



Makarand (Mark) Hastak, Ph.D., PE, CCP

Professor and Head of Construction Engineering & Management
Professor of Civil Engineering
Purdue University

CONTACT INFORMATION

WORK

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Dr. Hastak is the Professor and Head (2007-Present) of the Division of Construction Engineering and Management as well as Professor of Civil Engineering at Purdue University, USA. He has been involved with the construction industry for almost 30 years where he has conducted research, taught, and assisted industry in the area of construction engineering and management including manufactured housing, disaster risk reduction, infrastructure management, cost control, project management decision-making, risk management, and strategic planning.

Dr. Hastak is a Professional Engineer (PE) and a Certified Cost Professional (CCP). He has authored and co-authored over 180 publications including journal papers, peer-reviewed conference papers, book chapters, and several other publications. Dr. Hastak has co-authored a widely used book on *Infrastructure Planning, Engineering, and Economics* through McGraw-Hill (2015, Second Edition). He has served on the Education Board of the Association for Advancement of Cost Engineering (AACE) for over twelve years (2004-2016). He edited two books for AACE, the 6th edition of the *Skills and Knowledge of Cost Engineering* (2015) and the 2nd Edition of the *CCP Certification Study Guide* published in spring 2016.

Prof. Hastak has developed and currently manages several websites as a public service to the construction industry including:

1. the Emerging Construction Technologies (www.ect-purdue.org) website that highlights innovative technologies for the construction industry,
2. the Academic Breakthroughs website that was recently established to capture the academic advances in the area of Construction Engineering & Management at the PhD level (<http://rebar.ecn.purdue.edu/phd2>), and
3. Purdue Index for Construction (Pi-C), the website that illustrates the health of the construction industry on a periodic basis (<http://rebar.ecn.purdue.edu/CEM/Pi-C/#>).

Dr. Hastak was the Chair of the National Consortium of Housing Research Centers (NCHRC) (2008-2010). He has done extensive research in the area of factory built housing and was the invited Scholar-in-Residence at the National Association of Home Builders (NAHB) Research Center in 2006. He was the Editor-in-Chief of the ASCE *Journal of Management in Engineering* (2009-2015) and is one of the founders and the past chair of the Global Leadership Forum for Construction Engineering and Management programs (GLF-CEM) (<http://wpvcemweb01.itap.purdue.edu/glf/default.aspx>). He is a Fellow of the American Council on Education (cohort of 2013-14) in recognition of his leadership capabilities. Dr. Hastak spent his fellowship year working closely with the senior leadership at Cornell University. He serves on several Editorial Boards and Conference Scientific committees including the Editorial Board of the *International Journal of Disaster Resilience in the Built Environment* (IJDRBE).

EDUCATION

DEGREES

PhD	1994	Civil Engineering (CEM), Purdue University
MS	1991	Civil Engineering (CEM), University of Cincinnati
BE	1987	Civil Engineering, Nagpur University (India)

ADVANCED PROFESSIONAL CERTIFICATES

Certificate	2015	SCUP Planning Institute (including Step I, II, and III workshops for Integrated Planning in Higher Education), The Society for College and University Planning (SCUP) (Step III completed in January 2015).
Advanced Certificate	2014	Strategic Human Resource Management , 12-week Certificate Program, Cornell University (Completed in August 2014)
Certificate	2014	Financial Management , 12-week Certificate Program, Cornell University (Completed in April 2014)
Certificate	2014	Executive Leadership , 12-week Certificate Program, Cornell University (Completed in February 2014)

LEADERSHIP AND ADMINISTRATIVE ACTIVITIES

2014-Present	Member	President's Council on Budget and Affordability, Purdue University
2007-Present	Head	Division of Construction Engineering & Management, Purdue University
2013-2016	Past-Chair	Global Leadership Forum for Construction Engineering and Management Programs
2009-2015	Editor-in-Chief	ASCE Journal of Management in Engineering
2007-2016	Editor-in-Chief	AACE Skills and Knowledge of Cost Engineering, 6 th Ed and Certification Study Guide, 4 th Ed.
2013-2014	Fellow of the American Council on Education (ACE) 2013-14	Office of the Vice President, Division of Planning and Budget, Cornell University, Ithaca, NY
2010-2013	Chair and Founder (GLF-CEM)	Global Leadership Forum for Construction Engineering and Management Programs
2011-2012	Chair	ASCE Construction Research Congress
2008-2012	Chair and Past-Chair	National Consortium of Housing Research Centers (NCHRC)
2003-2012	Research Director for Manufactured Housing	Purdue Housing Research Center

