

The background of the cover is a photograph of the interior of the OHL School of Construction. The image shows a large, modern building with a curved, ribbed ceiling and prominent red structural beams. The lighting is warm, highlighting the architectural details.

**FIU**

**FLORIDA  
INTERNATIONAL  
UNIVERSITY**

**ANNUAL REPORT  
2011 - 12**

**OHL SCHOOL OF  
CONSTRUCTION**



## **Annual Report 2011-2012**

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## 1. Introduction

This year the Department of Construction Management made history by elevating itself to OHL School of Construction. Globally known international construction company Obrascon Huarte Lain (OHL) named the FIU construction program through a generous gift. OHL School of Construction became the first named school in the history of the college. The dedication took place on March 20, 2012 in the presence of the high-ranked executives of both FIU and OHL including President Mark B. Rosenberg of FIU and Chairman of the OHL Board of Directors Juan-Miguel Villar-Mir. Many dignitaries were present as invited guests including FIU administrators, local construction industry executives, faculty and students of the college.

This year the school continued to make noteworthy accomplishments as in the previous years. A team of undergraduate students won the Associated Builders and Contractors (ABC) 12<sup>th</sup> annual student chapter Construction Management Competition during the 2012 ABC EdCon and Expo in San Antonio, Texas. FIU also took second place in safety. FIU was one of the 25 teams from colleges and universities across the nation participating in the competition. Our team competed with reputable schools such as Auburn University, Clemson University, Colorado State, Georgia Tech, Purdue University, Texas A& M University, Ohio State University, and University of Florida among others. It is the second time FIU has brought home the coveted title of Construction Management Champions. FIU team became champion for the first time in 2006.

The school began offering its first overseas MSCM (Masters of Science in Construction Management) in the Dominican Republic in May of this year. Another program is due to begin in Panama in January next year. In addition, a professional MSCM program is being launched in August this year. The professional program will be taught on Saturdays at the FIU Pines Center in Broward.

The Bachelor of Science in Construction Management program is re-accredited by the American Council for Construction Education (ACCE) for a six year period ending in 2013. The school will be revisited by ACCE in the fall of 2013. The school is preparing for the upcoming visit.

Enrollment is significantly lower than last year. The fall 2011 total (undergraduate and graduate) headcount is 443 compared to 546 in fall 2010 indicating a decrease of nearly 19 percent. The graduate fall 2011 enrollment is 123, and the undergraduate enrollment is 320. The decrease is very likely due to the continuing downturn in economy. We hope that enrollment will rise as the economy improves.

The total number of students graduated this year is 138. Last year 166 students, highest in the history of the school, graduated.

It should be mentioned here that according to latest employment data published by SUS (2010-11 Florida Public University Graduates) the Masters in Construction Management has the highest employment rate in the state when compared to other universities in Florida and the Bachelor degree program in Construction Management has the second highest rate of employment.

OHL School of Construction faculty members were active in publishing their research findings in reputed construction journals and conference proceedings. Collectively, the department faculty published one book, nine journal papers, three research reports and twenty conference proceedings papers.

The school did extremely well again this year in external research funding, thanks to Dr. Yimin Zhu and Dr. Bayraktar. In addition to Dr. Zhu's ongoing NSF grants, Dr. Bayraktar received a number of grants from the Florida Department of Transportation.

The school has been allocated funding for developing its planned construction process laboratory. Work is underway with targeted completion by December 2012. The laboratory is intended to provide students hands-on demonstrations on real-life construction processes, construction materials, components and their assembly. Half-built walls, steel structural joints and samples of various construction components will be the features of this laboratory.

In addition, the school has a 650 square feet MEP (mechanical, electrical, plumbing) studio on the first floor of the Engineering Center Building. This laboratory is equipped with HVAC, electrical and plumbing appliances/fixtures for demonstration to students, and computer hardware and software for instruction and training.

At present, undergraduate students taking the course on 'Construction Materials' are required to meet three class sessions in the civil engineering materials laboratory for hands-on demonstration on testing of common construction materials, such as cement, concrete, steel and timber. This arrangement provides much needed laboratory experience to our students.

The department currently has 10 fulltime faculty members and employs between 10 to 15 adjunct faculty members every term.

