

KIRK MARTINI

Associate Professor
Associate Dean for Academics
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EDUCATION

- Dec 1990 Ph.D. in Civil Engineering; University of California Berkeley. Specializing in structural engineering
- Dec 1982 Master of Science in Engineering Science: Civil; Master of Architecture. University of California Berkeley (concurrent degree program)
- June 1980 Bachelor of Arts in Architecture, University of California Berkeley

ACADEMIC ADMINISTRATION

- Fall 2010 -
Spring 2014 **Associate Dean for Academics.** School of Architecture, University of Virginia. Responsible for academic programs and student services, including overseeing the development of a new Ph.D. program; implementation of a new undergraduate curriculum; leading the planning and development of physical resources such as fabrication and IT facilities to support academic mission.

ACADEMIC POSITIONS

- Fall 1999 -
present **Associate Professor with tenure.** Department of Architecture, University of Virginia. Teaching courses in structural design, photography, and digital media.
- Fall 1992 -
Spring 1999 **Assistant Professor.** Department of Architecture, University of Virginia. Teaching courses in structural design.
- Spring 1986 **Instructor.** Department of Architecture, Cornell University. Teaching a course in reinforced concrete structures.
- Summer 1982.
Summer 1984 -
Summer 1987 **Instructor.** Department of Architecture, University of California Berkeley. Teaching an introductory structures course.

PROFESSIONAL EXPERIENCE

- June 1988 -
April 1991
(part time) **Position:** Computer specialist for **Skidmore, Owings and Merrill**, San Francisco.
Responsibilities: Leading a project to study the use of non-linear analysis in the seismic design of building structures.
- Summer 1989 **Position:** Intern for **Taisei Construction Company**, Tokyo, Japan.
Responsibilities: Review of the use of computers in construction and design at Taisei, including using and evaluating a newly developed CAD system.
- Apr 1983 -
Jan 1986 **Position:** Project engineer for **Interactive Resources, Inc.**, Point Richmond, Calif.
Responsibilities: Execution and coordination of structural design for commercial, residential and industrial buildings.

PROFESSIONAL REGISTRATION

- Aug 1985 Civil Engineer in State of California.(C 39755)

GRANTS, FELLOWSHIPS, AND AWARDS

- 2008 *All-University Teaching Award*. University of Virginia.
- 2007 *Premier Award for Excellence in Engineering Software*, an international award program run by **Engineering Pathway and NEEDS** (the National Engineering Education Delivery System).
- 2003-2005 *Teaching Non-linear Structural Behavior with a Physics Engine* **National Science Foundation**, Division of Undergraduate Education, Course, Curriculum, and Laboratory Improvement Program.
- 2002 *Teaching a Dynamic Perspective on Building Systems* Grant from the Teaching and Technology Initiative, sponsored by **UVa's Provost's Office and Department of Information, Technology, and Communication**. Co-authored with Bill Sherman.
- 1999 *Conceptual Studies of a New Emmet Street Bridge*. Grant from the **UVa School of Architecture Dean's Forum** to generate and present several alternative design concepts for a new bridge on the UVa grounds.
- 1998-1999 *Fundamentals of Seismic Design*. Grant from the **Faculty Senate Initiative to Promote Excellent Teaching** to develop a new course in civil engineering. Co-authored with Tom Baber, Furman Barton, and Lori Graham.
- 1997-1998 *Patterns of Reconstruction at Pompeii*. Resident research fellowship at the **Institute for Advanced Technology in the Humanities**, University of Virginia.
- 1996-1997 *Ancient Reconstruction of the Pompeii Forum*. Supported by grants from the **UVa School of Architecture Dean's Forum, UVa Sesquicentennial Associateship Program**, and matching funds from the **National Endowment for the Humanities** through the Pompeii Forum Project.
- 1995-1996 *Technologies for Teaching Design in Architecture and Engineering*. Grant from the Teaching and Technology Initiative, sponsored by **UVa's Provost's Office and Department of Information, Technology, and Communication**.
- 1994-1995 Teaching fellowship supported by the **Lilly Endowment** and UVa's **Teaching Resource Center**.
- Apr 1991 - Apr 1992 *Hierarchic Geometric Constraints for Building Design*. Post-Doctoral Fellowship from the **Japan Society for the Promotion of Science**. Research at the Kimura Lab of the Department of Precision Machinery Engineering at Tokyo University.
- Aug 1990 - Jan 1991 Grant for Japanese Language study from the **National Science Foundation**.

