

**BSCEM Assessment Results and Action for improvement for each Program Learning Outcomes**

The program assessment was conducted in the academic year 2015-2016. The assessment results and Action for Improvement for each program outcome are summarized in the table below:

Program Learning Outcomes	Relevant CEM Course	Assessment Results (%)			Feedback	Importance Ranking	Actions
		F2015	S2016	F2016			
<b>1. Create written communications appropriate to the construction discipline</b>	CE 101	64%	93%	N/A	- Senior/Alumni: acceptable performance - Employer surveys show marginal performance	Employers: 1st rank	- Have the COE-Writing & Communication Center evaluate students written communication performance.
	CEM 225	70%	N/A	70%			
	CE 406	87%	N/A	81%			
	CEM 421	77%	82%	81%			
	CEM 429	83%	N/A	86%			
	CEM 490	85%	84%	89%			
<b>Average</b>	<b>78%</b>	<b>86%</b>	<b>81%</b>				
<b>2. Create oral presentations appropriate to the construction discipline</b>	CE 101	69%	75%	N/A	- All surveys show satisfactory performance	Employers: 1st rank	- Use a rubric to evaluate student oral presentation performance
	CEM 225	74%	N/A	70%			
	CEM 421	80%	81%	N/A			
	CEM 429	84%	N/A	70%			
	CEM 490	87%	88%	90%			
	<b>Average</b>	<b>79%</b>	<b>81%</b>	<b>77%</b>			
<b>3. Create a construction project safety plan</b>	CEM 315	82%	88%	84%	- All surveys: above average performance	Employers: 4th rank	- Review courses of these areas
	CEM 425	N/A	N/A	N/A			
	CEM 490	83%	85%	87%			
	<b>Average</b>	<b>83%</b>	<b>87%</b>	<b>86%</b>			
<b>4. Create construction project cost estimates</b>	CEM 121	87%	89%	78%	Average satisfaction	Employers: 1st rank	- Provide more sessions for blueprint readings and quantity take off
	CEM 225	76%	N/A	70%			
	CEM 324	N/A	84%	78%			
	CEM 429	82%	N/A	74%			
	CEM 490	85%	87%	89%			
	<b>Average</b>	<b>83%</b>	<b>87%</b>	<b>78%</b>			
<b>5. Create construction project schedules</b>	CEM 421	78%	78%	78%	Overall satisfaction	Employers: 1st rank	- Use P6 software for scheduling
	CEM 431	72%	76%	78%			
	CEM 490	86%	89%	90%			
	<b>Average</b>	<b>79%</b>	<b>81%</b>	<b>82%</b>			
<b>6. Analyze professional decisions based on ethical principles</b>	CE 101	87%	78%	N/A	All surveys: above average performance	Employers: 4th rank	Maintain the level of performance in regard to this learning outcome
	CEM 121	89%	75%	83%			
	CEM 125	N/A	N/A	N/A			
	CEM 225	65%	N/A	70%			
	CEM 315	86%	86%	82%			
	CEM 421	78%	80%	82%			
	CEM 429	72%	N/A	72%			
<b>Average</b>	<b>80%</b>	<b>80%</b>	<b>78%</b>				
<b>7. Analyze construction documents for planning and management of construction processes</b>	CEM 315	86%	87%	86%	Senior survey: high satisfaction Alumni/Employer: above average performance	Employers: 1st rank	Maintain the level of performance in regard to this learning outcome
	CEM 421	79%	78%	78%			
	CEM 429	83%	N/A	N/A			
	CEM 490	88%	89%	90%			
	<b>Average</b>	<b>84%</b>	<b>85%</b>	<b>85%</b>			
<b>8. Analyze methods, materials, and equipment used to construct projects</b>	CEM 125	N/A	N/A	N/A	All surveys: above average performance	Employers: 3rd rank	Maintain the level of performance in regard to this learning outcome
	CEM 200	76%	74%	71%			
	CEM 225	75%	N/A	70%			
	CEM 335	79%	78%	77%			
	CEM 425	N/A	N/A	N/A			
	<b>Average</b>	<b>77%</b>	<b>76%</b>	<b>73%</b>			
<b>9. Apply construction management skills as a member of a multi-disciplinary team</b>	CE 101	N/A	N/A	N/A	Senior survey: high satisfaction Alumni/Employer: above average performance	Employers: 1st rank	Focus on multi-disciplinary team work in CEM courses Use peer-evaluation forms
	CE 130	78%	76%	74%			
	CEM 315	83%	88%	84%			
	CE 406	87%	N/A	81%			
	CEM 490	85%	87%	90%			
	<b>Average</b>	<b>83%</b>	<b>84%</b>	<b>82%</b>			
<b>10. Apply electronic-based technology to manage the construction process</b>	CEM 121	86%	89%	84%	All surveys: above average performance	Employers: 2nd rank	Introduce various electronic-based tools in CEM courses
	CEM 206	82%	81%	79%			
	CEM 225	74%	79%	78%			
	CEM 421	77%	N/A	N/A			
	CEM 490	84%	87%	90%			
	<b>Average</b>	<b>81%</b>	<b>84%</b>	<b>83%</b>			

