

2013-2014 Assessment Report
Department/Unit: Building Science, BS

College of Architecture, Design & Construction

McWhorter School of Building Science

Building Science, BS

Expected Outcome 1: Administration and management of construction project activities

After review and analysis of construction documentation, the graduating Building Science major will be able to effectively participate in the administration and management of construction project activities from inception through de-construction.

1.1 Assessment Method 1: Evaluation of student's performance in BSCI 4980

1.1.1 Assessment Method Description

Evaluation of student's performance in BSCI 4980 Building Science Thesis. Course description:

Individual project demonstrating mastery of curriculum content through the application of skills/knowledge to a theoretical construction company and project. Requires a written thesis and oral defense of work.

Based on an evaluation of the students' performance in the thesis and subsequent meeting faculty and/or industry evaluators are asked to evaluate the student on how strongly they agree (on a five point scale) they have met the following 10 learning outcomes:

- 1.2 Describe Mechanical & Electrical Systems
- 1.9 Review the financial health of a construction project
- 1.10 Schedule construction activities
- 1.11 Create solutions to provide temporary support during construction
- 1.12 Assess various structural systems
- 1.13 Prepare construction project documents for construction phase
- 1.15 Assess the jobsite safety program
- 1.19 Prepare the construction schedule
- 1.20 Estimate the cost of construction work using various methods
- 1.21 Manage their time effectively

A grading rubric for thesis was also introduced for the thesis during the 2010/11

academic year. The Thesis is graded across 10 grading criteria and an average percentage for each criteria is recorded. The 6 criteria used to measure this outcome are:

- 4. Project Estimate
- 6. Project Administration
- 7. Project Documents
- 8. Project Schedule
- 9. Structural
- 10. Student Selected Work

All graduating students are assessed. This is approximately 90 students.

1.1.2 Findings

This expected outcome is evaluated by 10 learning outcomes that are individually evaluated by faculty or industry graders. Of the 10 learning outcomes evaluated during the Fall 2013 semester the following mean response rates on a 5 point scale were recorded:

1.2	Describe Mechanical & Electrical Systems.	4.35	
1.9	Review the financial health of a construction project.		3.86
1.10	Schedule construction activities.	4.33	
1.11	Create solutions to provide temporary support during construction.		4.19
1.12	Assess various structural systems.	4.14	
1.13	Prepare construction project documents for construction phase.		4.38
1.15	Assess the jobsite safety program.	4.24	
1.19	Prepare the construction schedule.	4.38	
1.20	Estimate the cost of construction work using various methods.		4.52
1.21	Manage their time effectively.	4.48	

Of the 10 learning outcomes evaluated during the Spring 2014 semester the following mean response rates on a 5 point scale were recorded:

1.2	Describe Mechanical & Electrical Systems.	4.16	
1.9	Review the financial health of a construction project.		3.97
1.10	Schedule construction activities.		4.00
1.11	Create solutions to provide temporary support during construction.		4.00
1.12	Assess various structural systems.	3.84	
1.13	Prepare construction project documents for construction phase.		3.94
1.15	Assess the jobsite safety program.	3.88	
1.19	Prepare the construction schedule.	3.94	
1.20	Estimate the cost of construction work using various methods.		4.25
1.21	Manage their time effectively.	3.78	

Of the 10 learning outcomes evaluated during the Summer 2014 semester the following mean response rates on a 5 point scale were recorded:

1.2	Describe Mechanical & Electrical Systems.	4.08	
1.9	Review the financial health of a construction project.		4.00

1.10	Schedule construction activities.	4.08
1.11	Create solutions to provide temporary support during construction.	3.83
1.12	Assess various structural systems.	4.08
1.13	Prepare construction project documents for construction phase.	4.15
1.15	Assess the jobsite safety program.	4.00
1.19	Prepare the construction schedule.	4.23
1.20	Estimate the cost of construction work using various methods.	4.31
1.21	Manage their time effectively.	3.92

This expected outcome is also evaluated by the 6 grading criteria that are individually evaluated by faculty or industry graders. Of the 6 criteria graded by faculty during Fall 2013 the following mean percentage scores were recorded:

Project Estimate	82.14%
Project Administration	81.07%
Project Documents	82.86%
Project Schedule	85.50%
Structural	81.53%
Student Selected Work	85.71%

Of the 6 criteria graded by faculty during Spring 2014 the following mean percentage scores were recorded:

Project Estimate	81.81%
Project Administration	82.29%
Project Documents	82.58%
Project Schedule	82.83%
Structural	81.83%
Student Selected work	80.97%

Of the 6 criteria graded by faculty during Summer 2014 the following mean percentage scores were recorded:

Project Estimate	84.09%
Project Administration	90.61%
Project Documents	90.90%
Project Schedule	88.18%
Structural	90.90%
Student Selected work	92.72%

1.1.3 How did you use findings for improvement?

The annual quality improvement meeting was held on Monday May 5, 2014. Prior to meeting faculty were given one week to review data collected from the following assessment exercises:

1. Student's performance in BSCI 4980 Building Science Thesis (Grading Rubric)
 1. Spring 2013
 2. Summer 2013
 3. Fall 2013
2. Faculty assessment of Learning Objectives and Outcomes for Undergraduate Program by evaluation of performance in the thesis
 1. Spring 2013
 2. Summer 2013
 3. Fall 2013

The BSCI faculty was asked to identify any specific issues identified from the various assessment exercises mentioned previously. The consistent performance of students in the thesis is most likely due to the introducing of the grading rubric following concerns expressed by students as part of the 2011 annual assessment report.

