

# Michael H. Gardner

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## Research Interests

Rock Mechanics ♦ Slope Stability ♦ Fluid-Solid Interaction ♦ Natural Hazards ♦ Open Source Software ♦ High Performance Computing ♦ Multiscale Simulations ♦ Discrete Element Method ♦ Lattice Boltzmann Method ♦ Uncertainty Quantification ♦ Remote Sensing

## Academic Positions

- July 2023 – present **Assistant Professor**, *Department of Civil and Environmental Engineering*, University of California, Davis
- 2020 – June 2023 **Assistant Professor**, *Department of Geological Sciences and Engineering*, University of Nevada, Reno
- 2018 – 2019 **Postdoctoral Scholar**, *NHERI SimCenter*, University of California, Berkeley

## Education

- 2018 **Ph.D., Civil and Environmental Engineering**, *University of California, Berkeley*  
Title: *Development of a Coupled 3-D DEM-LBM Model for Simulation of Dynamic Rock-Fluid Interaction*  
Minors: Numerical Mathematics, Mechanics  
Advisor: Professor Nicholas Sitar
- 2012 **M.S., Civil and Environmental Engineering**, *University of California, Berkeley*
- 2010 **B.S., Civil and Environmental Engineering**, *University of California, Berkeley*  
*High Honors*

## Professional Licenses

- 2014 - Present **Licensed Professional Engineer**, *California*

## Honors and Awards

- 2023 **Editor's Choice**, *Journal of Hydraulic Engineering*, ASCE
- 2022 **Finalist**, LaMay Award for Excellence in Teaching, College of Science  
University of Nevada, Reno
- 2018 **Best Paper**  
52nd US Rock Mechanics/Geomechanics Symposium
- 2018 **Presidential Management Fellow**  
A highly selective leadership development program (~7% acceptance rate)
- 2012 **Outstanding Graduate Student Instructor Award**  
Awarded for outstanding work in teaching course on groundwater and seepage (CE 173)
- 2008 – 2010 **Regents' and Chancellor's Scholarship**  
Most prestigious scholarship offered by UC Berkeley to entering undergraduates

## Publications

### Journal Articles

- [1] D. Tsapetis, M. D. Shields, D. G. Giovanis, A. Olivier, L. Novak, P. Chakraborty, H. Sharma, M. Chauhan, K. Kontolati, L. Vandanapu, D. Loukrezis, and **M. Gardner**, "Uqpy v4.1: Uncertainty quantification with python," *SoftwareX*, vol. 24, p. 101561, 2023
- [2] **M. Gardner**, "Toward a Complete Kinematic Description of Hydraulic Plucking of Fractured Rock," *ASCE Journal of Hydraulic Engineering*, 2023
- [3] **M. Gardner**, E. Nichols, N. Stark, A. Lemnitzer, and D. Frost, "Multispectral Imaging for Identification of High-Water Marks in Post-Disaster Flood Reconnaissance," *ASCE Natural Hazards Review*, 2023

- [4] S. Feehan, S. McCoy, J. Scheingross, and **M. Gardner**, "The influence of variability in lift, drag, protrusion, friction angle, and particle and fluid density on incipient sediment motion," *JGR: Earth Surface*, 2023
- [5] **M. Gardner** and N. Sitar, "Modeling of Dynamic Rock–Fluid Interaction Using Coupled 3-D Discrete Element and Lattice Boltzmann Methods," *Rock Mechanics and Rock Engineering*, Invited paper, 2019
- [6] **M. Gardner** and N. Sitar, "Coupled three-dimensional discrete element-lattice Boltzmann methods for fluid-solid interaction with polyhedral particles," *International Journal for Numerical and Analytical Methods in Geomechanics*, 2019
- [7] **M. Gardner**, J. Kolb, and N. Sitar, "Parallel and scalable block system generation," *Computers and Geotechnics*, vol. 89, pp. 168 – 178, 2017. DOI: <https://doi.org/10.1016/j.compgeo.2017.05.001>
- [8] F. Zheng, Y.-Y. Jiao, **M. Gardner**, and N. Sitar, "A fast direct search algorithm for contact detection of convex polygonal or polyhedral particles," *Computers and Geotechnics*, vol. 87, pp. 76 – 85, 2017. DOI: <https://doi.org/10.1016/j.compgeo.2017.02.001>

