PEDRO ARDUINO

Curriculum Vitæ

Department of Civil & Environmental Engineering
132 I More Hall
Box 352700
Seattle, WA 98195

Phone: 206-543-6777
Fax: 206-543-1543
Email: parduino@uw.edu

EDUCATIONAL HISTORY

Georgia Institute of Technology, Atlanta, Ga.
Ph.D. in Civil Engineering.
December 1996.
Dissertation: Multiphase Description of Deforming Porous Media by the Finite Element Method.

Georgia Institute of Technology, Atlanta, Ga.
M.S.C.E.
July 1995.

University of Puerto Rico, Mayagüez, P.R.
M.S.C.E.
June 1993.

Universidad Nacional de Córdoba, Córdoba, Argentina.
Civil Engineer (Prof. Degree).
March 1988.

EMPLOYMENT HISTORY

Department of Civil & Environmental Engineering, University of Washington
Seattle, WA, U.S.A
Professor, 2012-present.

Department of Civil & Environmental Engineering, University of Washington
Seattle, WA, U.S.A
Associate Professor, 2003-2012.

Department of Civil & Environmental Engineering, University of Washington
Seattle, WA, U.S.A
Assistant Professor, 1997-2003.

College of Civil and Environmental Engineering, Georgia Institute of Technology
Atlanta, GA, U.S.A.
Research Assistant, 1993-1996.

Department of Civil and Environmental Engineering, University of Puerto Rico
Mayagüez, Puerto Rico
Research Assistant, 1990-1993.

Facultad de Ciencias Exactas Físicas y Naturales, Universidad Nacional de Córdoba
Córdoba, Argentina
Instructor, 1988-1990.

Facultad de Ciencias Exactas Físicas y Naturales, Universidad Nacional de Córdoba
Córdoba, Argentina
Research Assistant, 1988-1990.

AWARDS AND HONORS

- Egresado Distinguido (Distinguished Alumni), Universidad Nacional de Córdoba, Córdoba, Argentina, April, 2013.
- Outstanding Teacher Award, Department of Civil & Environmental Engineering, University of Washington, Seattle, WA, June 2009.
- J. Ray Bowen Professorship for Innovation in Engineering Education, 2003-2007, College of Engineering, University of Washington.
- Nomination - Outstanding Mentor award, 2003, University of Washington.
- Nomination - Outstanding Teaching award, 2002, 2003, University of Washington.
- Nomination - College of Engineering Teaching award, 2002, 2003, and 2005.
- Chi-Epsilon Faculty Honor Member May, 2001, University of Washington.
- ADSC Civil Engineering Faculty Workshop, 2000, ADSC Fort Collins, CO.
- NSF/IFAI Professor Training Course on Geosynthetics, 1997, Auburn University, Auburn, AL.
- Luther S. Long III Memorial Award in Engineering Mechanics, 1996, Georgia Institute of Technology, Atlanta, GA.
- Sowers Distinguished Graduate Student Award for outstanding achievements in research activities, academic excellence, and contributions to the Geosystems Engineering program, 1995, Georgia Institute of Technology, Atlanta, GA.
- Alfredo Estrada Academic and Student Service Award for Hispanic Graduate Students, 1994-1995, Georgia Institute of Technology, Atlanta, GA.
- Research Fellowship, 1990, CONICET (National Council for Scientific and Technological Research), Córdoba, Argentina.
- Research Fellowship, 1988-1990, SECyT (Science and Technology Department, National University of Córdoba), Córdoba, Argentina.

AFFILIATIONS AND OTHER APPOINTMENTS

- Courtesy Faculty, School of Civil and Construction Engineering, Oregon State University, 2014- present.
- Visiting Professor, Facultad de Ingeniería, Universidad de los Andes, Bogota, Colombia, 2008, 2010.
- Visiting Professor, Facultad de Ciencias Exactas Físicas y Naturales, Universidad Nacional de Córdoba, Córdoba, Argentina, 2004, 2008.

PUBLICATIONS

Refereed archival journal publications

1. R. McGann, and P. Arduino, (2014), Assessment of three-dimensional foundation pinning effects during lateral spreading at the Mataquito river bridge, ASCE Journal of Geotechnical and Geoenvironmental Engineering, in print.

2. C. Mast, P. Arduino, G. Miller, and P. Mackenzie-Helnwein, P. Arduino, (2013), Avalanche and landslide simulation using the material point method: flow dynamics and force interaction with structures, Computational GeoSciences, in print.
3. C. Mast, P. Arduino, G. Miller, and P. Mackenzie-Helnwein, P. Arduino, (2014), Simulating granular column collapse using the Material Point Method, Acta Geotechnica, in print.
4. C. McGann, P. Arduino, and P. Mackenzie-Helnwein, (2014), Stabilized single-point 8-node hexahedral element for dynamic analysis of fluid saturated porous media, ASCE International Journal of Geomechanics: under review.
5. M. M. Chiaramonte, P. Arduino, D. E. Lehman, and C. W. Roeder, (2013), Seismic analyses of conventional and improved marginal wharves, Earthquake Engineering and Structural Dynamics, 42: pp.1435-1450.
6. C. McGann, P. Arduino, and P. Mackenzie-Helnwein, (2012), Stabilized single-point 4-node quadrilateral element for dynamic analysis of fluid saturated porous media, Acta Geotechnica: Vol. 7, Issue 4, 2012, pp. 297-311.
7. C. Mast, P. Mackenzie-Helnwein, P. Arduino, G. Miller, and W. Shin, (2012), Mitigating kinematic locking in the Material Point Method, Journal of Computational Physics, Vol. 231, Issue 16, June 2012, pp. 5351-5373.
8. P. Arduino, P. Mackenzie-Helnwein, G. Miller and C. Mast, (2012), Aplicación y Mejoras al Método MPM para el Análisis de Desprendimientos y Movimientos de Tierra, Revista Internacional de Desastres Naturales, Accidentes e Infraestructura Civil, Vol. 12, No. 1, Mayo 2012, pp. 5-9.
9. J. Bray, K. Rollins, T. Hutchinson, R. Verdugo, C. Ledezma, D. Assimaki, G. Mylonakis, G. Montalva, P. Arduino, S. Olson, R. Kayen, Y. Hashash, and G. Candia, (2012), Effects of Ground Failure on Buildings, Ports, and Industrial Facilities, Earthquake SPECTRA, Vol. 28, N^{o} S1, June 2012, pp s97- s118.
10. C. Ledezma, S. Ashford, T. Hutchinson, R. Moss, P. Arduino, R. Kayen, J. Bray, S. Olson, and Y. Hashash, (2012), Effects of Liquefaction-Induced Ground Failure on Bridges, Roads, and Railroads, Earthquake SPECTRA, Vol. 28, N^{o} S1, June 2012, pp s119 – s143.
11. Stuedlein, S. Kramer, P. Arduino, and R.D. Holtz, (2012), Reliability of Spread Footing Performance in Desiccated Clay, ASCE Journal of Geotechnical and Geoenvironmental Engineering, Vol. 138, No. 11, November 2012, pp1301-1313.
12. Stuedlein, S. Kramer, P. Arduino, and R.D. Holtz, (2012), Geotechnical Characterization and Random Field Modeling of Desiccated Clay, ASCE Journal of Geotechnical and Geoenvironmental Engineering, Vol. 138, No. 11, November 2012, pp 1314-1325.
13. R. McGann, P. Arduino, and P. Mackenzie-Helnwein, (2012), Simplified Procedure to Account for a Weaker Soil Layer in Lateral Load Analysis of Single Piles, ASCE Journal of Geotechnical and Geoenvironmental Engineering, Vol. 138, No.9, pp 1129-1137.
14. M. Mast, P. Mackenzie-Helnwein, P. Arduino, and G.R. Miller (2011), Representing Arbitrary Bounding Surfaces in the Material Point Method using a Dual-Grid Approach, International Journal for Numerical Methods in Engineering, under review.
15. R. McGann, P. Arduino, and P. Mackenzie-Helnwein, (2011), Applicability of Conventional *p-y* Relations to the Analysis of Piles in Laterally Spreading Soils, ASCE Journal of Geotechnical and Geoenvironmental Engineering, Vol. 137, No 6, June 1, 2011, pp.557-567.

16. W. Shin, G. R. Miller, P. Arduino, and P. Mackenzie-Helnwein (2010), Dynamic Meshing for Material Point Method Computations, International Journal of Computational and Mathematical Sciences,4:8, pp. 379-387 2010.
17. P. Mackenzie-Helnwein, Arduino, P., Shin, W., Moore, J.A., and Miller, G.R., (2009), Modeling Strategies for Multiphase Drag Interactions Using the Material Point Method, International Journal for Numerical Methods in Engineering, Vol. 83, Issue 3, pp. 295-322.
18. Ranf, R. Shin, H., Eberhard, M., Arduino, P., and Kramer, S.L. (2009), "Fixed-Base Approximations for PBEE of Bridges on Drilled Shafts", Earthquake Spectra, accepted.
19. Hoyos, L. R., Arduino, P., (2008), Implicit Algorithm for Modeling Unsaturated Soil Response in Three-Invariant Stress Space, ASCE International Journal of Geomechanics, Volume 8, Number 4, pp.266-273.
20. Choi C.H., and Arduino, P., (2008) "Development of a True Triaxial Apparatus for Sands and Gravels", ASTM Geotechnical Testing Journal, Volume 31, Issue 1, pp 1-13, January 2008.
21. Francisca, F., Arduino, P., (2007), Immiscible Displacement Model for Anisotropic and Correlated Porous Media, International Journal of Goemechanics, Volume 7, Issue 4, pp. 311-317, July/August 2007.
22. Miller, G., Arduino, P., Jang, J., and Choi, C.H. (2003), Localized Tensor-Based Solvers for Interactive Finite Element Applications Using C++ and Java, Computers & Structures, Vol. 81/7, pp. 423 - 437.
23. Hoyos, L. R., Macari, E. J, and Arduino, P. (2003) Constitutive Modeling of an Unsaturated Soil under Axisymmetric Stress States using a Suction Controlled Cubical Testing Device, International Journal of Plasticity, Vol. 19, No. 10, pp. 1481-1515.
24. Arduino, P. and E. J. Macari (2002) Closure to: Numerical Analysis of Geomaterials within the Theory of Porous Media, ASCE Journal of Engineering Mechanics, Vol. 128, Issue 6, p. 708, June 2002.
25. Kramer, S. L., P. Arduino, A. Jones, and M. Eberhard (2002), Uncertainty Analysis for a Seismic Warning System, TRB Record No. 1801 – Soil Mechanics 2002, pp. 112-121.
26. Arduino P., G. R. Miller, and Ayokunle Ogunrinde, (2002) Live Modeling of 1-D Wave Propagation in Layered Soil Media, Computer Applications in Engineering Education, Vol 9, No. 4, pp. 248-258.
27. Fowler, J. A., Arduino, P., and Holtz, R. D. (2001) Approximate Displacement Influence Factors for Elastic Shallow Foundations - ASCE Journal of Geotechnical and Geoenvironmental Engineering, Vol 127, No 1, pp. 99-102.
28. Arduino, P. and E. J. Macari (2001) Numerical Analysis of Geomaterials within the Theory of Porous Media, ASCE Journal of Engineering Mechanics, Vol. 127, No. 2, pp. 167--175.
29. Arduino, P. and E. J. Macari (2001) Implementation of a Porous Media Formulation for Geomaterials, ASCE Journal of Engineering Mechanics, Vol. 127, No. 2, pp. 157-166.
30. Wyatt, T., Arduino, P, and Macari, E. J. (2000) Assessment of a Virtual Laboratory for Geotechnical Engineering Education, Computers in Education Journal, ASEE Computers in Education Division, Vol. X, No. 2, April-June 2000, pp.27-35.
31. Arduino, P. and E. J. Macari (1998) Numerical Modeling of Spread Footings at Bridge-Embankment Interfaces, Transportation Research Record No 1633, pp. 61-67.

