Undergraduate Commencement
December 15, 2017 | Lockridge Arena, Golden, Colorado

BOARD OF TRUSTEES
Thomas Jorden '80, MS '87 Chairman
Timothy Haddon ’70 Vice Chairman
Stewart Bliss
Charlie McNeil ’71
Jesus Salazar ‘01, MS ‘02
Patty Starzer ’83
Richard Truly
Terri Hogue Faculty Trustee
Sevy Swift Student Trustee

CEREMONY

Processional

National Anthem
Colorado School of Mines Natural Miners

Alma Mater
Colorado School of Mines Natural Miners

Welcome
Dr. Paul C. Johnson, President

Student Address
Ms. Nana Adu, Electrical Engineering

Distinguished Speaker
Mr. Jim Payne ’59, Retired Oil and Gas Executive

Recognition of Emeritus Faculty
Dr. Thomas Boyd, Provost and Executive Vice President

Recognition of Commissioned Cadets
Captain Luisa Pollette, United States Army

Presentation of Posthumous Degrees
Dr. Paul C. Johnson

Announcement of Baccalaureate Degree Recipients

Presentation of Candidates for Baccalaureate Degrees
Dr. Thomas Boyd

Presentation of the Class of 2017 to the Board of Trustees
Dr. Paul C. Johnson

Acceptance of Class
Mr. Jesus Salazar ’02, Trustee

Conferral of Degrees
Dr. Paul C. Johnson

New Mines Alumni Welcome
Mr. Jesus Salazar ’02, Trustee

Closing Remarks
Dr. Paul C. Johnson

Recessional
Audience is requested to stand and remain in place until the platform party has exited the arena. Please join us for a new alumni reception immediately following the ceremony in the Ben Parker Student Center.

All graduates will be photographed by a professional photographer after receiving their diplomas. Proofs will be emailed to you by the photographer at your Mines email address.

Professional photographs can be ordered at events.lifetouch.com/mines. Photos can also be downloaded from the Mines Flickr site at no cost. The site can be accessed at flickr.com/photos/coloradoschoolofmines.
BACHELOR OF SCIENCE
Class of 2017

College of Earth Resource Sciences and Engineering
Dr. Ramona M. Graves, Dean

MINING ENGINEERING
Dr. Priscilla P. Nelson, Department Head

Mining Engineering, Bachelor of Science
Samuel Engelhoff  Greenbay, Wisconsin
Erza Grossinger  Durham, North Carolina
Erika Nieczkoski  Boulder, Colorado
Benjamin Ntumba  Kinshasa, Democratic Republic of Congo
Christopher Overley*  Highlands Ranch, Colorado

GEOLOGY AND GEOLOGICAL ENGINEERING
Dr. M. Stephen Enders, Department Head

Geological Engineering, Bachelor of Science
Abdulaziz Aldossary  Khafji, Saudi Arabia
Tyler Dziedzina  Palatine, Illinois
Michelle Franke*  Woodland Park, Colorado
Emily Giddens  Norfolk, Virginia
Julia Haw**  Bellevue, Washington
Jesse Reigle  Lakewood, Colorado
Zachary Ziegler  Roanoke, Texas

PETROLEUM ENGINEERING
Dr. Erdal Ozkan, Department Head

Petroleum Engineering, Bachelor of Science
Chineh Ade  Aurora, Colorado
Yeldos Armanov  Atyrau, Kazakhstan
Christa Bedetse  Bujumbura, Burundi
Roberto Betancourt  Lakewood, Colorado
Ryan Choe  Highlands Ranch, Colorado
Derek Clark  Arvada, Colorado
Maximilian David  Golden, Colorado
Jacob Engman  Littleton, Colorado
Chelsea Gibas  Manitou Springs, Colorado
Ryan Givan***  Englewood, Colorado
Mohamad Jamil  Lebanon
Josef Kenrick*  Austin, Texas
Justin Kilb**  Calgary, Alberta
Matthew King  Grand Junction, Colorado
Bryant Klein  Sterling, Colorado
Clayton Lauderdale  Smithson Valley, Texas
Anthony Lillo  Colorado Springs, Colorado
Francis Manu  Dubois, Wyoming
Seewong Na  South Korea
Samuel Pauling***  Highlands Ranch, Colorado
Lan Pham  Lafayette, Colorado
Ross Philipp  Doha, Qatar
Connally Reid*  Englewood, Colorado
Logan Salewski  Littleton, Colorado
Drew Stephon  Parker, Colorado
Chike Sullivan  Golden, Colorado
Brian Medberry***  Seldovia, Alaska
Seth Suydam**  Aurora, Colorado
Chantz Tanner  Atyrau, Kazakhstan
Maxat Toktarov  Littleton, Colorado
Anthony Valerio  Morrison, Colorado
Eric Veitch  Walnut Creek, California

GEOPHYSICS
Dr. John Bradford, Department Head

Geophysical Engineering, Bachelor of Science
Aspen Anderson***  Fort Collins, Colorado
Benjamin Federspiel  Parker, Colorado
Victoria Fisher  Aurora, Colorado
James Jordan  Littleton, Colorado
David Klausmeier  Colorado Springs, Colorado
James Neumeyer  Dubois, Wyoming
Michael Pace**  Wasilla, Alaska
Dana Sirotas  Los Angeles, California

ECONOMICS AND BUSINESS
Dr. Roderick G. Eggert, Division Director

Energy and Environmental Economics, Bachelor of Science
Kimberly Seago  Centennial, Colorado

College of Applied Science and Engineering
Dr. Michael J. Kaufman, Dean

GEORGE S. ANSELL DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING
Dr. Angus A. Rockett, Department Head

Metallurgical and Materials Engineering, Bachelor of Science
Anna Banks  Lincoln, Nebraska
Ian Brummell***  Omaha, Nebraska
Rachel English***  Warren, Pennsylvania
Michelle Hoffmann  Brighton, Colorado
Brian Medberry***  Highlands Ranch, Colorado
Andrew Parker  Parker, Colorado
Taraneh Samadi  Littleton, Colorado
Paige Stock***  Westminster, Colorado
Grace Weber  Queen Creek, Arizona
Dean Wenger

CHEMICAL AND BIOLOGICAL ENGINEERING
Dr. Jennifer Wilcox, Department Head

Chemical Engineering, Bachelor of Science
Oliver Liebig  Denver, Colorado
Joseph McChesney  Hotchkiss, Colorado
Joseph Murray  North Las Vegas, Nevada
Benjamin Schneiderman***  Colorado Springs, Colorado
Jacob Schutte***  Parker, Colorado

Chemical and Biochemical Engineering, Bachelor of Science
Ryan Courtney  Monument, Colorado
Holly Weyand  Monument, Colorado

