Annual Report for Assessment Outcomes
Architectural Design & Drafting Program
Denise Roy, SAC Chair

1. ***Describe changes that have been implemented towards improving students' attainment of outcomes that resulted from outcome assessments carried out in 2010-2011. These may include but are not limited to changes to content, materials, instruction, pedagogy etc.***

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

We have expanded our guest speaker pool, as proposed in the 2010-11 assessment through several means. Through work on our NSF grant, new industry contacts have been made, creating field trip opportunities, and guest speakers.
One of our long-time adjuncts has retired, resulting in expansion in our Adjunct pool, also increasing industry contacts.

This spring term, the ARCH 224 curriculum was redesigned to conduct two reviews of the class Capstone project, per assessment in 2010-11. This has proven helpful in increasing the critical thinking, and improving the quality of projects. It has also had the unintended outcome of encouraging several students to withdraw from the class with the realization that they did not have appropriate skills and/or time to complete the course's curriculum.

2. ***For Each outcomes assessed this year:***
Describe the assessment design used. Include information on nature of assessment, student sample assessed, assessment tools, how results analyzed

The Outcomes assessed this year:

- *Select and recommend building systems, structural systems, construction materials, and structural component responsive to the building's design.*
- *Communicate with design professionals, clients, and engineers, using industry specific terminology and graphics.*
- *Complete all phases of the design and documentation process with consideration of its impact on the natural world.*

The first two Outcomes are technical skills, and the third supports these with a sustainability emphasis. Therefore, all three Outcomes will be evaluated using the same type of assessment, with the same student sample and evaluation tool.

Nature of the assessment

Students in the A.A.S. degree program in Architectural Design & Drafting take a design class – ARCH 203, which builds a Capstone project throughout the term. ARCH 203, Residential Renovation Studio ("Covers as- built drawings, design and construction documents for a residential remodel/addition") is taken just before completing the program and graduating.

This studio design course requires use of a number of skills to complete the design and technical documents for a residential project, thereby addressing all of the Degree Outcomes. The studio culminates in a Capstone project which is presented in a formal review, and becomes part of the student's professional Portfolio used for their work search. This Capstone project will provide the basis for a **direct-type** Outcomes Assessment.

Student sample assessed

*The **student sample** for the Assessment activity was determined by collaboration with several instructors of the Capstone course to who selected a student sample that represented a variety of skill ranges: (ranging from meeting the standards to exceeding the standards), and a variety of professional experience (through work and/or internships). The **sample size** was determined to be about 30% of the student enrollment in the Capstone project this year.*

Assessment tool

A **Scoring guide** was used to evaluate student work. It was developed by several of our Faculty who teach the class, and corresponds to the National Council of Building Designer Certification (NCBDC) Plan Standards. The ***Scoring guide*** is attached.

How the results were analyzed

Outcomes Assessed	***Method Used***
• *Select and recommend building systems, structural systems, construction materials, and structural component responsive to the building's design.*	Assessment based on selection and integration of building and structural system, and building materials appropriate to the building's design.
• *Communicate with design professionals, clients, and engineers, using industry specific terminology and graphics.*	Assessment based on completeness of drawings, use of industry specific terminology and graphics, and their ability to communicate the construction requirements.
• *Complete all phases of the design and documentation process with consideration of its impact on the natural world.*	Assessment based on the building system, structural components, and their impact on the energy use and sustainable materials.

Steps to ensure reliable results:

An inter-rater reliability method will be followed to insure reliability of the assessment of the student Capstone projects. This will take the form of rater-training plan. The following steps will be taken to insure consistency of evaluation:

- Raters will review the Scoring guide together to ensure interpretation is consistent.
- Raters will then "practice" on at least three previously evaluated Capstone projects. Once consistency is reached, faculty will move onto using the Scoring guide to assess current Capstone portfolios. Faculty members will be available during the process to consult with raters, in the event questions or concerns arise.
- Each Portfolio will be evaluated by a minimum of two raters, who will record findings in the ***Scoring guide***. Faculty will review then review the Scoring guides, and confirm that the projects receive similar ratings. In the event of noteworthy differences in the ratings, Faculty will review the Scoring guide with raters, to come to a unified conclusion.

- ***Provide information about the results.*** Results should be broken down in a way that is meaningful and useful for making improvements to teaching/learning.