32. Arduino, P., A. Op den Bosch and E. J. Macari (1997) Geotechnical Triaxial Soil Testing within a Virtual Environment, ASCE Journal of Computing, Vol. 11, No. 1, pp.44-47.
33. Macari, E. J., P. Arduino and S. Weihe S., (1997) Implicit Integration of Elasto-Plastic Constitutive Models for Frictional Materials with Highly Non-Linear Hardening Functions, International Journal of Mechanics of Cohesive-Frictional Materials, Vol. 2, pp.1-29.
34. Macari, E. J. and P. Arduino, (1995) Overview of `State-of-the Practice', Modeling of Overconsolidated Clays, Transportation Research Record No 1479 - Engineering Properties and Practices in Overconsolidated Clays, pp.51-60.

Refereed archival journal publications in preparation

35. Shin, H., P. Arduino, S. Kramer, and K.J Mackie. (2011) "Performance-Based Evaluation of a Highway Bridge-Part I: Effects of Subsurface of Subsurface Conditions on Seismic Response", Earthquake Spectra – in preparation.
36. Shin, H., P. Arduino, S. Kramer, and K.J Mackie. (2011) "Performance-Based Evaluation of a Highway Bridge-Part II: Effects of Subsurface of Subsurface Conditions on damage and Loss", Earthquake Spectra – in preparation.
37. Mackenzie-Helnwein, P., Petek, A, K., and Arduino, P., (2009), 3-D Beam-Solid Contact using Conventional Beam Element s– Part I: Geometrically Linear Theory – in preparation.
38. Mackenzie-Helnwein, P., Petek, A, K., and Arduino, P., (2009), 3-D Beam-Solid Contact using Conventional Beam Element – Part II: Geometrically Exact Formulation – in preparation.
39. Heller E., Arduino, P., and Yeh, H., (2009) "Determination of the Diffusion Coefficient for Sands", to be submitted to Geophysical Research Letters, in preparation.
40. Kramer, S. L., P. Arduino, D. Baska, and M. Malgesini, (2009), A Practical Constitutive Model for Free-Field Analysis of Liquefiable Soils, ASCE Journal of Geotechnical and Geoenvironmental Engineering, to be resubmitted.

Conference proceedings and other non-journal articles

- ***Fully refereed publications***

1. C.R. McGann, and P. Arduino, "Influence of foundation pinning and deck resistance on the response of a Chilean bridge abutment to lateral spreading", New Zealand-Japan Workshop on Soil Liquefaction during Recent Large-Scale Earthquakes, University of Auckland, New Zealand, Dec. 2-3, 2013, Paper No. 12.
2. S.J. Dyke, B. Stojadinovic, P. Arduino, M. Garlock, N. Luco, J.A. Ramirez, S. Yim, and W. Song, "The 2020 Vision Workshop for Earthquake Engineering Research in the U.S.A.", International Conference on Earthquake Engineering Research Challenges in the 21st Century, Harbin, China, May 18-21, 2012
3. P. Arduino, P. Mackenzie-Helnwein, and G.R. Miller, "Modeling Multi-Scale Flow Using the Material Point Method", Multiscale and Multiphysics Processes in Geomechanics", R.I Borja (Ed.), Stanford University, June 23-25, 2010, pp.133-136.
4. C.M. Mast, P. Mackenzie-Helnwein, P. Arduino, and G.R. Miller, "Landslide and Debris-Flow Induced Static and Dynamic Loads on Protective Structures", Multiscale and

Multiphysics Processes in Geomechanics", R.I Borja (Ed.), Stanford University, June 23-25, 2010, pp.169-172.

5. S. Dyke, B. Stojadinovic, P. Arduino, M. Garlock, N. Luco, J. Ramirez, and Solomon Yim, "2020 Vision for earthquake Engineering Research", 9th US National and 10th Canadian Conference on Earthquake Engineering: Research Beyond Borders, Toronto, July 25-29, 2010.
6. C. McGann, P. Arduino, and P. Mackenzie-Helnwein (2010), "Lateral Resistance Reduction for Static Analysis of Lateral Spreading", Joint Conference Proceedings, 7th International Conference on Urban Earthquake Engineering (7CUEE) & 5th International Conference on Earthquake engineering, March 3-5, 2010, Tokyo Institute of Technology, Tokyo, Japan.
7. Kramer, S.L., Arduino, P., and Shin, H. (2009). "Development of performance criteria for foundations and earth structures," Proceedings, International Conference on Performance-Based Design in Earthquake Geotechnical Engineering – from Case History to Practice, IS-TOKYO 2009, 15-18 June 2009, Invited Theme Lecture Paper, pp. 107-120.
8. P. Arduino, P. Mackenzie-Helnwein, and P. I. Lam "Estudio de Interacción Suelo-Pilote Sometidos a Cargas Laterales Mediante OpenSees", III Conferencia Sudamericana de Ingenieros Geotécnicos Jóvenes - Desafíos y Avances de la Geotecnia Joven en Sudamérica, Cordoba, Argentina, Ed. F. M. Francisca, pp 283-286.
9. Lam, I., Arduino, P., Mackenzie-Helnwein. P. "OpenSees Soil-Pile Interaction Study under Lateral Spread Loading", International Foundation Congress & Equipment Expo '09 (IFCEE'09 , Orlando, FL, May 15-19, 2009.
10. P. Mackenzie-Helnwein, P. Arduino, W.-K. Shin, G.R. Miller. Modeling Framework for Fluid-Solid Mixtures using Distinct Phases and the Material Point Method, presented at at the 22nd International Congress of Theoretical and Applied Mechanics (ICTAM2008), Adelaide, Australia, August 2008.
11. Shin, H., Arduino, P., Kramer, S.L., and Mackie, K. "Seismic Response of a Typical Highway Bridge in Liquefiable Soils", ASCE Geotechnical Earthquake Engineering and Soil Dynamics IV Congress (GEESD), Sacramento, CA, May 19-23, 2008.
12. Arduino, P., Petek, A.K., and Mackenzie-Helnwein, P. "Three-dimensional beam-solid contact element formulation for analysis of pile-soil interaction", ENIEF 2007 XVI Congreso sobre Metodos Numericos and sus Aplicaciones, Octubre 2-7, 2007, Cordoba, Argentina.
13. Shin, H., Arduino, P., and Kramer, S.L., "Performance-Based Evaluation of Bridges on Liquefiable Soils", ASCE Structures Congress, Long Beach, CA, May 16-18, 2007.
14. Ilankatharan, M., Kutter, B.L., Shin, H-S., Arduino, P., Kramer, Johnson, N., Sasaki, T., "Comparison of Centrifuge and 1g Shake Table Models of a Pile Supported Bridge Structure", International Conference on Physical Modeling Geotechnics, Honk-Kong University of Science and Technology, August 4-6, 2006.
15. Petek, K., Arduino, P., and Mackenzie, P., "3-D Beam-to-Solid Contact Formulation for the Simulation of Soil-Pile Structure Interaction Problems", 8th World Congress on Computational Mechanics, July 15-17, 2006.
16. Ranf, R. T., Shin, H.S., Eberhard, M.O., Arduino, P., Kramer, S., "Experimentally Based Evaluation of Soil-Foundation-Structure Interaction for a Reinforced Concrete Bridge", 8th National Conference on Earthquake Engineering commemorating 100th Anniversary of 1906 S.F. Earthquake, San Francisco, CA, April 18-22, 2006.

17. Shin, H.S., Ilankatharan, M., Arduino, P., Kramer, S., Kutter, B., "Experimental and Numerical Analysis of Seismic Soil-Pile-Structure Interaction of a Two-Span Bridge", 8th National Conference on Earthquake Engineering commemorating 100th Anniversary of 1906 S.F. Earthquake, San Francisco, CA, April 18-22, 2006.
18. Shin, H.S., Ilankatharan, M., Arduino, P., Kramer, S., Kutter, B., "Seismic Soil-Foundation-Structure Interaction of Oriented Bridge Bents", 8th National Conference on Earthquake Engineering commemorating 100th Anniversary of 1906 S.F. Earthquake, San Francisco, CA, April 18-22, 2006.
19. Hoyos, L.R., and Arduino, P. (2005). "Modeling response of unsaturated silty sand in three-invariant stress space". Proc., Third MIT Conference on Computational Fluid and Solid Mechanics, Elsevier Science, June 14-17, 2005, Boston, Massachusetts, Ed: K.J. Bathe, pp. 256-260.
20. Petek, K., Arduino, P., and Holtz, R.D., "Three-Dimensional Model Development of Construction Defects in Drilled Shafts", 11th International Conference of International Association of Computer Methods and Advances in Geomechanics (IACMAG), Italy, June 19-24, 2005.
21. Hoyos, L., Arduino, P., "Simulation of Unsaturated Soil Behavior in Three-Invariant Stress Space", McMat EM 2005, LSU, Baton Rouge, Louisiana, June 2005.
22. Shin, H., Arduino, P., "Numerical Analysis of Seismic Pile-Soil-Structure Interaction Problem using OpenSees", McMat EM 2005, LSU, Baton Rouge, Louisiana, June 2005.
23. Arduino, P., Kramer, S. L,, Li, P., Horne, J. "Seismic Performance and Simulation of Pile Foundations in Liquefied and Laterally Spreading Ground", ASCE-GSP 145, Proceedings of the US-Japan Workshop, Editors Boulanger, R., and Tokimatsu, K., Davis, California March 16-18, 2005.
24. Petek, K., Mackenzie, P., and Arduino, P., "Two- and Three-Dimensional Contact Element Implementation for Geotechnical Applications", McMat EM 2005, LSU, Baton Rouge, Louisiana, June 2005.
25. Arduino, P., Choi, C.H., and Harney, M., "Simulation of Complex Stress-Paths using the Manzari-Dafalias Two-Surface Bounding Surface Model", McMat EM 2005, LSU, Baton Rouge, Louisiana, June 2005.
26. Arduino, P., Choi, C.H., and Harney, M., "Two-Surface Soil Constitutive Model Calibration for Coarse Granular Materials", ASCE GSP 139, Proceedings of the sessions of the Geo-Frontiers, Editors Yamamuro, J., and Kaliakin, V., Austin Texas, January 24-26 2005.
27. Choi, ChangHo. and P. Arduino, "Comportamiento Experimental de Gravas Sometidas a Cargas Cíclicas", SINERGIA 2004-XVII Congreso Argentino de Mecanica de Suelos e Ingeniearia Geotecnica – Universidad Nacional de Cordoba, Cordoba, Argentina - October 18-23, (2004).
28. Choi, ChangHo. and P. Arduino, "Behavioral Characteristics of Gravelly Soils under General Cyclic Loading Conditions ", International Conference on "Cyclic Behaviour of Soils and Liquefaction Phenomena, Bochum – Germany, 31 March – 02 April (2004).
29. Wood, S., Anagnos, T., Arduino, P., et al, "Using NEES to Investigate Soil-Foundation-Structure Interaction", 13th World Conference on Earthquake Engineering, Vancouver, B.C., Canada, August 1-6, 2004, paper No. 2344.