CONSULTING

- Jan 2008 Consulting with William McDonough to prepare for seismic issues on the architecture licensing exam in California.
- Jan 1999 Consulting for a project to create web-based teaching materials in the Department of Civil Engineering at **Hong Kong University**.
- May 1998 Juror for the *ACSA/STI Hollow Structural Sections National Student Design Competition*.

- Oct 1996 to
Jun 97 Juror and program co-author for the 1997 AIA/FEMA *Rehousing Hollywood National Student Design Competition*.
- Oct 1996 to
Jan 1997 Program design and presentation for the 1997 AIA *Faculty Institute on Seismic Design*, San Francisco Calif.
- Apr 1996 to
Jun 1996 Program design and presentation for the 1996 AIA *Research Seismic Design/Build Charette*, Pomona, Calif.

SERVICE

REFEREE SERVICE

- Apr 2012 Reviewer for the International Conference on Structures and Architecture.
- 2011-2014 Paper reviews for *ASCE Journal of Structural Engineering* and *Journal of Architectural Engineering*.
- Feb 2008 Proposal review concerning structural engineering, *Nebraska Experimental Program to Stimulate Competitive Research*, University of Nebraska.
- Oct 2006 Ph.D. Thesis review on earthquake engineering, Indian Institute of Technology Roorkee.
- May 2005 Proposal review concerning structural engineering laboratory instrumentation, National Science Foundation's *Science and Engineering Information Integration and Informatics (SEIII) Program*
- May 2005 Paper review concerning computer graphics for the 2005 IEEE Visualization conference.
- 1996-2004 Papers for the conference of the Association for Computer-Aided Design in Architecture (ACADIA)
- 1997 Paper reviews for the journals *Advances in Engineering Software* and *Computers and Structures*, Elsevier publishers.
- 1997-present Reviews of book proposals on the topic of structures and construction for J. Wiley, Burrston House, and Prentice Hall.
- 1995-1998 Paper reviews for the journal *Computer-Aided Design*, Butterworth Heinemann publishers.

NATIONAL SERVICE

- July 2006 Proposal review panel for the National Science Foundation's program in *Course, Curriculum, and Laboratory Improvement*.
- 2003 External Review Panel for FEMA report 454: *Designing for Earthquakes*
- 1999-2003 Editorial Board for the journal *Automation in Construction*
- 1999-2003 Web site manager for ACADIA.
- 1998-2001 Steering committee of ACADIA

Aug 1997 Session co-chair for the 7th *International Conference on Computing in Civil and Building Engineering*, Seoul Korea. Session T1A: Structural Engineering.

Aug 1996 Session moderator for the ACSA *Teaching Structural Creativity* conference.

Jul 1996 Tester for the NCARB quiz on *Structural Design for Wind Forces*.

UNIVERSITY SERVICE

2010-present University Academy of Teaching Advisory Committee.

2010-2012 Faculty Budget Advisory Committee

2009-2010 Mentor for U.Va. Excellence in Diversity Fellow, Sarah Kucenas of Biology.

2008-2009 Mentor for University Teaching Fellow, Sheila Crane of Architectural History.

2007-2010 University Advisory Committee on Course Management Systems.

2006-2008 University Committee for Promotion and Tenure

2005-2008 Chair, University Committee for Information Technology

2004-2005 Mentor for University Teaching Fellow, Caroline Westort.

2003-2004 Chair, Academic Computing Advisory Council.

2005-2006 SACS accreditation committee for assessing critical thinking.

2001-2002 Mentor for University Teaching Fellow, David Luebke.

Nov 2000 Selection committee for the Teaching + Technology program.

Aug 2000 Interview committee for selection of design team for a footbridge across Emmet St.

1999-2006 Dean's Technology Council.

Mar 1997 Selection committee for the University Teaching Fellows program.

Feb 1997 Invited panelist *Educational Technology '97*, sponsored by the department of Information, Technology, and Communications.

1995-1996,
1998-1999 Academic Computing Advisory Council.