ACADEMIC AND INDUSTRY POSITIONS

2011-Present	Honorary Chair Professor	Civil Engineering/Construction Management, Tsinghua University, Beijing, China
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2007-Present	Professor and Head	Division of Construction Engineering & Management, Purdue University
2007-Present	Professor	Civil Engineering, Purdue University
2004-2007	Associate Professor	Civil Engineering as well as Construction Engineering & Management, Purdue University
2001-2004	Assistant Professor	Civil Engineering as well as Construction Engineering & Management, Purdue University (Joint Appointment)
1998-2001	Assistant Professor	Civil Engineering, University of Cincinnati <i>Program Coordinator: Construction Engineering & Management</i>
1995-1998	Assistant Professor	Civil Engineering, Polytechnic University (now NYU-Tandon School of Engineering) <i>Program Coordinator: CEM and Exec 21 Programs</i>
1994-1995	Post-Doctoral Fellow	Civil and Environmental Engineering, Georgia Institute of Technology
1991-1994	Graduate Assistant	Civil Engineering/Construction Engineering & Management, Purdue University
1989-1991	Graduate Assistant	Civil Engineering, University of Cincinnati
1987-1989	Assistant Design Engineer	STUP Consultants Ltd., New Delhi, India

LICENSES AND REGISTRATIONS

Professional Engineer (Civil), Indiana, 2011 (# PE11100350)
 Certified Cost Professional (CCP), 1996 (# 1902)
 Instructor – Real Estate-CE, 2006, (# INST000644 – Expired 2013)

PROFESSIONAL SERVICES (2011-2017)

1. Expert Witness Service, Procopio, Cory, Hargreaves & Savitch LLP (2017-)
2. Expert Witness Service, Sudekum, Cassidy & Shulruff, Chtd. (2017-)
3. Towards a Resilient Grid: An Investment Prioritization Decision Framework that Integrates the Growing Risks of Severe Weather-Induced Outages (Aug 2017 – July 2020), National Science Foundation (NSF), (M. Hastak, PI, R. Nateghi and W. Tyner Co-PI).
4. Performance Assessment for P.T. Tripatra Engineers and Constructors, Jakarta, Indonesia through Purdue Enterprise Company (PEC) LLC and the EPCOM Center at Purdue University, July-Aug, 2016.
5. Simplified Construction Scheduling for Field Personnel – SPR 3907, Jan 2015 – April 2016, Joint Transportation Research Program (JTRP), (M. Hastak, PI).
6. Intelligent Compaction of Asphalt Pavement Implementation – SPR 3804, Oct 2013 – Feb 2015, Joint Transportation Research Program (JTRP), (M. Hastak, PI).
7. Enhanced Treatment Selection for Reflective Joint Cracking in Composite Pavements (PHASE-2) – SPR 3626, Jan 2013 – Apr 2014, Joint Transportation Research Program (JTRP), Extension granted for May 2014 – Apr 2015; Second Extension granted from May 2015-Aug 2015 (M. Hastak, PI).

8. Mitigating Threats of Counterfeit Materials in the Capital Projects (RT307), Sept 2012 – August 2014, Construction Industry Institute (CII), (M. Hastak, PI, Sanjiv Gokhale, Vanderbilt Co-PI, Mehmet Emre Bayraktar, Florida International University Co-PI)
9. Comparing Stabilized/Unstabilized Subbase for Unsealed Joints in PCCP – SPR 3510, Jan 2011 – Dec 2013 (extended at no cost until 2016), Joint Transportation Research Program (JTRP), (M. Hastak, PI and Yigong Ji, INDOT, Co-PI).
10. Performance Evaluation of Crack Sealing and Filling Materials with Pavement Preservation Treatments, SPR 3533, Jan 2011 – Dec 2014 (extended until Oct 31, 2015), Joint Transportation Research Program (JTRP), (M. Hastak, PI and Jusang Lee, INDOT, Co-PI).
11. Project Evaluation Methods for Pavement Preservation Treatments, Jan 2011 – April 2013, Joint Transportation Research Program (JTRP), (M. Hastak, PI and Jusang Lee, INDOT, Co-PI).
12. Enhanced Treatment Selection for Reflective Joint Cracking in Composite Pavements (PHASE-1), SPR-3626, Jan 2012 – Apr 2013, Joint Transportation Research Program (JTRP), (M. Hastak, PI).
13. Quantify the Benefits of Pavement Preservation, Jan 2010 – Apr 2011, NCE till May 2011, Joint Transportation Research Program (JTRP), (M. Hastak, PI).
14. Secretarial Support for the Journal of Management in Engineering, Annual Recurring Fund 2009-2015, American Society of Civil Engineers (ASCE) (M. Hastak, PI).
15. “Introduction to Skills and Knowledge of Cost Engineering” Organized by the Association for Advancement of Cost Engineering International for the Russian Section, Saint Petersburg, Russia. April 2013 and December 2013.
16. “Skills and Knowledge of Cost Engineering-Cost Planning” Organized by the Association for Advancement of Cost Engineering International for the Russian Section, Saint Petersburg, Russia. December 2013.
17. “Skills and Knowledge of Cost Engineering” Organized by the Association for Advancement of Cost Engineering International for Tasnee, Jubail, Saudi Arabia. February 2014.
18. “Project Costing and Financial Management.” Intensive Course for Master of Project Management (MPM) degree program, Abu Dhabi University, UAE. Feb 8-19, 2015.
19. “Project Management Professionalism.” Intensive Course for Master of Project Management (MPM) degree program, Abu Dhabi University, UAE. Jan 10-Feb 6, 2016.
20. “AAACEI CCE/CCC (CCP since 2012) Certification Review Course” Organized by the Association for Advancement of Cost Engineering International during the Annual Conference (Las Vegas 2006; Nashville 2007, Toronto 2008, Seattle 2009, Atlanta 2010, Anaheim 2011, San Antonio 2012, Washington DC 2013, New Orleans 2014, Las Vegas 2015, Toronto 2016, Orlando 2017).
21. Developed Course-in-a-box, CCE/CCC Certification course for AAACE. Jan 2011.

