Working closely with their professors—in classrooms, labs, studios, archives and in the field—Union students delve into topics that inspire and challenge them intellectually and creatively.

For one day each spring, the College suspends classes so that students can share their academic and creative interests and talents in the Steinmetz Symposium: a campus-wide celebration with peers, professors and families.

Held annually since 1991, the symposium features an extensive array of oral presentations, posters, performances and exhibits. The day is part of Union’s Recognition Weekend, which includes Prize Day on Saturday, a tribute to student achievement in all fields.

The Steinmetz Symposium celebrates a culture of personal discovery that integrates coursework, faculty mentorship and peer collaboration to deepen students’ understanding of subject and self.

The Steinmetz Symposium is named for one of the College’s most renowned faculty members, Charles Proteus Steinmetz (1865-1923), who taught electrical engineering and applied physics. Also a chief engineer for General Electric Co., he was widely regarded as America’s leading electrical engineer and, after Thomas Edison, perhaps the most recognized name in the field.

Among his many contributions, Steinmetz fostered the development of alternating current, which made possible the expansion of the nation’s electric power industry. He received his Ph.D. in 1888 and was forced to flee Germany after writing a paper critical of the government. He settled in New York City, where he developed the law of hysteresis, which enabled engineers to design better electric motors for use in industry. He joined General Electric Co. in 1892 and relocated to Schenectady. In 1902, he became professor of electrical engineering at Union. Three years later, he took charge of Union’s new electrical engineering program. After World War I, Steinmetz ceased lecturing at Union, but he remained an active friend of the College the rest of his life.

Active in the community, he chaired the city’s school board and parks commission. He also served as president of the Common Council. A 1914 “Duplex Drive Brougham” Detroit Electric automobile that belonged to Steinmetz is on permanent display in the first-floor corridor between the Wold and Olin buildings. Steinmetz and Thomas Edison are memorialized in statues along Schenectady’s Erie Boulevard.
Union will welcome back to campus three alumni who are CEOs of Fortune 500 companies: James Loree ’80 of Stanley Black & Decker, Richard Templeton ’80 of Texas Instruments and Devin Wenig ’88 of eBay.

President David R. Harris will moderate the conversation, which is free and open to the public. Seating is limited. Doors open at 5:45 p.m. The event begins promptly at 6 p.m. A livestream will be available in overflow spaces to be determined.
## Schedule of Events

**Friday, May 10**

### Steinmetz Symposium

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>9 A.M. – 5 P.M.</td>
<td><strong>The Charles Proteus Steinmetz Symposium</strong></td>
</tr>
<tr>
<td></td>
<td>Presentations on student creative, scholarly and research achievement. Programs and information available in Schaffer Library, inside the north entrance to Karp Hall, inside the north entrance to Lippman Hall, inside the entrance to the Feigenbaum Center for Visual Arts and inside the entrance to the Wold Center.</td>
</tr>
<tr>
<td></td>
<td><strong>Student Presentation Sessions Begin at 9 A.M.</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Noon – 1 P.M.</th>
<th><strong>Maneville Gallery Student Talks</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maneville Gallery work study students will lead docent talks that highlight artworks, artists and themes from the exhibition, “A Decolonial Atlas: Strategies in Contemporary Art of the Americas.” Each talk is 10 minutes.</td>
</tr>
<tr>
<td></td>
<td><strong>Maneville Gallery, Nott Memorial</strong></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>5 – 6 P.M.</th>
<th><strong>Steinmetz Symposium Reception</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cash Bar and light refreshments. For presenters, their parents, alumni, guests and faculty sponsors.</td>
</tr>
<tr>
<td></td>
<td><strong>Stanley O’Brien ’74 Center for Collaboration and Engagement</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>6 P.M.</th>
<th><strong>Developing Leaders for an Uncertain Tomorrow</strong></th>
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</thead>
<tbody>
<tr>
<td></td>
<td>A conversation with three Union alumni leading Fortune 500 companies</td>
</tr>
<tr>
<td></td>
<td><strong>Stanley O’Brien ’74 Center for Collaboration and Engagement</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>8 P.M.</th>
<th><strong>The Union College Choir</strong></th>
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</thead>
<tbody>
<tr>
<td></td>
<td><strong>The Union College and Community Orchestra</strong></td>
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<td></td>
<td><strong>Memorial Chapel</strong></td>
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</table>

