

## CURRICULUM VITAE, JANUARY 2018 (ABBREVIATED)

### KIHONG KU

#### I. EDUCATION:

2005	Doctor of Design, Design Technology and Management Harvard University Graduate School of Design
2002	Master in Design Studies, Management of Design and Construction Harvard University Graduate School of Design
1994	M.S.Eng., Architecture, Seoul National University, Korea (South)
1992	B.S.Eng. (Honors), Architecture, Seoul National University, Korea (South)

#### II. ACADEMIC AND PROFESSIONAL EXPERIENCE:

2017/7-present	Associate Professor of Architecture College of Architecture and the Built Environment Jefferson (Philadelphia University + Thomas Jefferson University)
2016/1-present	<i>IDEA Studio</i> Director, Jefferson (Philadelphia University + Thomas Jefferson University)
2015/8-2017/7	Associate Professor of Architecture (awarded tenure 2015) College of Architecture and the Built Environment, Philadelphia University
2011/8-2015/8	Assistant Professor of Architecture College of Architecture and the Built Environment, Philadelphia University
2005-2011/8	Assistant Professor Department of Building Construction Virginia Polytechnic Institute and State University
2006/4-2011/8	Adjunct Assistant Professor Via Dept. of Civil & Environmental Engineering Virginia Polytechnic Institute and State University
2003-2004	Teaching Fellow, Graduate School of Design Harvard University
2002-2004	Graduate Research Assistant, Center for Design Informatics Harvard University
2001-2002	Graduate Teaching Assistant, Graduate School of Design Harvard University
2000-2001	Design Manager, HanmiParsons, Co., Ltd., Seoul, Korea.
1994-2000	Architectural Engineer, Hyundai Engineering & Construction, Co., Ltd., Seoul, Korea

#### III. RESEARCH & TEACHING INTERESTS:

Building and Design Technology Innovation; BIM and Computational Design Methods; Sustainable Design; Health and Architecture; Emerging Material Strategies; Performance based design; Digital Fabrication; Building System Integration; Design for Safety; Prefabrication; Responsive Architecture; Architectural Robotics; Case Study Research; Innovative Pedagogy

#### IV. PROFESSIONAL LICENSES AND CERTIFICATIONS:

Registered Architectural Engineer (1<sup>st</sup> Grade), Certificate No. 93204010839G, 1993, Korea

#### V. HONORS AND AWARDS

2016	Volpe Family Term Chair for Architectural Innovation, 2015.9-
2015	President's Award for Teaching Excellence, Philadelphia University
2011	XCaliber Award, Center for Innovation in Learning, Virginia Polytechnic Institute and State University
2011	Excellence in Outreach Award, College of Architecture and Urban Studies Virginia Polytechnic Institute and State University
2003	Doctoral Teaching Fellowship, Harvard Graduate School of Design