***summa cum laude  |  **magna cum laude  |  *cum laude
CHEMISTRY
Dr. Thomas Gennett, Department Head

Chemistry, Bachelor of Science
Grace Gamba  Glenn Springs, Colorado
Jaime Hagen  Colorado Springs, Colorado
Rachel Hernandez  Littleton, Colorado
David Knittel  Discovery Bay, California
Armando Lopez Jr.  Los Angeles, California
Maleigh Pagenkopf  Olathe, Kansas

PHYSICS
Dr. Jeff Squier, Department Head

Engineering Physics, Bachelor of Science
Michael Colucci IV  Boulder, Colorado
David Cruse  Woodland Park, Colorado
Zachary Czajkowski  Golden, Colorado
Andrew England  Castle Rock, Colorado
Brennan Fieck  Viroqua, Wisconsin
Brandon Green  Westminster, Colorado
Ryan Kubistek  Arvada, Colorado

College of Engineering and Computational Sciences
Dr. Kevin L. Moore, Dean

APPLIED MATHEMATICS AND STATISTICS
Dr. Gregory E. Fasshauer, Department Head

Applied Mathematics and Statistics, Bachelor of Science
Jonathan Helland*  Lakspur, Colorado
Scott Hill Jr.  Montrose, Colorado

Computational and Applied Mathematics, Bachelor of Science
Carly Best  Bellevue, Washington
Sarah De Nardis  Golden, Colorado
Andy Han  Aurora, Colorado
Hunter Johnson  Littleton, Colorado

CIVIL AND ENVIRONMENTAL ENGINEERING
Dr. John E. McCray, Department Head

Civil Engineering, Bachelor of Science
Shima Aghaei III  Aurora, Colorado
Moustapha Agrignan  Lakewood, Colorado
Jordan Brothers  Longmont, Colorado
Molly Epstein  Louisville, Colorado
Heidi Fronapfel**  Arvada, Colorado
Guadalupe Garza III  Evans, Colorado
Ryan Gimbel*  Littleton, Colorado
Thomas Ladd*  Casper, Wyoming
Adelle McKenna  Colorado Springs, Colorado
Arthur Richard III*  Denver, Colorado
Jared Roberts  Greeley, Colorado
Nikko Sandoval  Nederland, Texas
Jacob Sawaya  Canon City, Colorado
Sydney Slouka**  Denver, Colorado
Estevan Trujillo  Steamboat Springs, Colorado
Zachary Waanders*  Colorado Springs, Colorado

Environmental Engineering, Bachelor of Science
Thomas Carter  Lakewood, Colorado
Quentin Geile**  Parker, Colorado
Mason Haycock  Colorado Springs, Colorado
Shaojun Liu  Fountain, Colorado
Emiley Lopez  Brighton, Colorado
Kayla White  Arvada, Colorado

COMPUTER SCIENCE
Dr. Tracy K. Camp, Department Head

Computer Science, Bachelor of Science
Carathryn Beutel  Aurora, Colorado
Christopher Bonin  Littleton, Colorado
Tyler Brown  Fayetteville, North Carolina
Brennan Fieck  Viroqua, Wisconsin
Arnaud Filliat  Golden, Colorado
Jesse Halbach**  Montrose, Colorado
Daniel Herman*  Monument, Colorado
Reece Hughes*  Centennial, Colorado
Ryan Hunt***  Fort Collins, Colorado
Tiffany Kalin***  Colorado Springs, Colorado
Chamal Kayssar  Zalka, Lebanon
Bryant Klein*  Sterling, Colorado
Nicholas Lantz*  Littleton, Colorado
Kevin Pham  Houston, Texas
Vanessa Ramos Rivera  Denver, Colorado
Sergio Rodriguez*  Denver, Colorado
Jack Rosenthal*  Steamboat Springs, Colorado
Jacob Thompson  Northglenn, Colorado
Michael Villafuerte*  Denver, Colorado
Timothy Walker***  Zhenjiang, China
Huan Wang**  Littleton, Colorado
Nathaniel Watts  Erie, Colorado
Caleb Willkomm*  Fairplay, Colorado
Joseph Wilson***  Plano, Texas
Troy Woolbert  Fort Collins, Colorado
Steven Yoshihara  Thornton, Colorado

ELECTRICAL ENGINEERING
Dr. Atef Z. Elsherbeni, Department Head

Electrical Engineering, Bachelor of Science
Nana Adu  Highlands Ranch, Colorado
Andrea Benefiel*  Denver, Colorado
Nicholas Broucek  Highlands Ranch, Colorado
Jeremy Che  Walnut Creek, California
Dionysi Damaskopoulos**  Denver, Colorado
Zachary Door  Colorado Springs, Colorado
Vaughn Ericson  Stilwell, Kansas
Duncan Flint  Salt Lake City, Utah
Matthew French  Arvada, Colorado
Austin Genger  Centennial, Colorado
Jaydee Griffith  Payette, Idaho
Kevon Hayes  Arvada, Colorado
Jakob Howard**  Highlands Ranch, Colorado
Ryan Hunt***  Fort Collins, Colorado
Barron Keith  Westminster, Colorado
Matthew Mishler  Parker, Colorado
Pranav Sharma  Northglenn, Colorado
Michael Sonnabend  DePere, Wisconsin
Andrew Torkelson  Littleton, Colorado
Timothy Walker***  Fort Collins, Colorado
Kyle Whittle***  Fort Collins, Colorado
MECHANICAL ENGINEERING
Dr. John Berger, Department Head

MECHANICAL ENGINEERING, Bachelor of Science
Cole Alexander**
Matthew Andersen
Evan Anundsen
Nicholas Attarian
William Bellis**
Cameron Bennethum Sr.**
Martin Bergstrand-Reiersgard
Aaron Bilek
Logan Bock
Christopher Britschge
Chad Brockman
Sabre Cook
Arthur Cooper
William Cullum
Dionysi Damaskopoulos**
Christopher DeAngelis
Erich Deutsch*
Jordan Dicksteen
Ashlyn Eitemiller
Michael Ennis
Conrad Evans III
Matthew French
Kyle Gantee
Jesse Gettett
Chelsea Gibas
Nathan Girkins
Marcus Harper
Marcos Hernandez Rodriguez
Caitlin Kaltenbaugh
John Kargar*
John Kater**
Rachel Keatley**
Michael Kelso
Nicholas Kincaid***
Collin Kinder***
Francis Knafelc
Ryan Kubistek
Anthony Lariva
Matthew Lewis**
William Marquis
Annabel Marruffo
Chad McFarland
Haley McManus
Elvis Molina
Chayce Moniz
Brock Morrison
Benjamin Moser**
Cesar Navejas Garcia
Brooke Nezaticky
Edwin Nicholas
Duncan Oliver
Christopher Olsen
Richard Petersen
Emily Quaranta
Christopher Ransom
Trevor Reed
Konstantin Rehbein
Connery Reid
Aaron Richner
Hayden Rutherford
Alexandra Sauer
Elyse Schrader*
Daniel Shackelford
Kristen Smith*
Donald Sneed
Steven Steila
Ilman Surghani
Erik Trenary
Steven Vlajic
Brian Vogel*
Robert Waite
Jonathan Webb
Joshua Wisda
Adam Young
Chad Young
Lakewood, Colorado
Pueblo West, Colorado
Golden, Colorado
Littleton, Colorado
Lakewood, Colorado
Lawton, Oklahoma
Golden, Colorado
Denver, Colorado
Lakewood, Colorado
Lawrence, Kansas
Denver, Colorado
Denver, Colorado
Billings, Montana
Elbert, Colorado
Denver, Colorado
Boulder, Colorado
Evergreen, Colorado
Colorado Springs, Colorado
Colorado Springs, Colorado
Maple Plain, Minnesota
San Francisco, California
Littleton, Colorado
Boulder City, Nevada
Boulder, Colorado
Benton, Louisiana
Lexington, South Carolina
Fort Collins, Colorado
Colorado Springs, Colorado
Evergreen, Colorado
Omaha, Nebraska
Golden, Colorado
Loveland, Colorado
Denver, Colorado
Lakewood, Colorado
Golden, Colorado
Arvada, Colorado
Morrison, Colorado
Canon City, Colorado
Newmarket, New Hampshire