## **2. Academics**

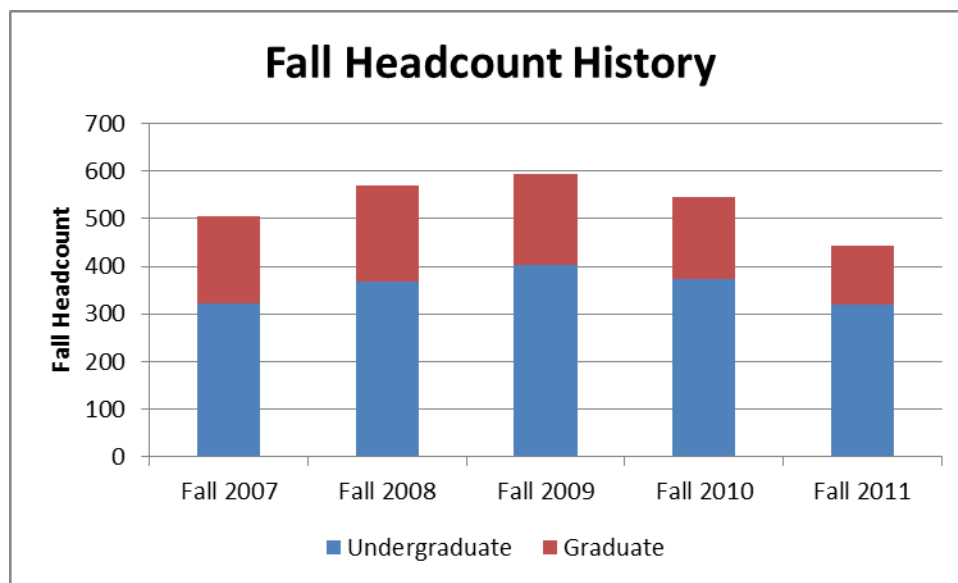
### **2.1. Enrollments and FTEs**

Fall headcount (enrollment) history is shown in Table 1 and Figure 1. After a steady growth of more than six years between 2003 and 2009, the fall enrollment has been declining over the last the last two years. This year the decline is about 19 percent from

546 to 443. The undergraduate enrollment dropped to 320 from 374 and graduate enrollment to 123 from 172.

**Table 1. Fall Headcount History**

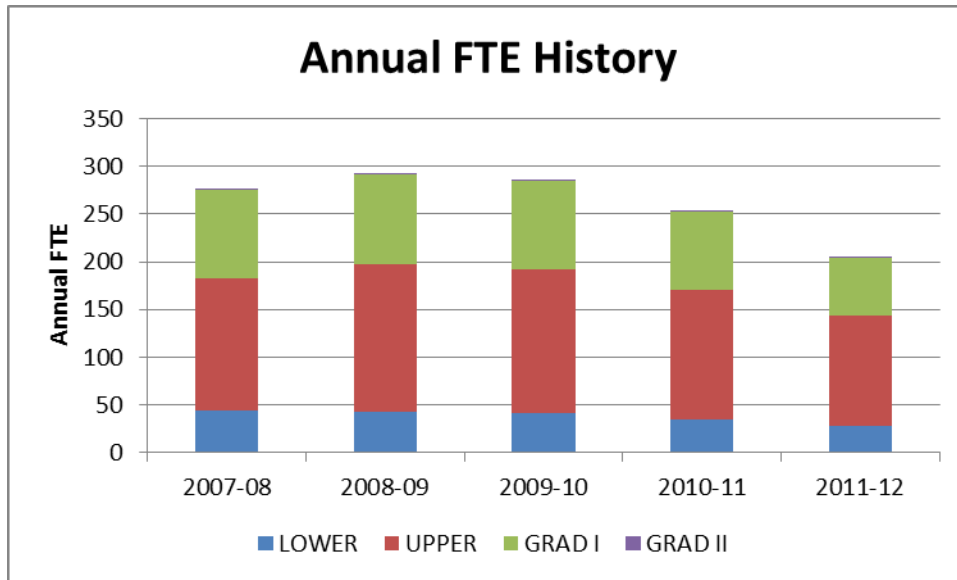
	Fall 2007	Fall 2008	Fall 2009	Fall 2010	Fall 2011
UNDERGRADUATE	323	369	402	374	320
GRADUATE	182	202	192	172	123
<b>TOTAL</b>	<b>505</b>	<b>571</b>	<b>594</b>	<b>546</b>	<b>443</b>



**Figure 1. Fall Headcount History**

**Table 2. Annual Full Time Equivalent (FTE)**

	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
LOWER	43.7	42.8	41.3	34.1	28.0
UPPER	138.5	155	150.4	136.2	115.9
GRAD I	93.1	94.1	92.8	82.0	59.6
GRAD II	0.8	0.5	0.5	2.1	1.1
<b>TOTAL</b>	<b>275.7</b>	<b>292.0</b>	<b>285.0</b>	<b>254.4</b>	<b>204.6</b>



**Figure 2. Annual FTE History**

The annual full-time equivalent (AFTE) students, calculated as the fundable student credit hours divided by 40 or 32 credits for the undergraduate and graduate students, respectively, have also declined correspondingly with the headcount at both undergraduate and graduate levels over the last two years. Overall decrease in AFTE is close to 20% over the last year (2010-11). The increase in total AFTE, however, was close to 40% over the three year period from 2005-06 to 2008-09. Figure 2 shows the AFTE history of the department since 2007-08.