**Saturday, May 11**

### Prize Day

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>11 A.M. – Noon</td>
<td><strong>Presentation of Prizes and Recognition</strong></td>
</tr>
<tr>
<td></td>
<td><strong>Memorial Chapel</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2 P.M.</th>
<th><strong>Union College Jazz Ensemble</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Emerson Auditorium, Taylor Music Center</strong></td>
</tr>
</tbody>
</table>
# TABLE OF CONTENTS

## FRIDAY, MAY 10

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>All Day</td>
<td>Art Exhibits</td>
</tr>
<tr>
<td>9 – 10:40 A.M.</td>
<td>Oral Presentations</td>
</tr>
<tr>
<td>10:50 A.M. – 12:30 P.M.</td>
<td>Oral Presentations</td>
</tr>
<tr>
<td>12:30 – 1:50 P.M.</td>
<td>Engineering Project Display, Minerva Fellows, Poster Presentations</td>
</tr>
<tr>
<td>1:50 – 3:30 P.M.</td>
<td>Oral Presentations</td>
</tr>
<tr>
<td>3:40 – 5 P.M.</td>
<td>Oral Presentations</td>
</tr>
<tr>
<td>4 P.M.</td>
<td>Steinmetz Dance Performance</td>
</tr>
<tr>
<td>8 P.M.</td>
<td>Steinmetz Concert</td>
</tr>
</tbody>
</table>

## SATURDAY, MAY 11

<table>
<thead>
<tr>
<th>Time</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2 P.M.</td>
<td>Union College Jazz Ensemble</td>
</tr>
</tbody>
</table>

### THE CONVENIENCE STORE WILL BE OPEN:
- Friday, 8:45 a.m. – 11 p.m.
- Saturday, 10:30 a.m. – 11 p.m.
- Sunday, 11 a.m. – 11 p.m.

### THE BOOKSTORE WILL BE OPEN:
- Friday, 8:45 a.m. – 4:30 p.m.
- Saturday, 10:30 a.m. – 3:30 p.m.
- Sunday, closed

### THE NOTT MEMORIAL WILL BE OPEN:
- Friday, 10 a.m. – 6 p.m.
- Saturday, 10 a.m. – 6 p.m.
- Sunday, 10 a.m. – 6 p.m.

### SCHAFFER LIBRARY WILL BE OPEN:
- Friday, 8 a.m. – midnight
- Saturday, 10 a.m. – midnight
- Sunday, 10 a.m. – 2 p.m.
The Visual Arts Department is delighted to present our 2019 Steinmetz Symposium exhibition, an annual highlight of select student work chosen by our Studio Art faculty. The breadth and diversity of this exhibition showcase the range of courses students are actively engaging as well as those who push the boundaries between different materials. This selection of work includes students in various class years, majors and minors in our program, as well as students taking visual art courses as an elective. We are proud of our students' achievements and hope that you will enjoy seeing all their hard work.

LORRAINE MORALES COX // ASSOCIATE PROFESSOR AND DEPARTMENT CHAIR

PRESENTING 174 OF THE BEST AND MOST ACCOMPLISHED STUDENT WORKS OF THE ACADEMIC YEAR.