PATENTS: NONE

HONORS AND AWARDS

- **Brian D. Dunfield Educational Service Award** (2017), Association for Advancement of Cost Engineering (AAACE) International, Morgantown, WV.
- **Distinguished Visiting Professor** (May 15-19, 2017), General Tedeusz Kosciuszko Military Academy of Land Forces, Wroclaw, Poland.

- **Best Peer Reviewed Paper Honorable Mention** (2016) “Exploratory Framework for Application of Analytics in the Construction Industry.” ASCE *Journal Management in Engineering*.
- **Highly Commended Award Winner** at the Literati Network Awards for Excellence. (2011). “Impact of Flood Damaged Critical Infrastructure on Communities and Industries,” Journal of Built Environment Project and Asset Management, *Emerald Group Publishing Ltd, UK*.
- **Highly Commended Award Winner** at the Literati Network Awards for Excellence (2010). “Disaster impact analysis based on inter-relationship of critical infrastructure and associated industries: A winter flood disaster event” International Journal of Disaster Resilience in the Built Environment, *Emerald Group Publishing Ltd, UK*.
- **Academic Keys Who's Who** in Engineering Higher Education (WWEHE), 2007
- **Scholar-in-Residence** at the National Association of Home Builders (NAHB) Research Center, Upper Marlboro, Maryland, May 29 – July 20, 2006.
- **Roy E. and Myrna Wansik Civil Engineering Research Award** (2006) in recognition of outstanding research in the School of Civil Engineering, Purdue University.
- **Who's Who in Engineering Education** (WWE), 2002 edition
- **Academic Achievement Award** given by Construction Management Association of America (CMAA), NY/NJ Section for *Exec 21* program established at Polytechnic University in conjunction with colleagues, Polytechnic University (1997). *Exec 21* is a certificate program for executive training in construction engineering and management.

MEMBERSHIP AND LEADERSHIP ROLES IN PROFESSIONAL SOCIETIES

National Consortium of Housing Research Centers (NCHRC)

2010–2012	Past-Chair of NCHRC
2008–2010	Chair of NCHRC
2006–2008	Secretary of NCHRC
2001–2012	Member, representing Purdue Housing Research Center

Global Leadership Forum for Construction Engineering and Management Programs

2010-Present	ExCom Member, GLF-CEM
2014-2016	Past Chair, GLF-CEM.
2012	Forum Chair, <i>GLF-CEM 2012</i> , Purdue University.
2011	Forum Chair, <i>GLF-CEM 2011</i> , Purdue University.
2010-2013	Founding Chair, GLF-CEM.

American Society of Civil Engineers (ASCE)

2010-2012	Chair, ASCE 2012 <i>Construction Research Congress</i> , Purdue University.
2009-2015	Editor-in-Chief, ASCE <i>Journal of Management in Engineering</i> .
2008-Present	Member (288614)
2007-Present	Member, Construction Engineering Education Committee
1997-2001	Member, Computing in Construction (CIC)
1997-1998	Member, National Task Committee on Continuing Professional Development/Education in the Professional Practice Area of ASCE
1994-Present	Member, Construction Research Council (CRC)
1990-2008	Associate Member

The Association for the Advancement of Cost Engineering (AACE International)

2007-2016	Editor-in-Chief, Skills and Knowledge of Cost Engineering, 6 th Ed. and Certification Study Guide, 4 th Ed.
2006-2016	Full Member, Academic Council
2004-2016	Full Member, Education Board
2004-2008	Member, Grant Funding Task Force
2003-2004	Contributing Member, Education Board
1990-Present	Associate Member (03681)

Construction Industry Institute (CII)