1.1.4 Additional Comments

At a faculty meeting on September 23, 2013, the faculty decided to conduct a major review of BSCI 4980 Building Science Thesis. This review has been prompted by the introduction of new learning outcomes based standards by our accreditation agency, the American Council for Construction Education and the need to teach and assess the class in a more manageable way. These new standards were approved at the July 2014 accreditation meeting and will be in force at the time of the next accreditation visit in 2020. The chair of undergraduate studies, Ben Farrow put together a committee that reviewed the thesis to include assessment of 4 of the 20 ACCE learning outcomes as a start to eventually assessing all 20 of the outcomes. This is a transitional period for our program as we move from a prescriptive, topical content-based curriculum to a learning outcomes based one. Starting in Fall 2014, we will start to assess the following four learning outcomes using both direct and indirect assessment measures:

1. *Create a construction project safety plan.*
2. *Create construction project cost estimates.*
3. *Understand the basic principles of sustainable construction.*
4. *Understand the basic principles of structural behavior.*

1.2 Assessment Method 2: Graduating Seniors Exit Survey & Interview

1.2.1 Assessment Method Description

An online Exit Survey is sent to graduating seniors each semester. Students are asked how strongly they agree (on a five point scale) they have met the 21 McWhorter School of Building Science Learning outcomes used to evaluate this objective:

- 1.1 Review construction materials, methods, and sequences within the context of the environment and technology.
- 1.2 Describe Mechanical and Electrical Systems.
- 1.3 Explain the construction life cycle processes from initiation to deconstruction.
- 1.4 Review the roles of all stakeholders in a construction project.
- 1.5 Identify applicable Building Codes and other construction regulations.
- 1.6 Discuss different project delivery systems.
- 1.7 Identify construction best practices.
- 1.8 Describe the principles of sustainable construction & development.
- 1.9 Review the financial health of a construction project.
- 1.10 Schedule construction activities.
- 1.11 Create solutions to provide temporary support during construction.
- 1.12 Assess various structural systems.
- 1.13 Prepare construction project documents for construction phase.
- 1.14 Prepare procedures to identify, evaluate and manage risk.
- 1.15 Assess the job site safety program.
- 1.16 Inspect work for quality assurance and control purposes.
- 1.17 Organize LEED Green Building activities.
- 1.18 Evaluate submittal documents.
- 1.19 Prepare the construction schedule.
- 1.20 Estimate the cost of construction work using various methods.
- 1.21 Manage their time effectively.

In addition the school head meets with all graduating students in small groups to identify good and bad experiences during their time in the program and any suggestions for improvement.

1.2.2 Findings

This expected outcome is evaluated by 21 learning outcomes that are individually evaluated by graduating seniors. Of the 21 learning outcomes evaluated during the Fall 2013 semester the following mean response rate on a 5 point scale were recorded:

1.1 Review construction materials, methods, and sequences within the context of the environment and technology.	4.75
1.2 Describe Mechanical and Electrical Systems.	3.75
1.3 Explain the construction life cycle processes from initiation to deconstruction.	4.59
1.4 Review the roles of all stakeholders in a construction project.	4.38
1.5 Identify applicable Building Codes and other construction regulations.	3.82
1.6 Discuss different project delivery systems.	4.41
1.7 Identify construction best practices.	4.18
1.8 Describe the principles of sustainable construction & development.	3.88
1.9 Review the financial health of a construction project.	3.65
1.10 Schedule construction activities.	4.35

1.11 Create solutions to provide temporary support during construction.	4.35
1.12 Assess various structural systems.	3.88
1.13 Prepare construction project documents for construction phase.	4.24
1.14 Prepare procedures to identify, evaluate and manage risk.	4.12
1.15 Assess the job site safety program.	4.35
1.16 Inspect work for quality assurance and control purposes.	4.24
1.17 Organize LEED Green Building activities.	3.69
1.18 Evaluate submittal documents.	3.76
1.19 Prepare the construction schedule.	4.41
1.20 Estimate the cost of construction work using various methods.	4.47
1.21 Manage their time effectively.	4.47

Of the 21 learning outcomes evaluated during the Spring 2014 semester the following mean response rate on a 5 point scale were recorded:

1.1 Review construction materials, methods, and sequences within the context of the environment and technology.	4.58
1.2 Describe Mechanical and Electrical Systems.	3.71
1.3 Explain the construction life cycle processes from initiation to deconstruction.	4.54
1.4 Review the roles of all stakeholders in a construction project.	4.50
1.5 Identify applicable Building Codes and other construction regulations.	3.79
1.6 Discuss different project delivery systems.	4.67
1.7 Identify construction best practices.	4.46
1.8 Describe the principles of sustainable construction & development.	4.23
1.9 Review the financial health of a construction project.	4.13
1.10 Schedule construction activities.	4.46
1.11 Create solutions to provide temporary support during construction.	3.61
1.12 Assess various structural systems.	4.00
1.13 Prepare construction project documents for construction phase.	4.13
1.14 Prepare procedures to identify, evaluate and manage risk.	4.17
1.15 Assess the job site safety program.	4.29
1.16 Inspect work for quality assurance and control purposes.	4.38
1.17 Organize LEED Green Building activities.	3.57
1.18 Evaluate submittal documents.	3.96
1.19 Prepare the construction schedule.	4.54
1.20 Estimate the cost of construction work using various methods.	4.63
1.21 Manage their time effectively.	4.50

Of the 21 learning outcomes evaluated during the Summer 2014 semester the following

mean response rate on a 5 point scale were recorded:

1.1 Review construction materials, methods, and sequences within the context of the environment and technology.	4.33
1.2 Describe Mechanical and Electrical Systems.	3.27
1.3 Explain the construction life cycle processes from initiation to deconstruction.	4.20
1.4 Review the roles of all stakeholders in a construction project.	4.07
1.5 Identify applicable Building Codes and other construction regulations.	3.33
1.6 Discuss different project delivery systems.	4.27
1.7 Identify construction best practices.	4.07
1.8 Describe the principles of sustainable construction & development.	3.83
1.9 Review the financial health of a construction project.	3.47
1.10 Schedule construction activities.	4.20
1.11 Create solutions to provide temporary support during construction.	3.27
1.12 Assess various structural systems.	3.67
1.13 Prepare construction project documents for construction phase.	4.07
1.14 Prepare procedures to identify, evaluate and manage risk.	3.87
1.15 Assess the job site safety program.	3.80
1.16 Inspect work for quality assurance and control purposes.	3.67
1.17 Organize LEED Green Building activities.	3.20
1.18 Evaluate submittal documents.	3.80
1.19 Prepare the construction schedule.	4.13
1.20 Estimate the cost of construction work using various methods.	4.47
1.21 Manage their time effectively.	4.47

1.2.3 How did you use findings for improvement?

The annual quality improvement meeting was held on Monday May 5, 2014 at 11:30 in the large conference room. Prior to meeting faculty were given one week to review data collected from the following assessment exercises:

1. Notes from exit interviews with graduating seniors
 1. Spring 2013
 2. Summer 2013
 3. Fall 2013
2. Exit surveys completed by graduating seniors
 1. Spring 2013
 2. Summer 2013
 3. Fall 2013

The BSCI faculty was asked to identify any specific issues identified from the various assessment exercises mentioned previously. In previous years the lowest evaluation scores recorded were for the learning outcome: *Organize LEED Green Building*

activities. Following a major curriculum review carried out between 2009 & 2011 a one credit hour class in sustainable construction was added. Many students graduating from the program have taken the pre-building science class BSCI 2100 - Introduction to Sustainable Construction, and by Fall 2014, all students graduating from the program would have taken this class. The results above show a small improvement in how well the students perceive they are meeting this outcome.

Following some concerns raised during the grading of thesis, it was agreed that the policy on the use of project buildings incorporating Pre-Fabricated Wood Trusses or Pre-Fabricated Buildings would be revised effective for the Fall 2014 semester.

For students with pre-engineered metal buildings, substitute traditional steel members for prefabricated members and complete the following:

- Develop a paragraph indicating the substitutions you plan to make (bar joists for typical purlins, wide flange members for girders, etc.)
- Determine the required size of members noted in a.
- Develop a price for the structure sized in (b).
- Develop a paragraph indicating the difference in the cost of the structure between your approach in the estimate and your answer in (c). Reflect on the differences.

For students with either wood/metal pre-fab trusses, complete the following:

- Select a typical truss and sketch an elevation of that truss. Select a possible layout of web members. Show all dead and live loads applied to the truss on a plf basis along the top and bottom chord or as a point load at truss joints. Essentially, indicate the vertical load on a horizontal projection of the truss.
- Produce a plan(s) of trusses showing all required temporary bracing. You may use any accepted national standard for bracing such as Alpine's "Builders Guide for Trusses".
- Design and provide a sketch for the diagonal brace at the end of the truss that takes the force to the ground. (This item may also be used for the temporary bracing design requirement of the thesis.)

In a response to concerns raised by students during the exit interviews, Instructions regarding the use of the RS Means online estimating program will be incorporated into the new thesis instructions for the estimating component effective Fall 2014 Semester. When using R.S Means online software for pricing, students can export information from their estimate to Excel and then convert it into a traditional pricing sheet.

Student requests in exit interviews & surveys for more technology and BIM – It was agreed that as part of the thesis students would be required to develop a structural model using BIM. This model would be used to demonstrate both an understanding of structural systems and to obtain quantities for estimating purposes. Thesis instructions will be revised for the Fall 2014 semester.