Jan 1996 Working group meeting on Information Technology for the SACS reaffirmation of accreditation.

1995-1998 Committee for Information Technology in Research.

1994-1995 Self-study Improvement of Teaching Committee.

SCHOOL AND DEPARTMENT SERVICE

2010-2014 Associate Dean for Academics

2013	Chair of search committee for Admissions and Financial Aid Coordinator
2012-2014	Chair of physical resources planning committee.
2009	Chair of search committee for Fabrication Facilities Manager
2010-2011	Chair of a task force to develop proposals for new M.S. and Ph.D. degree programs.
2011	Chair of a task force to develop a new School web site.
2009-2011	Weedon professor search committee.
2011-2013	Summer session chair.
2000-2003, 2004-2007	Promotion and Tenure Committee
1995-2002	Manager of the School web site.
1992-1996, 1999-present	Computer committee.
1994-1996, 1998-2006, 2008-present	Undergraduate advisor.
1992-1993, 2000, 2004	Graduate admissions committee.
1994-1995	Building Addition Committee, chair.
1992-1993	Undergraduate curriculum committee.

PUBLICATIONS

Kirk Martini, “**Multimodal Structural Optimization for Conceptual Design**”, *Proceedings of the International Conference Structures and Architecture*, University of Minho, Guimarães, Portugal. July 24-16, 2013. Accepted for publication.
(conference; refereed)

Kirk Martini, “**A Harmony Search Method for Multimodal Size, Shape, and Topology Optimization of Structural Frameworks**”, *Journal of Structural Engineering*, American Society of Civil Engineers, 137(11) November 2011, 1332-1339.
(journal; refereed)

Kirk Martini, “**Optimization and Parametric Modeling to Support Conceptual Structural Design**”, *International Journal of Architectural Computing*, 9(2) June 2011, 152-166.
(journal; refereed)

Kirk Martini “**A New Kind of Software for Teaching Structural Behavior and Design**”, *Proceedings of the 2006 Building Technology Educator’s Symposium* School of Architecture, University of Maryland. (published on CD-ROM)
(conference)

Kirk Martini “**Real-time, Non-linear, Dynamic Simulation in Teaching Structures: Elementary to Advanced**”, *Proceedings of the 2005 American Society for Engineering Education Annual Conference*, Portland, Oregon. American Society of Engineering Education. (published on CD-ROM)
(conference; refereed)

Kirk Martini “**Teaching Structural Behavior with a Physics Engine**”, *Proceedings of 2005 Structures Congress*, American Society of Civil Engineers, New York. (published on CD-ROM)
(conference)

Kirk Martini “**A Particle-System Approach to Real-Time Non-Linear Analysis**”, *Proceedings of the 7th National Conference on Earthquake Engineering*, Earthquake Engineering Research Institute, 2002. (published on CD-ROM).
(conference; refereed)

Kirk Martini, “**Non-linear Structural Analysis as Real-Time Animation: Borrowing from the Arcade**” *Computer-Aided Architectural Design Futures 2001*, Kluwer Academic Publishers, Dordrecht, Netherlands, pp. 643-656.
(conference)

Kirk Martini, “**Digital Photogrammetry in Archaeological Re- and De-Construction**” *Proceedings of the ACADIA 99 Conference*, Salt Lake City, Utah. October 28-31, 1999.
(conference; extended abstract)

Kirk Martini, “**Digital Imaging in Teaching Structures**” *Journal of Professional Issues in Engineering Education and Practice*, American Society of Civil Engineers, vol. 125, no. 2, April 1999, pp. 56-64.
(journal; refereed)

Kirk Martini “**Ancient Structures and Modern Analysis: Investigating Damage and Reconstruction at Pompeii**” *Automation in Construction*, no. 8 1998, pp. 125-137.
(journal; refereed)

Kirk Martini, “**Digital Archives of Engineering Images: Lessons from the Arts**” *Advances in Engineering Software*, vol. 29, no. 10. 1998, pp 833-837.
(journal; refereed)

Kirk Martini “**Finite Element Studies in the Two-Way Out-of-Plane Failure of Unreinforced Masonry**,” *Proceedings of the 6th National Conference on Earthquake Engineering*, Seattle WA, May 31 - June 4, 1998. 12 pp.
(conference)