### Conference Papers (Refereed)

- [9] Y. Keissar, I. Brown, N. Sitar, and **M. Gardner**, "DEM Modeling of 3-D Kinematics in Rock Slope Failure," in *ARMA*, (Houston, Texas), 23-26 June (2024, In Review)
- [10] **M. Gardner**, E. Nichols, N. Stark, A. Lemnitzer, and F. J.D., "Identifying High-Water Marks in Post-Disaster Reconnaissance using Multispectral Imagery," in *ASCE GeoCongress*, (Vancouver, British Columbia, Canada), February 25 - 28 (2024, accepted)
- [11] F. Falcone, N. Stark, **M. Gardner**, A. Lemnitzer, N. Brilli, R. Sarlo, J. Hubler, and K. M., "Use of High-Resolution Multispectral Imagery to Assess the Role of Sand and Gravel Shoals for Flood-Infrastructure Interaction in the Yellowstone River, Montana," in *ASCE GeoCongress*, (Vancouver, British Columbia, Canada), February 25 - 28 (2024, accepted)
- [12] A. Lemnitzer, N. Stark, **M. Gardner**, E. Nichols, J. Mueller, and N. Brilli, "Geotechnical and Geo-environmental damage and its impact on critical infrastructure during the 2021 Western European Floods," in *9th International Congress on Environmental Geotechnics*, (Chania, Crete), June 23 - 27 (2023)
- [13] N. Stark, A. Lemnitzer, K. W. Franke, **M. Gardner**, J. Hubler, B. Lingwall, E. Nichols, B. Quinn, C. Thom, K. Markert, and D. Harman, "The role of gravel shoals on scour and erosion in the Yellowstone River during the 2022 flood event - initial observations," in *11th International Conference on Scour and Erosion (ICSE 11)*, (Copenhagen, Denmark), September 17 - 21 (2023)
- [14] E. Nichols, A. Lemnitzer, N. Stark, **M. Gardner**, and J. Mueller, "Impact of 2021 Western European Flooding on Geo-Structures," in *9th ASCE Forensic Engineering Congress*, (Denver, CO), November 4 - 9 (2022)
- [15] **M. Gardner**, "Modeling the Mechanics of Rock Scour in Unlined Dam Spillways," in *ASCE GeoCongress*, (Charlotte, North Carolina, USA), March 20 - 23 (2022)
- [16] A. Lemnitzer, N. Stark, J. Mueller, E. Nichols, **M. Gardner**, G. Anoyatis, H. Schuettrumpf, , J. Stamm, M. George, M. van Marle, A. Mavritsakis, L. Leunge, and K. van Ginkel, "Initial geo-structural performance observations of critical infrastructure components during the 2021 Western European Floods," in *ICONHIC*, (Athens, Greece), July 5 - 7 (2022)
- [17] **M. Gardner** and N. Sitar, "Modeling Rock Scour Using Coupled 3D Discrete Element and Lattice Boltzmann Methods," in *ASCE International Conference on Scour (ICSE10)*, (Virtual), October 18 - 21 (2021)
- [18] **M. Gardner** and N. Sitar, "Modeling of Rock Scour using Coupled 3-D Discrete Element and Lattice Boltzmann Methods," in *Proceedings of the 52nd US Rock Mechanics/Geomechanics Symposium*, (Seattle, Washington), American Rock Mechanics Association, 2018