2012–2014	Member, CII Project Team 307 – <i>Mitigating Threats of Counterfeit Materials in the Capital Projects</i>
2006-2008	Member, CII Project Team 241 – <i>Maximizing the Value of Construction in Pre-Project Planning</i>
2005-2016	Member, Academic Council
2004-2006	Member, CII Project Team 214 – <i>Cost Schedule Tradeoff</i>
2002-2004	Member, CII Project Team 193 – <i>Radical Reduction in Project Cycle Time</i>
2000-2007	Member, Globalization Committee
1998-2001	Member, CII Research Team 154 – <i>Electronic Simulation in Construction</i>
1994-1995	Research Associate, CII Research Team 112 – <i>A Framework and Practices for Cost-Effective Engineering in Capital Projects in the A/E/C Industry</i>
1992-1993	Research Assistant, CII Research Team 90 – <i>The Future Needs of the Construction Industry's Worldwide Customers</i>

PUBLICATIONS

FULL ARTICLES IN REFEREED PUBLICATIONS

1. **Over 180 papers** in leading journals and conference proceedings (List available upon request).

BOOKS

1. Goodman, Alvin S. and **Makarand Hastak**. (2006). *Infrastructure Planning Handbook: Planning, Engineering & Economics*. McGraw Hill/ASCE, New York, NY.
2. Goodman, Alvin S. and **Makarand Hastak**. (2015). *Infrastructure Planning, Engineering & Economics*. 2nd Ed., McGraw Hill/ASCE, New York, NY.
3. **Hastak, Makarand** (Editor) (2015). *Skills and Knowledge of Cost Engineering*, 6th Edition, Association for Advancement for Cost Engineering (AACE), Morgantown, WV.
4. **Hastak, Makarand** (Editor) (2016). *CCP Certification Study Guide*, 2nd Edition, Association for Advancement for Cost Engineering (AACE), Morgantown, WV.

COMPLETED PROJECTS AND REPORTS FOR THE INDUSTRY, GOVERNMENT, OR UNIVERSITY

1. **Hastak, Makarand** (1991). "Study of Factors Causing Variability in Project Estimate." M.S. Thesis, University of Cincinnati, Cincinnati, Ohio.
2. Halpin, Daniel W., Rong-Yau Huang, **Makarand Hastak**, S. Peter Dozzi, R. David Unkefer and Peter H. Bopp (1993). "The Future Needs of the Construction Industry's

- Worldwide Customers." A report to the Construction Industry Institute, the University of Texas at Austin, **CII Source Document 90**.
3. **Hastak, Makarand** (1994). "Decision Support System for Project Cost Control Strategy and Planning." Thesis in partial fulfillment of the requirements for the degree of Doctor of Philosophy, at Purdue University, West Lafayette, Indiana.
 4. Vanegas, Jorge, **Makarand Hastak**, Annie Pearce, and Francisco Maldonado. (1998). "A Framework and Practices for Cost-Effective Engineering in Capital Projects in the A/E/C Industry." A report to the Construction Industry Institute, the University of Texas at Austin, May 1998. **CII Research Report 112-11**
 5. **Hastak, Makarand**, A. K. Singh, and V. Thakkallapalli. (2001). "Electronic Simulation in Construction." A report to the Construction Industry Institute, the University of Texas at Austin, December 2001. **CII Research Report 154-11**
 6. Syal, M., **Hastak, M.**, Senghore, O, and Mehrotra, N. (2002). "Continuing Education Package –Manufactured Housing Production Process," NSF-PATH Project Report No.2, Michigan State University, MI.
 7. Syal, M., **Hastak, M.**, Banerjee, D., and Mehrotra, M. (2003). "Continuing Education Package –Manufactured Housing Facility layout," NSF-PATH Project Report No.4, Michigan State University, MI.
 8. **Hastak, M.**, Minkarah, I.A, Cui, Q., and Bayraktar, M.E. (2003). "Evaluation of Warranty Provisions on ODOT Construction Projects." A project report to Ohio Department of Transportation (ODOT), Columbus, Ohio.
 9. **Hastak, Makarand** (Contributing Author). (2003). "Detailed Planning for Research on Accelerating the Renewal of America's Highways." NCHRP Project 20-58(1) Renewal, Final Report Prepared for the National Cooperative Highway Research Program, Transportation Research Board, National Research Council, April 2003. Main authors/editors: Stephen J. Andrie, E. Thomas Cackler, Theodore Ferragut, and Rebecca McDaniel.
 10. **Hastak, Makarand** (Contributing Author). (2003). "Connection Between Simple Span Precast Concrete Girders Made Continuous." NCHRP Project 12-53, Final Report Prepared for the National Cooperative Highway Research Program, Transportation Research Board, National Research Council, October 2003. Main authors/editors: Richard Miller, Reid Castrodale, Amir Mirmiran, and Makarand Hastak.
 11. Syal, M., **Hastak, M.**, Banerjee, D., Mehrotra, N., "Continuation Education Module – Manufactured Housing Facility Layout," NSF Project Report, MSU and Purdue, March 2004
 12. Syal, M., **Hastak, M.**, and Mullens, M. (August 2004). Final Report, NSF-PATH Housing Research Agenda, NSF and U.S. Department of HUD, Washington DC. (<http://www.pathnet.org/sp.asp?id=12201>)
 13. **Hastak, M.**, S. Gokhale, K. Goyani, T. Hong, and B. Safi. (2004). "Radical Reduction in Project Cycle Time." A report to the Construction Industry Institute, the University of Texas at Austin, June 2004. **CII Research Report 193-11**
 14. **Hastak, M.**, Halpin, D. W., and Hong, TaeHoon (2004). "Constructability, Operability, Maintainability of Fiber Reinforced Polymer (FRP) Bridge Deck Panels." A project report to Joint Transportation Research Program (JTRP), INDOT, West Lafayette, Indiana.
 15. **Hastak, M.** and Alex Duran (2006). "Decision Model to Evaluate Decentralized and Centralized Wastewater Treatment Options for Residential Land Development." A report to the NAHB-Research Center for the National Housing Endowment Scholar-In-Residence Program. Report number AT629.160_081506, Upper Marlboro, Maryland.
 16. **Hastak, M.**, S. Gokhale, Bhavin Safi, and Emre Bayraktar. (2006). "Trade-off between Cost and Schedule." A report to the Construction Industry Institute, the University of Texas at Austin, Oct 2006. **CII Research Report 214-11**