Class of 2017
The Alan Kissock Award is awarded to a graduating senior in metallurgical and materials engineering, acknowledging creativity in metallurgy.

Michelle Hoffman

The Brunton Award in Geology is awarded in recognition of the highest scholastic achievement and interest in and enthusiasm for the science of geology.

Michelle Franke

The Clark B Carpenter Award is presented to the graduating senior in mining or metallurgy who, in the opinion of the senior students in mining and metallurgy and the professors in charge of the respective departments, is the most deserving of this award.

Erika Nieczkoski

The Faculty Choice Award in Computer Science is given to a top graduating senior who helped improve computer science at Mines.

Jack Rosenthal

The Mary & Charles Cavanaugh Award, presented in metallurgy, is determined by scholarship, professional activity and participation in school activities.

Brian Medberry

The Outstanding International Undergraduate Award is presented to the international student who has demonstrated scholastic achievement.

Huan Wang

The Outstanding Senior Research Award in Chemistry is awarded to a student who demonstrates superior performance and creativity in undergraduate research.

Maleigh Pagenkopf

The Outstanding Undergraduate Research Award in Computer Science is awarded to a student who demonstrates superior performance in undergraduate research.

Huan Wang

OUTSTANDING GRADUATING SENIOR AWARDS

Applied Mathematics and Statistics
Jonathan Helland

Civil & Environmental Engineering
Thomas Tarcha

Civil & Environmental Engineering
Quentin Geile

Electrical Engineering
Ryan Hunt

Computer Science
Tiffany Kalin

Geology and Geological Engineering
Julia Hawn

Geophysics
Aspen Anderson

Mechanical Engineering
Collin Kinder

Metallurgical and Materials Engineering
Rachel English

Mining Engineering
Christopher Overley

Petroleum Engineering
Ryan Givan

SENIOR GIFT

Thank you, class of 2018, for embracing the tradition of a senior gift, and supporting and inspiring the next generation of Orediggers. This semester’s Senior Gift program totaled $461 to support student organizations and activities.

Seniors supported The Mines Fund, Women’s Club Rugby Team, ROTC, Electrical Engineering, oSTEM, Mechanical Engineering, ASCE, Veteran’s Club, Club Sports, Men’s Basketball, the Student Emergency Fund, Civil Engineering, the SAIL office, Panhellenic Council, Mining Engineering, Geophysics, Club Baseball and Filmmakers at Mines.

DUAL DEGREE RECIPIENTS

Dionysi Damaskopoulos
Electrical Engineering and Mechanical Engineering

Brennan Fleck
Engineering Physics and Computer Science

Matthew French
Electrical Engineering and Mechanical Engineering

Chelsea Gibas
Petroleum Engineering and Mechanical Engineering

Ryan Hunt
Electrical Engineering and Computer Science

Bryant Klein
Engineering Physics and Mechanical Engineering

Joshua Nelson
Electrical Engineering and Mechanical Engineering

Timothy Walker
Computer Science and Electrical Engineering
Graduate Commencement

December 15, 2017 | Lockridge Arena, Golden, Colorado

BOARD OF TRUSTEES

Thomas Jorden ’80, MS ’87 Chairman
Timothy Haddon ’70 Vice Chairman
Stewart Bliss
Charlie McNeil ’71
Jesus Salazar ’01, MS ’02
Patty Starzer ’83
Richard Truly
Terri Hogue Faculty Trustee
Sevy Swift Student Trustee

CEREMONY

Processional

National Anthem
Colorado School of Mines Natural Miners

Alma Mater
Colorado School of Mines Natural Miners

Welcome
Dr. Paul C. Johnson, President

Student Address
Mr. Xiaopeng (Roy) Li, Petroleum Engineering

Keynote Address
Dr. Margaret Murnane, Professor at University of Colorado and Fellow at JILA

Presentation of the Dr. Bhakta Rath and Sushama Rath Research Award
Dr. Wendy Harrison, Vice President of Research and Technology Transfer

Announcement and Hooding of Doctoral Degree Recipients

Announcement of Master’s Degree Recipients

Presentation of Candidates for Graduate Degrees
Dr. Wendy Zhou, Dean of Graduate Studies

Presentation of the Class of 2017 to the Board of Trustees
Dr. Paul C. Johnson

Acceptance of Class
Mr. Thomas Jorden ’87, Chairman of the Board of Trustees

New Mines Alumni Welcome
Ms. Patty Starzer ’83, Trustee

Closing Remarks
Dr. Paul C. Johnson

Recessional
Audience is requested to stand and remain in place until the platform party has exited the arena. Please join us for a new alumni reception immediately following the ceremony in the Ben Parker Student Center.

All graduates will be photographed by a professional photographer after receiving their diplomas. Proofs will be emailed to you by the photographer at your Mines email address.