**VI. SCHOLARLY ACTIVITIES (SELECTED PEER-REVIEWED PUBLICATIONS):**

- (1) Schultz, J.\* , Ku, K., Gindlesparger, M., and Doerfler, J. (2017), A Benchmark Study of BIM-Based Whole Building LCA Tool and Processes, *International Journal of Sustainable Building Technology and Urban Development*, Vol. 7, Iss. 3-4
- (2) Ku, K. and Broadstone, P. (2017). A case study of multi-trade near-site factory assembly, *Offsite Architecture: constructing the future*, Smith, R. and Quale, J.D., eds., Routledge Taylor & Francis, March 6, 2017
- (3) Ku, K., Jordan, C., and Doerfler, J. (2016), Pedagogical Explorations of an Open-Source Architecture Paradigm in Emerging Design Technologies, 2016 AIA/ACSA Intersections Between the Academy and Practice Conference: Innovative Technologies in Design and Delivery, May 18, 2016, Philadelphia, PA [abstract; acceptance rate: 21%]
- (4) Ku, K. (2016), A Framework for Designing Responsive Architecture, CIB World Building Congress WBC16, May 30 - June 3, 2016, Tampere Hall, Tampere, Finland [full paper]
- (5) Heffner, D.\* and Ku., K. (2016), The Role Of Live Energy Modelling In The Integrated Design Process, CIB World Building Congress WBC16, May 30 - June 3, 2016, Tampere Hall, Tampere, Finland
- (6) Prins, M., Wamelink, H., Giddings, B., Ku, K., and Feenstra, M. (Eds.) (2016). Proceedings of the CIB World Building Congress 2016: Volume II - Environmental Opportunities and Challenges. Constructing Commitment and Acknowledging Human Experiences. Tampere University of Technology. Department of Civil Engineering. Construction Management and Economics. Report; Vol. 18
- (7) Ku, K. and Chung, D.(2015), Digital Fabrication Methods of Composite Architectural Panels for Complex Shaped Buildings, 20th Annual Conference on Computer-Aided Architectural Design Research in Asia (CAADRIA 2015), May 20-23, 2015, Global Plaza, Kyungpook National University, Daegu, Korea [acceptance rate: 33%]
- (8) Chung, D. and Ku, K. (2016), Digitally-driven Fabrication of Fiber-Reinforced Composite Panels for Complex-shaped Envelopes 2016 AIA/ACSA Intersections Between the Academy and Practice Conference: Innovative Technologies in Design and Delivery, May 18, 2016, Philadelphia, PA [acceptance rate: 21%]
- (9) Frosten, S. and Ku, K.(2015), Incorporating Open Source Knowledge Communities into the Research Skillset of the Design Student, Temple University Faculty Conference on Teaching Excellence, January 8, 2015, Temple University
- (10) Ku, K. (2014), BIM and Design for Lifecycle Safety, CIB Innovation Reports on Buildings and the Built Environment, March 19, 2014
- (11) Ku, K. (2014), Prototyping Kinetic Architecture: A framework for design methods and tools, 5<sup>th</sup> International Conference on the Constructed Environment, October 16-17, 2014, University of Pennsylvania, Philadelphia, PA
- (12) Ku, K., Frosten, S., and Grinham, J. (2014), An Open-Source Paradigm in the Responsive Architecture Studio, ACSA International Conference, June 21-23, 2014, Seoul, Korea
- (13) Ku, K. (2014), Design risk management practices and assessment tools for safety in construction: Opportunities for BIM, CIB W099, June 2-3, 2014, Lund, Sweden
- (14) Ku, K. (2013). Comparing safety in design approaches and tools in the US, UK, and Australia, CIB World Building Congress 2013, May 5-9, 2013, Brisbane, Australia
- (15) Grinham, J.\* and Ku, K., (2012). 4D Environments and Design: Towards an Appliance Architecture Paradigm, Digital Aptitudes + Other Openings, Proceedings of the 100th ACSA Annual Meeting Conference, March 1-4, 2012, Boston, MA
- (16) Becerik-Gerber, B., Ku, K., and Jazizadeh, F., (2012), BIM-enabled virtual and collaborative construction engineering and management, *Journal of Professional Issues in Engineering Education and Practice*, Vol. 138, Iss. 3, 234-245
- (17) Ahn, Y.H.\* , Pearce, A.R. and Ku, K. (2011), Paradigm Shift of Green Buildings in the Construction Industry, *International Journal of Sustainable Building Technology and Urban Development*, Vol 2., No.1, 52-62
- (18) Ku, K., and Taiebat, M.\* (2011), "BIM Experiences and Expectations: The Constructors' Perspective," *International Journal of Construction Education and Research*, Vol. 7, Iss.3, 175-197, Taylor & Francis Group
- (19) Becerik-Gerber, B., Gerber, D. and Ku, K. (2011), Keeping Architecture, Engineering, and Construction Education in Line with the Needs of Industry and the Pace of Technological Innovation: Integrating Recent Trends into the Curricula, *Journal of Information Technology in Construction*, Vol. 16, 411-432