## 2.2. Online Masters Program

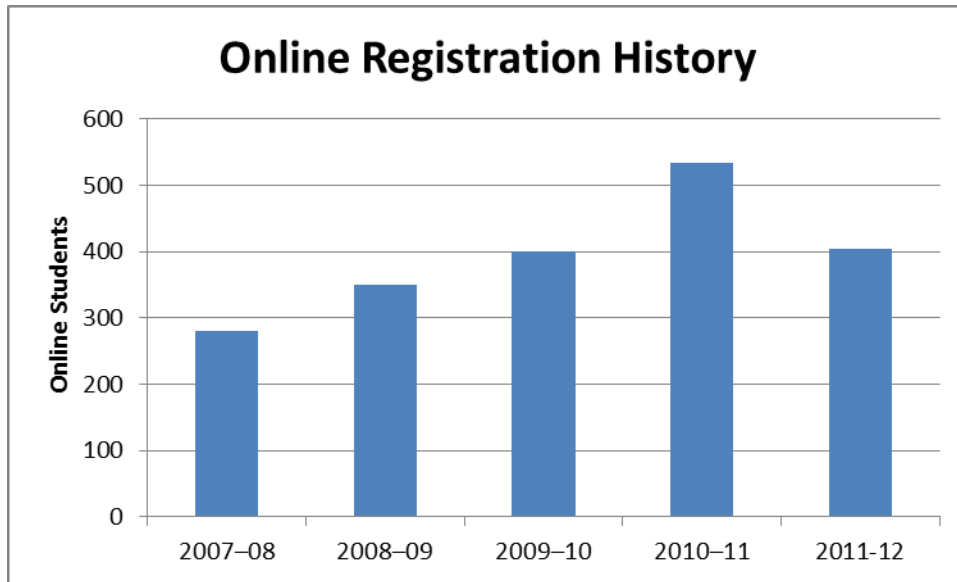
The school began offering graduate courses online for its Masters students in 2004. Two sections for each online course are offered, one for the in-state students and the other for the out-of-state students. Fee structures are different. FTE credits of out-of-state students are not credited to the school. Sufficient courses are offered within a four-semester cycle enabling students to graduate by taking all courses online. The enrollment has declined this year as compared to the years before as can be seen from Tables 3 and 4 and Figure 3.

**Table 3. Online (MS) Enrollment and Course Offering**

<b>Semester/Year</b>	<b>Online Enrollment</b>	<b>Online Course Offering</b>
Summer 2008	86	2
Fall 2008	110	3
Spring 2009	154	4
<b>2008 - 2009</b>	<b>350</b>	<b>9</b>
Summer 2009	125	3
Fall 2009	143	3
Spring 2010	133	4
<b>2009 - 2010</b>	<b>401</b>	<b>9</b>
Summer 2010	158	4
Fall 2010	203	5
Spring 2011	172	3
<b>2010 - 2011</b>	<b>533</b>	<b>12</b>
Summer 2011	113	3
Fall 2011	152	4
Spring 2012	138	4
<b>2011 - 2012</b>	<b>403</b>	<b>11</b>

**Table 4. Online (MS) Course Registrations History**

	<b>Online Enrollment (Total)</b>				
	<b>2007-08</b>	<b>2008-09</b>	<b>2009-10</b>	<b>2010-11</b>	<b>2011-12</b>
<b>Graduate</b>	281	350	401	533	403



**Figure 3. Online Registration History**

### 2.3. Pines Center

The school offers classes in the Pines Center campus, which is located in the Broward County for convenience of the students primarily residing in the Broward and the Palm Beaches counties. We offer a number of classes there every semester during the academic year, and fewer during the summer. Courses offered at the Pines Center during a given semester are not offered at the Engineering Center during that same semester and vice versa. During 2011-12 academic year 14 undergraduate and 5 graduate course-sections were offered with a total of 235 undergraduate and 104 graduate student-registrations in the Pines Center. The data in Table 5 show that there has been a drop in both undergraduate and graduate enrollments.

**Table 5. Pines Center Course offering/registrations**

	Academic Year		
	2009-10	2010-11	2011-12
Undergraduate	16/448	15/359	14/235
Graduate	7/133	6/188	5/104
<b>TOTAL</b>	<b>23/581</b>	<b>21/547</b>	<b>19/339</b>



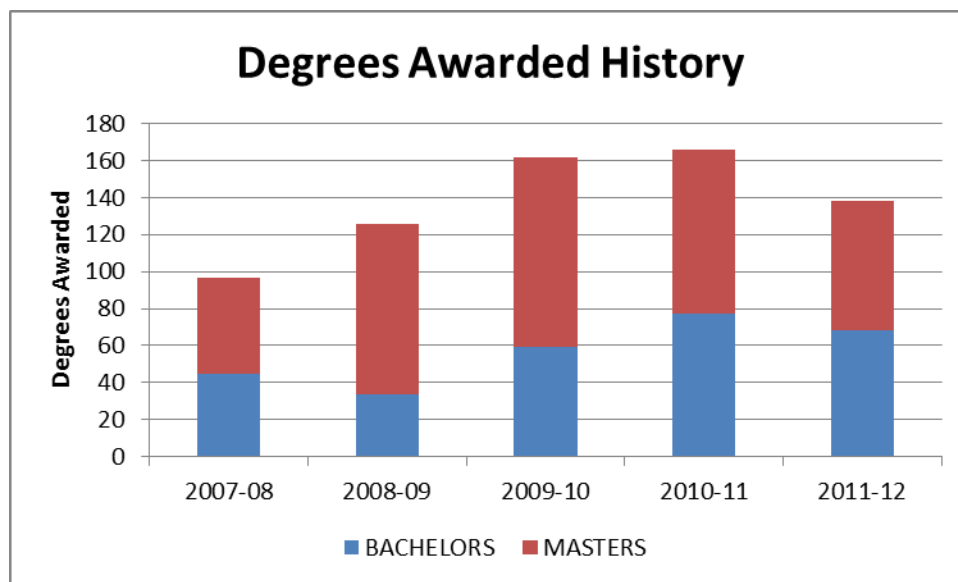
## 2.4. Degrees Awarded

The department awarded 138 degrees last year. The year before, the number of degrees awarded was 166, the highest in the history of the department. The historical numbers over the last five years for bachelors and masters are shown in Table 6 and Figure 4.

