Academic Quality Improvement Plan (QIP)

Building Construction Science Program

College of Architecture, Art, and Design

Mississippi State University

10/22/2018v3

Purpose

The QIP will be the basis for continuous improvement of the Building Construction Science four-year bachelor degree program. The QIP plan provides a systematic and sustainable process to enable the BCS Program to fulfill its mission. An annual report of progress in achieving program goals and objectives is generated. The Plan has three major components:

1. A strategic plan for the BCS program
2. An assessment plan
3. An assessment implementation plan

Strategic Plan

The strategic plan provides the basis for assessment. This plan will be updated every three years through the collective efforts of the Building Construction Science Faculty and Program Director. The Director is responsible for maintaining the Plan and seeking input from the BCS Faculty, students, alumni, employers and the IAB. This plan updates the 7/6/2015v1 plan.

Assessment Plan

The Assessment Plan (ref: ACCE 9.1.3) links the Strategic Plan and the Assessment Implementation Plan. The Plan is used to provide evidence of the effectiveness of the program in preparing construction practitioners, and consists of the following five areas:

1. Mission Statement
2. Program Objectives
3. Learning Outcomes
4. Performance Criteria
5. Evaluation Methodology

Assessment Implementation Plan

The Assessment Implementation Plan is executed through a collection of pertinent program data, evaluation of this data, and response to data indicators and trends. This close-the-loop approach is documented each semester with the BCS Assessment Checklist.

1. PROGRAM MISSION AND GOALS

University Mission Statement: Mississippi State University is a public, land-grant university whose mission is to provide access and opportunity to students from all sectors of the state's diverse population, as well as from other states and countries, and to offer excellent programs of teaching, research, and service.

Enhancing its historic strengths in agriculture, natural resources, engineering, mathematics, and natural and physical sciences, Mississippi State offers a comprehensive range of undergraduate and graduate programs; these include architecture, the fine arts, business, education, the humanities, the social and behavioral sciences, and veterinary medicine.

The university embraces its role as a major contributor to the economic development of the state through targeted research and the transfer of ideas and technology to the public, supported by faculty and staff relationships with industry, community organizations, and government entities. Building on its land-grant tradition, Mississippi State strategically extends its resources and expertise throughout the entire state for the benefit of Mississippi's citizens, offering access for working and place-bound adult learners through its Meridian Campus, Extension, and distance learning programs.

Mississippi State is committed to its tradition of instilling among its students and alumni ideals of diversity, citizenship, leadership, and service.

College Mission: The mission of the College of Architecture, Art, and Design is to promote and engage students and faculty in the following: conceptualization, craft, media and technology, history and theory, aesthetics, and ethical issues associated with making artifacts in the world.

Program Mission: By means of a problem-based learning andragogy that uses case studies, precedents, and the integration of multiple subject areas, the Building Construction Science program will arm graduates with a clearly defined management skill set as they prepare for careers in construction or construction-related fields where effective decision making, problem solving, and multiple forms and levels of management are required.

Goals:

The program mission statement supports both the University and College missions through an emphasis on economic development and student advancement. The goal for students enrolled in the BCS program is a rewarding career in the construction industry.

2. CONSTRUCTION MANAGEMENT PROGRAM EDUCATIONAL OBJECTIVES

The following program educational learning (PLOs) describe the expected accomplishments of graduates during the first several years following graduation from the BCS program at Mississippi State University.

1. Demonstrate an understanding of professional behavior and standards and a readiness to perform in the construction industry.
2. Demonstrate an ability to apply problem-solving skills and integrated technical knowledge within an interdisciplinary team environment.
3. Demonstrate an ability to communicate effectively.
4. Demonstrate a propensity for lifelong learning.

3. STUDENT LEARNING OUTCOMES

The student learning outcomes used to assess the BCS program are: (ACCE Student Learning Outcomes, SLOs).

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 upon ethical principles.
7. Analyze construction documents for planning and management of construction processes.
8. Analyze methods, materials, and equipment used to construction projects.
9. Apply construction management skills as an effective 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. Analyze different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process.
13. Explain construction risk management.
14. Explain construction accounting and cost control.
15. Explain construction quality assurance and control.
16. Explain construction project control processes.
17. Explain the legal implications of contract, common, and regulatory law to manage a construction project.
18. Explain the basic principles of sustainable construction.
19. Demonstrate the basic principles of structural behavior.
20. Demonstrate the basic principles of mechanical, electrical, and plumbing systems.