1.2.4 Additional Comments

Our accreditation agency, the American Council for Construction approved new

standards at the July 2014 accreditation meeting and will be in force at the time of the next accreditation visit in 2020. Starting in Fall 2014, we will start to assess the following 20 learning outcomes using the student exit survey:

1. *Create written communications appropriate to the construction discipline.*
2. *Create oral presentations appropriate to the construction discipline.*
3. *Create a construction project safety plan.*
4. *Create construction project cost estimates.*
5. *Create construction project schedules.*
6. *Analyze professional decisions based on ethical principles.*
7. *Analyze construction documents for planning and management of construction processes.*
8. *Analyze methods, materials, and equipment used to construct projects.*
9. *Apply construction management skills as a member of a multi-disciplinary team.*
10. *Apply electronic-based technology to manage the construction process.*
11. *Apply basic surveying techniques for construction layout and control.*
12. *Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.*
13. *Understand construction risk management.*
14. *Understand construction accounting and cost control.*
15. *Understand construction quality assurance and control.*
16. *Understand construction project control processes.*
17. *Understand the legal implications of contract, common, and regulatory law to manage a construction project.*
18. *Understand the basic principles of sustainable construction.*
19. *Understand the basic principles of structural behavior.*
20. *Understand the basic principles of mechanical, electrical and piping systems*

Expected Outcome 2: Appreciation of the arts and sciences and an awareness of the social and global consequences of construction operations.

The graduating Building Science major will have an appreciation of the arts and sciences and an awareness of the social and global consequences of construction operations.

2.1 Assessment Method 1: Evaluation of student's performance in BSCI 4980

2.1.1 Assessment Method Description

Evaluation of student's performance in BSCI 4980 Building Science Thesis. Course description:

Individual project demonstrating mastery of curriculum content through the application of skills/knowledge to a theoretical construction company and project. Requires a written thesis and oral defense of work.

Based on an evaluation of the students' performance in the thesis and subsequent meeting faculty and/or industry evaluators are asked to evaluate the student on how strongly they agree (on a five point scale) they have met the learning outcome:

4.3 Use practical experience to acquire knowledge

A grading rubric for thesis was also introduced for the thesis during the 2010/11 academic year. The Thesis is graded across 10 grading criteria and an average percentage for each criteria is recorded. The criteria used to measure this outcome is:

LEED Assessment

All graduating students are assessed this is approximately 90 students.

2.1.2 Findings

This expected outcome is evaluated by one learning outcome that is individually evaluated by faculty or industry graders. The learning outcome evaluated by faculty graders during the Fall 2013 semester the mean response rate on a 5 point scale was 4.48. The learning outcome evaluated by faculty graders during the Spring 2014 semester the mean response rate on a 5 point scale was 4.22. The learning outcome evaluated by faculty graders during the Summer 2014 semester the mean response rate on a 5 point scale was 4.15.

This expected outcome is also evaluated by one grading criteria that is individually evaluated by faculty or industry graders. For the criteria graded by faculty during Fall 2013 the following mean percentage scores were recorded:

LEED Assessment 87.62%

For the criteria graded by faculty during Spring 2014 the following mean percentage scores were recorded:

LEED Assessment 85.48%

For the criteria graded by faculty during Summer 2014 the following mean percentage scores were recorded:

LEED Assessment 89.39%

2.1.3 How did you use findings for improvement?

The annual quality improvement meeting was held on Monday May 5. Prior to meeting faculty were given one week to review data collected from the following assessment exercises:

1. Student's performance in BSCI 4980 Building Science Thesis (Grading Rubric)
 1. Spring 2013
 2. Summer 2013
 3. Fall 2013
2. Faculty assessment of Learning Objectives and Outcomes for Undergraduate Program by evaluation of performance in the thesis
 1. Spring 2013
 2. Summer 2013
 3. Fall 2013

The BSCI faculty was asked to identify any specific issues identified from the various assessment exercises mentioned previously. No specific issues were identified by the faculty that currently require addressing. The consistent performance of students in the thesis is most likely due to the introducing of the grading rubric following concerns expressed by students as part of the 2011 annual assessment report.

2.1.4 Additional Comments

None

2.2 Assessment Method 2: Graduating Seniors Exit Survey & Interview

2.2.1 Assessment Method Description

An online Exit Survey is sent to graduating seniors each semester. Students are asked how strongly they agree (on a five point scale) they have met the 8 McWhorter School of Building Science Learning outcomes that measure this objective:

- 4.1 Recognize career opportunities available.
- 4.2 Recognize the influence of the arts and sciences in the evolution of buildings.
- 4.3 Use practical experience to acquire knowledge.
- 4.4 Practice a commitment to lifelong learning.
- 4.5 Students will be informed and engaged citizens of the United States and the world.
- 4.6 Students will understand and appreciate the diversity of and within societies of the United States and the world.
- 4.7 Students will understand and appreciate methods and issues of science and technology.
- 4.8 Students will understand and appreciate the arts and aesthetics as ways of knowing and engaging with the world.

In addition, the school head meets with all graduating students in small groups to identify good and bad experiences during their time in the program and any suggestions for improvement.

