

College of Technology Academic Program Assessment Response

Department: Building Construction Management

Program: BS in Building Construction Management

History:

The Department of Building Construction Management was initiated within the Purdue System in 1946 to re-train the returning GI's. When the College of Technology was created in 1964, the Department of Architectural and Civil Engineering Technology was also formed. In 1974, the University granted autonomy to the regional campuses which, for all practical purposes, made them separate institutions, and freed the department at the West Lafayette campus from responsibility to the regional campuses. In 1976, the name of the department was changed to the Department of Building Construction and Contracting and revisions in the curriculum were initiated to meet the standards of the American Council for Construction Education. The Department was initially accredited in July of 1979 and has maintained continuous ACCE accreditation. BCM along with six other departments and the school administrative offices moved to KNOY Hall in 1984. For the first time, the Department of Building Construction Management would have dedicated space for classrooms and laboratories. In the 90's the name was changed to Department of Building Construction Management Technology. In 2007, the department dropped Technology for its name.

The BS BCM program offers six areas of concentration which were developed in direct response to requests by industry partners. The first three concentrations: residential construction management, electrical construction management, and mechanical construction management can be found among other construction management programs in the US. The most recent concentrations which were developed in the past 6 years are perhaps one-of-a kind programs in the US, they include: Demolition and Reconstruction Management (2005), Healthcare Construction Management (2006), and Disaster Restoration and Reconstruction Management (2008). The first textbooks ever written for Demolition Management (2010) and Disaster Restoration (2011) were published through Purdue Press by BCM Faculty.

The BCM program has more than 4,400 alumni throughout the US and abroad.

Program Trajectory:

Students:

- Historically, BCM has never had a need to market its program and experienced enrollment of over 600 majors prior to 2005. In order to begin growing our graduate program and research efforts without additional faculty resources, an enrollment management plan was established in 2009 with a target of 450 undergraduate majors in BCM.
- Since the Fall of 2009 our total undergraduate enrollment has dropped from 480 to 399, representing a 17% decline. However, the Fall 2011 enrollment (399) is only 11% below our target enrollment of 450 students.
- Since the Fall of 2009 our number of applications have declined from 134 to 95 (-29%), while admissions level have remained around 80 students per year. Non-resident applications have decreased by 40% since the Fall of 2009, while our actual number of international students has risen, which leads to suggest that the decline in non-resident students may be directly related to the economy and more students being forced to stay close to home in pursuit of their college degrees.

- Recruitment videos are currently being produced for distribution on YouTube, Facebook, BCM website and other forms of social media.
- The average number of CODO's into BCM has been 31 per semester since 2008. The average number of CODO's out of BCM since 2008 has been 7 students per semester.
- From the Fall of 2009 to Fall of 2011, the student quality for BCM has remained level with SAT Scores (Reading + Math) at 1063 and an average high school GPA of 3.40. For 2011 the CoT average SAT score was 1109 and a 3.42 GPA; the University average was an 1175 SAT with a 3.62 GPA.
- The undergraduate student profile for BCM has experienced positive changes in diversity by growing to 5% female, 7.8% minority, 6.5 % under-represented minority, and 3% international.
- In the Fall of 2011, BCM created the new position of *Student and Industry Outreach Specialist*. This position is funded entirely by non-recurring sources and is championed to increase our recruitment and retention activities on female and underrepresented minorities. This position also serves as the advisor to BCMentors. Numerous direct recruitment activities have taken place in the greater Chicago and Indianapolis areas since filling this position.
- BCMentors began in 2007 with the initiative to secure any BCM student who could provide tutoring or instruction (as well as encouragement when necessary) to ANY BCM student seeking assistance. BCMentors has made a major positive impact in helping students learn both inside and outside of the classroom. BCMentors meets every Wednesday night from 6-8pm for study tables in Knoy 416. Afterwards, BCMentors takes mentees to Fuzzy's tacos for a discounted meal. To-date, more than 90 BCM students have served as mentors for more than 150 students. The measurable successes are indicated by increased test scores, increased course grades, and reduced levels of student dismissal. During the 2009-2010 academic year there were 43 BCMentors from all academic levels who served 44 protégés. In 2010-2011, more than 331 mentor-protégé interactions took place.
- In addition to BCM student mentors, the department also hires math and physics tutors to work with the BCMentors program.
- BCM's one-year retention rate remains above 91%, and overall progression of students is well-executed, resulting in nearly a 79% six-year graduation rate, and an average time to degree completion of 4.5 years. It should be noted that our BS BCM degree requires 800 hours of work experience in the construction industry prior to degree completion.
- BCM Student competition teams compete in 3 regional and 6 national competitions, often placing in the top-three finishers at both levels.
- Bryan Morris (BCM '11) served as the student responder at the December 2011 graduation ceremony.
- Each year BCM students win national honors. Two recent examples include BCM Senior Branden Burke's essay on leadership qualities earned him the 2012 Associated General Contractors of America's James L. Allhands Student Essay Competition. His essay titled "Critical Components of Being a Great Project Manager", focused on five important traits based on his experiences and the book "Good to Great," which he had just finished reading for a BCM class. Burke is the second BCM student in as many years to win the contest. Andrew Talarek (BCM '11) was the 2011 winner. His essay was titled "Initiating a Culture of Lean Construction Within the Firm".
- Our job placement rate remains strong, even in a down economy, with an average of 86% of our BS BCM student being employed upon graduation at an average salary of \$50,000, since May 2008.
- The overall success of BCM graduates is further reinforced by the fact that more than 250 alumni have become presidents, vice-presidents, CEO's, and owners of construction firms across the US.