30. Hoyos, L., P. Arduino, and E. Macari, "Modeling unsaturated soil response on deviatoric □-plane", 4th International Workshop on "Applications of Computational Mechanics in Geotechnical Engineering", Ouro Preto – Brazil, August 17-20, (2003).
31. Laureano R. Hoyos, Jr., Pedro Arduino, Emir J. Macari , "Modeling elasto-plastic behavior of unsaturated soil using a controlled suction cubical test cell", In: Constitutive Modeling of Geomaterials, CRC Press, Selected Contributions from Frank L. DiMaggio's Symposium, Ed: Hoe I. Ling, 165-172 (2003).
32. Laureano R. Hoyos, Jr., Pedro Arduino, Emir J. Macari , Experimental and Computational Modeling of Elasto-Plastic Constitutive Behavior of An Unsaturated Soil Under True Triaxial Stress States, Proceedings of the 15th ASCE Conference in Engineering Mechanics, New York, June 3 – 5, 2002.
33. Kramer, S. L., and Arduino, P., Constitutive Modeling of Cyclic Mobility and Implications for Site Response, Proceedings of the 2th International Conference on Earthquake Geotechnical Engineering, Laboratorio Nacional de Engenharia Civil, Lisboa, Portugal, June 21-25, 1999, pp 1029-1034.
34. Sfriso, A., Arduino, P. and Macari, E. J., A Constitutive Equation for Sands based on Non-Associative Plasticity and the Stress-Dilatancy Theory, Proceedings of the 5th U.S. National Congress on Computational Mechanics, University of Colorado at Boulder, Boulder, CO, July 1999.
35. Wyatt, T. R., Arduino, P. and Macari, E. J., Assessment of a Virtual Laboratory for Geotechnical Engineering, Proceedings of the 1999 ASEE Annual Conference, Charlotte, NC, June 20-23 1999.
36. Hoyos, L. R., Arduino, P. and Macari, E. J., An Implicit Integration Scheme for Modeling Constitutive Behavior of Unsaturated Soils, Proceedings of the 99 International Conference on Plasticity, Plasticity 99, Cancun, Mexico, January 1999.
37. Arduino, P. and Macari, E. J., Numerical Study of Geomaterials in the Light of Modern Theories of Porous Media, Proceedings of the Biot Conference on Poromechanics, pp. 3-10, Universite Catholique de Louvain, Louvain-la-Neuve, Belgium, September 1998.
38. Hoyos, L., Arduino, P. and Macari, E. J., Constitutive Modeling of Partially Saturated Soils, Proceedings of the 6th International Symposium on Plasticity and Its Current Applications, Juneau, Alaska, pp 311-312, 1997.
39. Arduino, P. and Macari, E. J., Multi-Phase Flow in Deforming Porous Media by the Finite Element Method, Proceedings of the eleventh Conference in Engineering Mechanics, American Society of Civil Engineers, Florida Atlantic University Center, Fort Lauderdale, FL, Vol. I, pp 420-425 (1996).
40. Arduino, P., E. J. Macari and M. Gemperline, Load-Settlement Prediction of Footings on Steep Slopes, Proceedings of the Specialty Conference on Vertical and Horizontal Deformations of Foundations and Embankments – Settlements' 94, American Society of Civil Engineers, Texas A&M, College Station, TX, pp.1385-1399, (1994).
41. Macari, E. J. and P. Arduino, Elasto-Plastic Characterization of Granular Materials with Implications for Slope Stability, Proceedings of the NSF Structures, Geomechanics, and Building Systems Grantee's Conference, National Science Foundation, San Juan, PR, pp. 26-29, (1992).

- ***Refereed by abstract only***

1. W. Shin, P.Mackenzie-Helnwein, P. Arduino, and G. Miller, 3D Modeling of Landslides and Debris Flow, 2009, 5th MPM Workshop, April 2-3, 2009, Oregon State University, Corvallis, OR.
2. C. Mast, P.Mackenzie-Helnwein, P. Arduino, and G. Miller, Grid Independent Boundary Surfaces, 2009, 5th MPM Workshop, April 2-3, 2009, Oregon State University, Corvallis, OR.
3. P.Mackenzie-Helnwein, P. Arduino, W.-K. Shin, Modeling Rain-induced Landslide Initiation from Wetting of Dry Soil to Failure using a Multiphase MPM, 2008 SIAM Annual Meeting, San Diego, CA. July 2008.
4. Mackenzie-Helnwein, P., Arduino, P., Moore, J.A., Shin W., and Miller, G. "Modeling Interaction of Phases in Mixtures using a Multi-field Material Point Method", 9th World Congress on Computational Mechanics, San Francisco, July, 2007.
5. Hoyos, L., P. Arduino, and E. Macari, "Modeling Controlled-Suction Unsaturated Soil Response on Deviatoric Stress Plane", 16th ASCE Engineering Mechanics Conference (EM2003), July 16-18, 2003University of Washington, Seattle, WA.
6. Choi, ChangHo. and P. Arduino, "Implicit Numerical Integration of Constitutive Relations using Object-Oriented Programming", 16th ASCE Engineering Mechanics Conference (EM2003) July 16-18, 2003University of Washington, Seattle, WA.
7. Choi, T., E. Macari, and P. Arduino, "Dynamic Finite Element Analysis of Pile-Porous Media Interaction", 15th ASCE Engineering Mechanics Conference (EM2002) June 2-5, 2002, Columbia University, New York, NY.
8. Hoyos, L., P. Arduino, and E. Macari, "Experimental and Computational Modeling of Elasto-Plastic Constitutive Behavior of An Unsaturated Soil Under True Triaxial Stress States", 15th ASCE Engineering Mechanics Conference (EM2002), June 2-5, 2002, Columbia University, New York, NY.
9. Arduino, P., S. L. Kramer, and D. Baska, Applications of a Simple Constitutive Model for Liquefiable Soils, Proceedings of the 2001 ASCE-ASME-SES Joint Applied Mechanics & Materials Summer Conference, La Jolla, San Diego, June 27-29, 2001.
10. Arduino, P., S. L. Kramer, and D. Baska, UW-Sand – A Simple Constitutive Model for Liquefiable Soils, Proceedings of the 6th U.S. National Conference on Computational Mechanics, Dearborn, Michigan, August 1-4, 2001.
11. Arduino, P., Numerical Models for Geotechnical Applications, Proceedings of the NSF Civil and Mechanical Systems Workshop for the Advancement & Retention of Underrepresented & Minority Engineering Educators, Washington DC, September (2001).
12. Arduino, P., UW-Sand A New Constitutive Model for Liquefiable Soils, Proceedings of the NSF Civil and Mechanical Systems Workshop for the Advancement & Retention of Underrepresented & Minority Engineering Educators, Washington DC, September (1999).
13. Arduino, P., Analytical and Numerical Study of Geomaterials in the Light of Modern Theories of Porous Media, Proceedings of the NSF Civil and Mechanical Systems Workshop for the Advancement & Retention of Underrepresented & Minority Engineering Educators, Washington DC, September (1997).
14. Arduino, P., A. Op den Bosch and E. J. Macari, Simulation of a Cyclic Triaxial Experiment in a Virtual Environment, Proceedings of the NSF Workshop on Scientific Supercomputing, Visualization, and Animation in Geotechnical Earthquake Engineering and Engineering Seismology, Carnegie Mellon University, Pittsburgh, PA, (1994).

15. Arduino, P. and E. J. Macari, Bearing Capacity of Footings on Steep Slopes, Proceedings of the Fifth Puerto Rican EPSCoR Annual Conference, Mayagüez, PR, pp. 14-15, (1993).
16. Arduino, P., E. J. Macari, S. Weihe and K. Runesson, Numerical Integration Scheme Applied to a Cone-Cap Model, Proceedings of the Meet'n 93 Conference in Engineering Mechanics, American Society of Civil Engineers, Charlottesville, VA, (1993).
17. Arduino, P., Multi-Phase Description of Deforming Porous Media by the Finite Element Method, Ph.D. Dissertation, Atlanta, GA, (1996).

Complete books written

Books edited

1. R. J. Finno, Y. M.A. Hashash, and P Arduino (Eds.), "Earth Retention Conference 3", Proceedings of the 2010 Earth Retention Conference, ASCE Geotechnical Special Publication, No. 208, August 2010.

Abstracts, letters, non-refereed papers, technical reports

2. C. McGann, P. Arduino, and P. Mackenzie-Helnwein, "Development of Simplified Analysis Procedure for Piles in Laterally Spreading Layered Soils", PEER Report 2012/05.
3. J. Meneses and P. Arduino, "Preliminary Observations of the Effects of Ground Failure and Tsunami on the Major Ports of Ibaraki Prefecture", Quick Report 3: GEE Association Report No. GEER-025-c, May 17, 2011.
4. P. Arduino, P. Keller, and R.D. Holtz, "Evaluation of Ko and Gmax for Kaolin Clays Slurries", Pacific North West National Lab (PNNL) Report, September 2010.
5. S. Dyke, B. Stojadinovic, P. Arduino, et al., "Vision 2020: An Open Space Technology Workshop on the future of earthquake engineering" A Report on the NSF-Funded Workshop, September 2010.
6. P. Arduino et al., Geo-engineering Reconnaissance of the Maule, Chile Earthquake, Editors: J. Bray and D. Frost, GEER Association Report No. GEER-022, Version 2, May 25, 2010.
7. P. Arduino, P. Mackenzie-Helnwein, and K. You S, "Evaluation of KICT Tunnel Lining System using Advanced Numerical Analysis, KICT Report 2010.
8. S. Kramer, P. Arduino, and HyungSuk Shin, "Performance-Based Evaluation of Bridges on Liquefiable Soils using OpenSees" PEER Report 2008, NSF Award EEC-9701568, August 2008.
9. I.P. Lam, P. Mackenzie-Helnwein, P. Arduino. OpenSees Soil-Pile Interaction Study under Lateral Spread Loading. PEER Report 2008, NSF Award EEC-9701568, November 2007
10. Evaluation and Characterization of Uncertainty in Geotechnical Parameters (with S. L Kramer), final report prepared for PEER NSF, PEER Report 2002/16, pp 100, Dec 2002.
11. Influence of Long-Duration Motions on Expected Performance (with M. Eberhard), final report prepared for PEER-NSF, March 2003.
12. Seismic Instrumentation System for Warning and Rapid Recovery – Pilot Study (with M. Eberhard, and S. L Kramer), WADOT Report No. WA-RD 520.1, pp. 98, September 2001.
13. Dynamic Stiffness of Piles in Liquefiable Soils, (with S. L. Kramer), WADOT Report No. WA-RD 514.1, pp 149, July 2001

14. Elasto-Plastic Constitutive Driver for Geomaterials, final report prepared for the Royalty Research Fund, Grant RRF #1595, University of Washington, October 1999.
15. Development and Implementation of a General Constitutive for Partially Saturated Soils, prepared for the Boeing Endowment for Excellence, University of Washington, October 1997.
16. Advanced Concepts of Soil Mechanics as Applied to Highway Construction, prepared for the Puerto Rico Transportation Technology Transfer Center (English and Spanish versions), Mayagüez, PR, 1992.
17. Soil-Structure Interaction on Buildings subjected to Seismic Effects, Annual Report SECyT, Córdoba, Argentina, 1990.