Our graduates are employed by all major construction companies in south Florida and nationwide. OHL/ Arellano, Link Construction, Moss and Associates, Coastal Construction, Turner Construction, Odebrecht Construction, Balfour Beatty, MCM and Skanska are some of the major employers.

**Table 6. Degrees by Students**

DEGREE LEVEL	Academic Year				
	2007-2008	2008-2009	2009-2010	2010-2011	2011-2012
BACHELORS	45	34	59	77	68
MASTERS	52	92	103	89	70
<b>TOTAL</b>	<b>97</b>	<b>126</b>	<b>162</b>	<b>166</b>	<b>138</b>



**Figure 4. Degrees Awarded History**

## **2.5. ACCE Accreditation**

The CM undergraduate program (BSCM) has been re-accredited in fall 2007. The program has been awarded accredited status for six years by the American Council for Construction Education (ACCE). The department's strengths were duly recognized. In response to ACCE site visit report, the department constructed a 650 sq. ft. MEP laboratory. As mentioned earlier the department is working with the College Dean's Office and the FIU administration for establishing a construction process laboratory this year.

## **2.6. Student Chapter Activities**

Four student chapters are active in the Department. These are: ABC (Associated Builders and Contractors), AGC (Associated General Contractors), National Association of Women in Construction (NAWIC), and Sigma Lambda Chi Honor Society. ABC Student Chapter is the most active and works closely with the south Florida ABC. This student chapter participates in the National Construction Management Competition annually. Every year ABC East Florida Chapter organizes a golf tournament to raise funds for supporting the student team. Dr. Jose Faria serves as the advisor and Dr. Morad as the mentor of the team participating in the national competition.

The team won the National Grand Championship this year (2012) in the competition held in April, 2012 in San Antonio. It should be mentioned that FIU team also won the championship in 2006.

## **2.7. Overseas and Professional Programs**

The department and the college's Division of External Program took initiatives to launch two overseas programs to offer the Masters in Construction Management (MSCM) programs in the Dominican Republic and in Panama. The program in the Dominican Republic began in May 2012. It is being offered in collaboration with Universidad Iberoamericana (UNIBE) in Santa Domingo, Dominican Republic. The program in Panama will be offered in collaboration with the Quality Leadership University (QLU) in Panama City, Panama. The Panama program is set to begin in January 2013.

In addition, a professional MSCM program is being launched in August, 2012. This program is planned for the executives in the industry and courses will be offered during the weekends in the Broward Pines Center.

## **2.8. Other Events**

### **2.8.1. Outreach**

- ABC Golf Tournament, March 9, 2012 at the Miami-Melreese Golf Course for raising funds to support the FIU ABC student team for participating in the National Construction Management Championship competition held in San Antonio, Texas.
- The department organized its regularly held Career Expo on February 8, 2012. Eleven major construction companies including ANF, OHL/Arellano, Facchina, Hensel Phelps, Link, Moss, MCM, Skanska, Turner, and Weitz participated.

### **2.8.2. Industry Advisory Council Events**

- McGraw-Hill Event – Economic Outlook – Recovery or Double Dip? Held November 2, 2011 at EC 1115.
- Case Equipment demonstration – Held November 18, 2011 at the ARC Conference Room and EC yard.
- CM Industry Advisory Council Meeting and Holiday Luncheon – Held on December 8, 2011 at EC 2300.
- OHL School of Construction – Dedication held March 20, 2012.
- Lecture by OHL Chairman Juan Miguel Villar-Mir, held March 20, 2012 in EC 2300.
- FIU construction projects workshop - Held on April 20, 2012 for the south Florida construction industry. John Cal, Associate Vice President, Facilities Management, Bob Griffith, Director of Planning and Real Estate Development, and Sylvia Berenguer, Director, Minor Projects, were the speakers.
- The Executive Council (Chuck Nielson, Dan Whiteman, Dagobarto Diaz, Emilio Alvarez, Chad Moss, Irtishad Ahmad and Susan Jay) met several times throughout the year to assess the industry economy and strategize the fund-raising activities for the department.