- (20) Ku, K. and Taiebat, M. (2011). Design for Safety: The Constructors' Experiences and Perspectives, Proceedings of the CIB W099 Conference 2011, August 24-26, 2011, Washington, D.C.
- (21) Taiebat, M.\*, Ku, K. (2011). Tuning Up the Core of Hazard Identification: How to Improve Stimulated Thinking for Safety in Design, Proceedings of the 47th Annual Conference of the Associated Schools of Construction, April 6-9, 2011, Omaha, NE
- (22) Ku, K., and Mahabaleshwarkar, P.\* (2010), Building interactive Modeling for Construction Education in Virtual Worlds, *Journal of Information Technology in Construction Vol. 16, Special Issue, Use of Virtual World Technology in Architecture, Engineering and Construction*, Pathmeswaran, R., Ahmed, V., and Anumba, C., eds., p. 189-208
- (23) Ku, K. and Mills, T. (2010), "Research Needs for Building Information Modeling for Construction Safety," Proceedings of the 46th Annual Conference of the Associated Schools of Construction, April 7-10, 2010, Boston, MA
- (24) Taiebat, M.\* and Ku, K. (2010), "Industry Expectations of Construction School Graduates' BIM Skills," Proceedings of the 46th Annual Conference of the Associated Schools of Construction, April 7-10, 2010, Boston, MA
- (25) Taiebat, M.\* and Ku, K. (2010), "Discussion of the Construction Industry's Evaluation Survey," Proceedings of the 46th Annual Conference of the Associated Schools of Construction, April 7-10, 2010, Boston, MA
- (26) Taiebat, M.\* and Ku, K. (2010), "Auto Generating Construction Plan Alternatives Using a 5D Analyzer System," Proceedings of the 46th Annual Conference of the Associated Schools of Construction, April 7-10, 2010, Boston, MA
- (27) Siddiqui, M. Z.\*, Pearce, A., Ku, K. and Ahn, Y.\* (2009). Green BIM approaches to architectural design for increased sustainability, *Proceedings of the International Conference on Construction Engineering and Management/ Construction Project Management (ICCEM/ICCPM 2009)*, May 27-30, 2009, Jeju, Korea
- (28) Javed, S.\*, Schubert, B. and Ku, K. (2009), "In search of a future for the past: Use of digital technology in preservation of a 20th Century Legend," Proceedings of the 37th Annual International Conference on Computer Applications and Quantitative Methods in Archeology (CAA 2009), Making History Interactive, March 22-26, 2009, Williamsburg, VA
- (29) Siddiqui, M. Z.\*, Pearce, A., Ku, K. and Ahn, Y.\* (2009). "Green BIM approaches to architectural design for increased sustainability," Proceedings of the International Conference on Construction Engineering and Management/ Construction Project Management (ICCEM/ICCPM 2009), May 27-30, 2009, Jeju, Korea
- (30) Ku, K. and Gaikwad, Y.\* (2009), "Construction Education in Second Life," Proceedings of the 2009 Construction Research Congress: Building a Sustainable Future, April 5-7, 2009, University of Washington, Seattle, WA
- (31) Ahn, Y.\*, Pearce, A. and Ku, K. (2009), Green construction: U.S. Contractors' status and perception, Proceedings of the International Conference on Construction Engineering and Management/ Construction Project Management (ICCEM/ICCPM 2009), May 27-30, 2009, Jeju, Korea
- (32) Ku, K. (2009), The Eden Core Project: A case study on model-based collaboration for integrated project delivery, Proceedings of the 2009 Construction Research Congress: Building a Sustainable Future, April 5-7, 2009, University of Washington, Seattle, WA
- (33) Ku, K., and Pollalis, S. (2009), Contractual Standards for Effective Geometry Control in Model-based Collaboration, *Journal of Information Technology in Construction Vol. 14, Special Issue, Next Generation Construction IT: Technology Foresight, Future Studies, Roadmapping, and Scenario Planning*, Kazi, A.S., Aouad, G., and Baldwin, A., eds., p.366-384
- (34) Ku, K., and Pollalis, S., Fischer, M., Shelden, D. (2008), 3D model-based collaboration in design development and construction of complex-shaped buildings, *Journal of Information Technology in Construction Vol. 13, Special Issue Case Studies on BIM Use*, Olofsson, T., Lee, G., and Eastman, C., eds., pg. 258-285
- (35) Ku, K. and Cardenas, C. (2008), Flexibility in prefabrication approaches: Lessons from two US homebuilders, 2008 ACSA Northeast Fall Conference, September 25-27, University of Massachusetts Amherst
- (36) Ku, K. (2007), CAD/CAM mediated design and construction: a case study of the Bankside Loft Project, Proceedings of the 2nd International conference World of Construction Project Management, October 2007, Delft, the Netherlands

- (37) Mishra, M.\*, O'Brien, M., Ku, K. and Beliveau, Y. (2007), Digitally enabled mass customization in residential construction for production home builders, Proceedings of the 2007 World Conference on Mass Customization & Personalization, 2007, Cambridge, MA, USA.
- (38) Ku, K. and Pollalis, S. (2006), Implementation Challenges for 3D Model-based Collaboration and Research Needs for Contractual Standards, Proceedings of the European Conference on Product and Process Modeling, September 13-15, 2006, Valencia, Spain.