Kirk Martini “**Ancient Structures and Modern Analysis: Investigating Damage and Reconstruction at Pompeii**,” *ACADIA 97: Proceedings of the Conference of the Association for Computer-Aided Design in Architecture*, Cincinnati OH, October 3 - 5 1997. pp. 283-292.
(conference; refereed)

Kirk Martini “**Finite Element Studies in the Out-of-Plane Failure of Unreinforced Masonry**,” *Proceedings of the 7th International Conference on Computing in Civil and Building Engineering*, Volume 1, Seoul, Korea, August 19 - 21, 1997. pp. 179-184.
(conference)

Kirk Martini “**Digital Imaging and the Web in Teaching Structures**,” *ACADIA 96: Proceedings of the Conference of the Association for Computer-Aided Design in Architecture*, Tucson AZ, October 31 - November 3 1996. pp. 215-225.
(conference; refereed)

Kirk Martini, “**Digital Archives of Engineering Images: Lessons from the Arts**,” *Information Representation and Delivery in Civil and Structural Engineering Design*, B. Kumar and A. Retik eds., Edinburgh: Civil-Comp Press, from The International Conference on Information Technology In Civil And Structural Engineering Design 14th-16th August 1996 in Glasgow Scotland. pp. 93-97
(conference; refereed)

Kirk Martini, “**Visualizing Global Force Distributions in Finite Element Models**,” *ASCE Journal of Architectural Engineering* vol. 2, no. 2, June 1996, pp. 71-77.
(journal; refereed)

Kirk Martini, “**Visualizing Global Force Distributions in Finite Element Models**,” *Proceedings of the ASCE Computing in Civil Engineering Conference*, Anaheim CA, June 1996, pp. 697-703.
(conference)

Kirk Martini, “**Beyond Competence: Technical Courses in the Architecture Curriculum**,” *Architronic*, vol. 4, no. 3, article 5, December 1995.
<http://www.saed.kent.edu/Architronic/v4n3/v4n3.05.html>
(essay; refereed)

Kirk Martini, “**Hierarchic Geometric Constraints for Building Design**” *Computer-Aided Design* , vol. 27, no. 3, March 1995, pp. 181-191.
(journal; refereed)

Kirk Martini “**Seeing the Big Picture: Visualizing Global Structural Behavior**” *Design and Technological Innovation for the Environment*, Proceedings of the 12th Annual ACSA Technology Conference, 1994. pp. 133-136.
(conference)

Richard Sause, Kirk Martini, Graham H. Powell. “**Object-Oriented Approaches for Integrated Engineering Design Systems**” *Journal of Computing in Civil Engineering*, American Society of Civil Engineers, vol. 6, no. 3, July 1992. pp. 248-265.
(journal; refereed; secondary author)

Kirk Martini, Graham H. Powell. “**Geometric Modelling Approaches for Civil Engineering and Building Design**” *Microcomputers in Civil Engineering*, no.7 1992. pp. 3-14
(journal; invited)

Graham H. Powell, Filip Filippou, Kirk Martini, Scott Campbell, “**Nonlinear Modelling and Analysis of Reinforced Concrete Frame Structures**” *Proceedings of the Workshop on Recent Developments and Future Trends of Computational Mechanics in Structural Engineering*, Beijing China, Sept. 1991, Elsevier Science Publishers, 1991.
(conference; secondary author)

Kirk Martini, Graham H. Powell. “**Geometric Modelling Approaches for Civil Engineering and Building Design**” (extended abstract) *4th International Conference on Computing in Civil and Building Engineering (4ICCCBE)*. Tokyo, 1991. p. 46.
(conference; primary author)

Kirk Martini, Richard Sause, Graham H. Powell. “**Models for Computer Integrated Civil Engineering Design**” (extended abstract) *4th International Conference on Computing in Civil and Building Engineering*. Tokyo 1991. p. 45.
(conference; primary author)

Navin Amin, Kirk Martini, Hamid Fatehi, Tomio Kurata. “**Comparing the Behavior of 40 Story Structures Designed According to US and Japanese Codes**” *2nd National Conference on Tall Buildings in Seismic Regions*. Los Angeles. Council report 903.409, Council on Tall Buildings and Urban Habitat, 1991. pp. 1-10.
(conference; joint author)