4. PERFORMANCE CRITERIA

The BCS QIP utilizes data primarily from surveys and program coursework including:

Surveys

- Course Evaluations
- Alumni Surveys
- Annual Employment Survey
- Senior Exit Interviews

- Employer Survey

Course Work

- Test
- Quizzes
- Oral reports/presentations
- In class exercises/assignments/projects

5. EVALUATION METHODOLOGY

The following are the assessment tools used by BCS to evaluate the program.

Course Evaluations

Students complete course evaluation surveys, anonymously, for each course in the curriculum. Results are made available to the respective faculty and the Program Director shortly after the end of the semester. Depending upon the outcome, modifications may be warranted. Proposals for major changes, particularly those that may have an impact on other areas of the curriculum, are discussed at a meeting of the full faculty and Program Director.

Alumni Surveys

BCS Alumni surveys will be conducted by the department every five years. Data will be collected, summarized and reviewed by the BCS faculty and Program Director. It should be noted that assessment data from all sources, including surveys, is shared and discussed with the BCS IAB (Industry Advisory Board).

Annual Employment Surveys

An employment survey is conducted annually by the MSU Career Center to provide statistics on each graduating class relative to employment and graduate school status. Information is collected shortly after students graduate from MSU and is summarized and evaluated in a document called the Annual Report, College of Art, Architecture & Design (CAAD). Survey results are broken down by major and include data on employment and graduate school rates showing trends over several years. Employment data also includes the average starting salary by major and a list of

employers. Data for BCS graduates can be compared to all other majors in CAAD. While the data cannot be directly correlated to specific learning goals and objectives, it is viewed as an indicator of the overall effectiveness of the BCS program in starting MSU's BCS graduates' careers.

Senior Exit Interviews

The Program Director meets at the close of each academic year with all graduating students. As mentioned previously the senior BCS students complete an online exit survey, and the results are used to evaluate the BCS program on an annual basis. This meeting and survey allow graduating seniors to express their thoughts about the program. The results of this meeting are shared and discussed with faculty usually at faculty meetings. Changes to courses are influenced by information gathered through these exit interviews.

Employer Surveys

BCS Employer surveys will be conducted by the department every five years. Data will be collected, summarized and reviewed by the BCS faculty and Program Director. It should be noted that assessment data from all sources, including surveys, is shared and discussed with the BCS IAB (Industry Advisory Board).

Annual Faculty Evaluations

Another key element of the quality control program is the annual Faculty Evaluation Process. This process involves an evaluation of faculty strengths, weaknesses, and opportunities in the areas of teaching, service, scholarly/creative activity and professional development, and is the responsibility of the Program Director. During annual reviews, faculty members have an opportunity to discuss student evaluations and any problems in course delivery and student performance. They can also address future needs to improve pedagogical concerns. These may include improvements to the physical plant and upgrades to the classroom technology, as well as the need to strengthen their own background by attending seminars and conferences, taking courses or serving internships in industry. Issues with teaching loads and teaching assignments may be discussed as well. In addition, faculty may articulate future plans and needs regarding

incorporating service learning projects or collaboration as part of their course delivery. Faculty may announce their intention to conduct scholarly work or undertake research projects that may require a reduced teaching load, a sabbatical, physical space and funding. The annual evaluation process also affords the faculty member and Director an opportunity to identify service opportunities that will benefit the BCS program and strengthen pedagogy. Opportunities that have been identified in the past include service on Departmental and institutional committees, as well as those of professional organizations such as ASC and ACCE. Additionally, service to BCS student activities and group chapters are highly encouraged.

Summary

Data is collected from the above sources for assessment purposes. This data is evaluated periodically in relation to the course and program's goals and learning objectives. Issues raised by these surveys are discussed by the entire department as soon as they are identified. Changes, if required, are proposed, discussed and voted upon by the BCS faculty as quickly as possible. It should be noted that assessment data from all sources as well as proposed changes to the curriculum are shared and discussed with the BCS Program Director and faculty at the bi-annual IAB meetings as well as periodic faculty meetings during the fall and spring semesters.

Outcome assessment results are correlated with mission, goals, program content, and outcomes to implement change where needed. The BCS program uses the Assessment Checklist to track proposed changes to the program. Various constituencies (i.e. current students, alumni, faculty, administrators, employers, industrial advisors, and accreditors) are used that use quantitative and qualitative data gathered from a variety of sources on a regular basis to affect change and improvement in the program as needed. Implementation is spearheaded by the Program Director in concert with BCS faculty. It should be noted that any action taken because of assessment to modify the curriculum begins at the BCS program level with the BCS Curriculum Committee initiating proposals. Prior to implementation, proposals require approval from the BCS Program Director, the CAAD Curriculum Committee, the University Committee on Courses and Curricula, and ultimately the SVPAA/Provost.