### 3. Research and Scholarly Activities

#### 3.1. Research Areas

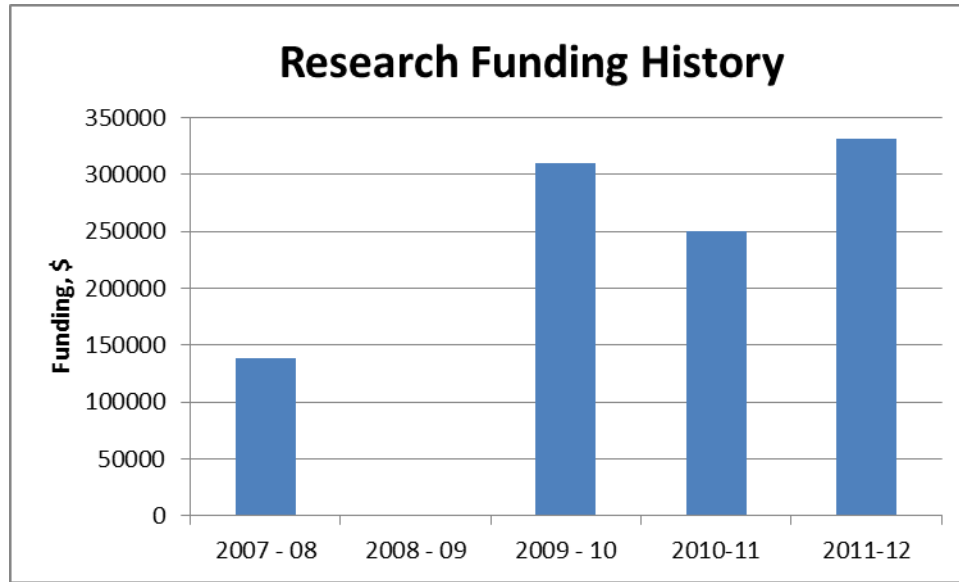
Major Research Area	Faculty Member
Risk Management and Decision Making	Irtishad Ahmad Emre Bayraktar Jose A. Faria Ayman Morad
Sustainability and Green Construction	Gene Farmer Yimin Zhu Emre Bayraktar Jose Faria
Information and Communication Technology	Irtishad Ahmad Yimin Zhu Ayman Morad Youngcheol Kang
Infrastructure Systems and Management	Irtishad Ahmad Yimin Zhu Jose Mitrani Wallied Orabi
Safety and Health	Gene Farmer Jose A. Faria
Construction Education	Yimin Zhu Ron Baier Irtishad Ahmad

#### 3.2. Research Funding

As shown in Table 7 and Figure 5, the department did very well again this year in external research funding, thanks to Dr. Yimin Zhu and Dr. Bayraktar. Currently, Dr. Zhu is working on two National Science Foundation grants. He completed one last year. Dr. Bayraktar received several grants from Florida Department of Transportation. As in the previous years, this year also a number of research proposals were submitted to various funding agencies by the faculty.

**Table 7. Research Funding History**

<b>Year</b>	<b>2007 - 08</b>	<b>2008 - 09</b>	<b>2009 - 10</b>	<b>2010 - 11</b>	<b>2011-12</b>
<b>Total \$</b>	\$138,456	0	\$310,000	\$250,231	\$331,837



**Figure 5. Research Funding History**

### **3.2.1. Active Research Projects**

1. Ahmad, I. (Co-PI), Suksawang, N., and Sobhan, K., "Develop Epoxy Grout Pourback Guidance and Test Method to Eliminate Thermal/Shrinkage Cracking at Post-Tensioning Anchorages," Florida Department of Transportation, \$148,698, August 2012 - August 2014.
2. Bayraktar, M.E. (PI), "Development of a Professional Science Masters (PSM) program in Construction Management," University of Central Florida, \$5,000, May 1, 2012 - November 30, 2012.
3. Bayraktar, M.E. (PI), with Youngcheol Kang (FIU) and Boo Hyoung Nam (UCF), "Evaluation of Vibration Limits and Mitigation Techniques for Urban Construction," Florida Department of Transportation, \$149,959, November 14, 2011 - October 14, 2013.
4. Bayraktar, M.E. (PI), "Life Cycle Based Assessment of Sustainable Practices in the Natural Stone Industry," Stoneline Group LLC, \$10,127, September 1, 2011 - February 29, 2013.

5. Bayraktar, M.E. (PI), "Flume Model," Florida Department of Transportation, \$49,999, April 30, 2012 – January 31, 2013.
6. Bayraktar, M.E. (PI), "Product Integrity Concerns in the Capital Projects Industry," Construction Industry Institute, \$75,000 (out of \$230,000 total), September, 2012 – August 2014.
7. Zhu. Y. (PI) , "PFI: Farmer-Academic-Industry Partnership for the Development of Sustainable, Energy Efficient, Multifunctional Bioproducts for the Built Environment," NSF subcontract from UNT, \$50,000, September 1, 2011 – August 31, 2013.
8. Zhu. Y. (PI), "Solar Decathlon China," Tsinghua University, \$30,000, January 2012 – September 2013.
9. Zhu, Y. (PI), "Collaborative Research: Foster Complex Systems Thinking in Construction Engineering Education Using a Case-Based Multidimensional Virtual Environment (CMVE)", \$100,000, January 2011 – Dec 2012.
10. Zhu, Y. (PI), "Stochastic Time, Cost and Environmental Impact Optimization for Construction Processes PI: Dr. Yimin Zhu, National Science Foundation: \$307,855, July 2010 – June 2013.