  *Using our locally developed **Scoring Guide** to assess the Capstone project, the following is a summary of the results, as related to meeting the Outcomes assessed this year:*

Student Name	**Outcome #4 + Assessment**	**Outcome #5 + Assessment**	**Outcome #6 + Assessment**
	Select and recommend building systems, structural systems, construction materials, and structural component responsive to the building's design.	***Communicate with design professionals, clients, and engineers, using industry specific terminology and graphics.***	***Complete all phases of the design and documentation process with consideration of its impact on the natural world.***
ZB Previous construction experience. Graduation: 8/2012	Construction documents complete and generally adequate in their ability to communicate the design and construction requirements. Score: B	A complete set of 2-D architectural drawings. However, portions of the drawings do not demonstrate adequate use of industry graphics. Score: C	Responds somewhat to site; limited response to environmental considerations. Score: C
JG No professional experience Graduation: 6/2013	Construction documents complete and adequate in their ability to communicate the design and construction Requirements. Score: A	A very complete set of 2-D architectural drawings; along with of a 3-D model. Score: A	A very complete response to site, strong consideration of environmental issues; highly energy efficient. Score: A
MA No professional experience Graduation: 12/2012	Construction documents complete, but not adequate in their ability to communicate all design and construction requirements. Score: B	A complete set of 2-D architectural drawings; complies fairly closely with industry standard graphics. Score: B	A fairly complete design response to site and program, responding fairly well to environmental considerations. Score: B
DR Previous professional experience Graduation: 6/2012	Construction documents complete and adequate in their ability to communicate the design and construction requirements. Score: A	A very complete set of 2-D architectural drawings; complies fairly closely with industry standard graphics. Score: B	A very complete design response to site, strong consideration of environmental issues, very complete implementation. Score: A
LQ Previous construction experience Graduation: 3/2013	Construction documents fairly complete and generally adequate in their ability to communicate the design and construction requirements. Score: C	A complete set of 2-D architectural drawings. However, portions of the drawings do not demonstrate adequate use of industry graphics. Score: C	Responds somewhat to site; limited response to environmental considerations. Score: C
KG Currently works in design/drafting industry	Construction documents complete and mostly than adequate in their ability to communicate the design and construction requirements. Score: B	A fairly complete set of 2-D architectural drawings; along use of a 3-D drawings. Several inconsistencies noticed in drawings. Score: C	A fairly complete design response to site and program, responding fairly well to environmental considerations. Score: B

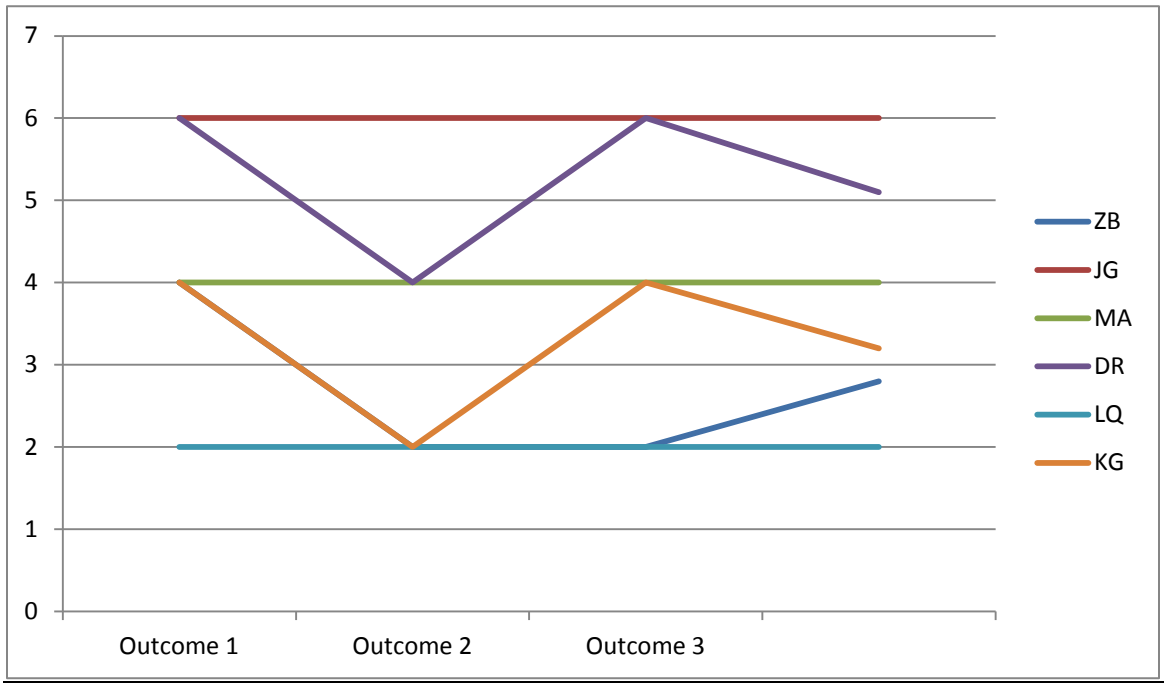
Graphing the Results, by student:

Notes:

Performance meets benchmark = 2 points

Performance above benchmark = 4 points

Performance exceeds benchmark = 6 points



Summary:

- About half of the students' performance meet or are above the benchmark
- About half of the students' performance are above the benchmark or exceed the benchmark.
- The "average" student performance is above the benchmark.