17. **Hastak, M.** and Sharvil Shah (2008). "Acquisition and Analysis of Earthwork Pay Quantity Verification Data." A project report to Joint Transportation Research Program (JTRP), INDOT, West Lafayette, Indiana.
18. Gokhale, Sanjiv, **Makarand Hastak**, and EunHo Oh. (2008). "Optimizing Construction Input in Front End Planning (FEP)." A report to the Construction Industry Institute, the University of Texas at Austin, Aug 2008. **CII Research Report 241-11**
19. **Hastak, M.**, Oh, EunHo, and Deshmukh, Abhijeet, (2009) "SGER: Short Term Investigation of 2008 Midwest Floods" NSF Project Report, Purdue University, August 2009.
20. Shah, Hiral, Yoojung Yoon, **M. Hastak**, Jusang Lee. (2011). "Benefits and Assessment of Budget Allocation for Pavement Preservation." A project report to Joint Transportation Research Program (JTRP), INDOT, West Lafayette, Indiana.
21. Yoon, Yoojung, Saumyang Patel, Yigong Ji, and **Makarand Hastak**. (2013). "Enhanced Treatment Selection for Reflective Joint Cracking in Composite Pavements – Phase-I." A project report to Joint Transportation Research Program (JTRP), INDOT, West Lafayette, Indiana.
22. Lee, J., **M. Hastak**, D. Harris, and H. J. Ahn. (2013). "Subsurface Condition Evaluation for Asphalt Pavement Preservation Treatments." Publication FHWA/IN/JTRP-2013/05. Joint Transportation Research Program, Indiana Department of Transportation and Purdue University, West Lafayette, Indiana, 2013. DOI: 10.5703/1288284315187. (<http://dx.doi.org/10.5703/1288284315187>)
23. **M. Hastak**, Gokhale, S., Bayraktar, E., Naderpajouh, N., Arif, F, and Iyer, A. (2014). "Mitigating Threats of Counterfeit Materials in Capital Projects Industry." A report to the Construction Industry Institute, the University of Texas at Austin, Sept 2014. **CII Research Report 307-11**
24. Yoon, S., **Hastak, M.**, and Lee, J. (2015). "Intelligent compaction of asphalt pavement implementation," (Joint Transportation Research Program Publication No. FHWA/IN/JTRP-2015/05). West Lafayette, IN: Purdue University. <http://dx.doi.org/10.5703/1288284315524>
25. Kang, K., Yoon, S., Patel, S., Yoon, Y., Ji, Y., & **Hastak, M.** (2015). *Enhanced treatment selection for reflective joint cracking in composite pavements* (Joint Transportation Research Program Publication No. FHWA/IN/JTRP-2015/21). West Lafayette, IN: Purdue University. <http://dx.doi.org/10.5703/1288284316006>
26. Lee, J., **M. Hastak**, and H. J. Ahn. (2015). "Crack Sealing/Filling: The Best Practices." (Joint Transportation Research Program Publication, No. FHWA/IN/JTRP-2015/23). West Lafayette, IN: Purdue University. <http://dx.doi.org/10.5703/1288284316008>
27. Khallaf, R., Yoon, S., **Hastak, M.**, and Nantung, T. (2016). *Simplified construction scheduling for field personnel* (Joint Transportation Research Program Publication No. FHWA/IN/ JTRP-2016/28). West Lafayette, IN: Purdue University. <https://doi.org/10.5703/1288284316355>