2.2.2 Findings

This expected outcome is evaluated by 8 learning outcomes that are individually evaluated by graduating seniors. Of the 8 learning outcomes evaluated during the Fall 2013 semester the mean response rate on a 5 point scale was as follows:

4.1 Recognize career opportunities available.	4.56
4.2 Recognize the influence of the arts and sciences in the evolution of buildings.	4.47
4.3 Use practical experience to acquire knowledge.	4.44
4.4 Practice a commitment to lifelong learning.	4.44
4.5 Students will be informed and engaged citizens of the United States and the world.	4.47
4.6 Students will understand and appreciate the diversity of and within societies of the United States and the world.	4.38
4.7 Students will understand and appreciate methods and issues of science and technology.	4.31
4.8 Students will understand and appreciate the arts and aesthetics as ways of knowing and engaging with the world.	4.38

Of the 8 learning outcomes evaluated during the Spring 2014 semester the mean response rate on a 5 point scale was as follows:

4.1 Recognize career opportunities available.	4.70
4.2 Recognize the influence of the arts and sciences in the evolution of buildings.	4.25
4.3 Use practical experience to acquire knowledge.	4.65
4.4 Practice a commitment to lifelong learning.	4.52
4.5 Students will be informed and engaged citizens of the United States and the world.	4.43
4.6 Students will understand and appreciate the diversity of and within societies of the United States and the world.	4.48
4.7 Students will understand and appreciate methods and issues of science and technology.	4.61
4.8 Students will understand and appreciate the arts and aesthetics as ways of knowing and engaging with the world.	4.43

Of the 8 learning outcomes evaluated during the Summer 2014 semester the mean response rate on a 5 point scale was as follows:

4.1 Recognize career opportunities available.	4.20
4.2 Recognize the influence of the arts and sciences in the evolution of buildings.	3.47

4.3 Use practical experience to acquire knowledge.	4.13
4.4 Practice a commitment to lifelong learning.	4.33
4.5 Students will be informed and engaged citizens of the United States and the world.	4.20
4.6 Students will understand and appreciate the diversity of and within societies of the United States and the world.	4.00
4.7 Students will understand and appreciate methods and issues of science and technology.	4.13
4.8 Students will understand and appreciate the arts and aesthetics as ways of knowing and engaging with the world.	3.80

2.2.3 How did you use findings for improvement?

The annual quality improvement meeting was held on Monday May 5, at 11:30 in the large conference room. Prior to meeting faculty were given one week to review data collected from the following assessment exercises:

1. Notes from exit interviews with graduating seniors
 1. Spring 2013
 2. Summer 2013
 3. Fall 2013
2. Exit surveys completed by graduating seniors
 1. Spring 2013
 2. Summer 2013
 3. Fall 2013

The BSCI faculty was asked to identify any specific issues identified from the various assessment exercises mentioned previously. No specific issues were identified by the faculty that currently require addressing. Previous concerns raised by students regarding the fairness of grading the thesis have reduced considerably and may well be due to the introduction of the grading rubric as a result of earlier annual assessment activities. Four new grading rubrics will be set out in the thesis instructions beginning Fall 2014 to assess 4 of the ACCE learning outcomes.

2.2. 4 Additional Comments

N/A

Expected Outcome 3: Effectively participate in the administration and management of construction company operations

After review and analysis of business documentation, the graduating Building Science major will be able to effectively participate in the administration and management of construction company operations.

3.1 Assessment Method 1: Evaluation of student's performance in BSCI 4980

3.1.1 Assessment Method Description

Evaluation of student's performance in BSCI 4980 Building Science Thesis. Course description:

Individual project demonstrating mastery of curriculum content through the application of skills/knowledge to a theoretical construction company and project. Requires a written thesis and oral defense of work.

Based on an evaluation of the students performance in the thesis and subsequent meeting faculty and/or industry evaluators are asked to evaluate the student on how strongly they agree (on a five point scale) they have met the 4 learning outcomes that measure this objective:

- 3.1 Describe the organization of construction companies
- 3.2 Describe insurance, bonds and contracts
- 3.3 Discuss the basics of contract law and litigation
- 3.5 Analyze the financial set up of a construction company

A grading rubric for thesis was also introduced for the thesis during the 2010/11 academic year. The Thesis is graded across 10 grading criteria and an average percentage for each criteria is recorded. The 2 criteria used to measure this outcome are:

- The Thesis and Company Items
- Financial

All graduating students are assessed. This is approximately 90 students.