### **3.3. International Conference on Construction in Developing Countries (ICCIDC-III), Bangkok, Thailand**

The department has organized the third conference on Construction in Developing Countries in Bangkok, Thailand in July 2012, in collaboration with East Carolina University, Auburn University and NED (Pakistan).

### **3.4. Research Productivity**

In this section, a listing of the research output and faculty scholarly work is compiled.

#### **3.4.1. Journal Editorship**

Ahmad, I. Editorial Board Member, *Journal of Management in Engineering*, American Society of Civil Engineers.

Ahmad, I. Editorial Board Member, *Leadership and Management in Engineering*, American Society of Civil Engineers.

Bayraktar, M.E. Associate Editor, *Journal of Management in Engineering*, American Society of Civil Engineers.

### 3.4.2. Books and Book Chapters

1. Gene Farmer. "Sustainable Construction for Construction Managers", Delmar Cengage.
2. Yimin Zhu and Raymond Issa. "Proceedings of the 2011 ASCE International Workshop on Computing in Civil Engineering", American Society of Civil Engineers, Jun, 2011.

### 3.4.3. Refereed Journal Papers 2011-12

1. Azhar, S., Lukkad, M. and Ahmad, I. "An Investigation of Critical Factors and Constraints for Deciding Modular Construction over Conventional Stick-Built Technique," International Journal of Construction Education and Research, ASC, Submitted April 2012..
2. Bayraktar, M. E., Owens, C., and Arif, F. . "Holding Homebuilders Liable for Personal Injury and Property Damage Caused by Defective Material: Chinese Drywall Case", Journal of Legal Affairs and Dispute Resolution in Engineering and Construction, ASCE, Spring 2012.
3. Bayraktar, M. E., Arif, F., Hastak, M., and Gad, N. . "The Judiciary's Use of the Critical Path Method to Resolve Construction Claims", Journal of Legal Affairs and Dispute Resolution in Engineering and Construction, ASCE, Spring 2012.
4. Bayraktar, M. E., Arif, F. "Venture Capital Opportunities in Green Building Technologies: A Strategic Analysis for Emerging Entrepreneurial Companies", Journal of Management in Engineering, ASCE, Fall 2011.
5. Jiang, A. and Zhu, Y.. "Impact of Incentives and System Efficiency on the Life Cycle of PV Systems", International Journal of Construction Education and Research.
6. Ozcan, G., Zhu, Y., and Ceron, V.. "Time, Cost and Environmental Impact Analysis on Construction Operation Optimization Using Genetic Algorithms", Journal of Management in Engineering.
7. Wallied Orabi and Khaled El-Rayes. "Optimizing the Rehabilitation Efforts of Aging Transportation Networks", Journal of Construction Engineering and Management, April 1, 2012.
8. Chi, S., Suk, S., Kang, Y., and Mulva, S.P.. "Development of a data mining-based analysis framework for multi-attribute construction project information", Advanced Engineering Informatics (Elsevier), Mar 2012.
9. Kang, Y., O'Brien, W., and O'Connor, J.. "Analysis of Information Integration Benefit Drivers and Implementation Hindrances", Automation in Construction (Elsevier), March 2012.
10. Kang, Y., O'Brien, W., and O'Connor, J.. "IOP Tool: Assessing the Benefits and Hindrances of Information Integration Opportunities", Journal of Management in Engineering (ASCE), April 2012.

#### 3.4.4 Reports 2011-12

1. Yong Tao and Yimin Zhu. "Analysis of Energy, Environment and Life Cycle Cost Reduction Potential of Ground Source Heat Pumps (GSHP) in Hot and Humid Climate", School of Computing and Information Sciences - FIU.
2. Marine, M., Farmer, G., Baier, R., Caballero, A.. "FDOT District 6 Facility Assessment Report", College of Engineering & Computing, June, 2011.
3. Bayraktar, M. E. and Arif, F. . "Venture Capital Opportunities in Green Building Technologies: A Strategic Analysis for Emerging Entrepreneurial Companies from South Florida and Latin America", Ewing Marion Kauffman Foundation / Eugenio Pino and Family Global Entrepreneurship Center, Florida International University, Jan. 2011.