MARTIN BENJAMIN
PHOTOGRAPHY

CHRIS DUNCAN
SCULPTURE

LAINI NEMETT
PAINTING & DRAWING

FERNANDO ORELLANA
DIGITAL ART

SANDY WIMER
PRINTMAKING & DRAWING

EXHIBITORS IN DRAWING AND PAINTING

PROFESSORS LAINI NEMETT AND JENNY KEMP

Kaitlyn Blow
Ava Disaviano
Lauren Elder
Anh Lee
Rachel Meyers
Jenny Mutch
Janae Nieto
Melissa Pedro
Sophie Potter
Kristen Westerhoff
Zihan He

EXHIBITORS IN DRAWING AND PRINTMAKING

PROFESSOR SANDY WIMER

Marina Angelopoulos
Dylan Banever
Erin Besch
Miles Bigelow
Caitlin Buchanan
Lauren Capron
Matthew Caulfield
Ava Disavino
Lauren Elder
Sahar Shakeel
Sophia Gebara
Madeline Goldberg
Liith Haig
Zihan He
Emma Houston
Gamze Inanc
Samantha Kelley
Dhea Kothari
Jenny Mutch
Walani Ndhlouv
Maya Newell
Raya Petrova
Sophie Potter
Emma Puhalski
Pamela Rice
Josephine Sasso
Sahar Shakeel
Sophie Shapiro
Eleanor Vaughan
THE 2019 ANNUAL STEINMETZ SYMPOSIUM
STUDENT ART EXHIBITION

9 A.M. – 4:30 P.M.  •  CROWELL AND WEST GALLERIES IN THE FEIGENBAUM CENTER FOR VISUAL ARTS

EXHIBITORS IN PHOTOGRAPHY

PROFESSOR MARTIN BENJAMIN
Emily Alston
Nicole Bergamini
Emily Caruso
Trey Everett
Zihan He
Gamze Inanc
Jihyeon Jung
Changho Kim
Nik Lockwood
Melany Lucerno
Olivia Ma
Delano McFarlane
Stephen Nadler
Halle Nagorsky
Edwin Palma Solis
Jenna Paszek
Kallan Picconi
Jack Pierre
Gabrielle Polott
Miazoshi Ren
Reagan Schwartz
Alexandra Trousdalek
Tina Tully
Bowei Xu
Niuniu Zhang
Anthony Zhuang

EXHIBITORS IN SCULPTURE

PROFESSOR CHRIS DUNCAN
Miles Bigelow
Emily Bobruff
Sean DePhillips
Tyler Greenwood
Keegan Guinn
Trust Martin
Isabel McCarthy
Jenna Paszek
Emily Phillips
Sara Shenkman
Elizabeth Soper
Tina Tully

EXHIBITORS IN DIGITAL ART

PROFESSOR FERNANDO ORELLANA
Daria Agadzhanova
Kate Blow
Lauren Capron
Shannon Collins
Lisa DeMoranville
Juliana Diaz
Abby Ellis
Hein Htet Aung
Gamze Inanc
Ben Kopchans
Nicholas Lockwood
Melany Lucero
Samantha Miller
Annika Morrill
Maya Newell
Sophie Potter
Sarah Shenkman
Manuel Ventura
Yizhou Zhuang
SESSION I

9 – 10:40 A.M. • CONCURRENT ORAL PRESENTATIONS

KARP 001

FINANCE

MODERATOR: FUNDA DOGRUE

9 A.M. // ROBERT RIGHI
The Shifting Dynamics of International Currency Reserves

9:20 A.M. // AIDAN LOH
The Effectiveness of Chinese Monetary Policy

9:40 A.M. // SEBASTIEN LUBRANO
Studying the Characteristics and Efficiency of Venture-Capital Funded Startups

10 A.M. // TUNG (JUSTIN) NGUYEN
Data Center REITs: Performance and Portfolio Considerations

KARP 002

MIGRATION

MODERATOR: LEWIS DAVIS

9 A.M. // CASEY MORIARTY
The Public History of Immigration: Exploring the Ellis Island National Museum of Immigration

9:20 A.M. // PEDRAM MALAKIAN
The Impact of Generational Experiences on Anti-immigration sentiments