3.1.2 Findings

This expected outcome is evaluated by 4 learning outcomes that are individually evaluated by faculty or industry graders. Of the 4 learning outcomes evaluated by faculty graders during the Fall 2013 semester mean response rate on a 5 point scale were as follows:

3.1	Describe the organization of construction companies	4.24
3.2	Describe insurance, bonds and contracts	4.33
3.3	Discuss the basics of contract law and litigation	4.29
3.5	Analyze the financial set up of a construction company	4.10

Of the 4 learning outcomes evaluated by faculty during the Spring 2014 semester mean response rate on a 5 point scale were as follows:

3.1	Describe the organization of construction companies	4.06
3.2	Describe insurance, bonds and contracts	3.69
3.3	Discuss the basics of contract law and litigation	3.84
3.5	Analyze the financial set up of a construction company	3.78

Of the 4 learning outcomes evaluated during the Summer 2014 semester mean response rate on a 5 point scale were as follows:

3.1	Describe the organization of construction companies	4.15
3.2	Describe insurance, bonds and contracts	4.08
3.3	Discuss the basics of contract law and litigation	3.92
3.5	Analyze the financial set up of a construction company	4.00

This expected outcome is also evaluated by 2 of the 10 grading criteria that are individually evaluated by faculty or industry graders. Of the 2 criteria graded by faculty during Fall 2013 the following mean percentage scores were as follows:

2. The Thesis and Company Items	83.71%
3. Financial	80.71%

Of the 2 criteria graded by faculty during Spring 2014 the following mean percentage scores were as follows:

2. The Thesis and Company Items	82.347%
3. Financial	86.26%

Of the 2 criteria graded by faculty during Summer 2014 the following mean percentage scores were as follows:

2. The Thesis and Company Items	88.18%
3. Financial	85.45%

3.1.3 How did you use findings for improvement?

The annual quality improvement meeting was held on Monday May 5. Prior to meeting faculty were given one week to review data collected from the following assessment exercises:

1. Student's performance in BSCI 4980 Building Science Thesis (Grading Rubric)

1. Spring 2013
 2. Summer 2013
 3. Fall 2013
2. Faculty assessment of Learning Objectives and Outcomes for Undergraduate Program by evaluation of performance in the thesis
 1. Spring 2013
 2. Summer 2013
 3. Fall 2013

The BSCI faculty was asked to identify any specific issues identified from the various assessment exercises mentioned previously. No specific issues were identified by the faculty that currently require addressing. The consistent performance of students in the thesis is most likely due to the introducing of the grading rubric following concerns expressed by students as part of the 2011 annual assessment report.

3.1.4 Additional Comments

None

3.2 Assessment Method 2: Graduating Seniors Exit Survey & Interview

3.2.1 Assessment Method Description

An online Exit Survey is sent to graduating seniors each semester. Students are asked how strongly they agree (on a five point scale) they have met the 6 McWhorter School of Building Science Learning outcomes that measure this objective:

- 3.1 Describe the organization of construction companies.
- 3.2 Describe insurance, bonds and contracts.
- 3.3 Discuss the basics of contract law and litigations.
- 3.4 Describe the organization of construction companies.
- 3.5 Analyze the financial set up of a construction company.
- 3.6 Judge the ethics of business and personal activities.

In addition the school head meets with all graduating students in small groups to identify good and bad experiences during their time in the program and any suggestions for improvement.

3.2.2 Findings

This expected outcome is evaluated by 6 learning outcomes that are individually evaluated by graduating seniors. Of the 6 learning outcomes evaluated during the Fall 2013 semester the following mean response rates were recorded:

- | | |
|--|------|
| 3.1 Describe the organization of construction companies. | 4.41 |
| 3.2 Describe insurance, bonds and contracts. | 4.41 |

3.3 Discuss the basics of contract law and litigations.	4.29
3.4 Describe the organization of construction companies.	4.41
3.5 Analyze the financial set up of a construction company.	4.12
3.6 Judge the ethics of business and personal activities.	4.47

Of the 6 learning outcomes evaluated during the Spring 2014 semester the following mean response rates were recorded:

3.1 Describe the organization of construction companies.	4.61
3.2 Describe insurance, bonds and contracts.	4.17
3.3 Discuss the basics of contract law and litigations.	4.26
3.4 Describe the organization of construction companies.	4.65
3.5 Analyze the financial set up of a construction company.	4.17
3.6 Judge the ethics of business and personal activities.	4.61

Of the 6 learning outcomes evaluated during the Summer 2014 semester the following mean response rates were recorded:

3.1 Describe the organization of construction companies.	4.20
3.2 Describe insurance, bonds and contracts.	3.80
3.3 Discuss the basics of contract law and litigations.	4.07
3.4 Describe the organization of construction companies.	4.13
3.5 Analyze the financial set up of a construction company.	3.80
3.6 Judge the ethics of business and personal activities.	4.00

3.2.3 How did you use findings for improvement?

The annual quality improvement meeting was held on Monday May 5, at 11:30 in the large conference room. Prior to meeting faculty were given one week to review data collected from the following assessment exercises:

1. Notes from exit interviews with graduating seniors
 1. Spring 2013
 2. Summer 2013
 3. Fall 2013
2. Exit surveys completed by graduating seniors
 1. Spring 2013
 2. Summer 2013
 3. Fall 2013

The BSCI faculty was asked to identify any specific issues identified from the various assessment exercises mentioned previously. No specific issues were identified by the faculty that currently require addressing. Previous concerns raised by students in the 2011 annual assessment report regarding cheating were not raised in either the exit surveys or exit interviews for the past two years. The issuing of an official notification

to students addressing the issue of cheating was given to students entering the program since the fall of 2011 may well have helped in this matter.