DEVELOPMENT AND TEACHING OF SHORT COURSES AND WORKSHOPS:

1. "Constructability and Modularization & Preassembly." Construction Industry Institute (CII) Continuing Education Short Courses for Project Management, Sponsored by the Construction Industry Cooperative Alliance (CICA), Clemson University, Clemson. September 18-23, 1994.
2. "Project Management." Project Management Training to the Department of Aviation (DOA) Employees in preparation for the Hartsfield Improvement Program (HIP-96)

- initiative, Department of Aviation (DOA), Hartsfield International Airport, Atlanta, Georgia (in collaboration with colleagues), Atlanta, Georgia. 1995.
3. "Constructability." Continuing Education Short Courses for Project Management. Fernald Environmental Restoration Management Corporation (FERMCO) in cooperation with the Construction Industry Cooperative Alliance (CICA), Clemson University. Cincinnati, Ohio. September 23, and September 30, 1995.
 4. "Introduction to Factorized and Prefabricated Production in Construction Projects: Preassembly and Modularization." Training program for the delegation from the Ministry of Chemical Industry, P.R. China, US-CHINA Business Co., New York, New York. Nov. 7, 1995.
 5. "Educational Training Module for Constructability, Value Engineering, and Inputs to Design," part of the Continuing Education Short Courses for Project Management, Georgia-Pacific Corporation in cooperation with the Construction Industry Cooperative Alliance (CICA), Clemson University. Developed at Georgia Institute of Technology, Atlanta, Georgia in collaboration with colleagues. 1995.
 6. "Educational Training Module for Constructability," part of the Continuing Education Short Courses for Project Management, Fernald Environmental Restoration Management Corporation (FERMCO) in cooperation with the Construction Industry Cooperative Alliance (CICA), Clemson University. Developed at Georgia Institute of Technology, Atlanta, Georgia in collaboration with colleagues. 1995.
 7. "Constructability." Continuing Education Short Courses for Project Management, Georgia-Pacific Corporation in cooperation with the Construction Industry Cooperative Alliance (CICA), Clemson University, Cedar Springs, Georgia. September 9, 1996.
 8. "Introduction to Factorized and Prefabricated Production in Construction Projects: Preassembly and Modularization." Training program for the delegation from the Ministry of Chemical Industry, P.R. China, US-CHINA Business Co., New York, New York. Dec. 4, 1996.
 9. "Probability, Statistics, & Optimization," AACE International Certification training program for CCC and CCE, AACE International, Metropolitan New York Section, New York. May 1, 1997.
 10. "Engineering Economics," NYU P.E. Certification training program, NYU, School of Continuing Education, New York. March 12, 1998.
 11. "AACEI CCE/CCC (CCP since 2012) Certification Review Course" Organized by the Association for Advancement of Cost Engineering International. (Las Vegas, June 2006; Nashville July 2007, Toronto June 2008, Seattle 2009, Atlanta 2010, Anaheim 2011, San Antonio 2012, Washington DC 2013, New Orleans 2014, Las Vegas 2015, Toronto 2016, Orlando 2017.)
 12. "Managing Construction Projects in Tennessee" Professional Education Seminar, Chattanooga, TN (Jan 2006), Nashville, TN (Feb 2006), Knoxville, TN (April 2006).
 13. "Program/Project Management for Leadership Development." Short course organized for the Leadership Development Program at the Boeing Company by ProEd, College of Engineering, Purdue University, Palmdale, CA (Summer, 2006, Spring 2007.)
 14. "Construction Project Management Skills in Indiana" Professional education short course, Indianapolis, IN. Summer 2006.
 15. "Construction Project Management Skills" Professional education short course for the US Customs and Border Protection, Indianapolis, Dallas, and Laguna Niguel. Summer 2006.