Other significant research dissemination (web sites, software, Wikis, etc.)

- DrLayer, a computer program designed to provide students a simulation/visualization environment for studying linear and nonlinear wave propagation behavior in layered soil media. http://octavia.ce.washington.edu/DrLayer/index.html.

- OpenSees Geotechnical examples. A complete set of examples on the use of OpenSees for geotechnical applications. http://opensees.berkeley.edu/wiki/index.php/Examples.

OTHER SCHOLARLY ACTIVITY

Invited lectures and seminars

1. P. Arduino, "Assessment of three-dimensional foundation pinning effects during lateral spreading", Invited speaker in seminar on Practical Deep Foundation Design and Construction for Seismic and Lateral Loads, Deep Foundations Institute (DFI), Seattle, WA, April 22, 2014.
2. P. Arduino, "Consequences of liquefaction, analytical models", Speaker and panelist in workshop on State of the Art and Practice in Earthquake Induced Soil Liquefaction Assessment, National Research Council (NRC), Tempe, AZ, March 10-11, 2014.
3. P. Arduino, "Geotechnical Applications in OpenSees", OpenSees on the Road, Oregon State University, OR, November 21, 2013.
4. P. Arduino, "Geotechnical Applications in OpenSees", OpenSees Days 2013, August, 2013, Berkeley, CA.
5. P. Arduino, "Experiencias en la Modelación Numérica de Problemas Geotécnicos", Seminario de egresados distinguidos de la Facultad de Ciencias Exactas Físicas y Naturales, Festejos por los 400 años de la Universidad Nacional de Córdoba, Córdoba, Argentina, April 11, 2013.
6. P. Arduino, "Application of the Material Point Method (MPM) to the evaluation of landslide and debris flow induced-loads on protective structures", Department of Structural Engineering, University of California at San Diego, February 23, 2012.

7. P. Arduino, “Geotechnical Applications in OpenSees”, OpenSees Days 2012, August, 2013, Berkeley, CA.
8. P. Arduino, “Development of simplified analysis procedure for piles in laterally spreading soil”, Geotechnical Lecture Series, Oregon State University, January, 11, 2012,
9. P. Arduino, “Geotechnical Earthquake Engineering Seminar”, ASCE Puerto Rico Section, Polytechnic University of Puerto Rico, San Juan, P.R., Sep 2, 2011.
10. P. Arduino, “Simplified Methodologies for Assessment and Design of Piles Affected by Lateral Spreading Ground”, PEER Annual Metting, Sep 30 – Oct 1, 2011.
11. T. Allen, P. Arduino, and D. Baska, “Observations During Reconnaissance Following the February 27, 2010, Maule, Chile Earthquake (Mw=8.8)”, ASCE Seattle Section Geotechnical Group/ASCE Seattle Section, Red Lion Inn, January 27, 2011.
12. P. Arduino, S. Ashford, and J. Moehle “Learning from Chile”, Science Pub Conference Series, The Bagdad Theater, Portland, OR, June 28, 2010.
13. P. Arduino, “Geotechnical Applications in OpenSees”, OpenSees Days, August 2011, Berkeley, CA.
14. P. Arduino, “Geotechnical Applications in OpenSees”, OpenSees Days, September 2010, Berkeley, CA.
15. P. Arduino, “Geotechnical Applications in OpenSees”, OpenSees Days, September 2009, Berkeley, CA.
16. P. Arduino, “Geotechnical Applications in OpenSees”, OpenSees Developer Symposium, September 2008, Berkeley, CA., http://opensees.berkeley.edu/workshop/OpenSeesDays2008/OpenSeesDays2008.html
17. P. Arduino, “Modelación del comportamiento del suelo empleando “bounding surface” y resultados de ensayos triaxiales cúbico”, Universidad de los Andes (UNIANDES), Bogota, Colombia, March 21, 2007.
18. P. Arduino, “Development and Application of Mixed Beam-Solid Models for Analysis of Soil-Pile Interaction Problems”, Universidad de los Andes (UNIANDES), Bogota, Colombia, March 20, 2007.
19. P. Arduino, “Computacional Geomechanics”, Invited speaker/participant - Encuentro Latino de Profesores de Geotecnia, auspiciado por la Fundacion Goizueta, Atlanta, GA, March 1-3, (2006).
20. P. Arduino, “Role of Information Technology in Learning and Education”, Invited panelist-GeoCongress Atlanta 06, Atlanta, GA – Feb 26 – March 1, (2006).
21. P. Arduino, “Computational Geomechanics at the University of Washington”, Invited speaker-Korea Water Resources Corporation (KOWACO), Daejeon, Korea - April 25, (2006).
22. P. Arduino, “Performance Based Analysis for Bridges in Liquefiable Soils”, Invited speaker – Korean Institute of Construction Technology (KICT), Ilsan, Korea - April 24, (2006).
23. P. Arduino, P., “Comportamiento Experimental de Gravas Sometidas a Cargas Cíclicas”, Invited panelist - SINERGIA 2004-XVII Congreso Argentino de Mecanica de Suelos e Ingeniería Geotécnica – Universidad Nacional de Córdoba, Córdoba, Argentina - October 20, (2004).

24. P. Arduino, "Rigidez Dinamica de Pilotes en Suelos Licuables", Universidad Nacional de Chile, Santiago de Chile, Chile, June 24, 2004.
25. P. Arduino, "Modelacion Numerica y Experimental de Materiales Granulares Gruesos", Universidad Nacional de Chile, Santiago de Chile, Chile, June 23, 2004.
26. P. Arduino, "Rigidez Dinámica de Pilotes en Suelos Licuables", Universidad Nacional de Córdoba, Córdoba Argentina, June 9, 2004.
27. P. Arduino, "Modelación Física y Numérica de Suelos Granulares Gruesos", Universidad Nacional de Córdoba, Córdoba Argentina, Abril 30, 2004.
28. P. Arduino, "Numerical Modeling of Liquefaction and its Effects on Pile Behavior", University of Massachusetts at Amherst, MA, June 6, 2002
29. P. Arduino, "Dynamic Stiffness of Piles in Liquefiable Soils", Washington State Department of Transportation, Olympia, WA, May 30, 2002.
30. P. Arduino, "Constitutive Modeling of Soils", Washington State University, March , 2001.
31. P. Arduino, "Constitutive Modeling of Soils: Some General Issues and Current Developments", University of California at Davis, March 12, 1999.

Presentations given at conferences

1. **P. Arduino**, "How do state-of-the-art mechanics-based models cope with solid-fluid transitions in geomechanics", Speaker in Modeling and Characterization of Solid-Fluid Transitions in Soil Mechanics Panel Session, ASCE-GI Geo-Congress, Atlanta, GA, February 23-26, 2014.
2. **P. Arduino**, Mackenzie-Helnwein, and C.R. McGann, "Simplified Methodologies for Assessment and Design of Piles Affected by Lateral Spreading Ground", PEER Annual Meeting, Sept 30- Oct 1, 2011, Berkeley, California.
3. **P. Arduino**, Mackenzie-Helnwein, G. Miller and C. Mast, "Aplicación y Mejoras al Método MPM para el Análisis de Deslizamientos y Movimientos de Tierra", GeoLatina 2011, Emory University, Atlanta, GA, Oct 6-9, 2011.
4. **P. Arduino**, Mackenzie-Helnwein, and C. Mast, "Modeling Landslides and Debris Flow-Induced Loads on Protective Structures using the Material Point Method", Quake Summit - NEES & MCEER Annual Meeting, June 9-11, 2011, Buffalo, New York.
5. H. Shin, **P. Arduino**, and S.L. Kramer, "Performance-Based Earthquake Evaluation of Bridges on Soils Subjected to Lateral", presented at 2009 PEER Annual Meeting, San Francisco, CA, October 15-16, 2009.
6. **P. Arduino**, P. Mackenzie-Helnwein, and P. I. Lam "Estudio de Interacción Suelo-Pilote Sometidos a Cargas Laterales Mediante OpenSees", keynote talk – presented at III Conferencia Sudamericana de Ingenieros Geotécnicos Jóvenes - Desafíos y Avances de la Geotecnia Joven en Sudamérica, Cordoba, Argentina, Marzo 2009.
7. **P Lam**, P. Arduino, and P. Mackenzie-Helnwein, "OpenSees Soil-Pile Interaction Study under Lateral Spread Loading", presented at International Foundation Congress and Equipment Expo (IFCCE'09) , March 2009.
8. Shin, H., **Arduino, P**., Kramer, S.L., and Mackie, K. "Seismic Response of a Typical Highway Bridge in Liquefiable Soils", presented at ASCE Geotechnical Earthquake Engineering and Soil Dynamics IV Congress (GEESD), Sacramento, CA, May 19-23, 2008.