3.2.4 Additional Comments

None

Expected Outcome 4: Operate & communicate effectively in diverse settings

After evaluation of the specific circumstances, the graduating Building Science major will be able to identify appropriate methods to operate & communicate effectively in diverse settings

4.1 Assessment Method 1: Evaluation of student's performance in BSCI 4980

4.1.1 Assessment Method Description

Evaluation of student's performance in BSCI 4980 Building Science Thesis. Course description:

Individual project demonstrating mastery of curriculum content through the application of skills/knowledge to a theoretical construction company and project. Requires a written thesis and oral defense of work.

Based on an evaluation of the students performance in the thesis and subsequent meeting faculty and/or industry evaluators are asked to evaluate the student on how strongly they agree (on a five point scale) they have met the 5 learning outcomes that measure this objective:

- 2.1 Apply written, oral and visual means to communicate effectively in diverse settings
- 2.2 Employ technology as an effective communication, visualization and management tool
- 2.9 Students will be able to read analytically and critically
- 2.12 Students will be able to apply simple mathematical methods to the solution of real-world problems.
- 2.13 Students will be able to select and use techniques and methods to solve open-ended, ill-defined or multistep problems.

A grading rubric for thesis was also introduced for the thesis during the 2010/11 academic year. The Thesis is graded across 10 grading criteria and an average percentage for each criteria is recorded. The criteria used to measure this outcome is:

1. General Overview

All graduating students are assessed this is approximately 90 students.

4.1.2 Findings

This expected outcome is evaluated by 5 learning outcomes that are individually evaluated by faculty and/or industry graders. Of the 5 learning outcomes evaluated during the Fall 2013 semester the following mean response rates were recorded:

2.1	Apply written, oral and visual means to communicate effectively in diverse settings	4.14
2.2	Employ technology as an effective communication, visualization and management tool	4.38
2.9	Students will be able to read analytically and critically	3.38
2.12	Students will be able to apply simple mathematical methods to the solution of real-world problems.	4.43
2.13	Students will be able to select and use techniques and methods to solve open-ended, ill-defined or multistep problems.	4.33

Of the 5 learning outcomes evaluated during the Spring 2014 semester the following mean response rates were recorded:

2.1	Apply written, oral and visual means to communicate effectively in diverse settings	4.25
2.2	Employ technology as an effective communication, visualization and management tool	4.00
2.9	Students will be able to read analytically and critically	3.97
2.12	Students will be able to apply simple mathematical methods to the solution of real-world problems.	4.13
2.13	Students will be able to select and use techniques and methods to solve open-ended, ill-defined or multistep problems.	3.84

Of the 5 learning outcomes evaluated during the Summer 2014 semester the following mean response rates were recorded:

2.1	Apply written, oral and visual means to communicate effectively in diverse settings	4.31
2.2	Employ technology as an effective communication, visualization and management tool	4.15
2.9	Students will be able to read analytically and critically	4.31
2.12	Students will be able to apply simple mathematical methods to the	4.31

solution of real-world problems.

- 2.13 Students will be able to select and use techniques and methods to solve open-ended, ill-defined or multistep problems. 4.31

This expected outcome is also evaluated by 1 of the 10 grading criteria that are individually evaluated by faculty or industry graders. For the grading criteria graded by faculty during Fall 2013, the mean percentage score was:

1. General Overview 88.21%

For the grading criteria graded by faculty during Spring 2014, the mean percentage score was:

1. General Overview 87.26%

For the grading criteria graded by faculty during Summer 2014, the mean percentage score was:

1. General Overview 88.88%

4.1.3 How did you use findings for improvement?

The annual quality improvement meeting was held on Monday May 5. Prior to meeting faculty were given one week to review data collected from the following assessment exercises:

1. Student's performance in BSCI 4980 Building Science Thesis (Grading Rubric)
 1. Spring 2013
 2. Summer 2013
 3. Fall 2013
2. Faculty assessment of Learning Objectives and Outcomes for Undergraduate Program by evaluation of performance in the thesis
 1. Spring 2013
 2. Summer 2013
 3. Fall 2013

The BSCI faculty was asked to identify any specific issues identified from the various assessment exercises mentioned previously. No specific issues were identified by the faculty that currently require addressing. The consistent performance of students in the thesis is most likely due to the introducing of the grading rubric following concerns expressed by students as part of the 2011 annual assessment report.

4.1.4 Additional Comments

None

4.2 Assessment Method 2: Graduating Seniors Exit Survey & Interview

4.2.1 Assessment Method Description

An online Exit Survey is sent to graduating seniors each semester. Students are asked how strongly they agree (on a five point scale) they have met the 14 McWhorter School of Building Science Learning outcomes that measure this objective:

- 2.1 Apply written, and visual means to communicate effectively in diverse settings.
- 2.2 Apply oral, and visual means to communicate effectively in diverse settings.
- 2.3 Employ technology as an effective communication, visualization and management tool.
- 2.4 Operate in teams, including those of diverse composition.
- 2.5 Formulate resolutions to difficult issues creatively by employing multiple systems and tools.
- 2.6 Solve conflicts by personal communication.
- 2.7 Operate effectively in business meetings.
- 2.8 Demonstrate the ability to negotiate construction issues.
- 2.9 Students will be information literate.
- 2.10 Students will be able to read analytically and critically.
- 2.11 Students will be able to critique an argument effectively.
- 2.12 Students will be able to construct an effective argument.
- 2.13 Students will be able to apply simple mathematical methods to the solution of real-world problems.
- 2.14 Students will be able to select and use techniques and methods to solve open-ended, ill-defined or multi step problems.