### Technical Reports

- [19] A. Lemnitzer and K. Franke, "Geotechnical Reconnaissance of the 2022 Yellowstone Floods," techreport, Geotechnical Extreme Events Reconnaissance Association, 2022. (**Contributing Author**)
- [20] A. Lemnitzer and N. Stark, "Geotechnical Reconnaissance of the 2021 Western European Floods," techreport, Geotechnical Extreme Events Reconnaissance Association, 2022. (**Contributing Author**)
- [21] G. G. Deierlein and e. Adam Zsarnóczyay, "State of the Art in Computational Simulation for Natural Hazards Engineering," tech. rep., Feb. 2021. (**Corresponding Author in Chapters 3 & 5**)
- [22] G. G. Deierlein and A. Zsarnóczyay, "State-of-Art in Computational Simulation for Natural Hazards Engineering," tech. rep., Feb. 2019. (**Contributing Author in Sections 1.2, 1.3 & 1.4**)

- [23] **M. Gardner** and N. Sitar, "Coupled 3-D DEM-LBM Model for Simulation of Dynamic Rock-Fluid Interaction," tech. rep., University of California, Berkeley, 2018. DOI: <https://doi.org/10.13140/RG.2.2.21301.73441>
- [24] J. Bray, J. Cohen-Waeber, T. Dawson, T. Kishida, and N. Sitar, "Geotechnical Engineering Reconnaissance of the August 24, 2014 M6 South Napa Earthquake," techreport, Geotechnical Extreme Events Reconnaissance Association, 2014. (**Contributing Author in Sections 5 & 6**)

#### Published Software

- [25] F. McKenna, K. Zhong, **M. Gardner**, A. Zsarnoczay, S. ri Yi, A. B. Satish, C. Wang, and W. Elhaddad, "Nheri-simcenter/ee-uf: Version 3.4.0," Oct. 2023. This work is based on material supported by the National Science Foundation under grants CMMI 1612843 and CMMI 2131111
- [26] A. Zsarnoczay, F. McKenna, C. Wang, W. Elhaddad, claudioperez, S. Gavrilovic, **M. Gardner**, P. Mackenzie-Helnwein, and Noam-Elisha, "Nheri-simcenter/pbe: Version 3.2.0," Oct. 2023
- [27] F. McKenna, S. ri Yi, A. B. Satish, A. Zsarnoczay, M. Gardner, nickberkeley, **M. Gardner**, and W. Elhaddad, "Nheri-simcenter/quofer: Version 3.4.0," Oct. 2023. This work is based on material supported by the National Science Foundation under grants CMMI 1612843 and CMMI 2131111
- [28] F. McKenna, A. Melaku, F. Ding, J. Wan, P. Mackenzie-Helnwein, W. Elhaddad, and **M. Gardner**, "Nheri-simcenter/we-uf: Version 3.1.0," Oct. 2023. This work is based on material supported by the National Science Foundation under grants CMMI 1612843 and CMMI 2131111
- [29] F. McKenna, S. ri Yi, A. B. Satish, A. Zsarnoczay, **M. Gardner**, and W. Elhaddad, "The Quantified Uncertainty with Optimization for the Finite Element Method (quoFEM) application: Version 3.2.0," Oct. 2022. <https://doi.org/10.5281/zenodo.7131444>
- [30] F. McKenna, K. Zhong, **M. Gardner**, A. Zsarnoczay, C. Wang, and W. Elhaddad, "NHERI-SimCenter Earthquake Engineering with Uncertainty Quantification (EE-UQ) Application," Oct. 2022. <https://doi.org/10.5281/zenodo.7131474>
- [31] F. McKenna, P. Mackenzie-Helnwein, W. Elhaddad, **M. Gardner**, J. Wan, and D. K. Kwon, "NHERI-SimCenter Wind Engineering with Uncertainty Quantification (WE-UQ) Application," July 2019. <http://doi.org/10.5281/zenodo.3274228>
- [32] **M. Gardner**, "NHERI-SimCenter smelt (Stochastic, Modular, and Extensible Library for Time histories)," May 2019. <https://doi.org/10.5281/zenodo.2697657>
- [33] F. McKenna, A. Zsarnoczay, C. Wang, W. Elhaddad, and **M. Gardner**, "NHERI-SimCenter Performance-Based Engineering (PBE) Application," Apr. 2019. <https://doi.org/10.5281/zenodo.2619736>
- [34] B. Simpson, F. McKenna, and **M. Gardner**, "NHERI-SimCenter Braced Frame Modeling (BFM) Application," Sept. 2018. <https://doi.org/10.5281/zenodo.1438554>
- [35] **M. Gardner**, J. Kolb, and N. Sitar, "SparkRocks," Nov. 2016. <https://doi.org/10.5281/zenodo.166103>