9. **Arduino, P.**, Petek, A.K., and Mackenzie-Helnwein, P. "Three-dimensional beam-solid contact element formulation for analysis of pile-soil interaction", ENIEF 2007 XVI Congreso sobre Metodos Numericos and sus Aplicaciones, Octubre 2-7, 2007, Cordoba, Argentina.
10. P. Mackenzie-Helnwein, **P. Arduino**, and K.A. Petek. Frictional 3D Beam-to-Solid Contact Formulation for OpenSees, OpenSees Developer Symposium, August 16, 2006, Berkeley, CA. http://opensees.berkeley.edu/workshop/OpenSeesDays2006.html
11. Petek, K., **Arduino, P**., and Mackenzie, P., "3-D Beam-to-Solid Contact Formulation for the Simulation of Soil-Pile Structure Interaction Problems", presented at 8th World Congress on Computational Mechanics, July 15-17, 2006.
12. **Ranf, R. T**., Shin, H.S., Eberhard, M.O., Arduino, P., Kramer, S., "Experimentally Based Evaluation of Soil-Foundation-Structure Interaction for a Reinforced Concrete Bridge", presented at 8th National Conference on Earthquake Engineering commemorating 100th Anniversary of 1906 S.F. Earthquake, San Francisco, CA, April 18-22, 2006.
13. **Arduino, P**., Choi, C.H., and Harney, M., "Simulation of Complex Stress-Paths using the Manzari-Dafalias Two-Surface Bounding Surface Model", presented at McMat EM 2005 conference, LSU, Baton Rouge, Louisiana, June 2005.
14. **Shin, H.S**., Ilankatharan, M., Arduino, P., Kramer, S., Kutter, B., "Experimental and Numerical Analysis of Seismic Soil-Pile-Structure Interaction of a Two-Span Bridge", presented at 8th National Conference on Earthquake Engineering commemorating 100th Anniversary of 1906 S.F. Earthquake, San Francisco, CA, April 18-22, 2006.
15. Shin, H.S., Ilankatharan, M., **Arduino, P**., Kramer, S., Kutter, B., "Seismic Soil-Foundation-Structure Interaction of Oriented Bridge Bents", presented at 8th National Conference on Earthquake Engineering commemorating 100th Anniversary of 1906 S.F. Earthquake, San Francisco, CA, April 18-22, 2006.
16. **Hoyos, L.R**., and Arduino, P. (2005). "Modeling response of unsaturated silty sand in three-invariant stress space". Presented at Third MIT Conference on Computational Fluid and Solid Mechanics, Elsevier Science, June 14-17, 2005, Boston, Massachusetts.
17. **Hoyos, L**., Arduino, P., "Simulation of Unsaturated Soil Behavior in Three-Invariant Stress Space", presented at McMat EM 2005 conference, LSU, Baton Rouge, Louisiana, June 2005.
18. **Shin, H**., Arduino, P., "Numerical Analysis of Seismic Pile-Soil-Structure Interaction Problem using OpenSees", presented at McMat EM 2005 conference, LSU, Baton Rouge, Louisiana, June 2005.
19. **Petek, K**., Mackenzie, P., and Arduino, P., "Two- and Three-Dimensional Contact Element Implementation for Geotechnical Applications", presented at McMat EM 2005 conference, LSU, Baton Rouge, Louisiana, June 2005.
20. **Arduino, P**., Choi, C.H., and Harney, M., "Two-Surface Soil Constitutive Model Calibration for Coarse Granular Materials", to be presented at Geo- frontiers, Austin Texas, January 2005.
21. Choi, ChangHo. and **P. Arduino**, "Comportamiento Experimental de Gravas Sometidas a Cargas Cíclicas", to be presented at SINERGIA 2004-XVII Congreso Argentino de Mecanica de Suelos e Ingeniearia Geotecnica – Universidad Nacional de Cordoba, Cordoba, Argentina - October 18-23, 2004.
22. Choi, ChangHo. and **P. Arduino**, "Behavioral Characteristics of Gravelly Soils under General Cyclic Loading Conditions ", presented at International Conference on "Cyclic

Behaviour of Soils and Liquefaction Phenomena, Bochum – Germany, 31 March – 02 April (2004).

23. Hoyos, L., **P. Arduino**, and E. Macari, "Modeling Controlled-Suction Unsaturated Soil Response on Deviatoric Stress Plane", presented at 16th ASCE Engineering Mechanics Conference (EM2003), July 16-18, 2003University of Washington, Seattle, WA.
24. Choi, ChangHo. and **P. Arduino**, "Behavioral Characteristics of Gravelly Soils under General Loading Conditions", presented at the 16th ASCE Engineering Mechanics Conference (EM2003), July 16-18, 2003University of Washington, Seattle, WA.
25. Hoyos, L., P. Arduino, and **E. Macari**, "Modeling unsaturated soil response on deviatoric □-plane", presented at 4th International Workshop on "Applications of Computational Mechanics in Geotechnical Engineering", Ouro Preto – Brazil, August 17-20, (2003).
26. Hoyos, L., **P. Arduino**, and E. Macari, "Experimental and Computational Modeling of Elasto-Plastic Constitutive Behavior of An Unsaturated Soil Under True Triaxial Stress States", presented at the 15th ASCE Engineering Mechanics Conference (EM2002), June 2-5, 2002, Columbia University, New York, NY.
27. **Arduino, P**., S. L. Kramer, A. Jones, and M. Eberhard, "Uncertainty Analysis for a Seismic Warning System", presented at the 2002 TRB Meeting, WA-DC January 14-16 2002.
28. **Arduino, P**., S. L. Kramer, and D. Baska, "Applications of a Simple Constitutive Model for Liquefiable Soils, presented at the 2001 ASCE-ASME-SES Joint Applied Mechanics & Materials Summer Conference, La Jolla, San Diego, June 27-29, 2001.
29. **Arduino, P**., S. L. Kramer, and D. Baska, "UW-Sand – A Simple Constitutive Model for Liquefiable Soils, presented at the 6th U.S. National Conference on Computational Mechanics, Dearborn, Michigan, August 1-4, 2001.
30. **Kramer, S**. L., and Arduino, P., "Constitutive Modeling of Cyclic Mobility and Implications for Site Response, presented at the 2th International Conference on Earthquake Geotechnical Engineering, Laboratorio Nacional de Engenharia Civil, Lisboa, Portugal, June 21-25, 1999.
31. Sfriso, A., **Arduino, P**. and Macari, E. J., "A Constitutive Equation for Sands based on Non-Associative Plasticity and the Stress-Dilatancy Theory, presented at the 5th U.S. National Congress on Computational Mechanics, University of Colorado at Boulder, Boulder, CO, July 1999.
32. **Arduino, P**., Constitutive Modeling of Soils: Some General Issues and Current Developments, UW Civil Engineering Seminar Series, Nov. 1998.
33. **Arduino, P**. and E. J. Macari, Numerical Study of Geomaterials in the Light of Modern Theories of Porous Media, presented at the Biot Conference on Poromechanics, Universite Catholique de Louvain, Louvain-la-Neuve, Belgium, September 1998.
34. **Arduino, P**. and E. J. Macari (1998) Numerical Modeling of Spread Footings at Bridge-Embankment Interfaces, presented at the annual meeting of the Transportation Research Board, Washington, DC, January 1998.
35. **Arduino, P**., Analytical and Numerical Study of Geomaterials in the Light of Modern Theories of Porous Media, presented at the NSF Civil and Mechanical Systems Workshop for the Advancement & Retention of Underrepresented & Minority Engineering Educators, Washington DC, September 1997.

36. Arduino, P. and **E. J. Macari**, Multi-Phase Flow in Deforming Porous Media by the Finite Element Method, presented at the eleventh ASCE conference in Engineering Mechanics, Florida Atlantic University Center, Fort Lauderdale, FL, May 1996.
37. **Macari, E. J**. and P. Arduino, Overview of `State-of-the Practice', Modeling of Overconsolidated Clays, presented at the annual meeting of the Transportation Research Board, Washington, DC, January 1995.
38. **Arduino, P**., A. Op den Bosch and **E. J. Macari**, Simulation of a Cyclic Triaxial Experiment in a Virtual Environment, presented at the NSF Workshop on Scientific Supercomputing, Visualization, and Animation in Geotechnical Earthquake Engineering and Engineering Seismology by P. Arduino and E. Macari, Carnegie Mellon University, Pittsburgh, PA,1994.
39. **Arduino, P**., E. J. Macari and M. Gemperline, Load-Settlement Prediction of Footings on Steep Slopes, presented at the ASCE Specialty Conference on Vertical and Horizontal Deformations of Foundations and Embankments – Settlements' 94, Texas A&M, College Station, TX, June 1994.
40. **Arduino, P**. and E. J. Macari, Bearing Capacity of Footings on Steep Slopes, presented at the Fifth Puerto Rican EPSCoR Annual Conference, Mayagüez, PR, 1993.
41. Arduino, P., **E. J. Macari**, S. Weihe and K. Runesson, Numerical Integration Scheme Applied to a Cone-Cap Model, presented at ASCE Meet'n 93 Conference in Engineering Mechanics, Charlottesville, VA, June 1993.
42. **Macari, E. J**. and P. Arduino, Elasto-Plastic Characterization of Granular Materials with Implications for Slope Stability, presented at the NSF Structures, Geomechanics and Building Systems Grantees' Conference, San Juan, PR, 1992.

Professional society memberships

1. American Society of Civil Engineers, member (1992-present)
2. TAU BETA PI National Engineering Honor Society, member, (1992-present)
3. PHI KAPPA PHI National Honor Society, member, (1992-present)
4. CHI EPSILON National Civil Engineering honor Society, member (2001-present)
5. Editorial Board, ASCE Journal of Geotechnical and GeoEnv. Engineering (2004-present)
6. ASCE-EM Inelastic behavior committee member, (2001 – present)
7. USUCGER Board of Directors, (2002 - 2003)
8. ASCE-GI Earth Retaining Structures committee member, (2008-present).
9. NEES-RAAS committee member (2010-2013).
10. NEES-Simulation committee member (2010 – present)
11. Review committee for ASCE – MOP 117 Inspecting Pipeline Installation, 2011- present.

Other (Reviews Made)

Journal or Other	*Number*
ASCE Journal of Geotechnical Engineering	100+
ASCE Journal of Mechanical Engineering -	5
ASCE Journal of Computing	2

ASCE Journal of Professional Issues in Eng Education and Practice	1
Computer Methods in Applied Mechanics and Engineering	2
IAHR Journal of Hydraulic Research	1
CACAIE (Computer Aided Civil & Infrastructure Engineering Journal)	1
Int. J. of Analytical Methods in Geomechanics	5
Acta Geomechanica	2
Soil Dynamics & Earthquake Engineering	1
EERI Earthquake Spectra	3
Revista Internacional de Desastres Naturales, Accidentes e Infraestructura Civil	4
1999 PAN-AM Conference in Soil Mechanics and Foundation Engineering	1
1998 ASCE Specialty Conference on Geotech. Earthquake Eng. & Soil Dyn.	2
NSF Proposals 1998	13
NSF Proposals 2001	9
NSF CARREER	1
NSF Proposals PFSMETE 97	20
NSF Proposals PFSMETE 99	15
UW-RRF Proposals	1
Journal of Civil and Environmental Engineering	1
M.J.Murdock Charitable Trust	1
NSF Proposals 2005	1
FONDECYT – CONICYT (Chile)	1
FWF Austrian Science Fund	1