Professional photographs can be ordered at events.lifetouch.com/mines. Photos can also be downloaded from the Mines Flickr site at no cost. The site can be accessed at flickr.com/photos/coloradoschoolofmines.
College of Earth Resource Sciences and Engineering
Dr. Ramona M. Graves, Dean

MINING ENGINEERING
Dr. Priscilla P. Nelson, Department Head

Mining and Earth Systems Engineering, Master of Science
Nestor Daniel Barba
Josef Patrick Bourgeois
Raul Alejandro Chavez Trillo
Tzu-Hsuan Chuang
Lucia Beale Dunnington
Heather Nichole Lammers
Charles Thomas Litchfield
Tyler N. Rockley
Ryan Airfin Zaini

GEOLOGY AND GEOLOGICAL ENGINEERING
Dr. M. Stephen Enders, Department Head

Petroleum Reservoir Systems, Professional Master
Ryan Garrett Jasper

Geological Engineering, Master of Engineering
Matthew Bradley Coen
Alyssa Marie Schwarz

Geological Engineering, Master of Science
Erin Katherine Bessette Kirton
Cole Douglas Rosenbaum

Geology, Master of Science
Moath Bader Al-Qaod
Matthew William Bauer
Alyssa Charsky
Abdulah Musbah Eljalafi
Cheryl Whitney Fountain
Jessica Alyse Franklin
Caleb H. Garbus
Xinran He
Blake Christian Herber
Michael John Hurth
Joshua Michael Payne
Julia Elizabeth Peacock
Philip Max Persson
Elizabeth Parker Wilson
Timothy Orion Wyatt

Hydrology, Master of Science
David Matthew Rey
Chelsea Elizabeth Stern

PETROLEUM ENGINEERING
Dr. Erdal Ozkan, Department Head

Petroleum Reservoir Systems, Professional Master
Andrew Hoyt Pomroy

Petroleum Engineering, Master of Engineering
Reed McAshan Baker
Juan Felipe Hurtado Villanueva
Kathryn Purnell Mills
Nurlybek Nurmakanov
Kamila Husna Putri
Fadi George Shammas
Sergio Suarez Fernandez

Petroleum Engineering, Master of Science
Mesferah M Z S Al Qahtani
Faisal Alhowaish
Rayan Abdulaziz Alidi
Patrick Lambie
Alberto Ramirez

GEOPHYSICS
Dr. John H. Bradford, Department Head

Petroleum Reservoir Systems, Professional Master
Liwei Cheng
Alexandra Kate Grazulis

Geophysical Engineering, Master of Science
Ahmed Alfataiere

Geophysics, Master of Science
Lucas Jose Andrade de Almeida
Sheila Anastasia Justitia Civita Aditya Harryandi
Sonali Pattnaik
Qian Yin

ECONOMICS AND BUSINESS
Dr. Roderick G. Eggert, Division Director

Engineering and Technology Management, Master of Science
Logu Achudhan
Alexander Shim Barker
James T. Beetham
Kylie Cyrielle Ford
Juan Felipe Hurtado Villanueva
Joshua Ryan Mangone
Christopher Daniel Matthews
Christian Taylor Polyak
Gaurav Teotia
Valerie Jeanne White

Mineral and Energy Economics, Master of Science
Jonathon Mark Becker
Zhao Chang
Daniel Forero
Christopher Michael Hapchuk
Larissa Ann House
Muhammad Abdullah Khawar
German Orlando Leon Duarte
Shuolin Liu
Walter Jones Meeker
Liam O’Callaghan
Kavish Yagnesh Patel
Alexander G. Restrepo
Phillip Nicolai Ruban
Rondinelli De Sousa Silva
Michael Stine
College of Applied Science and Engineering
Dr. Michael J. Kaufman, Dean

GEORGES ANSELL DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING
Dr. Angus A. Rockett, Department Head

Metallurgical and Materials Engineering, Master of Engineering
Eve Taylor Burkhardt
Trace Alexander Rimroth

Materials Science, Master of Science
Michaela Ann Beuerlein
Luis Roberto Ham Villa
Kayla Marie Johnson

Metallurgical and Materials Engineering, Master of Science
Christina Marie Ciganik
MinRui Gao
Alexander Peter Golden
Lindsay Golem
Byron William Jack McArthur
Jonathan Sami Watson

CHEMICAL AND BIOLOGICAL ENGINEERING
Dr. Jennifer Wilcox, Department Head

Chemical Engineering, Master of Science
Chidiebere Kelechi Agwu
Hanna Renee Aucoin
James Austin Clements
Dante I. Disharoon
Aakash Girish Katageri
Maximilian Josef Sanktjohanser
Rick Antonius Johannes Schrama
Daniel Timothy Wilson

CHEMISTRY
Dr. Thomas Gennett, Department Head

Nuclear Engineering, Master of Engineering
Michael John Servis

Chemistry, Master of Science
Jordan R. Goss
Shuo Liu
Morgan Marie Luckey

Materials Science, Master of Science
Matthew B. Strand
Luke Stephen Williams

Nuclear Engineering, Master of Science
Jarrod Gogolski
Matthew John Urban

Environmental Geochemistry, Professional Master
Erik Guldbek
Tyler James Pitcher

PHYSICS
Dr. Jeff Squier, Department Head

Applied Physics, Master of Science
James Alexander Harget

Materials Science, Master of Science
Emily Anne Makoutz

Nuclear Engineering, Master of Science
Adam Creveling Mahl

College of Engineering and Computational Sciences
Dr. Kevin L. Moore, Dean

APPLIED MATHEMATICS AND STATISTICS
Dr. Gregory E. Fasshauer, Department Head

Applied Mathematics and Statistics, Master of Science
Computational and Applied Mathematics Specialty
Shannon Alycia Grubb

Applied Mathematics and Statistics, Master of Science
Statistics Specialty
Mahmoud Mohammed AlJuhani
Taylor Kathryn Chott
Madeline Hack
Peter Storm Simonson

CIVIL AND ENVIRONMENTAL ENGINEERING
Dr. John E. McCray, Department Head

Civil and Environmental Engineering, Master of Science
Jeremy Akio Beard
David Alan Gabrielson
Katlyn Mariah Gresty
Christopher Alan Marks
Emily Rose Nicholas
Ian Michael Robinson
Anna Kay Schroeder

Environmental Engineering, Master of Science
Emily Miner Gustafson
Beth Kennicutt

Hydrology, Master of Science
Michele Louis Basile
Ryan Louise Gilliom
Martha Wulftange

Underground Construction and Tunneling Engineering, Master of Science
Bryce Allen Grimm

COMPUTER SCIENCE
Dr. Tracy K. Camp, Department Head

Computer Science, Master of Science
Andrew Austin Coles
Jacob Daniel Emmel
Christopher Travis Johnson
Peng Li
Derek Charles Smith
ELECTRICAL ENGINEERING
Dr. Atef Z. Elsherbeni, Department Head

Electrical Engineering, Master of Science
Suradech Boonlard
Steven Daniel Borenstein
Joseph Elliott Diener
Gunnar Timothy Hoglund
Govind Raj Joshi
Sepideh Kianbakht
Patrick Joseph Kuretich
Joshua Eric McNeely
Kyle T. Patel
Zachary Jacob Simons
Ricardo Siqueira de Carvalho

MECHANICAL ENGINEERING
Dr. John Berger, Department Head

Mechanical Engineering, Master of Science
Mahmoud Ahmad Abdusalam
Jason Alexander Actis
Nicholas Philipp Baumgartner
Michael Cheng
Anthony Marull D’Angelo
Rupak Dasgupta
Jose M. Dempere
Jessica My-Linh Godinez
Austin Mark Granger
William Thomas Hamilton
Kyle Bray Heer
Benjamin John Holland
Jasmin Honegger
Luca Imponenti
Eric Timothy Johnson
Benjamin Salvini Laro
Jason Yung Lee
Kirtland I. McKenna
Joseph Francis Meyer
Daniel Christopher Miller
Ezra Oladele Olagoke
Dhrupad Pragnesh Parikh
Jenevieve Katherine Parker
Colin Garrett Peter
Ryan Angelo Piscopo
Timothy Roberts
Matthew James Ruple
Joshua Matias Schechter
Daniel Guan Shang
Dennis Michael Te
Trevor Riley Turner
Sarah Amalie Wilson
Nelson Wyman Calvin Winbush III
MINING ENGINEERING
Dr. Priscilla P. Nelson, Department Head