9:40 A.M. // TATSURO MURAKAMI
A Case Study of Blockchain Use in Azraq Refugee Camp

KARP 004

GENDER VIOLENCE IN CONTEMPORARY ARGENTINE LITERATURE

MODERATOR: WILLIAM GARCIA

9 A.M. // DANIELLE PINNEY
The Influence of Gender Perception in Le viste la cara a Dios (2011)

9:20 A.M. // SAMUEL FOGARTY
The Hidden Power of Femininity

9:40 A.M. // ENRIQUE ROMAN
A Ghostly Revelation

10 A.M. // MADELEINE HAMPARIAN
Contemporary Argentine Literature and Gender Violence: Invoking Memories through Selva Almada’s Chicas Muertas

KARP 005

REPRODUCTION AT THE MOLECULAR LEVEL

MODERATOR: BRIAN COHEN

9 A.M. // BRANDON ZAHLER
Investigating the Lipid Raft Residency and Caveolin Binding of the Human Follicle Stimulating Hormone Receptor

9:20 A.M. // SCOTT KOSZER
Developing an APEX Assay to Investigate Signaling and Protein Interaction of the Human Follicle Stimulating Hormone Receptor

9:40 A.M. // MOLLY BROGIE
Characterization of Membrane Microdomains on a Human Granulosa Cell Line by Atomic Force Microscopy

10 A.M. // JILLIAN LOVE
Modulating Human Follicle Stimulating Hormone Signaling Activity Using Small Molecules

10:20 A.M. // ELIZABETH ALTMAN
Mutations in the Human Follicle Stimulating Hormone Receptor Caveolin Binding Motif Cause Increased Basal Activation
SESSION I

9 – 10:40 A.M.  ●  CONCURRENT ORAL PRESENTATIONS

KARP 008

ENGLISH HONORS THESIS I
MODERATOR: JENELLE TROXELL

9 A.M.  //  KATIE CASADO
Mothers and Daughters

9:20 A.M.  //  ANGELICA DEDONA
The Afrofuturist Critical Lens

9:40 A.M.  //  ANDREA HUEY
Harry Potter and the Symbolic Order: A Psychoanalytic Deconstruction of the Hero

10 A.M.  //  ELIZA SHOCKET
Representations of Autism in Fiction

10:20 A.M.  //  CAMERON YANG
Affect as Phenomenon: Why Critics of Feeling Can Never Be Validated

KARP 105

NEUROSCIENCE
MODERATOR: QUYNH CHU-LAGRAFF

9 A.M.  //  KATHRYN BANGSER
Investigation of the Presence of a Developmentally Regulated Gene Controlling Neural Segmentation in Dragonflies

9:20 A.M.  //  LAUREN ELDER
Effects of Body Temperature on Action Potential Responses of Target-Selective Descending Neurons in Aeshna Dragonflies

9:40 A.M.  //  BEEJIT SARKER
A Quick Look into the "Fast as Lightning" Response: A Neural Investigation into the Maximal and Optimal Speeds of Prey for Aeshna Dragonflies

10 A.M.  //  XIER ZHAO
Testing the Effect of Orthographic Distinctiveness on Memory Processing Using Eye Tracking

10:20 A.M.  //  OLGA KHAZEN
An Event Related Potential Study of Skill Learning in Unpaired Participants
SESSION I

9 – 10:40 A.M.  ●  CONCURRENT ORAL PRESENTATIONS

LIPPMAN 012
KLEMM FELLOWS I
Moderator: Tom Lobe

9 A.M.  // SYEDA KANEEZ FATIMA
Morocco Diaries

9:20 A.M.  // EMMA LEE
The Different People I met in Cape Town, South Africa

9:40 A.M.  // JESSALYN LI
The Fevers Unit: Holistic HIV Care in Ghana

10 A.M.  // MARISA PETERS
Healthcare in Madagascar

10 A.M.  // GILLIAN SINGER
Klemm Fellowship 2018: Bolivia

LIPPMAN 014

POLITICAL TURMOIL
Moderator: Kristin Bidoshi

9 A.M.  // KEVIN FITZPATRICK
The Incidence of Intra-State Ethnic Violence: An Empirical Study on Ethnicity and Values

9:20 A.M.  // SEBASTIAN VIDMAR
Immigration and Voting for a Far Right Party: Evidence from Sweden’s 290 Municipalities