#### 3.4.5 Conference Proceedings Papers 2011-12

1. Azhar, S., Lukkad, M., and Ahmad, I. "Modular v. Stick-Built Construction: Identification of Critical Decision-Making Factors," 48<sup>th</sup> ASC Annual International Conference Proceedings, 2012. **Received the best paper award.**
2. Arif, F., Azhar N. and Bayraktar, M. E. "Strategic Management Concepts and Practices in Pakistan: A Construction Industry Perspective", Construction Research Congress (CRC 2012) - Construction Challenges in a Flat World , West Lafayette, IN, May 21-23, 2012.
3. Arif, F. and Bayraktar, M. E. . "Theoretical Framework for Transportation Infrastructure Asset Management Based on Review of Best Practices", Construction Research Congress (CRC 2012) - Construction Challenges in a Flat World , West Lafayette, IN, May 21-23, 2012.
4. Arif, F., Bayraktar, M. E., and Grant, S.M.. "Comparison of Residential Roofing Alternatives Using Life Cycle Cost Assessment", Modern Methods and Advances in Structural Engineering and Construction ISEC-6, Zurich - Switzerland, June 21-26, 2011.
5. Spiegelhalter, T., Kang, Y., Pala, N., and Zhu, Y.. "Diagnosing, Benchmarking and Transforming the LEED certified FIU-SIPA Building into a Net-Zero-Energy-Building (Net-ZEBs)", the 2012 World Renewable Energy Forum, Denver, CO, May 13 - 17, 2012.
6. Shen, Z. and Zhu, Y.. "Complex Engineering System Learning through Study of Engineering Cases using 3D Animations", The ASEE 2011 Annual Conference and Exposition, Vancouver, British Columbia, Canada, June 26 - 29, 2011.
7. Ceron, V., Bayraktar, M., and Zhu, Y.. "Photovoltaic Electricity, Solar Water Heating and Geothermal Acclimatization: Forecast Feasibility Analysis for a Residence in Miami", Proceedings of the 9th LACCEI Latin American and Caribbean Conference (LACCEI™2011),, Medellin, Columbia, August 3 -5, 2011.
8. Ozcan, G. and Zhu, Y.. "A Decision-Making Model for Analyzing Highway Construction Processes with Environmental Constraints", Proceedings of



- 2011CRIOCM International Symposium on Advancement of Construction Management and Real Estate, Chongqing, China, September 23 - 25, 2011.
9. Shen, Z. and Zhu, Y.. "Is visualization of engineering accidents or failure cases a good way to learn complex engineering systems?", SEFI 2011 Annual Conference, Lisbon, Spain, October 1-2, 2011.
  10. Mum, J., Rayegan, R., Canbek, C., Munera, S., Tao, Y. and Zhu, Y.. "Energy and Cost Analysis of Hybrid Ground Source Heat Pump Systems for Hot and Humid Climate", 2011 ASME International Mechanical Engineering Congress and Exposition, Denver, CO,, November 11 -17, 2011.
  11. Ozcan, G. and Zhu, Y. "A Systems Approach to Support the Selection of Highway Construction Operations with Environmental Concerns", Proceedings of the International Conference of Construction and Real Estate Management, Guangzhou, China, November 18-19, 2011.
  12. Ozcan, G. and Zhu, Y.. "Using Analytical Network Process to Analyze Construction Method Selection in Highway Projects", Proceedings of the International Conference of Construction and Real Estate Management, Guangzhou, China, November 18-19, 2011.
  13. Zhu, Y. and Shen, Z.. "Learning from Failure Construction Cases by Visualizing the Function and Behavior of Construction Systems", Proceedings of the International Conference of Construction and Real Estate Management,, Guangzhou, China, November 18-19, 2011.
  14. Jiang, A. and Zhu, Y. "Energy Consumption Simulation and Construction Cost Analysis for Wood and Steel Framing System in Florida Residential Housing: A Case Study", Proceedings of the International Conference of Construction and Real Estate Management,, Guangzhou, China, November 18-19, 2011.
  15. Zhu, Y. and Orabi, W.. "An optimization model of time, cost and carbon emissions for building design and planning", 1st International Conference on Building Sustainability Assessment, Porto, Portugal, May 23 - 25, 2012.
  16. Farrukh Arif, Ayman Morad, and M. Emre Bayraktar. "Concurrent Delays: A Comparative Analysis of US and Australian Construction Law Practice", ASEA-SEC-1, the First Australasia and South-East Asia Structural Engineering and Construction Conference, Perth Australia, Nov 28 - Dec 2, 2012.
  17. Yimin Zhu and Wallied Orabi. "Application of systems modeling and particle swarm optimization to the analysis of time, cost and carbon emissions for building design and construction planning", 1st International Conference on Building Sustainability Assessment, Porto, Portugal, May 2012.
  18. Wallied Orabi, Yimin Zhu and Gulbin Ozcan-Deniz. "Minimizing Greenhouse Gas Emissions from Construction Activities and Processes", 2012 Construction Research Congress, West Lafayette, IN, May 2012.
  19. Spiegelhalter, T., Kang, Y., Pala, N., and Zhu, Y.. "Diagnosing, Benchmarking and Transforming the LEED certified FIU-SIPA Building into a Net-Zero-Energy-Building (Net-ZEBs)", 2012 World Renewable Energy Forum, Denver, CO, May 2012.

20. Kang, Y., Spiegelhalter, T., Pala, N., Zhu, Y., and Bhattarai, A.. "A Dynamic and Context-Driven Benchmarking Framework for Zero-Net-Energy Buildings", 2012 ASCE International Conference on Computing in Civil Engineering, Clearwater Beach, FL, June 2012.
21. Dai, J., Mulva, S., Suk, S., and Kang, Y.. "Cost Normalization for Global Capital Projects Benchmarking", 2012 Construction Research Congress, West Lafayette, IN, May 2012.
22. Kang, Y., Dai, J., and Mulva, S.P.. "A Benchmarking Framework for Public Transportation Project Delivery", 2012 Construction Research Congress, West Lafayette, IN, May 2012.