Mining and Earth Systems Engineering, Doctor of Philosophy
Kamran Jahan Bakhsh
ADVISOR: Masami Nakagawa
Effects of Thermally-Induced Fractures on EGS Performance

GEOLOGY AND GEOLOGICAL ENGINEERING
Dr. M. Stephen Enders, Department Head

Geology, Doctor of Philosophy
Wesley Scott Hall
ADVISOR: Yvette D. Kuiper | CO-ADVISOR: Murray W. Hitzman
Geochronology, Magnetic Lithostratigraphy and the Tectonic Evolution of the Late Mes-To Neoproterozoic Ghanzi Basin in Botswana and Namibia, and Implications for Copper-Silver Mineralization in the Kalahari Copperbelt
Kamran Jahan Bakhsh
ADVISOR: Masami Nakagawa
Effects of Thermally-Induced Fractures on EGS Performance

Subaru Tsuruoka
ADVISOR: Thomas Monecke
The Evolution of Hydrothermal Fluids from the Deep Porphyry Environment to the Shallow Epithermal Environment

Hydrology, Doctor of Philosophy
Hee Won Jung
ADVISOR: Alexis K. Sitchler
Physical Heterogeneity Control on Mineral Dissolution Rates: From Pore to Continuum Scale Over Geologic Time
Emily Voytek
ADVISOR: Kamini Singha
Determination of Subsurface Water Movement Using Self-Potential Measurements

PETROLEUM ENGINEERING
Dr. Erdal Ozkan, Department Head

Petroleum Engineering, Doctor of Philosophy
Mahmoud Fathi Abuhghanab
ADVISOR: Alfred W. Eustes
Extending the Reach of Drilling: Better Wellbore Trajectory and Torque & Drag Models
Younki Cho
ADVISOR: Yaoyun Chen | CO-ADVISOR: Hossein Kazemi
Pore-Scale Assessment of Middle Bakken Reservoir Using Centrifuge, Mercury Injection, Nitrogen Adsorption, NMR and Resistivity Instruments
Somayeh Karimi
ADVISOR: Hossein Kazemi
Pore-Scale Assessment of Middle Bakken Reservoir Using Centrifuge, Mercury Injection, Nitrogen Adsorption, NMR and Resistivity Instruments
Xiaopeng Li
ADVISOR: Hazim H. Abass
Modeling Fluid Imbibition for Hydraulic Fracturing and its Implications on Unconventional Hydrocarbon Recovery
Zhijian Liu
ADVISOR: Luis E. Zerpa Acosta
Study of Hydrate Deposition and Sloughing in Gas-Dominated Pipelines Using Numerical and Analytical Models

Yanrui Ning
ADVISOR: Hossein Kazemi
Production Potential of Niobrara and Codell: Integrating Reservoir Simulation with 4D Seismic and Microseismic Interpretation

GEOPHYSICS
Dr. John H. Bradford, Department Head

Geophysical Engineering, Doctor of Philosophy
Alena Grechishnikova
ADVISOR: Thomas L. Davis
Niobrara Discrete Fracture Network: From Outcrop Surveys to Subsurface Reservoir Models

Kendra Leigh Johnson
ADVISOR: Edwin K. Nissen
Applications of High Resolution Topography in Active Tectonics
Ryan Elliot North
ADVISOR: Yaoyun Chen
The Effects of Wideband Complex Electromagnetic Properties of Soils on Geophysical Sensor Performance
Abdullah Nurhasan
ADVISOR: Thomas L. Davis
4D Processing and Time - Lapse Azimuthal Amplitude Analysis Using Legacy Surveys for Niobrara Reservoir Characterization, Wattenberg Field, Colorado

ECONOMICS AND BUSINESS
Dr. Roderick G. Eggert, Division Director

Mineral and Energy Economics, Doctor of Philosophy
Maxwell Leonard Brown
ADVISOR: Jared C. Carbone
Essays in Mineral and Energy Policy
Luis Ernesto Guzman
ADVISOR: Graham A. Davis
Three Essays on Regulatory Economics of U.S. Natural Gas Markets and Midstream Assets
Ross Lockhart Manley
ADVISOR: Peter T. Maniloff
Learning to Bid for Oil and Gas Development Rights in The Gulf of Mexico

College of Applied Science and Engineering
Dr. Michael J. Kaufman, Dean

GEORGE S. ANSELL DEPARTMENT OF METALLURGICAL AND MATERIALS ENGINEERING
Dr. Angus. A. Rockett, Department Head

Materials Science, Doctor of Philosophy
Yachao Chen
ADVISOR: Ivar Reimanis
Understanding Structure-Property Relations in B-Eucryptite Under Pressure and at Elevated Temperature
CHEMICAL AND BIOLOGICAL ENGINEERING
Dr. Jennifer Wilcox, Department Head

CHEMICAL ENGINEERING, Doctor of Philosophy
Nathan A. Fletcher
ADVISOR: Melissa D. Krebs
Controlling Antibody Delivery, Mechanical Properties and Cell Response of Alginate-Chitosan Polyelectrolyte Complexes

Marcus Lehmann
ADVISOR: Keith B. Neeves
Biophysical Mechanisms Regulating Von Willebrand Disease, Arterial Thrombosis and Deep Vein Thrombosis in Microfluidic Models of Vascular Injury

Sean-Thomas Bourne Lundin
ADVISOR: James D. Way
Material and Operational Considerations for Effective Use of Palladium Composite Hydrogen Separation Membranes in Ammonia Decomposition Membrane Reactors

Ashley Marie Maes
ADVISOR: Andrew M. Herring
Biocatalytic Production of Phosphoric Acid Using Lactic Acid Bacteria

Christopher Moran
ADVISOR: Andrew M. Herring | CO-ADVISOR: John R. Dorgan
Design and Characterization of Bio-Based Polymer Blends and Composites

Neil Satish Patki
ADVISOR: James D. Way
Coking Resistant Pd-Au Composite Membranes and Cu-Based Electrodes by Electroless Plating for H2 Separation and Purification

Liqiu Yang
ADVISOR: Moises A. Carreon
Deoxygenation of Fatty Acids to Transport Fuels over Supported Metal-Organic Framework Membranes

Xianwei Zhang
ADVISOR: Amadeu K. Sum
Gas Hydrate Deposition from Water Saturated Vapor in Deadlegs