In addition the school head meets with all graduating students in small groups to identify good and bad experiences during their time in the program and any suggestions for improvement.

4.2.2 Findings

This expected outcome is evaluated by 14 learning outcomes that are individually evaluated by graduating seniors. Of the 14 learning outcomes evaluated during the Fall 2013 semester the mean response rate on a 5 point scale are as follows:

2.1 Apply written, and visual means to communicate effectively in diverse settings.	4.35
2.2 Apply oral, and visual means to communicate effectively in diverse settings.	4.35
2.3 Employ technology as an effective communication, visualization and management tool.	4.35
2.4 Operate in teams, including those of diverse composition.	4.29
2.5 Formulate resolutions to difficult issues creatively by employing multiple	4.18

systems and tools.	
2.6 Solve conflicts by personal communication.	4.35
2.7 Operate effectively in business meetings.	4.18
2.8 Demonstrate the ability to negotiate construction issues.	4.06
2.9 Students will be information literate.	4.35
2.10 Students will be able to read analytically and critically.	4.41
2.11 Students will be able to critique an argument effectively.	4.35
2.12 Students will be able to construct an effective argument.	4.35
2.13 Students will be able to apply simple mathematical methods to the solution of real-world problems.	4.59
2.14 Students will be able to select and use techniques and methods to solve open-ended, ill-defined or multi step problems.	4.47

Of the 14 learning outcomes evaluated during the Spring 2014 semester the mean response rate on a 5 point scale are as follows:

2.1 Apply written, and visual means to communicate effectively in diverse settings.	4.63
2.2 Apply oral, and visual means to communicate effectively in diverse settings.	4.63
2.3 Employ technology as an effective communication, visualization and management tool.	4.67
2.4 Operate in teams, including those of diverse composition.	4.61
2.5 Formulate resolutions to difficult issues creatively by employing multiple systems and tools.	4.43
2.6 Solve conflicts by personal communication.	4.61
2.7 Operate effectively in business meetings.	4.39
2.8 Demonstrate the ability to negotiate construction issues.	4.26
2.9 Students will be information literate.	4.57
2.10 Students will be able to read analytically and critically.	4.52
2.11 Students will be able to critique an argument effectively.	4.43
2.12 Students will be able to construct an effective argument.	4.48
2.13 Students will be able to apply simple mathematical methods to the solution of real-world problems.	4.57
2.14 Students will be able to select and use techniques and methods to solve open-ended, ill-defined or multi step problems.	4.30

Of the 14 learning outcomes evaluated during the Summer 2014 semester the mean response rate on a 5 point scale are as follows:

2.1 Apply written, and visual means to communicate effectively in diverse settings.	4.20
2.2 Apply oral, and visual means to communicate effectively in diverse settings.	4.33

2.3 Employ technology as an effective communication, visualization and management tool.	4.00
2.4 Operate in teams, including those of diverse composition.	4.40
2.5 Formulate resolutions to difficult issues creatively by employing multiple systems and tools.	4.27
2.6 Solve conflicts by personal communication.	4.33
2.7 Operate effectively in business meetings.	4.13
2.8 Demonstrate the ability to negotiate construction issues.	4.07
2.9 Students will be information literate.	4.13
2.10 Students will be able to read analytically and critically.	4.20
2.11 Students will be able to critique an argument effectively.	4.20
2.12 Students will be able to construct an effective argument.	4.27
2.13 Students will be able to apply simple mathematical methods to the solution of real-world problems.	4.13
2.14 Students will be able to select and use techniques and methods to solve open-ended, ill-defined or multi step problems.	4.20

4.2.3 How did you use findings for improvement?

The annual quality improvement meeting was held on Monday May 5, at 11:30 in the large conference room. Prior to meeting faculty were given one week to review data collected from the following assessment exercises:

1. Notes from exit interviews with graduating seniors
 1. Spring 2013
 2. Summer 2013
 3. Fall 2013
2. Exit surveys completed by graduating seniors
 1. Spring 2013
 2. Summer 2013
 3. Fall 2013

The BSCI faculty was asked to identify any specific issues identified from the various assessment exercises mentioned previously. No specific issues were identified by the faculty that currently require addressing.

4.2.4 Additional Comments

Following a review of the schools writing plan by the Office of University Writing during the 2012/13 academic year. The learning outcomes above were increased from 13 to 14. Previously learning outcome 2.1 was “Apply written, oral, and visual means to communicate effectively in diverse settings”. In order to distinguish better between oral and written communication this outcome was broken up into two distinct outcomes (2.1 & 2.2 above).