## 4. Fundraising

### 4.1. Scholarships

The department offers the following scholarships to the students.

NAME OF SCHOLARSHIP	DESCRIPTION
CONSUL TECH (endowed)	1 for \$1,000
BALFOUR BEATTY (endowed)	1 for \$1,000
CONDOTTE AMERICA (endowed)	1 for \$1,500
CASF (endowed)	1 for \$2,500
ASPE (endowed)	1 for \$2,000
KELLY FOUNDATION (CM & CIVIL) (endowed)	2 for \$2,000 ea.

### 4.2. Industry Support Campaign

The historic achievement last year was the transformational gift received from the international construction giant OHL Construction. The multiyear monetary gift in terms of endowment and operational expenses transformed the department into the newly named OHL School of Construction. In addition to this gift, the school received cash donations in the amount of \$46,000 from the Industry Advisory Council members. The school has launched a new campaign for naming various facilities and laboratories in the school.

The school organized several programs to keep the industry engaged and supportive. As a result, a number of successful construction companies are now interested in naming the program with significant endowment.

This campaign is ongoing on an annual basis. Please see Appendix A for IAC membership criteria.

## 5. Future Plans and Priorities

The school faculty members met for a full day planning session at the Doral Country Club on February 10, 2012 and developed a strategic plan for the school. The plan is included in Appendix B of this report.

## **5.1. Priorities**

### **5.1.1. Research Funding**

The department will strive towards establishing the CM department as a research intensive program. Hiring of new faculty in strategic areas to increase external research funding will continue to be a priority. Efforts will be made to hire faculty with proven strengths in research and to identify emerging research areas and funding agencies. One new faculty member is joining the department this fall. With five research-active faculty members in the department we expect to reach research award exceeding \$500,000 this year.

### **5.1.2. Marketing of programs (website, visits, brochures, newsletters, postcards, mail campaign)**

The department will continue its efforts in attracting students from other states and countries as well as from governmental and corporate entities. With the help of the new marketing personnel hired by the College, the department will publish redesigned brochures, program descriptions and other print materials. The website dedicated to the online program will be redesigned to make it attractive and user-friendly. Newsletters will be published on a regular basis beginning this fall. Advertisements will be placed in trade magazines and industry association publications to market the programs. An industry liaison coordinator position was created last year - the department is searching for a suitable person to fill this position. The position will help the department tremendously in its effort to market its programs effectively and to build strong ties with the industry.

### **5.1.3. Maintain Accredited Status**

The department will continue to retain its accredited status of the bachelors program with the highest order of approval. Preparations in terms of outcomes assessment, satisfying curriculum requirements, providing oversight of instruction, achieving program goals, involving the industry in curriculum development and improvement are underway.

### **5.1.4. Alumni Association**

The department Alumni Association will be encouraged to undertake activities such as annual gathering, sports, and other extracurricular activities. Alumni will be invited to participate in outcomes assessment survey, contribute to newsletter articles, and fund-raising.

### **5.1.5. Construction process laboratory**

The Department has been allocated funding for developing its planned construction process laboratory. Work has begun in spring 2012 with projected completion by December 2012. The laboratory will be housed in OU 104. The laboratory is intended to provide students hands-on demonstrations on real-life construction processes, construction materials, components and their assembly. Half-built walls, steel structural joints and samples of various construction components will be the features of this laboratory. This laboratory is required to satisfy the accreditation criteria set forth by American Council for Construction Education. The undergraduate construction management program is scheduled for re-accreditation in fall 2013.

### **5.2. Resource Needs**

- Construction Process laboratory for the undergraduate students.
- Staff support for developing and maintaining relationships with the industry, alumni, and the hiring companies.
- Additional faculty lines.

### **5.3. New Programs**

- New programs – International programs at the Master’s level in the Dominican Republic and Panama have been developed. The DR program has already started in May 2012, and the Panama program will start in January 2013. The weekend (Saturday) program for the professionals in the Pines Center (Broward County) will begin in August 2012. The school already has a successful online Master’s program. Other areas for expansion could be joint BS and MS degree programs in construction engineering together with the Department of Civil and Environmental Engineering.
- Seminars/conferences/workshops – The school can organize seminars and workshops for the industry professionals, contractors and their employees. There is a critical need for such programs as the industry needs to keep its employees updated with new knowledge and techniques in the field.

### **5.4. New Directions**

#### **Organizational Growth and Development**

- Recruitment of two additional faculty members within two years.
- Recruitment of an additional staff position to support industry and alumni engagement activities and to secure donors support.

#### **Curriculum Implementation**

- If approved, implement the new programs, including Bachelors and Master of Science in Construction Engineering in collaboration with Civil and

Environmental Engineering, and programs in facility management.

**Enrollment Management**

- Re-evaluate the admission policy for the undergraduate and graduate programs to address the quality of students being admitted to the program and the high demand on the discipline.

**Research**

- Hire faculty with proven strengths in research and identify emerging research areas and funding agencies to capture external funding.

**Fundraising**

- Complete the 'naming of the facilities' campaign and begin to envision future fundraising goals. Recruit additional IAC members.