CHEMISTRY
Dr. Thomas Gennett, Department Head

Applied Chemistry, Doctor of Philosophy
Anna G. Baldwin
ADVISOR: Jennifer C. Shafer
Understanding Aggregation of Solvating Extractants in Applied Separations

Xueming Li
ADVISOR: Yonggan Yang
Development of Advanced Materials for Next Generation of Rechargeable Batteries

Feilong Liu
ADVISOR: Daniel M. Knauss
Synthetic and Application of Styril Phosphonic and Cinnamic Acid Derivatives

Nicholas Robert Stambach
ADVISOR: Kent J. Voorhees
Rapid Methods for Bacterial Identification and Predicting Antibiotic Resistance by MALDI-TOF MS

Sarah Marie Shulda
ADVISOR: Ryan M. Richards | CO-ADVISOR: Svitlana Pylypenko
Spectroscopic Characterization of Extended Surface Catalysts

Nuclear Engineering, Doctor of Philosophy
Michael John Servis
ADVISOR: Jennifer C. Shafer | CO-ADVISOR: David T. Wu
Understanding Extractant Aggregation Through Molecular Simulation

PHYSICS
Dr. Jeff Squier, Department Head

Applied Physics, Doctor of Philosophy
Abdalaziz Hussain Alaswad
ADVISOR: Timothy R. Ohno
Stability of CdTe Solar Cell Prepared with Rapid-Thermal Processed ZnTe:Cu Back Contacts and Different Metallizations

Tianyuan Guan
ADVISOR: Reuben T. Collins
Quantum Confined Silicon Nanoparticles in Disordered Matrix

Aaron Daniel Martinez
ADVISOR: Eric S. Toberer | CO-ADVISOR: Adele Tamboli
Zinc Silicon Phosphide as a Wide Band Gap Semiconductor for Integration with Silicon

Roxanne Mlliss Tutchton
ADVISOR: Zhigang Wu | CO-ADVISOR: Mark T. Lusk
The Impact of Crystal Structure on Electron-Phonon Coupling and Phonon-Mediated Properties
DOCTOR OF PHILOSOPHY continued

Class of 2017

Materials Science, Doctor of Philosophy
Angela Nicole Fioretti
ADVISOR: Eric S. Toberer | CO-ADVISOR: Adele Tamboli
Development of Zinc Tin Nitride for Application as an Earth Abundant Photovoltaic Absorber

Nuclear Engineering, Doctor of Philosophy
Osama Ebrahim Salem Ebrahim Alzaabi
ADVISOR: Uwe Greife
Benchmarking of Neutron Flux Parameters at the USGS Triga Reactor in Lakewood, Colorado

College of Engineering and Computational Sciences
Dr. Kevin L. Moore, Dean

CIVIL AND ENVIRONMENTAL ENGINEERING
Dr. John E. McCray, Department Head

Civil and Environmental Engineering, Doctor of Philosophy
Kimberly Fumiko Manago
ADVISOR: Terri S. Hogue
Evaluating Hydrologic Change in a Semi-Arid City: The Impacts of Land Cover, Water Consumption, and Policy Directives on Local Water Fluxes in Los Angeles, California
Melissa McShea Valentín
ADVISOR: Terri S. Hogue
Identifying Climate-Related Hydrologic Regime Change in Mountainous, Cold-Region Watersheds

Hydrology, Doctor of Philosophy
Skuyler Poage Herzog
ADVISOR: John E. McCray | CO-ADVISOR: Christopher P. Higgins
Biophysical Enhancements for Streamwater Treatment: Engineered Hyporheic Zones to Increase Hyporheic Exchange, Control Residence Times and Improve Water Quality
Ashley Johnson Rust
ADVISOR: Terri S. Hogue
Wildfire in the West: Evaluating Water Quality and Ecosystem Impacts and their Controlling Factors

Environmental Science and Engineering, Doctor of Philosophy
Zackary Louis Jones
ADVISOR: Jonathan O. Sharp
Microbial Ecology and Functional Insights into Contaminant Bioattenuation in Engineered Shallow Open Water Treatment Wetlands

COMPUTER SCIENCE
Dr. Tracy K. Camp, Department Head

Mathematical and Computer Sciences, Doctor of Philosophy
Dheivya Thiagarajan
ADVISOR: Dinesh P. Mehta
Faster Isomer Network Generation

ELECTRICAL ENGINEERING
Dr. Atef Z. Elsherbeni, Department Head

Electrical Engineering, Doctor of Philosophy
Farnaz Harirchi
ADVISOR: Marcelo G. Simoes | CO-ADVISOR: Ahmed Al-Durra
Advanced Power Theories and Signal Decomposition Methods for Controlling Smart Converters in Smart Grid Applications
Zhihui Zhu
ADVISOR: Michael B. Wakin
Subspace Approximation on the Continuum

MECHANICAL ENGINEERING
Dr. John Berger, Department Head

Operations Research with Engineering, Doctor of Philosophy Interdisciplinary
Gavin Hugh Goodall
ADVISOR: Alexandra M. Newman | CO-ADVISOR: Amanda S. Hering
Minimizing Fuel Use at Remote Sites - The Roles of Load and Batteries
Christopher Daniel Richards
ADVISOR: Alexandra M. Newman | CO-ADVISOR: Dinesh P. Mehta
Practical Military Applications of Timetabling, Path Planning and Time-Varying Networks for Maximizing Mission Success and Minimizing Risk

Mechanical Engineering, Doctor of Philosophy
Madison Andrew Kelley
ADVISOR: Jason M. Porter
Investigation of High-Temperature and High-Pressure Steam Gasification Kinetics of a Coal-Derived Char Surrogate

DOUBLE DEGREE RECIPIENTS
Juan Felipe Hurtado Villanueva
Master of Science, Engineering and Technology Management
Master of Engineering, Petroleum Engineering
Michael John Servis
Master of Engineering, Nuclear Engineering
Doctor of Philosophy, Nuclear Engineering
EMERITUS FACULTY

Distinguished faculty members announced their retirement during the past academic year and have been awarded emeritus status. Mines’ emeritus faculty have demonstrated exemplary service through a distinguished teaching career and achievement of national and international recognition through outstanding scholarship.

Dr. Anthony Dean, Professor of Chemical & Biological Engineering
Dr. Nigel Middleton, Professor of Electrical Engineering
Dr. Carl Mitcham, Professor of Humanities, Arts and Social Sciences

CHEMICAL AND BIOLOGICAL ENGINEERING OUTSTANDING THESIS AWARD

Liqui Yang, PhD Chemical and Biological Engineering

GRADUATE AWARDS

MENDEHALL PRIZE
The Mendenhall Prize is awarded by the Department of Geophysics to the department’s outstanding graduate student.