#### VII. FUNDED COMPETITIVE GRANTS (SELECTED)

- (1) Interdisciplinary Design and Experimental Architecture Studio (IDEAS) on Textile Material Strategies, \$34,208, PI, 2015 National Council of Architectural Registration Boards (NCARB) Award, 1/2016-1/2017
- (2) Computational methods for designing with nature, \$4,945, PI, Faculty Research, Scholarship and Practice-based Project Grant, Philadelphia University, 6/15-6/16
- (3) Towards Digital Containerized Factories of Composite Architectural Panels for Complex-shaped Buildings, \$36,820, PI, MAG Composites Center, Philadelphia University, 6/13-5/15
- (4) Integrative design method of environmentally responsive building skins, \$6,000, PI, Faculty Research, Scholarship and Practice-based Project Grant, Philadelphia University, 6/12-6/13
- (5) Incorporating open source knowledge communities into the research skillset of the design student as evidenced through Prototyping of Interactive Architecture, Nexus Learning Grant, Philadelphia University, \$6,000, co-PI (with Susan Frosten), 8/12-7/13
- (6) A learning symbiosis of integrative design practices: The DEC Center Case Study, Nexus Learning Grant, Philadelphia University, \$2,000, PI, 6/12-12/12
- (7) R03 Proposal, National Institute of Occupational Safety and Health, Collaborative Building Information Modeling Framework for Construction Hazard Prevention through Design: Needs Assessment Study, \$141,875, PI (100%), 9/11-8/13
- (8) The Miami Valley Hospital Case Study: Multi-Trade Prefabrication, Skanska USA Building, \$25,000, PI, 5/11-10/12
- (9) Towards Mobile Production for On-site Prefabrication, MLSoC RA Program, 2010, \$50,000 – PI (70%), 7/10-8/11
- (10) PARTeE, Center for Creative Technologies in the Arts, EEC Initiative, 2009, \$5,000 – PI (100%), 11/9-6/10
- (11) BIM Implications for Design-for-Safety, MLSoC RA program, 2009, \$25,000 – PI (50%), 6/09-11/10

#### VIII. EXHIBITIONS

- (1) Textile Tectonics, ARCH 507 Design Studio exhibit, Design Philadelphia 2017, October 5 – October 11, 2017
- (2) Textile+Shelter, ARCH 507 Design Studio exhibit, Design Philadelphia 2016, October 10 – October 14, 2016
- (3) 3D Textiles coursework exhibit with Lyn Godley, Marcia Weiss, International Contemporary Furniture Fair, New York Javitz Center, May 14-17, 2016
- (4) "A2O - A study of building assemblies with embedded intelligence," YES, SOMETIMES BEAUTY IS SKIN DEEP, ARCHIVE100 Beauty Pageant Competition, 2012
- (5) "Prototyping in Architectural Robotics," Mapping Spectral Traces Symposium, Experiential Gallery for Creative Technologies, School of Visual Arts, Virginia Tech, October 12 – January, 12, 2010

#### IX. TEACHING ACTIVITIES

##### Courses taught at Jefferson (Philadelphia University + Thomas Jefferson University)

##### M.S.Arch Program:

- MSARC 791 Internship and Research (summer 15)
- MSARC 771 Architectural Research Methods (summer 15, spring 17)
- MSARC 902 Graduate Thesis Project II (summer 15, fall 15)

##### B.ARCH Program:

- Design
- BArch 5th year design studios ARCH 507 Design 9, ARCH 508 Design 10, ARCH 502 Design X (spring 12- present)

ARCH 401 Design 7 (spring 14)  
 Technology  
 ARCH 416 Tech 5 (fall 2011- spring 15)  
 ARCH 511 Tech V (fall 2011-fall 2012)  
 ARCH 408 Visualization II: Construction Documentation & Detailing (fall 11-spring 12)  
 Computational Design; Experimental Materials  
 ARCH 324 Experimental Modeling (Spring 17)  
 ARCH 414 Experimental Materials (Fall 15)  
 Independent Study  
 ARCHDSN 381 Independent Study in Architecture (spring 13, spring 14)  
 SCI 381 Independent Study in Science (spring 13)

### **Courses taught at Virginia Tech**

#### MS.Building Construction:

BC5354 Integration of Design, Construction, and Manufacturing I (spring 2009, spring 2010)  
 BC5364 Integration of Design, Construction, and Manufacturing II (fall 2008, fall 2009, fall 2010)  
 BC5984 Integration of Design, Construction, and Manufacturing (spring 2007, fall 2007)

#### BS.Building Construction:

BC2014/2024 Construction Principles I & II (fall 2005-spring 2011)  
 BC5014/5024 Principles & Practices of Construction I & II (fall 2005-spring 2007)