16. "Construction Project Management Skills" Professional education short course for the US Naval Academy, Public Works, Annapolis, Maryland. August 2006.
17. "Strategic Planning and Decision Making for Construction Executives." Professional Education Short course organized by ProEd, College of Engineering, Purdue University, Indianapolis, IN. October 2006.
18. "Construction Project Planning and Scheduling." Professional Education Short course organized by ProEd, College of Engineering, Purdue University, Indianapolis, IN. November 2006.
19. "Program/Project Management." Short course organized for Butler International, Inc., by ProEd, College of Engineering, Purdue University, West Lafayette, IN. October 2007.
20. "Skills and Knowledge of Cost Engineering" Organized by the Association for Advancement of Cost Engineering International for Enbridge Inc., Edmonton, Canada. Jan 2008 and May 2010.
21. "Skills and Knowledge of Cost Engineering" Organized by the Association for Advancement of Cost Engineering International for DoE, Washington, DC. April 2010.
22. "Introduction to Skills and Knowledge of Cost Engineering" Organized by the Association for Advancement of Cost Engineering International for the Russian Section, Saint Petersburg, Russia. April 2013 and December 2013.
23. "Skills and Knowledge of Cost Engineering-Cost Planning" Organized by the Association for Advancement of Cost Engineering International for the Russian Section, Saint Petersburg, Russia. December 2013.
24. "Skills and Knowledge of Cost Engineering" Organized by the Association for Advancement of Cost Engineering International for Tasnee, Jubail, Saudi Arabia. February 2014.
25. "Project Costing and Financial Management." Intensive Course for Master of Project Management (MPM) degree program, Abu Dhabi University, UAE. Feb 8-19, 2015.
26. "Project Management Professionalism." Intensive Course for Master of Project Management (MPM) degree program, Abu Dhabi University, UAE. Jan 10-Feb 6, 2016.

INVITED LECTURES AND KEYNOTE PRESENTATIONS

1. "Decision Support Methods in Project Management." **Invited Speaker** at the 5th Annual Canadian Construction Research Forum, University of Alberta, Edmonton, Alberta, Canada. October 5-6, 1998.
2. **Invited Speaker**, Forum on *Emerging Trends in Construction Technology*, Sponsored by Indiana Construction Roundtable, Indianapolis, IN. January 23, 2002.
3. "Cost Effective Management & Maintenance of Urban Infrastructure" **Invited Speaker** at the National Institute of Construction Management & Research (NICMAR), Pune, India, Oct 17, 2005.
4. "A Decision Support System for Infrastructure Rehabilitation Planning" **Invited speaker** at the International Infrastructure Management Seminar, organized by the Korean Institute of Construction Technology (KICT), Seoul, Republic of Korea, Nov 28, 2005.
5. "Infrastructure Risk Management in Preparedness of Extreme Events." **Keynote Speaker** at the ICCEM & ICCPM 2009, The 3rd International Conference on Construction Engineering and Management, The 6th International Conference on Construction Project Management, Global Convergence in Construction, Jeju, Korea, 27-31 May 2009.

6. "Post Disaster Housing – A U.S. Perspective." **Invited Speaker** at the International Symposium on Wenchuan Earthquake Reconstruction Efforts (ISWERE), Dujiangyan City, Sichuan Province, China, September 11-13, 2009
7. "Challenges in Infrastructure Management" **Invited speaker** at the International Infrastructure Asset Management Seminar, organized by the Korean Institute of Construction Technology (KICT), Seoul, Republic of Korea, Nov 19, 2010.
8. "Impact Analysis of Natural Disasters on Critical Infrastructure, Associated Industries, and Communities." **Public Lecture**, Hong Kong Polytechnic University, Hong Kong, June 22, 2011.
9. "New Trends and Challenges in Civil Engineering." **Keynote Speaker** at the 10th International Congress on Advances in Civil Engineering, October 17-19, 2012, Ankara, Turkey.
10. "Sovereign Disaster Risk and Critical Infrastructure Management for Developing Countries." **Keynote Speaker** at the 2nd International Conference on Sustainable Built Environment (ICSBE 2012), December 14-16, 2012, Kandy, Sri Lanka.
11. "Risk Management and Profitability in Construction." **Invited Lecture** organized by the Institute for Lean Construction Excellence (ILCE) at IIT Delhi (Dec 13, 2012) and at the Chamber of Commerce, Mumbai, India (Dec 21, 2012).
12. "Construction Project Delivery Methods in the US." **Invited Speaker** at the Department of Civil Engineering, College of Engineering Pune, Pune, India (Dec 20, 2012).
13. "Effective Debris Management for a Resilient Community." **Keynote Speaker** at the 7th International Structural Engineering and Construction Conference (ISEC-7), June 18-23, 2013, Honolulu, Hawaii.
14. "Infrastructure & Resource Planning Perspective to Make Communities More Resilient to Natural Hazards." **Invited Lecture** at Guizhou Institute of Technology, Guizhou, China, July 15, 2013.
15. "Strategic Capacity Building for Making Communities more Resilient to Natural Hazards," **Invited Lecture** at the Korean Institute of Construction Technology (KICT), Seoul, Republic of Korea, July 23, 2013.
16. "Planning of Multiyear Optimal Rehabilitation Strategies for Infrastructure," **Invited Lecture** at the Korean Institute of Construction Technology (KICT), Seoul, Republic of Korea, July 23, 2013.
17. "Profitability and Risk in Construction," **Invited Lecture** at Yonsei University, Seoul, Republic of Korea, July 23, 2013.
18. "Strategic Capacity Building for Making Communities more Resilient to Natural Hazards." **Invited Speaker** at the Stellenbosch University, South Africa, May 7, 2014.
19. "Capacity Building and Resilience for Disaster Risk Reduction." **Invited Speaker** at the Innovation in Construction Forum 2014, University of Alberta, June 4-5, 2014, Edmonton, Canada.
20. "Ex-Ante Infrastructure Capacity Building for Improving Community Resilience to Natural Disasters." **Keynote Speaker** at the First International Conference on Infrastructure Failures and Consequences (ICIFC), July 16-20, 2014, Melbourne, Australia
21. "Ex-Ante Infrastructure Capacity Building for Improving Community Resilience to Natural Disasters." **Invited Speaker** at the 3rd National Symposium on Engineering Risk & Insurance Research, August 1-3, 2014, Yichang, China.
22. "A System of Systems Approach to Profitability Analysis of Construction Companies." **Keynote Speaker** at the 19th Intl Symposium on the Advancement of Construction Management and Real Estate (CRIOCM 2014), Nov 8-9, 2014, Chongqing, China.