#### Data Sets

- [36] **M. Gardner**, N. Stark, A. Lemnitzer, E. Nichols, N. Brill, M. Grilliot, J. Zdebski, K. Dedinsky, and J. I. Mueller, "Geotechnical and geoenvironmental properties of the ahr river, germany, after the 2021 western european flood," 2023
- [37] A. Lemnitzer, K. Franke, **M. Gardner**, D. Harman, J. Hubler, A. Kunz, B. Lingwall, K. Markert, E. Nichols, B. Quinn, N. Stark, and C. Tohm, "Geotechnical reconnaissance of the 2022 southern montana/ yellowstone floods," 2023
- [38] N. Stark, A. Lemnitzer, **M. Gardner**, E. Nichols, J. I. Mueller, M. George, J. Stamm, H. Schuettrumpf, M. van Marle, K. van Ginkel, L. Leunge, G. Anoyatis, S. Francois, and H. Rattez, "Geotechnical and geo-structural reconnaissance of the western european flood july 2021," 2022

#### Thesis

- [39] **M. Gardner**, *Development of a Coupled 3-D DEM-LBM Model for Simulation of Dynamic Rock-Fluid Interaction*. PhD thesis, University of California, Berkeley, 2018

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## Presentations

### Seminar Presentations (Invited)

- A. Lemnitzer, N. Stark, **M. Gardner**, and M. George, "The 2021 Western European Flood: Geotechnical and geomorphological observations and data collected from Europe's most severe natural hazard of the 21st century," in *Geotechnical Extreme Event Reconnaissance (GEER) Association Webinar*, January 26 (2023)
- **Michael Gardner**, "Kinematics of hydraulic plucking in fractured rock," in *Seminar Series (Host: Anne Lemnitzer)*, (University of California, Irvine, CA, United States of America), November 4, 2022
- **Michael Gardner**, "Modeling dynamic fluid-solid interaction in turbulent flow during rock scour," in *USGS Engineering Brownbag (Host: Ben Mason)*, (United States Geological Engineering, Golden, CO, United States of America), June 9, 2022
- **Michael Gardner**, "Modeling dynamic fluid-solid interaction in turbulent flow during rock scour," in *Graduate Seminar (Host: Michael Shields)*, (Johns Hopkins University, Baltimore, MD, United States of America), February 3, 2022
- A. Lemnitzer, E. Nichols, **Michael Gardner**, A. Mavritsakis, and M. van Marle, "GEER reconnaissance mission to Germany, Belgium and the Netherlands," in *Lunch Lecture (Host: Magreet van Marle)*, (Deltares, Delft, Netherlands), November 11, 2021
- **Michael Gardner**, "Modeling dynamic rock-fluid interaction applied to hydraulic plucking in dam spillways," in *AEG Great Basin Chapter Meeting (Host: Merrily Graham)*, (AEG Great Basin Chapter, Reno, NV, United States of America), October 14, 2021
- **Michael Gardner**, "Modeling dynamic rock-fluid interaction," in *Distinguished Lecturer Series (Host: Ye Zhang)*, (University of Wyoming, Laramie, WY, United States of America), April 12, 2021
- **Michael Gardner**, "Modeling dynamic rock-fluid interaction," in *Lunchtime Talk (Host: Kirk Ellison)*, (Arup, San Francisco, CA, United States of America), April 10, 2020
- **Michael Gardner**, "Large-scale C++ programming and parallelisation frameworks," in *1st Workshop on Large-Scale DEM-LBM (Host: Krishna Kumar)*, (University of Cambridge, Cambridge, United Kingdom), June 23 (2017)
- **Michael Gardner**, "Numerical modelling of rock-fluid interaction," in *Geotechnical Seminar (Host: Stefano Utili)*, (Newcastle University, Newcastle upon Tyne, United Kingdom), June 21 (2017)
- **Michael Gardner**, "Numerical modeling of fractured rock," in *Association of Environmental and Engineering Geologists Student Night (Host: Julien Cohen-Waeber)*, April 11 (2017)