9:40 A.M.  // IRVING CORTES-MARTINEZ
Mexico: Neoliberalism, Popular Grievances and the Rise of Andra’s Manuel Lopez Obrador

10 A.M.  // MARIA LOVETERE
Negative Impacts of European Union Expansion on Romani Populations
SESSION I

9 – 10:40 A.M.  ●  CONCURRENT ORAL PRESENTATIONS

HEALTH CARE AND SOCIETY
MODERATOR: KAYWANA RAEBURN

9 A.M. // ANNA CURTIS
Infant Mortality Among African Americans: The Influence of Social Factors and Strategies for Equitable Treatment

9:20 A.M. // CHRISTIE DIONISOS
Neurosexism: The Extent to Which Sex Differences in Mental Illness are Neurologically Explained Versus Socially Constructed

9:40 A.M. // MARC PERLMAN
How Do the Type and Intensity of Chronic Pain Affect an Individual’s Willingness to Take Risks?

10 A.M. // DHRUV PATEL
Radiographic and Health Economic Analysis of Acetabular Retractors Placement Relative to Neurovascular Structure in Various Total Hip Arthroplasty Surgical Approaches

10:20 A.M. // TALITHA KUMARESAN
The Business Cycle and Health Outcomes in the U.S.

DRUGS
MODERATOR: J. DOUGLASS KLEIN

9 A.M. // SAPAN SHAH
Efficacy of the Policy Response to the American Opioid Crisis: A Case Study of Three States

9:20 A.M. // DYLAN WINDLE-PUENTE
Identifying the People at Risk: Which Populations are the Opioid Epidemic Affecting the Most?

9:40 A.M. // BRIAN SHORR
The Impact of State-level Naloxone Access Policies on Opioid-related Mortality and Treatment Admissions

10 A.M. // JOHN SULLIVAN
The Effects of E-Cigarette Policies on Adult Tobacco Use

10:20 A.M. // JONATHAN FIELDS
The Generic Paradox: Insight to the Process Behind Drug Pricing

GENERATION NOW
MODERATOR: CHRISTINE HENSELER

9 A.M. // GIUSEPPE DE SPUCHES, HAYDEN PANETH, MEGAN BROWN, KATE OSTERHOLTZ, KATHLEEN SINATRA
Generation Now: Our Book Production Story

PROXY RECORDS AND ENVIRONMENTAL CHANGE
MODERATOR: ANOUK VERHEYDEN-GILLIKIN

9 A.M. // ELIZABETH ANDONIE
Organic Pollution in Urban and Rural Streams in the Schenectady-Schoharie Region

9:20 A.M. // HEIDI O’HORA
Carbon Dynamics in a Marsh-dominated Estuarine Ecosystem

9:40 A.M. // HAYLEY BENNETT
A Multi-species Survey of Nitrogen Isotopes in Marine Mollusk Soft Tissues From a North Carolina Coastal System: A Potential Indicator of Nitrogen Loading

10 A.M. // ELIZABETH CILIA
Detecting Eutrophication in Coastal North Carolina with the δ15N of Seagrasses and Algae

10:20 A.M. // ANNIKA WELLS
ENSO-Induced Floods Recorded in Lake Sediment Cores from Las Cajas National Park, Ecuador
SESSION I

9 – 10:40 A.M.  ●  CONCURRENT ORAL PRESENTATIONS

SCHAFFER 204

FRENCH AND FRANCOPHONE STUDIES
MODERATOR: MICHELLE CHILCOAT

9 A.M.  // OUMOU ZAKARIA
The Evolution of the Presence and Recognition of Afro-Germans in Germany, from Colonization Until Today

