program

a. Show the relationship of master's degree program to the undergraduate program in your unit. Describe the objectives of your master's degree programs in terms of student learning of the content of your field, professional skills, skills for lifelong learning, and other relevant outcomes, as well as its benefits for the academic unit, the University, and the region. Compare your objectives with those for programs at institutions you think of as peers.

Like most undergraduate professional programs, the construction management program prepares graduates for entry-level professional, supervisory, or managerial positions in the construction industry. It does not prepare them for upper management positions. The master's degree program was established in 1994 to fill this void by providing an advanced educational program that focuses on upper management issues. To minimize impediments to enrollment, an evening program was selected to accommodate working professionals. Senior industry leaders were consulted in creating the curriculum and course offerings shown in Appendix I. Most students admitted to the graduate program have undergraduate degrees in fields other than construction management. The majority possess undergraduate degrees in architecture or engineering.

The curriculum was structured to build upon the educational foundation gained in an undergraduate construction management curriculum. Students with different educational backgrounds are admitted, but they are required to take prerequisite courses or demonstrate their proficiency by passing validation examinations or provide a transcript showing completion of similar courses. Applicants possessing undergraduate degrees in architecture or engineering are required to take the following courses as part of their graduate studies unless they validate the requirements:

- CM 410 – Construction Estimating II
- CM 411 – Project Planning and Control
- CM 421 – Project Management
- CM 422 – Computer Applications in Construction

These four courses are offered by UW Extension both in an evening classroom-based certificate program and an online certificate program (Appendix O).

Applicants who have undergraduate degrees in disciplines other than construction, architecture, or engineering take the following prerequisite courses prior to being admitted to the graduate program:

- CM 310 – Introduction to the Construction Industry
- CM 311 – Construction Documents
- CM 313 – Construction Methods and Materials I
- CM 323 – Construction Methods and Materials II
- CM 331 – Construction Estimating I

These prerequisites may be validated if similar courses are reflected on the applicant's transcript or if the applicant desires to take validation examinations. The purpose of these prerequisites is

to ensure that all master's degree graduates possess the requisite technical skills to be successful members of the profession.

The graduate program is structured to allow students the flexibility to shape their programs of study to meet individual educational objectives. They can shape their programs of study by the selection of construction emphasis courses, electives, and thesis or professional project topics. Most students are working professionals, and they tend to select research topics related to the segment of the industry in which they are employed. A listing of thesis and professional projects in the last five years is shown in Appendix I.

Our master's program is the only construction management graduate program in the State of Washington. To accommodate prospective graduate students, who are unable or unwilling to come to campus, the department teamed with the Department of Civil and Environmental Engineering to create an online graduate program in construction engineering, which is described in Appendix J. Students may earn either a Master of Science in Construction Management or Master of Science in Civil and Environmental Engineering from the program. The department's graduate programs provide students an opportunity to study upper management issues and to conduct independent research into construction management topics.

The development of the graduate program has helped the department to establish a focus on research and scholarly work and investigate contemporary construction management challenges. The region is served by providing construction management education opportunities for those individuals who aspire to middle management positions within the construction industry.

We consider our peer programs to be those offered by Auburn University, Colorado State University, Texas A&M University, and University of Florida. Our program objectives are

comparable to those of those universities. We may offer more non-traditional courses, because of industry involvement in identifying learning objectives for the individual courses.

b. Describe the standards by which you measure your success in achieving your objectives for master's programs. Using these standards, assess the degree to which you have met your objectives. Indicate any factors that have impeded your ability to meet your objectives and any plans for overcoming these impediments.

The department uses several techniques for evaluating the success of the master's program. UW Graduate School Exit Questionnaire survey data is used as one indicator. The latest data is shown in Appendix S. Another technique is the use of individual course evaluations. Copies of these evaluations for the past three years are in Appendix M. A third technique is evaluation of the quality of the theses and professional projects written by students. Analysis of these assessment techniques indicates that the department has been successful in achieving its graduate education goals. The only problem area is the time to degree for many of our part-time students. Because of work and family conflicts, several students have not been able to complete their theses or professional projects in three quarters, which is a goal that we have established. To keep student motivated and making progress, faculty advisors work with each master's student during the preparation of his or her thesis or professional project and meet frequently to review progress.

c. How are you staying informed of the career options that graduates of your program typically pursue and the success they are obtaining? How are you using this information in department planning?