### Conference Presentations (Invited)

- **M. Gardner**, "Establishing high water elevations from flood and storm surge using multispectral imagery of buildings.," in *ASCE 10th Forensic Engineering Congress*, (Seattle, Washington, USA), 1-4 November (2024, accepted)

### Workshop Presentations

- D. Frost, **M. Gardner**, Y. Hashash, J. Wartman, and D. Z. (**Lead workshop organizer**), "Hands-On Workshop for Impactful Geotechnical Extreme Event," in *Joint NHERI RAPID/GEER Workshop*, (Los Angeles, California, USA), 25 March (2023)

### Conference Presentations

- **M. Gardner** and D. Harbor, "Considering Plucking as a Block-Fluid System Requires a New Look at Contributing Factors," in *American Geophysical Union Fall Meeting*, (San Francisco, California, USA), December 11 - 15 (2023)
- J. C. Cortes, **M. Gardner**, D. Harbor, M. Takhravan, B. Johnson, D. M. Bautista, M. Nguyen, T. Williams, and N. Youssef, "Field and Laboratory Experiments for Exploring the Drivers of Hydraulic Plucking," in *American Geophysical Union Fall Meeting*, (San Francisco, California, USA), December 11 - 15 (2023)
- **M. Gardner**, Y. Keissar, and N. Sitar, "Quantifying Uncertainty in Three-Dimensional Rock Slope Failure," in *6th World Landslide Forum*, (Florence, Italy), November 14-17 (2023)
- **M. Gardner**, N. Stark, E. Nichols, D. Frost, and A. Lemnitzer, "Multispectral Imagery for Identifying Flooding High-Water Marks," in *KAHR 2nd Science Conference*, (Germany), May 9 (2023)

- **M. Gardner**, N. Stark, A. Lemnitzer, N. Brilli, E. Nichols, M. Grilliot, J. Zdebski, J. Mueller, and M. George, "Geotechnical and geophysical investigations of river-infrastructure interaction in response to the 2021 Ahr Valley flood," in *American Geophysical Union Fall Meeting*, (Chicago, Illinois, USA), December 12 - 16 (2022)
- J. Toller, **M. Gardner**, and K. Keegan, "Using the Lattice Boltzmann Method to Determine the Intrinsic Permeability of Polar Firn," in *American Geophysical Union Fall Meeting*, (Chicago, Illinois, USA), December 12 - 16 (2022)
- S. Feehan, S. McCoy, J. Scheingross, and **M. Gardner**, "Exploring the Controls on Riverbed Grain Size Distributions," in *American Geophysical Union Fall Meeting*, (Chicago, Illinois, USA), December 12 - 16 (2022)
- N. Stark, A. Lemnitzer, and **M. Gardner**, "Geotechnical and geophysical investigations of river-infrastructure interaction in response to the 2021 Ahr Valley flood," in *1st KAHR Science Conference*, (Virtual), June 29 - 30 (2022)
- **M. Gardner**, "Modeling the Mechanics of Rock Scour in Unlined Dam Spillways," in *ASCE GeoCongress*, (Charlotte, North Carolina, USA), March 20 - 23 (2022)
- **M. Gardner**, Y. Keissar, P. Wood, I. Brown, and N. Sitar, "Three-Dimensional Kinematics and Scaling Effects in Rock Slope Failure," in *American Geophysical Union Fall Meeting*, (New Orleans, LA, United States), December 13 - 17 (2021)
- J. Toller, **M. Gardner**, K. Keegan, S. Day, and Y. Chung, "The Importance of Image Thresholding in Computing Permeability of Firn using Micro-CT Images and the Lattice Boltzmann Method," in *American Geophysical Union Fall Meeting*, (New Orleans, LA, United States), December 13 - 17 (2021)
- J. Scheingross, W. Cao, J. DesOrmeau, **M. Gardner**, S. Gordon, C. D. Masi, P. Sheevam, and J. Toller, "Progress on DEI initiatives within the University of Nevada Reno (UNR) geosciences community," in *American Geophysical Union Fall Meeting*, (New Orleans, LA, United States), December 13 - 17 (2021)
- **M. Gardner**, "Modeling the Mechanics of Rock Scour in Unlined Dam Spillways," in *International Conference of Numerical Analysis and Applied Mathematics*, (Rhodes, Greece), September 20 - 26 (2021)
- **M. Gardner** and N. Sitar, "Modeling Rock Scour Using Coupled 3D Discrete Element and Lattice Boltzmann Methods," in *ASCE International Conference on Scour (ICSE10)*, (Virtual), October 18 - 21 (2021)
- **M. Gardner**, "Surrogate Model Development for Rock Slope Failures using quoFEM," in *PEER Annual Meeting*, (Berkeley, CA, United States), January 16 - 17 (2020)
- **M. Gardner** and N. Sitar, "Coupled Three-Dimensional Discrete Element-Lattice Boltzmann Methods for Fluid-Solid Interaction with Polyhedral Particles," in *Engineering Mechanics Institute Conference*, (Pasadena, California), June 18 - June 21 (2019)
- W. Elhaddad, F. McKenna, **M. Gardner**, A. Zsarnóczyay, M. Schoettler, C. Wang, S. Govindjee, and G. Deierlein, "A Computational Framework for Regional Earthquake Loss Estimation," in *Engineering Mechanics Institute Conference*, (Pasadena, California), June 18 - June 21 (2019)
- **M. Gardner** and N. Sitar, "Modeling Rock Scour using Coupled Discrete Element and Lattice Boltzmann Methods," in *Engineering Mechanics Institute Conference*, (Boston, Massachusetts), May 29 - June 1 (2018)
- **Michael Gardner**, "Numerical modeling of rock-fluid interaction," in *1st Annual Geotechnical Research Symposium*, (University of California, Berkeley, United States of America), February 1 (2018)