Building Construction Science

Bachelor of Science Degree in Building Construction Science

Freshman Year Semester 1

BCS 1116 Building Construction Studio A
PH 1113 General Physics I w/lab
MA1613 Calculus for Business
EN 1103 English Composition I

Freshman Year Semester 2

BCS 1126 Building Construction Studio B
PH-1123 General Physics II w/lab
ID 3363-3D CAD/Modelling
EN 1113 English Composition II
ARC 1013 Architectural Appreciation

Sophomore Year Semester 1

BCS 2116 Building Construction Studio 1
BCS 2713 Passive Building Systems
BCS 3904 Structures I w/lab
CE 2213 Surveying I

Sophomore Year Semester 2

BCS 2226 Building Construction Studio 2
BCS 3723 Active Building Systems
BCS 3914 Structures II w/lab
EC 2113 Principles of Macroeconomics

Junior Year Semester 1

BCS 3116 Building Construction Studio 3
BCS 3213 Electrical Systems
ST 2113 Introduction to Statistics
EC 2123 Principles of Microeconomics

Junior Year Semester 2

BCS 3126 Building Construction Studio 4
BCS 3323 High Performance Construction
BL 2413 Legal Environment of Business
ACC 2013 Principles of Financial Accting

Senior Year Semester 1

BCS 4116 Building Construction Studio 5
BCS 4222 Professional Communication & Practice
ACC-2023 Principles of Managerial Accting
Humanities Elective-3hrs

Senior Year Semester 2

BCS 4126 Building Construction Studio 6
Humanities Elective-3hrs
General Elective-3hrs
General Elective-3hrs

	ACCE Semester Checklist		
	Document 103, Spring 2018	**Y or N**	**Notes**
1	Program name must include the word "Construction"	Y	Building Construction Science
2	Program is regionally accredited?	y	SACS
3	Program administrator responsible for the program?	y	George Ford
4	Pay annual fee?	y	
5	Sufficient institutional support to achieve mission, goals, and objectives?	y	
6	Degree program well defined and publicly accessible?	y	On-line website, curriculum
7	Program head qualified and knowledgeable in construction?	y	professionally registered
8	Organizational structure allow open communication?	y	
9	Well defined leadership structure?	y	
10	Faculty participation in educational unit's governance?	y	committees
11	Faculty participate in program maintenance and admin?	y	Curriculum committee, Tenure doc
12	Department and program mission support University mission?	y	
13	Curriculum reflect evolving knowledge in construction?	y	studio based curriculum
14	Sequenced courses?	y	Eight studios are sequenced. Will compare curriculum to other programs in the spring 2019.
15	Curriculum regularly evaluated?	y	each semester by IAB and faculty
16	Communications, oral and written? 6 cr hrs required	y	composition-6hrs
17	Social sciences	y	6 hrs
18	Humanities	y	6 hrs

19	Mathematics and statistics? Math higher level than Trig?	y	6 hrs
20	Physical sciences with lab? 6 cr hrs required	y	6 hrs
21	Behavior of materials, methods and equipment?	y	6
22	Principles of Management? 3 cr hrs	y	MGT-3114 added fall 2018
23	Breadth and depth in curriculum?	y	pre-reqs and review
24	Problem definition and solving BCS courses?	y	Structures I and II
25	Program 120 semester hours (minimum)	y	124
26	Accounting? 3 cr hrs?	y	ACCT-6 hrs
27	Economics, 3 cr hrs	y	ECON-6 hrs
28	Business Law, 3 cr hrs	y	Bus LAW-3 hrs
29	Total 33 cr hrs of math, science and business?	y	just 33 hrs in current program
30	Total of 50 cr hrs in CM?	y	70 hrs in current program
31	1. Create written communications appropriate to the construction discipline?	y	Collect project 7B student results. Re-assess fall 2020.
32	2. Create oral presentations appropriate to the construction discipline?		Collect collaborative project student results. Re-assess fall 2020
33	3. Create a construction project safety plan?		Re-assess in fall 2018. Safety plan must be generated by each individual student.
34	4. Create construction project estimates?		Re-assess in fall 2018. Only 58% of students passed the project 3B Estimate
35	5. Create construction project schedules?		Re-assess in fall 2018. Each individual student must complete their final project schedule.
36	6. Analyze professional decisions based on ethical principles?		Collect student results for question #7, exam #1. Re-assess fall 2020.
37	7. Analyze construction documents for planning and management of construction processes?		Re-assess in fall 2018. Only 58% of students passed the project 3B Preparation of Bids

38	8. Analyze methods, materials, and equipment used to construct projects?		86% of students performed adequately on Project #6. Re-assess spring 2020.
39	9. Apply construction management skills as a member of a multidisciplinary team?		95% of students performed adequately on the semester project-presentation. Re-assess spring 2020.
40	10. Apply electronic-based technology to manage the construction process?		95% of students performed adequately on the semester project-programs. Re-assess spring 2020.
41	11. Apply basic surveying techniques for construction layout and control?		Collect layout assignment student results. Re-assess fall 2020.
42	12. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process?		Collect student results for question #6, exam #1. Re-assess fall 2020.
43	13. Understand construction risk management?		94% of students performed adequately on Project #12. Re-assess spring 2020.