GRADUATE STUDENTS

Chaired Doctoral Degrees

Student Name	Dissertation Title	Completed (Year)	Current Employer
ChangHo Choi	Numerical and Experimental Analysis of Gravels	2003	KICT- South Korea
Petek, Kathryn (co-Chaired w/B. Holtz)	Development and Application of Mixed Beam-Solid Contact Models for Analysis of Soil Pile Interaction Problems	2006	Shannon & Wilson
Shin HyungSuk	Numerical Modeling of Bridge System and Its Application for Performance Based Earthquake Engineering	2007	Kleinfielder
Harney, Michael	Effects of Soil Properties on Plane-Strain Deformational behavior of Sands	In progress	Shannon & Wilson
Shin, Wookuen	Modeling Mixing and Separation of Solid Matter and Fluid in Landslide and Debris Flow by Representing the Multiphase Material through Distinct Phases	2009	Shannon & Wilson
McGann, Christopher	Numerical Evaluation of Forces on Piled-Bridge Foundations in Laterally Spreading Soil	June 2013	Postdoc, University of Canterbury, NZ
Mast, Carter (co-Chaired with P. Mackenzie)	Modeling Landslide-Induced Flow Interactions with Structures using the Material Point Method	June 2013	
Wen-Chia Yang		In progress	
Alborz Ghofrani		In progress	

Abbas Gangi		In progress	

Chaired Masters Degrees

Student Name	**Level of Supervision** ("thesis," "project" or "coursework only")	**Thesis/Paper Title**	**Completed (Year)**
Ryan J. Hoffmeister	thesis	GIS Study of Earthquake Induced Landslides	Dec. 1998
C.H. Choi	thesis	Constitutive Driver for Geomaterials	June 1999
Mark Miller	thesis	Effects of Long-Duration Long-Period Ground Motions on Bridge Foundation System Performance	Mar. 2000
Ping Li	thesis	Dynamic Behavior of Piles in Liquefiable Soils	June 2000
Jeffey Fowler	project	Development of a web-base site for Geosynthetics	June 2000
Fu-Jen Ho	project	Numerical Study of Bearing Capacity of Shallow Foundations Subjected to Eccentric and Inclined Loads	Dec. 2000
Jenny Persson	thesis	Numerical Modeling of Geotechnical Problems using Plaxis	Feb. 2002
Susan Robarge	thesis	Pile Analysis using OpenSees	May 2002
Erik Heller	thesis	Determination of Coefficient of Consolidation CV for Sands	Feb 2003
Alison Stanley	thesis	Numerical and Analytical Study of Geomaterials	Dec. 2002
Lindsay Baynes	thesis	Free-field Analysis of Liquefiable Soils using OpenSees	Sep. 2005
Nathan Betts	thesis	Strength Properties of Soils using a Cubic Triaxial Device	Jan. 2006
Magnea Huld Ingolfsdottir	thesis	A comparison of Different failure and Yield Criteria for Granular Mateirals	Mar. 2007
Oliver Hoopes	thesis	Development of a Strain Driven Algorithm for a Cubic Triaxial Device	Dec. 2007
Alex Proszek	Project	Analytical Evaluation of Consolidation CV for Sands	June 2009
Chris McGann	thesis	Analysis and Evaluation of Single Piles in Laterally Spreading Soil	Jul. 2009
Dana Biggerstaff	thesis	Experimental Validation of Rowe's Dilatancy Theory	June 2010
Kyoosang You	thesis	valuation of KICT Tunnel Lining System using the Advanced Numerical Tool Msc Marc-2008	July 2010

Jacob Dafni	thesis	Pressuremeter Model for Soft Rock Materials	April 2013
Peter Keller	thesis	Development and Proofing of an Oedometer Ring for the Determination of Ko and Gmax in Soft Clays and Sands	Dec. 2010
Amy Arnold	Project	Background and guide for the use of construction data from the excavation of the Capitol Hill station	Dec 2010
Abdullah Al-Roumi	Project	Development of simplified method for design of piles subjected to lateral spreading	Sep 2011
Michael Beatty	Project	Coefficient of lateral pressure at rest	Aug 2011
Alborz Ghofrani	Project	Implementation of fiber overlay element in OpenSees	June 2012

Other significant student supervision

Ph.D Committees

Student Name	**Level of Supervision**	**Completed** (Year)
Laureano R. Hoyos	External Georgia Tech	1998
Wei Lee	Reading committee and defense	2000
Dave Baska	Advising, Reading committee and defense	2002
C.H. Wang	Reading committee and defense	2003
F. Saidin	Reading committee and defense	2007
Allan Jones	Advising, Reading committee and defense	2003
Jong-Jin Park	GSR (mechanical engineering)	In progress
Taecil Choi	External Georgia Tech	In progress
Marcelo Ceballos	External Univ. Nacional de Cordoba - Argentina	2004
Sarah Paulsen	Reading committee and defense	2006
Tyler Ranf	Reading committee and defense	2006
Roy Mayfield	Reading committee and defense	2007
Diana Reyes	External – Universidad de los Andes - Colombia	2008
Armin Stuedlein	Advising, Reading committee and defense	2009
Yi-Ming Liu	Reading committee and defense	2008
Carter Mast	Advising, Reading committee and defense	Dec 2011
Mauricio Bouton	co-Advisor – Universidad de los Andes – Colombia	In progress
Alfonso Ramos	External – Universidad de los Andes – Colombia	2010
Grady Lemoine	GSR – Applied Mathematics	June 2013
Sam Sideras	Reading committee and defense	In progress
Kermit Applegate	Reading committee and defense	In progress
Matt. Gibson	Reading committee and defense	In progress
Jake Dafni	Reading committee and defense	In progress
Lorne Arnold	Reading committee and defense	In progress

Master (thesis) Committees

Student Name	**Complete** (Year)	**Student Name**	**Completed** (Year)
Cynthia Finley	1997	Jack Mitaim	1997
Perry R. Cole	1997	Steve Spencer	1998

Wendy Burton	1998	Jorgen Johansson	1998
Carolyn Cook	1999	Andre Sidler	1999
Greg Landau	2000	Zach Price	2000
Jared Nelson	2000	Ogunrinde Ayokunle	2001
Michael Harney	2001	Kathryn Petek	2001
Kristina Haggard	2001	Susan Tonkin Devries	2001
Sarah Paulsen	2002	Nils Lindwall	2002
Matt Malgesini	2002	Andrew Ayling	2002
Brian Bennets	2003	Hanna Sofie Jonsson	2004
Brett Martin	2005	Kevin Franke	2006
Aaron Hartvigsen	2007	John A. Moore	2007
Morgan Mayfield	2008	Carter Mast	2008
Stephanie Abbeg	2010	Benjamin Blanchette	2010
Maurizio Chiaramonte	2011	Sam Sideras	2011
Spencer Livermore	2014		

Advised Undergraduate Students

Student Name	Year Advised	Student Name	Year Advised
Aileen Santiago	1997	Kurt Zimmers	1998
Jesse Beaver	1998	Kip Gatto	1998
Ka Cheong Mak	1998	Chris Yeargin	1999
Chris Nickerson	1999	Damon Roth	2000
Ben Manfredi	2000	Konrad Craddock	2000
Brian Bennets	2001	Pendo Duku	2001
Yee-Fan Huang	2001	Lindsay Baynes	2001
Jennica Ottenbreit	2001	Paul Spitznas	2002
John Peuthen	2002	Marek Bednarczyk	2002
Peter Craig	2002	Brad Johnson	2002
Griffin Thornock	2002	Whitney Trent	2005
Lynette Sla	2011	Joseph Harmon	2011

RESEARCH ACTIVITIES

Funded Research

Funding Agency	Title	Total Amount	Your Amount	Role	Dates (start-finish)
UW-RRF	Elasto-Plastic Constitutive Driver for Geomaterials	$21,395	$21,395	PI	06/1997-06/1998
WSDOT	Dynamic Stiffness of Piles in Liquefiable Soils	$90,000	$45,000	Co-PI	06/1998-06/2000
NSF-PEER	Effects of Long-Duration, Long-Period Ground Motions on Bridge Foundation System Performance	$50,000	$50,000	PI	06/1998 – 06/1999
WSDOT	Alaskan Way Viaduct (AWD) Instrumentation	$75,000	$37,500	Co-PI	06/1999 – 06/2000

NSF-PEER	Influence of Ground-Motion Duration on Expected Performance	$,145,000	$145,000	PI	06/1999 – 06/2001
NSF-PEER	An advanced Educational Module to Study Wave Propagation	$20,000	$20,000	PI	06/1999 – 06/2000
NSF-PEER	Evaluation and Characterization of Uncertainty in Geotechnical Parameters	$59,000	$30,000	Co-PI	06/1999 – 06/2000
NSF-PEER	Development of Geotechnical Capabilities in OpenSees	$90,000	$90,000	PI	06/2000 – 06/2001
NSF	Tridimensional Analysis of Gravels	$105,200	$105,200	PI	06/2001-06/2004
NSF	Workshop on submerged floating tunnels	$40,226	$40,226	PI	06/2002 – 06/2003
NSF-PEER	Effects of Geotechnical Uncertainties on EDP's I	$70,000	$35,000	Co-PI	06/2002 – 06/2003
NSF – NEES	Collaborative Research: A demonstration of the NEES System for Studying Soil-Foundation-Structure Interaction	$283,241	$141,620	Co-PI	06/2003 – 06/2004
NSF-PEER	Effects of Geotechnical Uncertainties on EDP's II	$84,980	$42,490	Co-PI	06/2005 – 06/2006
NSF-PEER	Performance Based Evaluation of Bridges in Liquefiable Soils using OpenSees	$85,000	$42,500	Co-PI	06/2006 – 06/2007
UW-RRF	Development of a Solid/Fluid Two/Field Material Point Method for Saturated Granular Materials	$37,971	$26,579	PI	06/2007-06/2008
PEER	Simplified Design Procedure for Piles Affected by Lateral Spreading based on 3D Nonlinear FEA using OpenSees	$72,506	$50,574	PI	06/2009 – 06/2010
NSF	Landslide and Debrisflow-Induced Static and Dynamic Loads on Protective Structures	$439,700	$219,850	Co-PI	06/2009 – 06/2012
PNNL	Instrumentation to Measure Lateral Earth Pressure at Rest and Shear Modules	$59,810	$59,810	PI	01/2010 – 12/2010
WSDOT	Earthquake Ground Motion Selection	$20,000	$10,000	Co-PI	01/2011 – 07/2011
WSDOT	3D Numerical Evaluation of Seismic Forces on Bridge	$150,000	$135,000	PI	06/2011 – 06/2013

	Abutments				
PacTrans	A platform for proactive risk-based asset management	$465,000	$117,000	Co-PI	04/2012 – 04/2013
WSDOT	3D Numerical Evaluation of Seismic Forces on Bridge Abutments – Phase 2	$150,000	$150,000	PI	07/2013 – 06/2015
PacTrans	Behavior of drilled shafts with high-strength reinforcement and casing	$400,000	$200,000	Co-PI	07/2013 – 04/2014
NSF	COLLABORATIVE PROPOSAL: NEESR PLANNING: Simulation and Design Tools for Tsunami Bridge Engineering	$315,000	$80,000	Co-PI	10/2013 – 06/2016
PEER/ Caltrans	Estimation of shear demands on rock-socketed drilled shafts subjected to lateral loading	$50,173	$50,173	PI	09/2013 – 06/2014

Pending Proposals

Funding Agency	**Title**	**Total Amount**	**Your Amount**	**Role**	**Dates (start-finish)**
NSF	Multi-fidelity Numerical Modeling of Large Wave Impacts on Coastal Structures	$395,932	$132,000	Co-PI	06/2014-06/2017

Recent Not Funded Proposals

Funding Agency	**Title**	**Total Amount**	**Your Amount**	**Role**	**Dates (start-finish)**
NRC	Investigation and modeling of element-level soil behavior under multi-dimensional loading	$1,700,000	$944,170	PI	12/2011-12/2015
NSF	An experimental and analytical study of stress dilatancy and phase transformation for granular materials	$329,497	$329,497	PI	06/2012 – 06/2015
NSF	Collaborative Research: Drained Deep Foundations for Accelerated Construction and Liquefaction Mitigation	$520,000	$264,016	Co-PI	06/2013-06/2016

Unsponsored research

- Since 2001 I have been involved in the development of object-oriented computational tools for civil engineering applications. Most of this work has been done in cooperation with Prof. Greg Miller. Several tools resulting from this effort are publically available in the internet.