Kirk Martini, Graham H. Powell: “**Geometric Modeling Requirements for Structural Design**” *Engineering with Computers* 6, 1990, pp. 93-102.
(journal; refereed; primary author)

Kirk Martini, Navin Amin, Peter L. Lee, David Bonowitz: “**The Potential Role of Non-Linear Analysis in the Seismic Design of Building Structures**” *Proceedings of the 4th National Conference on Earthquake Engineering*, Palm Springs CA, 1990. pp. 67-76.
(conference; primary author)

INVITED TALKS AND CONFERENCE PRESENTATIONS

CONFERENCE PRESENTATIONS

“**A New Kind of Software for Teaching Structural Behavior and Design**”, *2006 Building Technology Educator’s Symposium* University of Maryland. August 2006.

“**Computational Issues in Non-linear Structural Analysis Using a Physics Engine**,” ASCE 17th Analysis and Computation Conference, St; Louis Missouri, May 2006.

“Real-time, Non-linear, Dynamic Simulation in Teaching Structures: Elementary to Advanced,” 2005 American Society for Engineering Education Annual Conference, poster session. Portland, Oregon, June 2005.

“Teaching Structural Behavior with a Physics Engine”, 2005 Structures Congress, American Society of Civil Engineers, New York, April 2005.

“A Particle-System Approach to Real-Time Non-Linear Analysis,” 7th National Conference on Earthquake Engineering, Earthquake Engineering Research Institute, Boston MA, July 2002.

“Non-linear Structural Analysis as Real-Time Animation: Borrowing from the Arcade,” CAAD Futures Conference, Eindhoven, Netherlands. July 2001.

“Digital Photogrammetry in Archaeological Re- and De-Construction,” Conference of the Association for Computer-Aided Design in Architecture: ACADIA 99, Salt Lake City Utah, October 28-31. 1999.

“Finite Element Studies in the Two-Way Out-of-Plane Failure of Unreinforced Masonry” 6th National Conference on Earthquake Engineering, Seattle WA, May 31 - June 4, 1998.

“Ancient Structures and Modern Analysis: Investigating Damage and Reconstruction at Pompeii,” Conference of the Association for Computer-Aided Design in Architecture: ACADIA '97, Cincinnati Ohio, October 3-5. 1997.

“Finite Element Studies in the Out-of-Plane Failure of Unreinforced Masonry,” 7th International Conference on Computing in Civil and Building Engineering (ICCCBE-VII), Seoul, Korea, August 19 - 21, 1997.

“Digital Imaging and the Web in Teaching Structures,” Conference of the Association for Computer Aided Design, ACADIA 96, Tucson AZ, October 31-November 2, 1996.

“Digital Archives of Engineering Images: Lessons from the Arts,” International Conference on Information Technology In Civil And Structural Engineering Design. Glasgow Scotland, August 14-16 1996.

“Digital Imaging and the Web in Teaching Structures,” University Programs in Computer-Aided Design, Engineering and Manufacturing, Charlottesville VA, June 1996.

“Visualizing Global Force Distributions in Finite Element Models,” ASCE Computing in Civil Engineering Conference, Anaheim CA, June 1996.

“Seeing the Big Picture: Visualizing Global Structural Behavior,” 12th Annual ACSA Technology Conference, Ann Arbor, MI, January 1994.

“Geometric Modelling Approaches for Civil Engineering and Building Design,” 4th International Conference on Computing in Civil and Building Engineering, Tokyo, July 29 -31, 1991.

“Models for Computer Integrated Civil Engineering Design,” 4th International Conference on Computing in Civil and Building Engineering (4ICCCBE), Tokyo, July 29 -31, 1991.

“The Potential Role of Non-Linear Analysis in the Seismic Design of Building Structures” 4th National Conference on Earthquake Engineering, Palm Springs CA, June 1990.

INVITED TALKS

“Multimodal Optimization for Conceptual Structural Design”, Virginia Tech Department of Civil Engineering, October 3, 2012.

“Can We Talk? Methods and Principles for Interactive Lectures,” Session in the Teaching Resource Center January Teaching Workshop, University of Virginia. January 19, 2010.