44	14. Understand construction accounting and cost control?		Finance final exam must produce a rubric. spring 2019
45	15. Understand construction quality assurance and control?		89% of students performed adequately on their final document. Re-assess spring 2020.
46	16. Understand construction project control processes?		Collect Project #9 student results. Re-assess fall 2020.
47	17. Understand the legal implications of contract, common, and regulatory law to manage a construction project?		Re-assess in fall 2018. Only 63% passed Project 10, Part 2C.
48	18. Understand the basic principles of sustainable construction?		94% of students performed adequately on final project. Re-assess spring 2020.
49	19. Understand the basic principles of structural behavior?		Must add scoring to rubric spring 2019
50	20. Understand the basic principles of mechanical, electrical and piping systems?		Re-assess the plumbing assignment fall 2018. Collect student results for the piping and electrical assignments. Re-assess fall 2020.
51	Assessment chart/map updated?	y	12-19-18
52	All syllabi, commonly formatted are posted on network?		Need to be posted on website. Scheduled for Spring 2019
53	Indirect (non-classroom) assessment of all 20 SLOs?	n	Complete alumni and employer surveys during fall 2018
54	Rubric posted on network for classroom SLOs?	n	Need to be posted on website. Scheduled for Spring 2019
55	One example of graded student work posted on network?	y	Need to be posted on network. Scheduled for Spring 2019.
56	Is the BCS Quality improvement Plan up to date, maintained on the network and on the website?	n	Plan to be updated Fall 2018
57	Faculty CVs posted to network?	n	Post in spring 2019
58	Does any tenure track faculty workload exceed 50 students per semester?	n	if yes, are new faculty needed?
59	Does any visiting faculty workload exceed 75 students per semester?		

60	Is faculty workload distributed evenly/fairly?	y	
61	Is support staff for the department sufficient to teach classes?	y	
62	Is faculty compensation competitive?	y	based upon similar institutions.
63	Is there support for faculty professional development?	y	Each faculty is supported for one conference per year by Department funds.
64	Were faculty AFEs completed this year?	y	
65	Is the Tenure and Promotion Document up to date?	y	Review in Fall 2019
66	Did all faculty participate in Advising Day activities?	y	
67	Are course offerings frequent enough for timely program completion?	y	All required courses are offered once annually at a minimum.
68	Is the Career Fair effective for student employment?		All 2018 graduates were placed.
69	Do students participate in extracurricular activities?	y	Attending AGC Competition in Atlanta during Fall 2018. ABC chapter is active.
70	Are SAIs provided by students to faculty?	y	
71	Are all CM scholarships posted?	n	Need to be posted on website. Scheduled for Spring 2019
72	Are classrooms and labs well maintained and sufficient to support program mission, goals and objectives??		Just sufficient
73	Is funding sufficient to support the program?	y	
74	Are IAB meeting minutes posted to the website?	n	Need to be posted on website. Scheduled for Spring 2019
75	Are faculty active in professional organizations?	y	ASEE is most notable.
76	Internship program sufficient?	y	
77	Is the registry of Alumni up to date?	y	But may be improved. Re-assess 2020.
78	Is the most recent assessment information available on the website?	n	Need to be posted on website. Scheduled for Spring 2019
79	Survey of graduates completed, results posted to network?	n	Need to be posted on website. Scheduled for Spring 2019

80	Survey of graduates completed by IAB, results posted to network?	n	Need to be posted on website. Scheduled for Spring 2019
81	Demonstrate an understanding of professional behavior and standards and a readiness to perform in the construction industry.	n	Assess this PLO using Alumni, Employer and senior surveys Spring 2019.
82	Demonstrate an ability to apply problem-solving skills and integrated technical knowledge within an interdisciplinary team environment.	n	Assess this PLO using Alumni, Employer and senior surveys Spring 2019.
83	Demonstrate an ability to communicate effectively.	n	Assess this PLO using Alumni, Employer and senior surveys Spring 2019.
84	Demonstrate a propensity for lifelong learning.	n	Assess this PLO using Alumni, Employer and senior surveys Spring 2019.