Faculty:

	2008-09	2009-10	2010-11	2011-12
Proposals	\$26,726,521	\$2,682,841	\$1,400,000	\$399,033
Awards	\$218,924	\$976,448	\$790,091	\$319,472
Teaching Load – WCH	12.4	9.1	10.7	
Proposal Participant Rate of ALL Faculty	57%	19%	55%	

- The external grant proposal activity within the BCM department has grown from \$294,000 in 2006-2007 to more than \$2.6 million in 2009-2010, and \$1.4 million in 2010-2011.
- In 2008-2009 our department's faculty received \$218,924 in external funding awards, while in 2009-2010 our faculty obtained \$976,000 and \$790,091 in 2010-2011.
- In 2008, 57% of BCM faculty members participated in research proposals and in 2010-2011 there were 10 different faculty members who submitted external proposals resulting in 8 individuals receiving awards. This constitutes more than 70% of our tenure-track faculty members (55% of all faculty) actively pursuing external funding opportunities.
- BCM currently lacks any space for applied research activities. In addition, there is no space to support learning / research in the healthcare, demolition, or disaster restoration areas of BCM.
- Further evidence of growth in scholarly activities is indicated by the number of publications prepared by our faculty within the BCM department. In 2006-2007, BCM faculty prepared 30 publications, while in 2009-2010 the department completed 59 refereed (journals and proceedings) publications, resulting in an increase of more than 95% since 2006. In 2010-2011, BCM faculty prepared more than 45 publications (7 journals, 33 proceedings, and 5 technical reports).
- In 2010-2011, BCM faculty members delivered 16 invited presentations (8 international).
- Currently, BCM has one strategic hire approved for the Fall of 2012 who is a female, resulting in two female faculty members (11% of faculty).
- Since 2006 there have been two BCM faculty members chosen to be Fulbright Scholars to work with Universities in Ireland and Estonia.
- BCM offers several successful continuing professional education programs each year.
- BCM faculty work closely with Purdue Enterprise Corporation.

Program or Engagement Activity:

BCM students can gain eight highly valued professional designations prior to their completing their BS degree through our close working relationship with construction industry professional organizations such as Home builders Institute, Occupational Safety and Health Administration, American Society of Healthcare Engineers, and the US Green Building Council.

The most recent concentrations (Demolition and Reconstruction Management, Healthcare Construction Management, and Disaster Restoration and Reconstruction Management) do not have any space allocation to support applied instructional / research labs.

BCM's Construction Advisory Council consists of 36 firms from all regions of the US.

Program Quality and Global/National Position:

While there is not a national ranking system for Construction Management programs, Purdue BCM is considered among the top 5-6 programs nationwide. Purdue BCM's formalized peer programs include Arizona State University, Auburn University, Colorado State University, University of Florida, Texas A&M, and Virginia Tech. The Peer group shares vital benchmark data to help all of the programs improve. The PEER Six Group was established over 20 years ago to support sharing of information among program heads in meetings at least twice each year in conjunction with the American Council for Construction Education. The PEER group share annual performance data including: faculty salaries, faculty workloads, research and scholarly activities, advisory board activities, and admissions / enrollment trends.