23. "Optimal Capacity Building - A Post Disaster Recovery Perspective." **Invited Speaker** at the Indian Institute of Public Administration (IIPA), Dec 15, 2014, New Delhi, India.
24. "Profitability Analysis of Construction Companies." **Invited Speaker** at the RICS School of Built Environment, Amity University, Dec 16, 2014, New Delhi, India.
25. "Enhancing Post Disaster Recovery by Optimal Infrastructure Capacity Building." **Keynote Speaker** at the Professional Engineers: Challenges in Disaster Management Conference, Dec 18-19, 2014 at GITAM University campus, Visakhapatnam, India.
26. "An Approach towards Expediting Post Disaster Community Recovery." **Invited Speaker** at the International Conference on Disaster and Safety Management of Water Infrastructure for Safe Korea." March 26, 2015, Daejeon, South Korea.
27. "A Model for Profitability Analysis of a Construction Company." **Invited Speaker** at the 2015 Global Leadership Forum for CEM Programs (GLF-CEM 2015), June 5-7, 2015, Weimar, Germany.
28. "Optimal Capacity Needs for Community Resilience during Post Disaster Recovery." **Keynote Speaker** at the Building Resilience Conference." July 15-17, 2015, Newcastle, Australia.
29. "Post Disaster Capacity Needs for Improving Community Resilience." **Keynote Speaker** at CONSTRUCT15. July 28-31, 2015, Perth, Australia.
30. "Emerging Careers in Engineering." **Invited Speaker**, Education and Health International (EHI) Science, Technology, Engineering, and Math (STEM) Symposium. New Delhi, India, November 22, 2015.
31. "Purdue Index for Construction (Pi-C): The need for Construction Performance Review and International Benchmarking." **Invited Speaker**, First International Construction Innovation Conference. The University of Hong Kong, Hong Kong, December 16, 2015.
32. "The Role of Infrastructure in Improving Resilience of Disaster Affected Communities." **Keynote Speaker**, WBC 16, CIB World Building Congress, Tampere, Finland, May 30-June 3, 2016.
33. "The Role of Infrastructure Capacity in Building Resilience for Disaster Affected Communities," **Keynote Speaker**, 12th International Conference of International Institute for Infrastructure Resilience and Reconstruction (IIIRR), August 5 - 7, 2016, Peradeniya, Sri Lanka.
34. "Improving Building Industry Resilience through Strain Capacity Analysis," **Keynote Speaker**, BRANZ NSC: Building better homes, towns, cities, 6th Building Resilience Conference, September 7-9, 2016, Auckland, New Zealand.
35. "Theory of an Intelligent Planning Unit (IPU) for the Complex Built Environment." **Keynote Speaker** at the 21st International Symposium on the Advancement of Construction Management and Real Estate (CRIOCM 2016), Dec 14-16, 2016, Hong Kong.
36. "Role of Infrastructure in Mitigating Risk from Natural Hazards" **Invited Speaker** at the National Institute of Construction Management & Research (NICMAR), Pune, India, July 25, 2017.
37. "Global Challenges in Infrastructure Management" **Invited Speaker** at the JSPM's Rajarshi Shahu College of Engineering at Tathawade, Pune, India, July 26, 2017.
38. "Theory of an Intelligent Planning Unit (IPU) For Lean Construction of Complex Built Environment" **Keynote Speaker** at the Indian Lean Construction Conference (ILCC 2017), IIT Madras, July 28-29, 2017.

TEACHING ACTIVITIES

- Infrastructure Planning
- Risk Management in Construction
- Computer Applications in Construction
- Construction Operations Analysis
- Strategic Planning
- Project Costing and Financial Mgmt.
- Project Management Professionalism
- Construction Plans and Estimates
- Construction Management
- Life Cycle Engineering & Management of Constructed Facilities
- Project Control & Life Cycle Execution of Constructed Facilities
- Measurements in Civil Engineering