Most of our graduate students are either working professionals or international students. Few of our graduate students seek employment upon graduation. For those who are seeking employment, the department conducts an annual career fair in January and schedules company interviews throughout the academic year. About one third of the department's master's degree

graduates go to work for construction firms, another third go to work for design firms, and the final third go to work for consulting firms or owner organizations like the Port of Seattle, the Department of Transportation, or King County. Because of the department's close relationship with the industry through the Industry Advisory Council, it keeps informed of industry needs and expectations. Course content is often revised to address contemporary issues facing the construction industry.

2. Undergraduate Program

a. Describe the objectives of your undergraduate program in terms of student learning of the content of your field, professional skills, skills for lifelong learning, and other relevant outcomes, as well as its benefits for the department, University, and region.

The undergraduate curriculum (Appendix K) consists of two years of general studies at the UW or a community college followed by two years of professional studies as a construction management major. During the first years, students fulfill department general education requirements and build a strong liberal arts and sciences foundation. The final two years are focused on acquiring technical and managerial skills. The educational objectives of the program are to enable graduates to develop:

- Technical skills necessary to define and solve practical construction problems,
- Managerial skills necessary to make and implement sound and timely decisions in a prudent and professional manner,
- Broad perspectives of the humanities and social and natural sciences, and
- The ability to communicate clearly and concisely both orally and in writing.

Graduates of the program have multiple options. Some seek employment with construction firms or construction management consulting firms. Others seek employment with public agencies that have their own construction management staffs. Others seek employment

with design firms, particularly those who receive degrees in both architecture and construction management. A few pursue graduate studies, but most want to acquire industry experience before considering graduate school.

The construction management program is one of five in the state that serve the construction industry. There are two-year degree programs at Edmonds Community College and Renton Technical College as well as four-year degree programs at Central Washington University in Ellensburg and Washington State University in Pullman. The UW program is the oldest and largest in the state.

b. Describe the standards by which you measure your success in achieving your objectives for your undergraduate program. Using these standards, assess the degree to which you have met your objectives. Indicate any factors that have impeded your ability to meet your objectives and any plans for overcoming these impediments.

The department uses several techniques for evaluating the success of the undergraduate program. The accreditation evaluations conducted by the American Council for Construction Education every six years provide an external assessment of our program. The last accreditation review was conducted in 2001, and the next is scheduled for the winter of 2007. A copy of the 2001 accreditation report is at Appendix P. Another technique is the use of individual course evaluations. Copies of the course evaluations for the past three years are shown in Appendix N. Student performance during the various student competitions is used to identify any weak areas. During the spring quarter, each fourth year student is required to select a project; develop a detailed cost estimate, project schedule, and project management documentation; and make an oral presentation to a jury of industry leaders. This Capstone exercise causes each student to apply the knowledge learned in previous courses. Jury feedback is used to assess the effectiveness of the program in meeting the objectives discussed in the previous section. The

final technique is a survey that is sent out every three years to recent graduates and to their employers. A copy of the results of the 2006 survey is shown in Appendix T. Analysis of these assessment techniques indicates that we have been successful in achieving our educational objectives.

c. In what ways have you been able to involve undergraduates in research programs in your unit? How do you assess the results? What other teaching innovations have your faculty undertaken or are your faculty considering?

Undergraduate students are required to research various aspects of construction management as a part of their course requirements. Some students also take independent study credits to conduct research with faculty into selected topics. A teaching innovation that is being explored is the incorporation of three-dimensional building information models into the project management course.

d. Indicate the steps the unit has taken to comply with state-mandated accountability measures (i.e., reduced time to degree; increased graduate efficiency index; increased retention rate). Have these steps improved the quality of student learning in your program? Why or why not? Do you envision further steps to increase compliance with state-mandated accountability measures?

The department accepts 50 new undergraduate students per year. Most graduate at the end of two years of study. Many, however, require five years to complete their degree requirements, because they did not decide to pursue a major in construction management until the end of their freshman year. Having taken few of the prerequisite courses, these students need an additional year to complete their basic education requirements. The department has minimal attrition, because we are an upper division program and require demonstrated academic performance before gaining admission.

e. How are you staying informed of the career options that graduates of your program typically pursue and the success they are obtaining? How are you using this information in departmental planning?

Many of our former graduates are sent back to campus by their employers to recruit new construction managers. This provides us excellent opportunities to follow their career successes. Others become involved as Capstone jury members, which provide another opportunity for maintaining contact. Our goal in these contacts is to ascertain contemporary construction management challenges and educational needs. This information coupled with our survey results (Appendix T) and the input from our Construction Industry Advisory Council serve as a basis for our curriculum planning.