Analysis of Results

After reviewing the student capstone projects for 2011-12, our SAC identified weakness in several areas, related to this year's assessment of Outcomes:

1) Structural Systems: weakness in several projects, related to a portion of Outcome #4: ***Select and recommend …. structural systems …. ,***
2) Use of industry terminology and graphics: weakness, related to a portion of Outcome #5: ***Communicate with … clients … using industry specific terminology and graphics.***
3) Environmental response: weakess in several projects, related to portion of Outcome #6 ***….. with consideration of its impact on the natural world.***

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

Outcome #4

Last year, 2010-11, our CTE assessment addressed targeted a more focused overview of building systems in our ARCH 124 class. This change was made Spring 2011, and has been implemented by four different instructors, with good success as measured by student performance in more advanced classes. Specific ally, Faculty have noticed improvement in the second of this sequence, ARCH 224, and Faculty who instruct the revised course have reported good feedback on the curriculum and from students. Therefore, we believe we have solid instruction to meet the Outcome: ***Select and recommend building system ….".***

ARCH 224 – now that the pre-requisite for this, ARCH 124, has been revised, the instructor for this course has eliminated some of the more basic content, and added additional more complex content. Results will be evaluated next academic year.

Based on assessment for this year, and last year, the weakest area is in meeting Outcome #4, our SAC is revising our basic Structures courses, Structures 1, (ARCH 121), Structures 2 (ARCH 122), and Structures 3 (ARCH 123). One of our long-term adjunct faculty, who taught this structures sequence, has retired. One of our full-time faculty is in the process of revised the Structures 1, while teaching it this spring term. She is working with another adjunct to revise Structures 2 (being taught this Summer term), and Structures 3 (to be taught Fall term).

The revision of these classes will revise the three classes as follows:

Structures 1, ARCH 121 – Basic structural content is covered in more depth, and will focus on identification of structural components, and basic load path analysis.

Structures 2, ARCH 122 – Structures 1 will provide a base to build student's ability to conduct analysis and calculations for wood frame buildings. The course will include more application and in-class practice; the class format has been changed from lecture only to lecture/lab.

Structures 3, ARCH 123 – Structures 1 and 2 will provide a base to build student's ability to conduct analysis and calculations for concrete, steel, and lateral design. The course will include more application and in-class practice; the class format has been changed from lecture only to lecture/lab.

Outcome #5

We have added two new courses, to improve student's graphic presentation of projects, and introduce new software. ID 140, *Digital Rendering and Presentation* (using Photoshop and Indesign) was offered first this academic year, and a sequence (ARCH 141) will be offered next academic year.

Results of these changes will be evaluated next academic year, 2012-13.

Outcome #6

The Capstone project for ARCH 224 will be evaluated for its potential to better coordinate with the studio.

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

Starting in 2012-13, our SAC use the model we developed for the TSA; a Locally Produced Technical Skills Assessment.

- The proposed *Locally produced TSA* is tied to a Capstone project, and reflects the nature of the profession we are preparing students for: creating technical drawings for a small building.
- The proposed *Locally produced TSA* has a *Scoring guide* for assessing the Capstone project, which is closely reflect the curriculum, and is based on industry standards *(see next item, below).*
- A clear, concise set of industry standards, in the form of a *Table of specifications*, are available from the National Council of Building Designer Certification (NCBDC).
- Instructors of the Capstone project courses are already very adept at using a grading rubric for bi-weekly project evaluations during the term. These grading rubrics are closely tied to the NCBDC *Table of specifications*, and form the basis for the *Scoring rubric* we have developed for our *Locally produced TSA.*

Sample Scoring Guide for Student Assessment

Arch 203 Residential Remodel Studio Assessment						
Student: KG	*Term: Spring 2012*					
Students are assigned a client who wants an addition to their existing home. Each student works in a team to create measured drawings of their client's existing conditions, including existing structural systems (foundation, floor and roof framing). They are also responsible for interviewing their client to assess the scope of the additional and aesthetic desires. Each student then creates their own schematic design which receives input from their clients. The second half of the term is spent developing their scheme and drafting a set of industry standard notated construction drawings which include permit required information.	State criteria is met	Aesthetic considerations are considered (if applicable	Materials and/or structural members are appropriate for application	Sustainable strategies are utilized	Graphics are industry standard	Graphics utilize line weights and organization which promote clarity of
Design complements existing structure and adds value with spaces created	B	B	B	B	C	C
Design demonstrates understand of residential building systems	B	NA	B	B	C	B
Drawing set includes:						
Legible and complete floor plan with dimensions, wall types, window and doors notated or scheduled, built-in casework, electrical outlets and lighting with switches.	A	B	NA	NA	B	B
Foundation plan, floor/ceiling framing, and roof framing.	B	NA	A	NA	C	C
Site plan with property information necessary to obtain a Building permit.	A	A	NA	NA	C	C
Building elevations necessary to describe scope of work.	A	B	B	B	A	B
Building sections and/or details necessary to describe structural requirements of load path and shear, and strategies to insulate and weather-proof building envelop.	B	A	B	A	C	C

Performance meets benchmark = C (2 points)

Performance above benchmark = B (4 points)

Performance exceeds benchmark = A (6 points)