DOCUMENTATION OF TEACHING EFFECTIVENESS

Courses Taught & Student Evaluations (adjusted scores)

Course	Title	Quarter	Credit Hrs	Enrollment	Evaluations? Response	Item 1	Item 3	Item 4	Average, Items 1-4
CIVE 436	Foundation Design	Winter, 1997	3	50	Yes, 32/50	3.30	3.50	3.30	3.40
CESM 563	Advanced Foundations	Spring, 1997	3	11	Yes, 11/11	3.92	4.00	3.88	3.82
CESM 561	Seepage and Consolidation	Fall, 1997	3	9	Yes, 9/9	4.60	4.94	4.40	4.60
CESM 503	Materials	Winter, 1998	3	9	Yes, 6/9	4.50	4.25	4.50	4.30
CESM 563	Advanced Foundations	Winter, 1998	3	9	Yes, 9/9	4.25	4.75	4.75	4.50
CIVE 463	Foundation Design	Spring, 1998	3	45	Yes, 36/45	4.13	4.24	4.18	4.15
CIVE 463	Foundation Design	Summer, 1998	3	25	Yes, 18/25	4.28	4.60	4.60	4.37
CESM 561	Seepage and Consolidation	Fall, 1999	3	14	Yes, 12/14	4.07	4.30	4.17	4.13
CESM 563	Advanced Foundations	Winter, 1999	3	12	Yes, 11/12	3.89	4.14	4.00	3.98
CESM 503	Materials	Winter, 1999	3	11	Yes, 9/11	4.30	4.67	4.50	4.41
CIVE 366	Basic Soil Mechanics	Spring, 1999	4	72	Yes, 39/72	4.05	4.55	4.92	4.13
CESM 562	Shear Strength & Slope Stab.	Fall, 1999	3	5	Yes, 5/5	4.25	4.33	4.25	4.21
CEE 503	Materials	Winter, 2000	3	8	Yes, 8/8	4.30	4.50	4.70	4.38
CEE 366	Basic Soil Mechanics	Spring, 2000	4	66	Yes, 43/66	4.63	5.06	5.11	4.80
CEE 436	Foundation Design	Spring, 2000	3	32	Yes, 24/32	4.20	4.79	4.67	4.43
CEE 521	Seepage and Consolidation	Fall, 2000	3	9	Yes, 9/9	4.86	4.86	4.86	4.75
CEE 522	Shear Strength & Slope Stab.	Fall, 2000	3	9	Yes, 9/9	4.75	4.86	4.60	4.64
CEE 503	Materials	Winter, 2001	3	13	Yes, 11/13	4.08	4.58	4.25	4.23
CEE	Mechanics of	Summer,	3	31	Yes, 20/31	4.44	4.96	4.93	4.66

220	Materials	2001							
CEE 523	Advanced Foundations	Winter, 2002	3	4	Yes, 4/4	3.28	3.30	3.84	3.40
CEE 503	Materials	Winter, 2002	3	18	Yes, 17/18	4.19	4.65	4.31	4.25
CEE 366	Basic Soil Mechanics	Spring, 2002	4	70	55/70	4.20	4.60	4.30	4.30
CEE 220	Mechanics of Materials	Summer, 2002	4	45	27/45	4.10	4.40	4.40	4.20
CEE 503	Materials	Winter 2003	3	9	8/9	3.80	4.70	4.80	4.30
CEE 563	Advanced Foundations	Winter, 2003	3	4	Yes, 2/4	4.50	5.00	4.50	4.70
CEE 526	Geotechnical Eq. Engr.	Spring, 2003	3	5	Yes, 5/5	4.00	4.00	4.30	4.00
CEE 220	Mechanics of Materials	Summer, 2003	4	41	Yes, 27/41	4.60	5.00	5.00	4.80
CEE 436	Foundations Design	Fall, 2003	3	50	Yes, 43/50	3.93	4.26	4.25	4.00
CEE 521	Seepage and Consolidation	Fall, 2003	3	11	Yes, 10/11	4.21	4.79	4.33	4.20
CEE 522	Shear Strength & Slope Stab.	Fall, 2004	3	12	Yes, 12/12	3.90	4.10	4.20	4.00
CEE 503	Materials	Winter, 2005	3	12	Yes, 12/12	3.80	4.40	4.20	4.00
CEE 436	Foundations Design	Winter, 2005	3	81	Yes, 34/81	4.20	4.90	4.60	4.40
CEE 521	Seepage and Consolidation	Fall, 2005	3	7	Yes, 7/7	3.60	3.70	3.70	3.60
CEE 503	Materials	Winter, 2006	3	10	Yes, 9/10	4.30	4.40	4.30	4.30
CEE 536	Advanced Foundations	Winter, 2006	3	8	Yes, 6/8	4.10	4.10	4.00	4.00
CEE 366	Basic Soil Mechanics	Spring, 2006	4	39	Yes, 33/39	4.40	5.00	4.80	4.50
CEE 522	Shear Strength & Slope Stab.	Fall, 2006	3	9	Yes, 9/9	4.10	4.50	4.60	4.40
CEE 366	Basic Soil Mechancis	Winter, 2007	4	58	Yes, 40/58	3.40	4.10	3.80	3.60
CEE 524	Earth Pressure & Ret. Str.	Spring, 2007	3	7	Yes, 7/7	4.20	4.10	4.10	4.10
CEE 220	Mechanics of Materials	Summer, 2007	4		Yes,	4.20			3.90
CEE 521	Seepage and Consolidation	Fall, 2007	3	5	Yes, 4/5	4.00	4.00	3.80	4.00
CEE 503	Materials	Winter, 2008	3	7	Yes, 7/7	3.90	4.60	4.50	4.30
CEE 366	Basic Soil Mechanics	Spring, 2008	4	47	Yes, 34/47	3.90	4.40	4.20	4.10
CEE	Mechanics of	Summer,	4	38	Yes, 31/38	4.10	4.30	4.30	4.20

220	Materials	2008							
CEE 522	Shear Strength & Slope Stab.	Fall, 2008	3	13	Yes, 13/13	4.80	4.90	4.70	4.70
CEE 523	Advanced Foundations	Winter, 2009	3	7	Yes, 7/7	4.10	4.60	4.20	4.30
CEE 524	Earth Pressure & Ret. Str.	Spring, 2009	3	7	Yes, 6/7	4.40	4.60	4.60	4.50
CEE 366	Basic Soil Mechanics	Spring, 2009	4	53	Yes, 37/53	4.20	4.60	4.60	4.40
CEE 521	Seepage and Consolidation	Fall, 2009	3	9	Yes, 6/9	4.50	4.70	4.70	4.60
CEE 523	Advanced Foundations	Winter, 2010	3	8	Yes, 7/8	3.90	4.30	4.60	4.10
CEE 366	Basic Soil Mechanics	Spring, 2010	4	63	Yes, 40/63	4.50	4.90	4.70	4.60
CEE 503	Materials	Summer, 2010	3	11	Yes, 10/11	4.40	4.60	4.40	4.40
CEE 521	Seepage and Consolidation	Fall, 2010	3	11	Yes, 10/11	4.00	4.50	4.60	4.30
CEE 366	Basic Soil Mechanics	Winter, 2011	4	59	Yes, 40/59	4.50	5.00	5.00	4.80
CEE 526	Geotechnical Eq. Engr.	Spring, 2011	3	9	Yes, 7/9	4.20	4.50	4.20	4.20
CEE 503	Materials	Summer, 2011	3	16	Yes, 16/16	4.70	4.80	4.70	4.70
CEE 599	Geotechnical Modeling	Winter 2012	4	13	Yes 13/13	4.40	4.60	4.50	4.40
CEE 366	Basic Soil Mechanics	Spring 2012	4	53	Yes 38/53	4.30	4.50	4.40	4.30
CEE 526	Geotechnical Eq. Engr.	Spring 2012	3	16	Yes 14/16	4.20	4.10	4.10	4.10
CEE 503	Materials	Summer 2012	3	14	Yes 13/14	4.40	4.90	4.90	4.70
CEE 521	Seepage and Consolidation	Fall, 2012	3	19	Yes 19/19	4.60	4.60	4.60	4.60
CEE 436	Foundations Design	Fall, 2012	3	50	Yes 33/50	4.20	4.70	4.60	4.40
CEE 599	Geotechnical Modeling	Winter 2013	4	18	Yes 18/20	4.40	4.80	4.70	4.60
CEE 503	Materials	Summer 2013	3	11	Yes 11/15	4.70	5.00	4.90	4.80
CEE 527	Advanced Geotech Lab.	Fall, 2013	4	14	Yes 14/15	4.40	4.80	4.50	4.50
CEE 599D	Advanced Foundations	Winter, 2014	4	16	Yes 14/16	4.90	4.80	4.90	4.80
CEE 599B	Geotechnical Modeling	Winter, 2014	4	11	Yes 11/11	4.40	4.90	4.70	4.70

Item 1 = The course as a whole was:

Item 3 = The instructor's contribution to the course was:

Item 4 = The instructor's effectiveness in teaching the subj. matter was:

Item 1-4 = Combines items 1-4
All scores are out of a scale of 5, 1=lowest 5=highest

Teaching at other institutions

Course	Title	Quarter	Credits	Enrollment	Evaluation
Georgia Institute of Technology					
CE 6160	Constitutive modeling of soils	Fall, 1995	3	9	No
CE 6170	Computational soil elasto-plasticity	Spring, 1995	3	7	No
University of Puerto Rico					
INCI 4109	Undergraduate Geotechnical Lab.	Fall, 1990	3	30	No
INCI 4109	Undergraduate Geotechnical Lab.	Spring, 1990	3	30	No
Universidad Nacional de Cordoba					
CE 1001	Numerical methods in engineering	Fall, 1989	3	50	No

Supervision of independent study (design projects and research)

Independent Study

Course	Title or Student Name	Quarter	# of Students (Total Credit Hrs)
CEE 499	Summer Internship	Sum., 1998	2 (6)
CEE 499	PEER scholars course	Fall, 1998	3 (9)
CEE 499	PEER scholars course	Fall, 1999	2 (6)
CEE 499	Independent study/research	Spring, 1999	1 (3)
CEE 499	PEER scholars course	Fall, 2000	3 (9)
CEE 499	PEER scholars course	Fall, 2001	3 (9)
CEE 499	Independent study/research	Spring, 2001	2 (6)
CEE 499	Research in colab. w/Burke museum	Spring, 2002	2 (6)
CEE 499	PEER scholars course	Fall, 2002	3 (9)
CEE 499	Independent study/ research	Winter, 2003	1 (6)
CEE 499	PEER scholars course	Fall, 2003	3 (9)
CEE 499	Independent study/research	Winter, 2005	1 (3)
CEE 599	Independent study/research	Sum. 2006	1 (3)
CEE 499	PEER scholars course	Fall, 2005	3 (9)
CEE 399	Independent study/ research	Spring 2011	1(3)
CEE 499	Independent study/ research	Spring, 2011	1 (3)

PEER scholar's course = Pacific Earthquake Engineering Research Center course on earthquake engineering (taught in cooperation with different schools from the Pacific coast).