G. Graduate Students

1. Recruitment and Retention

a. Describe recruitment/outreach programs to attract graduate students. Specifically address outreach to underrepresented groups. Describe the measures you use to assess the success of your efforts. How successful have they been?

The graduate program coordinator conducts information meetings three times per year (September, December, and May) for prospective students. In addition, many prospective students learn about the program from the department web site and send email inquiries to the graduate program coordinator. The majority of the department's graduate students are working professionals who desire to enhance their knowledge of construction management or are international students.

b. What are your retention rates for your master's programs? To what do you attribute attrition? What steps are taken to minimize attrition?

The retention rate for the master's program is about 80%. The primary attrition has been students who complete their coursework, but fail to complete their theses or professional projects. A few students have relocated prior to completing their degree requirements, but most attrition has occurred during thesis or professional project preparation. For those students who relocate prior to completion of required coursework, the department allows course substitution from the online graduate program. To minimize attrition, the graduate program coordinator works with each graduate student to develop a program of study and select a thesis or professional project topic. Then a faculty supervisor is selected to work with the student and track the student's progress in completing the written requirement.

2. Advising, Mentoring and Professional Development

a. In what ways do you communicate academic program expectations to students? Such information should include: timelines, phases and benchmarks of the degree program; procedures for committee formation; coursework, exam, and presentation; and scholarly integrity.

Upon being admitted into the graduate program, each graduate student meets with the graduate program coordinator to develop a program of study using the form shown in Appendix I. While the plan is not a contract, it is a plan that will meet all degree requirements. Included in the discussion are thesis and professional project requirements as well as the process for forming a supervisory committee. Based on the student's research interest, the graduate program coordinator suggests a prospective supervisor for the student's supervisory committee and recommends that the student contact the recommended faculty member. Once the supervisory committee is selected, the chairperson of the committee acts as a mentor for the graduate student.

b. In what ways do you inform students of your unit's graduation and placement record? Such information should include time to degree; average completion rates; and employment of graduates two and three years after degree completion.

Full-time graduate students are advised that they should be able to complete all degree requirements in 12 to 15 months. Part-time students are advised that they should be able to complete all degree requirements in 24 to 36 months. Sample schedules are shown in the program prospectus (Appendix I). Since most of our graduate students are already working, placement upon graduation is not a major issue. International students typically return to their country of origin upon graduation, so placement is not an issue with them. Those few graduate students who will be seeking placement upon graduation are advised of the company interview schedule and the department career fair. The department's efforts are on finding employment opportunities upon graduation, not two or three years after degree completion.

c. Please attach an example of your departmental mentoring/advising plan.

The form used by the graduate program coordinator in advising graduate students in the development of their program of study is in Appendix I.

3. Inclusion in Governance and Decisions

a. In what ways do you include graduate students in the governance of your department?

Graduate students do not participate in faculty meetings or play a role in the governance of the department. They provide input to the graduate program coordinator regarding the administration of the graduate program and the curriculum content.

b. Please describe your grievance process and characterize the nature of any grievances that have been lodged over the past three years.

Any student who believes that he/she has a grievance is to contact the chairperson of the Department Grievance Committee, Professor Goldblatt. The committee is to promptly investigate the alleged grievance and make a determination as to its validity. The investigation is to include input from both the student and the implicated faculty member. If the grievance appears unfounded, the committee is to provide the student with a written response. If the grievance appears to be substantiated, the committee will report the case to the supervisor of the faculty member. To date, there have been no grievances submitted by any graduate student in the department.

4. For Graduate Student Service Appointees, please describe:

a. Appointment process.

The department has few opportunities for graduate student service appointments because of funding restrictions. Some graduate students may be appointed as teaching assistants for undergraduate courses. They are selected by the faculty members teaching the respective courses and appointed on a quarterly basis. Teaching assistant responsibilities typically involve only grading of undergraduate student work. Occasionally, a faculty member who secures a grant may appoint a graduate student research assistant to help with the research effort. It is the individual faculty member's responsibility to select his or her research assistants.

b. Average duration of appointment.

Teaching assistant appointments typically are for one quarter, and research assistant appointments depend on funding availability and the duration of the needed support, which sometimes runs multiple quarters.

c. Mix of funding among various appointments.

Funding for teaching assistants is provided from departmental funds, while funding for research assistants comes from grants received by faculty members.

d. In what ways are graduate student service appointees supervised?

Teaching assistants and research assistants are supervised by the faculty members for whom they are working. The faculty members establish a scope of work for each graduate student service appointee and then supervise the performance of the work.