BCM has global recognition and our program has attracted undergraduate students from as far away as Australia, Singapore, Korea, China, and Latin America. BCM continues to increase its global footprint through effective strategic international partners. By the spring of 2013 it is anticipated that BCM will have full semester exchanges established in China at Tsinghua University and Dalian University of Technology. BCM continues to grow its relationship with Dublin Institute of Technology with which we have completed full-semester student exchanges with three students to/from Purdue for the past three years. In addition, two BCM faculty members have traveled to in DIT for full semester teaching and research opportunities. Most recently, BCM has established a new working relationship in Saudi Arabia with King Saud University's Department of Civil Engineering. BCM faculty and graduate students have increased our activity with Moi University (Kenya) focusing on faculty / student collaboration in targeting global challenges / research activities such as; bio-fuels, affordable housing, wind and solar energy, clean water, and sustainability. BCM will repeat all four successful study abroad programs from 2011 (China, Ireland, Costa Rica, and Saudi Arabia) during the summer of 2012. Since the summer of 2007, a total of 123 BCM students and 15 contractor shadows have been involved on our study abroad programs. BCM continues to be actively involved with the Purdue Office of Global Business Engagement and hosted contractors and Chinese Business leaders at an event in November to encourage Sino-US (Indiana) business partnerships.

Two BCM faculty members have been recognized as faculty scholars at Chinese Universities (Dr. Yi Jiang, Chang'An University and Dr. Robert F. Cox, Dalian University of Technology).

Position and Role in the State:

In addition to the Building Construction Management program in the College of Technology, there are currently five other construction management BS programs located at Ball State, Indiana State University, Purdue- Calumet, IUPUI, and Construction Engineering and Management (Purdue School of Civil Engineering). These various programs are found in Engineering, Technology, and other colleges. The Purdue BCM program remains the oldest, most comprehensive (our six undergraduate concentrations are not found at any other program), and largest in the state. The general descriptions of these programs are shown in the table below:

Location	Purdue BCM (CoT)	Purdue CEM (CoE)	Purdue – Calumet(CMET)	Ball State University	Indiana State University	IUPUI (CEMT)
BS Enrollment Fall 2011	399	53	150	158	145	230
Credit Hours	128	135	130	126	124	124
Accreditation	ACCE	ABET	ABET	ACCE	ACCE	ABET

On Purdue's campus, BCM has the capacity and expertise to be the central point for offering all construction management related courses in support of related majors such as: interior design, mechanical engineering, electrical engineering, construction engineering, civil engineering, agriculture, and management. BCM offers three *service* courses (BCM 100, BCM 130, and BCM 230) that include students from several majors across campus. The new 18 credit BCM minor will attract students from all of these related disciplines and increase the potential for future collaborative offerings and multi-disciplinary options for students across campus.

BCM continues to serve the land-grant mission through active engagement, industry outreach and community services. This land-grant focus is reinforced by the fact that 52% of all BCM alumni are reported to reside in the State of Indiana.

Role in the Academic Fabric of Purdue University:

- Working closely with MET, BCM served as the leader in managing the construction of the Purdue Solar Decathlon Team for the 2010-2012 international competition, which placed second.
- BCM faculty members are active in interdisciplinary scholarly activities in the areas of Energy and Sustainability.
- BCM faculty and students have continued to be involved in EPICS.
- Since 2006, BCM has hosted 8 visiting scholars from China and Australia.

Opportunities for Synergy and Efficiency:

- BCM faculty approved an 18 credit hour BCM minor option open to the university. The plan is for this to be in place by Fall 2012. Targeted programs include: agriculture, business, civil engineering, electrical engineering, mechanical engineering, and ALL COT programs.
- BCM Faculty members are consistently working on interdisciplinary research opportunities in energy, sustainability, health and safety, and applied technologies.
- BCM could be the central point of offering all construction management related courses for related majors.
- Similar programs in CIC member institutions can be found at Wisconsin-Stout, Michigan State, Penn State, Ohio State University, and the University of Nebraska – Lincoln.
- BCM needs to continue to focus its research in energy and sustainability related areas. Currently we have four faculty members who support this topic. In addition to the energy conservation and efficiencies standpoint, BCM desires to pursue energy generation and distribution. We are in the second year of working with North China Electrical Power University on the potential for developing a series of Nuclear Power Construction Management course(s). Dr. Hubbard has been successful in working closely with the Nuclear Regulatory Commission to stay advised on the future of this area.
- BCM will need to hire an additional 1-2 faculty members to ensure the growth in research and development in these energy related initiatives by releasing these faculty members from some of their core course teaching responsibilities. BCM needs to target a faculty hire in estimating and residential construction to provide support in the courses in which these faculty are currently assigned.
- With the roll-out of the BCM Minor, we will need at least one additional faculty member.
- In order to be more competitive in recruitment, additional funding for graduate student stipends is required. Currently BCM has 0.50 FTE allocation while employing 6.0 FTE (13 headcount).