## Grants & Funding

### Active Research Grants

- 2022 – 2025 **Collaborative Research: Multi-Block System Response to Hydraulic Loads in Rock Scour**, National Science Foundation, Principal Investigator, co-PI David Harbor (Washington & Lee University), \$419,486 (UC Davis portion), 3 years
- 2022 – 2024 **RAPID: Collaborative Research: Geotechnical and geoenvironmental properties of the Ahr and Erft Rivers, Germany, and their role in structural damage during the 2021 Western European Floods**, National Science Foundation, Principal Investigator, co-PIs Nina Stark (Virginia Tech) and Anne Lemnitzer (UCI), \$77,558 (UNR portion, including supplement), 2 years
- 2021 – 2024 **Mafic magmatic enclaves as tracer of protracted mixing and hybridization**, National Science Foundation, Co-Principal Investigator, PI Philip Ruprecht (UNR), \$320,350, 3 years

## Completed Research Grants

June 2020 – **Natural Hazards Engineering Research Infrastructure: Computational Modeling and Simulation Center (subaward)**, National Science Foundation, Expand modularity of SimCenter quoFEM application, \$9,358.20, 6 months  
Dec. 2020

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## Research Mentoring

### Graduate Students

Spring 2023 – **Jakob Scheel**, *Ph.D. Geology, University of Nevada, Reno*  
present Project: Mafic magmatic enclaves as tracer of protracted mixing and hybridization (co-advised with Philipp Ruprecht)

Fall 2021 – **Mohsen Tahkhravan**, *Ph.D. Civil Engineering, University of California, Davis*  
present Project: Multi-Block System Response to Hydraulic Loads

Spring 2019 – **Yuval Keissar**, *Ph.D. Civil Engineering, University of California, Berkeley*  
present Project: Predictive models for dynamic analysis of rock slope response (co-advised with Nicholas Sitar)

Spring 2021 – **Justin Toller**, *M.S. Geology, University of Nevada, Reno*  
Spring 2023 Project: The impact of glacial firn microstructure on ice age-gas age difference (co-advised with Kaitlin Keegan)