Kendra L. Johnson, PhD Geophysics

CHEMICAL AND BIOLOGICAL ENGINEERING OUTSTANDING THESIS AWARD

Liqui Yang, PhD Chemical and Biological Engineering

FACULTY RECOGNITION

THE DR. BHAKTA RATH AND SUSHAMA RATH RESEARCH AWARD

This award recognizes a Mines doctoral graduate whose thesis demonstrates the greatest potential for societal impact.

Xuemin Li, Applied Chemistry

RATH AWARD FINALISTS

Zackary L. Jones, Civil and Environmental Engineering
Christopher D. Richards, Operations Research with Engineering PhD program
Ashley Rust, Hydrologic Sciences and Engineering
Liqui Yang, Chemical and Biological Engineering

CARRIER OF THE UNIVERSITY MACE

Dr. P. Craig Taylor, Faculty Distinguished Lecturer

CARRIER OF THE BOOK: **DE RE METALLICA**

Undergraduate: Dr. Linda A. Battalora, Teaching Professor, Department of Petroleum Engineering
Graduate: Dr. Tzahi Y. Cath, Ben L. Fryrear Professor, Department of Civil and Environmental Engineering
Mines awards the academic honors designations of summa cum laude, magna cum laude and cum laude. The honor cords worn by students earning the highest designation, summa cum laude, are royal blue and orange. Magna cum laude is represented by light blue and orange. Cum laude is represented by silver and orange. Honor cords and stoles are also worn to signify involvement in honor societies and scholars programs and recognition of international students.

ACADEMIC HONORS, SCHOLARS AND HONOR SOCIETIES

Class of 2017

SCHOLARS AND SPECIAL PROGRAMS

HARVEY SCHOLARS
Many Mines students benefit from scholarships provided by our generous alumni and friends. The Harvey Scholars program provides full tuition for four years.
Grace Gamba
Rachel Keatley
Ben Schneiderman

BLUE KEY HONOR SOCIETY
Recognizes students with achievements in service, scholarship and activities.
Grace Weber

ORDER OF OMEGA
Recognizes outstanding leadership in fraternity and sorority systems.
Thomas Ladd
Jakob Howard
Zachary Waanders

TAU BETA PI
National Honor Society of Engineers
Aspen Anderson
Dionysi Damaskopoulos
William Bellis
Brian Vogel
Jesse Halbach
Benjamin Moser

MILITARY COMMISSIONS
The following students will be commissioned as Second Lieutenants in the United States Army:
Tyler Z. Brown
Zachary R. Doom
John D. Kater
Emily M. Quaranta
Kristen M. Smith
Erik H. Trenary

There are no December commissioning graduates for the United States Air Force.

U.S. Army Cadet Command annually rank-orders ROTC seniors, with the top 20 percent in the nation earning the designation of Distinguished Military Graduate:
John D. Kater

The Dwight D. “Ike” Eisenhower Award is awarded to the outstanding ROTC Cadet Commissioned each year, based on demonstrated exemplary leadership within the Corps of Cadets and academic excellence in Military Science.
Kristen M. Smith
Colorado School of Mines is a public university focused on science and engineering, dedicated to pioneering research that addresses the challenges society faces today and committed to educating students who will do the same.

Founded in 1874 as an institution specializing in silver and gold, Mines has since expanded its mission well beyond the extraction and use of natural resources. While still a powerhouse in mining, petroleum and earth sciences, the university has become a world leader in advancing responsible stewardship of the Earth, discovering and synthesizing new materials and developing innovative ways of harnessing traditional and novel energy sources.

Growing strengths include big data, bioengineering, biofuels, machine learning, nuclear science, optics, robotics and space, among numerous other disciplines.

Students at all levels take part in this groundbreaking research, one of the many ways the university prioritizes teaching. Techniques such as studio classes, inverted classrooms and video lectures maximize learning, creating sought-after graduates.

Mines students graduate with a strong sense of integrity, resilience, confidence in tackling new problems, the ability to work in collaborative environments, an enhanced sense of responsibility to promote positive change in the world and pride in their Mines degree.

**ACADEMIC REGALIA: CAPS, GOWNS AND HOODS**

The academic dress worn by today’s graduates reflects a tradition begun in the late 12th century, when universities were first taking form, and codified in the U.S. in 1895 under the Academic Costume Code. Originally the dress may have had a practical purpose—to keep the student warm in unheated buildings—but today it is ceremonial and divided into three parts: caps, gowns and hoods.

The traditional cap is the mortarboard with colored tassels to identify the graduate’s discipline or field of study. Doctors of philosophy wear a gold tassel, masters of science a yellow tassel, masters of engineering an orange tassel and bachelors of science a navy and silver commemorative tassel.

Bachelor’s and master’s gowns are untrimmed, but doctor’s gowns are faced down the front with velvet and trimmed with three velvet bars across the sleeves. The velvet facing and bars are black or the color of the field of study.

Hoods are also black. The doctor’s hood is 4 feet in length, and the master’s is 3 1/2 feet. Colorado School of Mines hoods are lined with silver and blue, the official school colors. The velvet border on the hood, which is three and five inches wide for the master’s and doctor’s degree, respectively, identifies the field of study to which the degree pertains. Colorado School of Mines hoods have yellow velvet borders for masters of science, orange velvet borders for masters of engineering and blue velvet borders for doctors of philosophy.
Jim Payne ’59
Retired Oil and Gas Executive

Mr. Payne had four careers in the oil and gas business, specializing in exploration and production. He spent the first 22 years with Chevron Corporation where his time was split equally between domestic and international, including five years in Sudan. After Chevron, he joined Santa Fe Snyder for another 20 years where he ultimately became CEO and Chairman. After Santa Fe, he was vice chairman for Devon Energy for a short period, before becoming CEO/Chairman for Nuevo Energy (later merged with Plains Energy). After this retirement, he helped form Shona Energy Co., a small South American start-up company. Shona Energy later merged with Canacol Energy Inc.

While active in his professional career, Mr. Payne served on several industry boards, including Pool Energy, Nabors, Global Marine, B. J. Service and Baker Hughes. He and his wife were also active in Houston in several charities, including Spindletop, Palmer Drug Abuse Program and TUTS.

Mr. Payne graduated from high school in Englewood, Colo. where he was the valedictorian and senior class president. He attended Mines on several scholarships and graduated with a professional degree in geophysics, along with The Cecil H. Green Award. In later years, he received the Mines Distinguished Achievement Award. He is a member of the Colorado School of Mines Board of Governors. He also attended Golden Gate University in San Francisco, earning an MBA and later was awarded an honorary doctorate degree from Golden Gate University.

Over the years, the Paynes have funded several scholarship programs at Mines. Their most recent activity is the initial funding of The Payne Institute for Energy Resources.