List of other teaching contributions

1. Seismic Site Response Analysis - One-Day Short Course (with S. Kramer), Oregon State University Geotechnical Group and ASCE Portland Section Geotechnical group, Oregon State University, Corvallis, OR, March 22, 2013.
2. Visiting profesor, Inelasticidad Computacional – Short Course (40 course hours distributed in two weeks), Programa de Maestria y Doctorado en Ingenieria Civil – Universidad Nacional de Córdoba, Córdoba, Argentina, Dec 2008.
3. Visiting profesor, Inelasticidad Computacional – Short Course (40 course hours distributed in two weeks), Programa graduado en Ingeniería Civil – Universidad de los Andes, Bogotá, Colombia, June 2008, 2010.
4. Instructor, OpenSees Users Workshop - OpenSees Days 2007, 2008, 2009, 2010, 2011, 2012, and 2013 – Geotechnical components and examples using OpenSees, offered every year in August or September.
5. Missouri University of Science and Technology GeoMo Conference, "Geotechnical Earthquake Engineering – Site Response", Instructors: Kramer, S., and Arduino, P., May 2, 2008.
6. Instructor, PE Review Course – Geotechnical component Instructor (offered twice a year, since 2000-present).
7. In charge of development and instruction of the 2005 PEER scholars course seismology component. Seattle, WA, September 16, 2005.
8. In charge of organization of the 2003 "USUCGER-TRB Doctoral Student Research in Transportation Geotechnics Workshop" (in cooperation with Susan Burns from the Georgia Institute of Technology), Washington DC, January 13, 2003.
9. In charge of development and instruction of the 2001 PEER scholars course public policy component (in coordination with Prof. Peter May from UW Political Science Dept.). Seattle, WA, November 10-12, 2001.
10. In charge of development and instruction of the 1999 PEER scholars course geotechnical component (in coordination with Prof. Steve Kramer). Seattle, WA, September 10-12, 1999.
11. Chaired PEER fellowship sub-committee (1998-2000).
12. UW PEER Education Program representative. In charge of developing and monitoring earthquake related PEER education programs at the University of Washington. The program consisted of four main subprograms: a) PEER undergraduate summer internships, b) PEER

undergraduate earthquake engineering scholars course, c) PEER graduate fellowship, and c) development of Educational Modules for Earthquake Engineering.

Other supporting documents

- Teaching evaluation from Prof. Steve Kramer (Spring, 2011)

Teaching Awards, Nominations for Teaching Awards

1. Outstanding Teacher Award, Department of Civil & Environmental Engineering, University of Washington, June, 2009.
2. J. Ray Bowen Professorship for Innovation in Engineering Education (2003 - 2007).
3. Nomination - University of Washington Outstanding Mentor award (2003).
4. Nomination - University of Washington Outstanding Teaching award (2002), (2003).
5. Nomination - University of Washington College of Engineering Teaching award (2002), (2003), (2005).

SERVICE

Departmental service

- Associate Chair, Department of Civil & Env. Engineering, 2010 - present.
- Chair, Department of Civil & Env. Engineering Graduate program, 2010 –2013.
- Chair, Department of Civil & Env. Engineering Space committee, 2010 – present.
- Member, Michael Dodd mentor committee, 2009 – present.
- Member, Jeff Bermann mentor committee, 2008 – present.
- Member, Peter Mackenzie-Helnwein mentor committee, 2008 – present.
- Member, Ed McCormack mentor committee, 2009 – present.
- Member of search committee, Department of Civil & Env. Eng. Struct-Geotech search, 2009 – 2010.
- Member, Department of Civil & Env. Engineering merit review committee, 2009.
- Chair, Department of Civil & Env. Engineering Undergraduate program, 2008 – 2011.
- Advisor, ASCE student Chapter, 2006 – 2008.
- Member, Concrete Canoe National Competition Committee, 2007.
- Member, Department of Civil & Env. Engineering Strategic Planning committee, 2001 – 2002.

- Member of search committee, Department of Civil & Env. Engineering, Comp. Mech. search, 1999.
- Member, Department of Civil & Env. Engineering Web-site committee, 1999 – present.
- Chair, Department of Civil & Env. Engineering Computing committee, 1999 – present.
- Member, Department of Civil & Env. Engineering, Scholarships committee, 1999 – 2002.
- Member, Department of Civil & Env. Engineering MRI – NSF Special Equipment committee, 1997-2002.

College service

- Member, College of Engineering Centers review committee, 2014 – present.
- Member, College of Engineering Undergraduate Admissions Policy committee, 2010 – 2011.
- Member of search committee, Department of Civil and Env. Engineering Chair search committee, 2006.
- Member College of Engineering Latin America connection committee, 2006 - 2007.
- Participant and organizer, College of Engineering Open-House, 2001
- Member, College Engineering Faculty Focus advisory committee, 1997 – 2005.

University service

- Senator, University of Washington Senate (representing CEE), 2009 – 2010.
- Member, University of Washington Royalty Research Fund Review committee, 2007 – 2009.
- In cooperation with Burke museum in the development of display “The Big One“ on Earthquakes in the Pacific Northwest; open to the public in February 28, 2002.

Professional society and other service

- Committee member- ASCE MOP 117 Inspecting Pipeline Installation, 2011- present
- Organizing committee, NEES Quake-Summit 2012, Boston, July 8-12 2012.
- Member, NEES- Data Curation subcommittee, 2010 – present.
- Member, NEES- Simulation subcommittee, 2010 - present.
- Member, NEES- RAAS (Requirement Analysis and Assessment) subcommittee, 2010 - 2013.

- Organizing committee (and co-author of report), Earthquake Engineering Vision 2020, An Open Space Technology Workshop on the Future of Earthquake Engineering, St. Louis, Missouri, Jan 25-26, 2010.
- Organizing committee, ASCE - Geo Institute Earth Retention 2010 Congress – ER 2010, Seattle, August 4-6, 2010.
- Organizing Committee, Geotechnical Earthquake Engineering Congress - GEESD-IV 2008, Sacramento, May 18-22, 2008.
- Associate Editor, ASCE Journal of Geotechnical and GeoEnvironmental Engineering, 2004 – present.
- Organizing committee, Geo-Congress 06-ASCE Geo Institute conference – Atlanta, GA, Feb 2006.
- Organizing committee, EM2003-ASCE Engineering Mechanics Conference – Seattle, WA, July 2003.
- Member, ASCE Engineering Mechanics (EM) Inelastic Behavior and Properties of Materials committee, 2001 – present.
- PEER-NSF Education committee member, 1997 – 2008.

Community service

- Head coach, Bellevue Youth Soccer Club – Recreational league – 2001 – 2009.

International, national or governmental service

- Committee member- Engineering Mechanics Institute (EMI) International Scientific Committee, 2014- present
- Member, GEER (Geo-engineering Extreme Events Reconnaissance Association) team (& lead report author) in charge of geo-engineering reconnaissance activities related to the 2011 Great East Japan Earthquake. In the ground in Japan in April 11-15, 2011.
- Member, GEER team (& lead report author) in charge of geo-engineering reconnaissance activities related to the 2010 Maule, Chile Earthquake. In the ground in Chile in March 13-18, 2010.
- Member of board of directors, USUCGER (United States University Council on Geotechnical Engineering Research), 2002 – 2003.
- Member, Nisqually Earthquake UW clearinghouse committee, 2001.
- NSF CMS review panel, 2001.

- NSF PFSMETE review panel (Post-doc. fellowships in Science, Math. Eng. and Tech..Education), 1999.
- NSF CMS review panel, 1998.
- NSF PFSMETE review panel (Post-doc. fellowships in Science, Math. Eng. and Tech. Education) , 1997.

Consulting

- Tennessee Valley Authority (TVA) EPA Seismic Assessment- Supplemental Numerical Simulations, Geocomp Consulting, Inc (w/ Steve Kramer), August-December 2012.
- Development of Ground Motions – Carpenters Tower Project, Seattle, WA (with Steve Kramer) – Whitlock Dalrymple Poston & Association – August 2009.
- OpenSees Simulations - Grays Harbor SR520 Pontoon Construction Facility (with Steve Kramer) – Landau – Nov – Dec 2008.
- OpenSees Soil-Pile Interaction Study under Lateral Spread Loading – (with Peter Mackenzie Helnwein and Po Lam) – Earth Mechanics – Sep-Dec 2007.
- Brightwater Marine Outfall Analysis using OpenSees – HWA, December 2007.
- Implementation of a Duncan-Chang Hyperbolic constitutive model in FLAC-3D, Tacoma Narrows Bridge Project, *Shannon & Wilson*, Seattle, WA, 2002.
- Non-linear Free-field Analyses for Liquefiable Soils, Projects: Skookumchuck Dam, Boeing Control Tower, Hutchison Career Center (Fairbanks, Alaska), Marysville Water Plant; Kent City Hall, *Shannon & Wilson*; Seattle, WA, 2000-2002.
- Evaluation of Embankment Dynamic Lateral Displacements, Port of Seattle Third Run-Way project, *Hart Crowser*; Seattle, WA, 2001-2002.
- Expert witness, "Landslide Hazards in West Seattle", State of Washington, 2000.
- Analysis of Foundational Alternatives for Support of Puget Sound Energy Transmissions; with Steven K. Kramer, Seattle, WA, 1999.
- Soil characterization by means of simple shear tests of a Puerto Rican silty-clay soil. Supervisor: Dr. E. J. Macari and Dr. J. A. Bernal, Atlanta, GA, 1994.

- Soil characterization and foundation analysis for a two story building. Supervisor: Dr. E. J. Macari, and Dr. J. A. Bernal, Mayagüez, PR, 1992.

- Analysis and Design of six (6) R-C multi story buildings by means of the S-ETABS computer program and Argentine building code. Supervisor: Dr. Carlos A. Bartó and Prof. Carlos Larson, Córdoba, Argentina, 1988-1990.