Fall 2019 – **Ingrid Suter**, *M.S. Geological Engineering, University of Nevada, Reno*  
Spring 2022 Project: Mapping bed forces to granular flow properties (co-advised with Scott McCoy)

### Undergraduate Students

Summer 2022 – **Kevin Ostfeld**, *B.S. Geological Engineering, University of Nevada, Reno*  
– present Project: Multispectral Imaging for Identifying Erosional and Depositional Patterns During Extreme Flooding

Summer 2019 – **Haley Hostetter**, *B.S. Civil Engineering, Southern Illinois University*,  
NSF Research Experiences for Undergraduates Intern at the NHERI SimCenter  
Project: A Stochastic Ground Motion Simulation Model Developed for Shallow Crustal Earthquakes Evaluated in a Subduction Zone Setting

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## Teaching Experience

Legend: ‡: course designed or substantially renovated

### Instruction

Winter 2024 – **‡Engineering Geology (ECI 289D)**,  
present *Department of Civil and Environmental Engineering, University of California, Davis*

Spring 2022 – **‡Geological Engineering Slope Stability (GE 483)**,  
present *Department of Geological Sciences and Engineering, University of Nevada, Reno*

Spring 2021 – **‡Numerical Methods for Geomaterials (GE 745)**,  
present *Department of Geological Sciences and Engineering, University of Nevada, Reno*

Fall 2020 – **‡Geological Engineering Data Analysis (GE 385)**,  
present *Department of Geological Sciences and Engineering, University of Nevada, Reno*

Summer 2015 **Engineering Geomatics (CE 174) [course TA]**,  
*Department of Civil and Environmental Engineering, University of California, Berkeley*

Spring 2014 **Advanced GeoEngineering Testing and Design (CE 273) [course TA]**,  
*Department of Civil and Environmental Engineering, University of California, Berkeley*

Fall 2011 & **Groundwater and Seepage (CE 173) [course TA]**,  
Fall 2013 *Department of Civil and Environmental Engineering, University of California, Berkeley*

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## Service

2022 – **Review Panelist and Ad Hoc Reviewer**, *National Science Foundation*  
Present

2021 – 2023 **Faculty Advisor**, *Association of Environmental and Engineering Geologists, UNR Student Chapter*

2020 – 2023 **Committee Member**, *Diversity, Equity, and Inclusion Committee, University of Nevada, Reno*

Academic **Annual Evaluation Committee**, *Department of Geological Sciences and Engineering, University of Nevada, Reno*  
Years 2021 &  
2022

Academic Year **Faculty Search Committee**, *Department of Geological Sciences and Engineering, University of Nevada, Reno*  
2020

2016 – present **Journal referee**

- Computers and Geotechnics, Rock Mechanics and Rock Engineering, International Journal for Numerical and Analytical Methods in Geomechanics, Acta Geotechnica, Geofluids, Journal of Rock Mechanics and Geotechnical Engineering

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## Work Experience

Spring 2010 - **Engineer**, *Geotechnics Group, Arup*, San Francisco, CA  
Fall 2013

Summer 2009 **Geotechnical Intern**, *ENGEO Incorporated*, San Ramon, CA

Summer 2007 **Engineering Intern**, *Zone 7 Water Agency*, Livermore, CA

March 2003 - **Combat Engineer**, *United States Army*, Honorably discharged at rank of Specialist, E-4  
March 2005 *Commendations:*

- Two Army Commendation Medals
- National Defense Medal
- Global War on Terrorism Expeditionary Medal
- Global War on Terrorism Campaign Medal
- Army Service Ribbon

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## Professional Memberships

- American Society of Civil Engineers (ASCE)
- American Geophysical Union (AGU)
- Association of Environmental and Engineering Geologists (AEG)
- U.S. Society of Dams (USSD)
- International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE)
- Geotechnical Extreme Events Reconnaissance Association (GEER)
- United States University Council on Geotechnical Education and Research (USUCGER)

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## Language Skills

- English: fluent (speaking, reading, writing)
- Afrikaans: native (speaking, reading, writing)