### **Harvard University Graduate School of Design**

GSD 1305 Option Studio: A Bridge and a Pavilion in Bilbao, Prof. Spiro N. Pollalis, Fall 2004 (Teaching Assistant)  
 GSD 7222 Bilbao Guggenheim Museum: Project Management, Prof. Spiro N. Pollalis, Spring 04 (Teaching Fellow)  
 GSD 7320 Technology in Design, Prof. Spiro N. Pollalis, Spring 04 (Teaching Fellow)  
 GSD 7411 From Concept to Implementation, Prof. Spiro N. Pollalis, Fall 03 (Teaching Fellow)  
 Building Technology, Prof. Mark Mulligan, Fall 2001 (Teaching Assistant)

### **X. SUPERVISION ACTIVITIES**

7 PhD students (Virginia Tech); 34 Master's students (Virginia Tech); 3 Master's students (PhilaU); about (20-23) undergraduate students per semester since 2011 to present(PhilaU)

### **XI. INTERNATIONAL, PROFESSIONAL SERVICE AND ADDITIONAL OUTREACH ACTIVITIES**

#### **Professional Membership Services**

- Member, ANSI A10 PtD White Paper Group, January 2015 - present
- Press Officer, CIB's Working Commission on Architectural Management, W096, May 2013-2015
- Member, AIA Technology in Architectural Practice Knowledge Community BIM Education Committee, January 2010-2011

#### **Invited Panelist & Presentations**

- Building Design and Health Summit, Delaware Valley Green Building Council (DVGBC), Nov. 3, 2017, Philadelphia, Pennsylvania
- 2017 AIA Research Summit, June 28-29, 2017, Hilton Hotel at the Ballpark, St. Louis, Missouri
- 2015 AIA Research Summit, August 17-19, 2015, Waterfront Hotel, Oakland, CA
- Invited Speaker, BIM and Design for Lifecycle Safety, CIB Innovation Webinars, May 7, 2014
- Invited Panelist and Presenter, Life Cycle Safety Stage-Design, Using BIM to Eliminate Construction Site Hazards, AGC BIMForum, NIOSH, CPWR, August 6-7, 2013, Arlington, Virginia.

- Invited Panelist and Presenter, Connecting Academia and K-12 Education, Governor's Education Summit: Innovate to Educate, October 27, 2010
- Invited Speaker, "Building Information Modeling Strategies," Department of Architectural Engineering, Yonsei University, Seoul, Korea, May 18, 2007
- Invited Speaker, "Effective Practices for BIM," Seoul National University, Department of Architecture, Seoul, Korea, January 10, 2006

**Outreach Activities**

- How can public artwork harvest renewable energy?, Supervising ARCH-508 Design 10 Student work, Philadelphia Science Festival, Science Carnival at Penn's Landing, April 30, 2016
- Architectural Robotics, Franklin Institute STEM Scholar Summer Program, Supervising ARCH-508 Design 10 Student work, Philadelphia University, Philadelphia, PA, July 14, 2015
- How smart is your home?, Supervising ARCH-508 Design 10 Student work, Philadelphia Science Festival on Benjamin Franklin Parkway, May 2, 2015 and Neighborhood Science After School Program at East Falls Library, April 29, 2015
- Summer 2014: Franklin Institute STEM Scholar Summer Program, Philadelphia University, Philadelphia, PA, July 15, 2014
- Architectural Robotics from ARCH 508 Design 10 studio, REAL (Relevant Experience and Learning) STEM program of the Philadelphia Center for Arts and Technology, Philadelphia University, Philadelphia, PA, July 15, 2014
- How can we design buildings to sense and respond in real-time? Supervising ARCH-508 Design 10 Student work, Philadelphia Science Festival on Benjamin Franklin Parkway, May 3, 2014 and Neighborhood Science After School Program at East Falls Library, April 28, 2014
- Faculty Advisor of Industry Sponsored Project, Green Roof System, Construction Specialties, Tyler Dye, Rebecca Della Paruta, Brittany Ristila, Jared Lowman, Aakriti Chandra, in collaboration with Prof. Les Sztandera (Business) and Prof. Tod Corlett (Industrial Design)
- Can architecture respond to me?, Supervising ARCH-502 Design X Student work, Philadelphia Science Festival on Benjamin Franklin Parkway, April 20, 2013 and Neighborhood Science After School Program at Wyoming Free Library, April 24, 2013
- At Virginia Tech
- Prototyping in Architectural Robotics for Technology-enriched Education (PARTeE): Educational Enhancement Collaboration Initiative, PI and Supervisor of project, January 2010-December 2010

**XII. UNIVERSITY SERVICE**

Continuing to serve/chair multiple University, College, and Program standing and ad-hoc committees (fall 2011 – present)