Mr. Payne is currently retired and he and his wife, Arlene, divide their time between Pagosa Springs, Colo. and Fredericksburg, Texas. They have a son and a daughter, eight grandchildren–two of which are attending Mines–and nine great-grandchildren.
Dr. Margaret Murnane
Professor at University of Colorado and Fellow at JILA

Dr. Margaret Murnane is a current faculty member of the Department of Physics and Electrical and Computer Engineering at the University of Colorado Boulder and visiting fellow at JILA. Margaret and her husband, Dr. Henry Kapteyn, have been collaborating since they were in their doctoral program at the University of California, Berkeley. Together, they set up a joint laboratory at Washington State University, and from there, moved their lab and several students to University of Michigan. Margaret and Henry were enticed by the highly specialized, one-of-a-kind instrumentation that brought them to JILA, and they have called Colorado home since 1999.

Margaret’s research interests are in ultrafast optical and x-ray science. She has received several fellowships and awards in recognition for her work in pioneering the use of lasers to study physical processes on shorter timescales. Currently, the joint laboratory run by Margaret and Henry consists of a large group of international researchers with diverse backgrounds. Students from physics, engineering and chemistry work together on a wide range of projects, highlighting the importance Margaret places on collaboration.

Margaret is active in getting women involved in science and has served on and chaired the American Physical Society Committee on the Status of Women in Physics. Margaret received her bachelor’s and master’s degrees from University College Cork in Ireland and her doctorate in physics from the University of California, Berkeley.
CONFERRED DEGREES
Departmental degrees are awarded at Colorado School of Mines according to the order in which the department or program originally conferred a degree, dating back to the first Mines commencement in 1883, at which two mining degrees were awarded. The College of Engineering and Computational Sciences, established in 2011, offers the newest degrees.

SILVER DIPLOMAS
While the degrees granted by Colorado School of Mines are valuable and unique, so are the diplomas themselves. The Mines silver diploma is a long-standing tradition dating back to 1933, when Charles A. Hull engraved a silver diploma as a gift for his son, a recent graduate. The diploma caught the eye of then-President Melville F. Coolbaugh, who asked that silver diplomas be made for all Mines graduates.

Starting with the commencement of 1934, Mines began issuing silver diplomas, measuring 5 by 6 inches and etched in pure sterling silver. Creating these diplomas required two workers spending six weeks (or 500 hours) making 19 delicate etchings in each diploma.

Today the tradition of metal diplomas continues, with all students receiving a silver/nickel-plated diploma upon graduation from Mines.

FLAGS
The Mines community is a world-wide community with students hailing from a variety of countries. On the stage are the flags representing the home countries of our international students receiving degrees today. Students are represented from the following countries:

<table>
<thead>
<tr>
<th>Graduate Students</th>
<th>Undergraduate Students</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>Burundi</td>
</tr>
<tr>
<td>Canada</td>
<td>Canada</td>
</tr>
<tr>
<td>China</td>
<td>China</td>
</tr>
<tr>
<td>Colombia</td>
<td>Democratic Republic</td>
</tr>
<tr>
<td>India</td>
<td>of Congo</td>
</tr>
<tr>
<td>Indonesia</td>
<td>Kazakhstan</td>
</tr>
<tr>
<td>Iran</td>
<td>Lebanon</td>
</tr>
<tr>
<td>Japan</td>
<td>Saudi Arabia</td>
</tr>
<tr>
<td>Kuwait</td>
<td>South Africa</td>
</tr>
<tr>
<td>Brazil</td>
<td>South Korea</td>
</tr>
<tr>
<td>Colombia</td>
<td>Thailand</td>
</tr>
<tr>
<td>Indonesia</td>
<td>United Arab</td>
</tr>
<tr>
<td>India</td>
<td>United States of</td>
</tr>
<tr>
<td>Japan</td>
<td>America</td>
</tr>
<tr>
<td>Kuwait</td>
<td>Venezuela</td>
</tr>
</tbody>
</table>
THE BOOK: DE RE METALLICA
Colorado School of Mines Faculty Senate President leads the academic portion of the commencement procession, carrying a replica of the 16th century treatise De Re Metallica. Widely regarded as the seminal text on mining and the science of metallurgy, this historic volume serves as a symbol of the body of knowledge shared by Mines’ faculty and students.

The book is placed on a stand at the front of the stage. Its opening marks the start of the commencement ceremony and also recalls the beginning of the students’ education at the school. The ceremony’s end is signified by the closing of the book.

A first edition of De Re Metallica, written by Georg Bauer under the pseudonym Agricola and printed in 1556, resides in the vault of Mines’ Arthur Lakes Library, as does a subsequent edition printed in 1621. In addition to these original texts, the library also houses several copies of Herbert Hoover’s 1912 translation from Latin, including one signed by the nation’s 31st president and his wife, Lou. Hoover contributed the introduction and lengthy footnotes. He visited mine sites and carried out Agricola’s formulas in laboratories to check the translations. Issued in a limited edition, it quickly became a collector’s item. Of the 3,000 copies printed, more than half were given free to mining engineers and students.

UNIVERSITY MACE
The Colorado School of Mines Faculty Senate Distinguished Lecturer carries the mace, which has a rich history as a symbol of authority going back to the 13th century. In commencement processions, the mace is carried before the president and the dignitaries composing the platform party. The Mines Mace stands 4 feet 8 inches high and weighs 16 pounds. The core is a rosewood staff, covered by fitted brass and cast bronze, silver-plated and topped by Mines’ mascot, Blaster. Mines Professor Emeritus Robert Taylor executed the design and Mr. Emil Dangreau produced the finished standard with the official school seal photoengraved on the base of the staff.

PRESIDENTIAL MEDALLION
The silver medallion, worn only by the Colorado School of Mines president, was designed by Rex Bull, an emeritus professor in the George S. Ansell Metallurgical and Materials Engineering Department and cast by students using silver donated by the Colorado School of Mines Alumni Association. It was first used at the inauguration of George S. Ansell as the 13th president of the school on February 8, 1985.
The Mines Alma Mater, to the tune of “Aura Lee,” is played during Commencement to acknowledge graduates’ transition from Mines students to Mines alumni.


Raise your voices engineers, your devotion sing
To the greatest School of Mines, let the chorus ring
Hail to thee, CSM to our hearts most dear
Ev’ry miner lauds name and ev’ry engineer.

Honor, glory to thy name, these we pledge anew
While we live to sing thy fame, Alma Mater true
Hail to thee School of Mines, silver and blue
Ev’ry Miner sings thy praise, Alma Mater true.

Aerial photos by Billy Ciccone, Class of 2018
Congratulations to our newest alumni!

The Mines M stands for home, wherever your adventures take you! The best way to stay connected to Mines is to join one of our M Clubs around the country and the world.

M Club gives you a gang of friends who speak geek, network for careers, support each other and the Mines community, while having fun.

The gang’s all here!

+ 11 International M Clubs:
Benelux countries, Bremen, Calgary, Jakarta, Kuwait, Lima, Paris, Perth, Papua New Guinea, Trinidad, Vancouver

Other great ways to keep the Oredigger connection:
Follow @minesalumni on Instagram, Facebook and Twitter or connect on LinkedIn. Visit minesalumni.com and catch the latest in our e-newsletter and Mines Magazine.