Program Learning Outcomes	Relevant CEM Course	Assessment Results (%)			Feedback	Importance Ranking	Actions
		F2015	S2016	F2016			
11. Apply basic surveying techniques for construction layout and control	CEM 130/L	80%	76%	75%	All surveys show above average performance	Employers: 5th rank	Maintain the level of learning performance
	<b>Average</b>	<b>80%</b>	<b>76%</b>	<b>75%</b>			
12. Understand different methods of project delivery and the roles and responsibilities of all constituencies involved in the design and construction process	CEM 125	N/A	N/A	N/A	All surveys: above average performance	Employers: 2nd rank	CEM 373 (Fundamentals of IPD) will be added as required course in Fall 2017
	CEM 206	81%	83%	80%			
	CEM 373	73%	77%	74%			
	CEM 421	78%	77%	79%			
	CEM 490	88%	89%	89%			
<b>Average</b>	<b>80%</b>	<b>82%</b>	<b>81%</b>				
13. Understand construction risk management	CEM 125	N/A	N/A	N/A	Seniors: Above average performance Alumni/Employers: Average performance	Employers: 3rd rank	Introduce risk management at different levels of CEM courses
	CEM 373	70%	66%	70%			
	CEM 421	78%	77%	78%			
	CEM 426	94%	96%	94%			
<b>Average</b>	<b>81%</b>	<b>80%</b>	<b>81%</b>				
14. Understand construction accounting and cost control	CE 406	74%	N/A	79%	All surveys: above average performance	Employers: 2nd rank	Introduce construction accounting at different levels of CEM courses
	CEM 421	77%	77%	75%			
	CEM 429	79%	N/A	79%			
	CEM 431	76%	75%	71%			
<b>Average</b>	<b>77%</b>	<b>76%</b>	<b>76%</b>				
15. Understand construction quality assurance and control	CEM 315	86%	87%	82%	All surveys: high satisfaction	Employers: 3rd rank	Maintain the level of learning performance
	CEM 421	79%	79%	77%			
	CEM 426	97%	97%	N/A			
	CEM 431	78%	67%	71%			
<b>Average</b>	<b>85%</b>	<b>83%</b>	<b>77%</b>				
16. Understand construction project control processes	CEM 373	72%	74%	76%	Alumni/Employers: average performance	Employers: 2nd rank	Introduce this outcomes in different levels of CEM courses
	CEM 421	78%	78%	77%			
	CEM 431	78%	80%	76%			
<b>Average</b>	<b>76%</b>	<b>77%</b>	<b>76%</b>				
17. Understand the legal implications of contract, common, and regulatory law to manage a construction project	CEM 373	77%	68%	81%	All surveys: high satisfaction	Employers: 3rd rank	Maintain the level of learning
	CEM 426	94%	96%	91%			
	CEM 490	88%	89%	91%			
<b>Average</b>	<b>86%</b>	<b>84%</b>	<b>88%</b>				
18. Understand the basic principles of sustainable construction	CEM 125	87%	91%	79%	All surveys: average performance	Employers: 2nd rank	A new course (CEM 481 - Sustainability in Built Environment) is added as required course in Fall 2017
	CEM 225	74%	N/A	70%			
	CEM 324	N/A	87%	N/A			
	CEM 365	85%	85%	84%			
	CEM 490	87%	87%	87%			
<b>Average</b>	<b>83%</b>	<b>88%</b>	<b>80%</b>				
19. Understand the basic principles of structural behavior	CEM 204	76%	74%	80%	All surveys: above average performance	Employers: 5th rank	Drop CEM 438 (Structural Design II) and change CEM 404 to Structural Systems for Buildings - Eff. Fall
	CEM 304	73%	76%	78%			
	CEM 404	75%	79%	77%			
	<b>Average</b>	<b>75%</b>	<b>76%</b>	<b>78%</b>			
20. Understand the basic principles of mechanical, electrical and piping	CEM 365	86%	84%	86%	All surveys: above average performance	Employers: 3rd rank	Maintain the level of learning performance
	CEM 375	70%	71%	73%			
	<b>Average</b>	<b>78%</b>	<b>78%</b>	<b>80%</b>			

**Other recent implementation for improvement of the program academic quality**

Following are the changes done recently and changes to be implemented in 2017:

New Requirements	Changes	Effective Date
CSU Policies: Max. number of units in total required for all BS degrees = 120 units	Total number of units required for BSCEM degree were reduced to 120 units (previously 128 units) by: Double counting CE 101, CE 406 and CEM 490 as GE courses and CEM courses	Fall 2014
ACCE Outcome-Based Standards	The contents of CEM courses have been revised in accordance to the new ACCE Outcome-Based Standards including the followings: Drop CEM 205 (Computer Systems and Programming)	Fall 2014
	-Add CEM 206 (Trends in Construction Engineering Management) to cover electronic-based technology for construction projects (ACCE-SLO # 10)	Fall 2014
	-Drop CEM 431 (Construction Cost Control)	Fall 2017
	-Revise CEM 421 (Construction Planning & Scheduling) to cover both Planning/Scheduling and Cost Control	Fall 2017
	-Drop CEM 438 (Structural Design II)	Fall 2017
	-Revise CEM 404 with new name “Structural Systems for Buildings” to cover ACCE-SLO # 19	Fall 2017
	-Add CEM 481 (Sustainability in Built Environment) which is double counted as a GE course and CEM course to cover ACCE-SLO# 18	Fall 2017
	-Add CEM 373 (Fundamentals of Project Delivery Methods) as a required CEM course (previously CEM technical elective course) to cover ACCE-SLO# 12	Fall 2017