“Arcade: A New Application of Explicit Dynamic Analysis,” Robert Silman Associates, Structural Engineers; Washington D.D., June 18, 2008.

“Computer Games and Structural Analysis: Borrowing Computational methods,” Johns Hopkins University Department of Civil Engineering, April 25, 2006.

“Can We Talk? Methods and Principles for Interactive Lectures,” Session in the Teaching Resource Center January Teaching Workshop, University of Virginia. January 17, 2007.

“Can We Talk? Methods and Principles for Interaction in a Lecture Setting,” Teaching Resource Center Public Workshop, University of Virginia. April 7, 2006.

“Interactive Lecture Techniques,” Presentation to University Teaching Fellows. University of Virginia. December 2004.

“Developing a Software Tool for Teaching Structural Behavior,” Presentation to Teaching + Technology fellows. University of Virginia. November, 2003.

“Interactive Animation in Structural Analysis,” Annual Banquet of the Virginia section of the American Society of Civil Engineers, October 1, 2001

“High Tech, Low Tech, Good Tech, Bad Tech: Using Teaching Tools Effectively,” Conference of the Center for Talented Youth, University of Virginia. November 4, 2000.

“If technology is the answer, what was the question?” Teaching Resource Center, University of Virginia. October 8, 1999.

“Patterns of Reconstruction at Pompeii,” Annual Banquet of the Virginia section of the American Society of Civil Engineers, November 11, 1998.

“Patterns of Reconstruction at Pompeii,” University of Virginia School of Architecture, October 30, 1998.

“Ancient Reconstruction of the Pompeii Forum,” University of Virginia School of Architecture, October 31, 1997.

“Finite Element Studies in the Out-of-Plane Failure of Unreinforced Masonry,” Tokyo University, Department of Mechanical Engineering, Sakai Lab, August 3, 1997.

“Seismic Design for Light Timber Construction,” AIA Faculty Institute on Teaching Seismic Design, San Francisco CA, January 31 - February 2, 1997.

“Investing Time in the Web: Scholarly Risks and Rewards,” Teaching Resource Center January Workshop, University of Virginia, January 13, 1997.

“Web-based Resources for Teaching Seismic Design and Planning,” AIA Faculty Institute on Teaching Seismic Design, San Francisco CA, January 31 - February 2, 1997.

“Seismic Design for Light Timber Construction,” AIA Seismic Design Charette, Pomona CA, June 7-10, 1996.

“Seeing Structure: Using Computers to Visualize Structural Behavior,” Department of Architecture, University of Michigan, March 18, 1996.

“Digital Images and Seismic Design,” AIA Faculty Institute on Teaching Seismic Design, Berkeley CA, February 2-5, 1996.

“How Tangled a Web to Weave?” Teaching Resource Center January Workshop, University of Virginia, January 15, 1996.

“Teaching with Technology: the future of the classroom and the classroom of the future,” Department of Architecture, Massachusetts Institute of Technology, December 1995.

“Teaching and Research in Structural Design,” Department of Architecture, University of Michigan, December 1995.

“Teaching with Technology: the future of the classroom and the classroom of the future,” the President’s Retreat, University of Virginia, September 1995.

“Seismic Design for the Global Engineer,” Department of Civil Engineering, University of Virginia, April 1995.

“Japanese Construction Methods: Engineering in Context,” Department of Civil Engineering, University of Virginia, May 1994.

“Design for Predictability,” Department of Civil Engineering, University of Virginia, March 1993.

“Hierarchic Geometric Constraints for Building Design,” Department of Architecture, Massachusetts Institute of Technology, November 1992.

“Hierarchic Geometric Constraints for Building Design,” Department of Precision Machinery Engineering, Tokyo University, April 1992.

“Hierarchic Geometric Constraints for Building Design,” Department of Architecture, University of California at Berkeley, April 1992.

“Recent Work in Geometric Modeling and Non-Linear Structural Analysis,” Department of Civil Engineering, Carnegie Mellon University, February 1991.

“Non-Linear Analysis in the Evaluation of Existing Highway Structures” with Prof. Graham Powell, California Department of Transportation, Sacramento CA, January 1991.

“Research and Practice in Structural Design for Architecture,” Department of Architecture, University of California at Berkeley, March 1990.