9:20 A.M.  // MATTHEW CARRIGAN
Understanding the Rise of Marine Le Pen in France

9:40 A.M.  // ANNA GAGION
French Feminism and Muslim Women

10 A.M.  // NIUNIU ZHANG
The Existence of French Existentialist Cinema

WOLD 225

AEROGELS AND THEIR APPLICATIONS
MODERATOR: ANN ANDERSON

9 A.M.  // ANDREW HAMLIN
Micro-PIV Analysis of the Fluid Velocity Boundary Layer Over Hydrophobic and Superhydrophobic Aerogels

9:20 A.M.  // ALLISON STANEC
Etched Silica Aerogels

9:40 A.M.  // COLIN BLESSING
Implementing Aerogel into Chimney Pipe

10 A.M.  // XIAO PENG LI
Investigation of Ceria-nickel-containing Aerogels for Catalytic Converter Applications

10:20 A.M.  // ALLISON KING
Diffusivity Measurements of Aerogels

WOLD 128

DEVELOPMENTAL BIOLOGY
MODERATOR: NICOLE THEODOSIOU

9 A.M.  // OLIVIA ZIMMERMAN, ERENDIRA GARCIA PALLARES
Extraembryonic Membranes and Their Effect on Development in the Chick

9:20 A.M.  // EMMANUELA OPPONG
Morphologic Analysis of the Spiral Intestine During Development in Leucoraja erinacea

9:40 A.M.  // VANESSA RASKIN
Computational Analysis of the Developing Spiral Intestine in Leucoraja erinacea

10 A.M.  // KIRSTEN KAPTEIN
Pitx2 Patterning During Leucoraja erinacea Spiral Gut Development
SESSION II

10:50 A.M. – 12:30 P.M.  •  CONCURRENT ORAL PRESENTATIONS

BAILEY 207

MATH
MODERATOR: CHRISTINA TONNESEN-FRIEDMAN

10:50 A.M. // RYAN BALDWIN
Boundary Value Problems Related to Extremal Kaehler Metrics

11:10 A.M. // ALLEGRA DAWES
Geometric Group Theory and Hyperbolic Groups

11:30 A.M. // JULIA GREENE
Geometric Constructions, Origami and Galois Theory

11:50 A.M. // PAIGE ISSER
Examining Relationships Between Cancer Diagnosis Rates and Demographic Factors in New York State

12:10 P.M. // NIUNIU ZHANG
Category Theory and Universal Properties

KARP 002

WORK AND GENDER
MODERATOR: YOUNGHWAN SONG

10:50 A.M. // EMMA SPROTBERY
Female Underrepresentation in Adirondack-based Conservation Movements

11:10 A.M. // ANNA GAGION
Female Forest Rangers in the New York State Department of Environmental Conservation

11:30 A.M. // RORY NIZOLEK

11:50 A.M. // MEICHAI CHEN
The Effect of Variation in Gender-Math Stereotype Content on Loss and Risk Averse Behavior

KARP 004

GENDER
MODERATOR: ANDREA FOROUGHI

10:50 A.M. // RACHEL MEYERS
The Sexual Double Standard in American Society: Analyzing The Factors That Influence Gender-Based Discrimination

11:10 A.M. // HANNAH ELLEN
The Feminist Pursuit of Happiness: An Analysis of Feminist and Freudian Theories of Individualistic and Communalistic Pleasure and Joy

11:30 A.M. // GILLIAN SINGER
Acting Hysterical: Analyzing the Construction, Diagnosis and Portrayal of Historical and Modern “Hysterical” Women

11:50 A.M. // DREW LENZ
LGBTQ+ Asylum Seekers Versus the U.S. Asylum Regime
SESSION II

10:50 A.M. – 12:30 P.M. • CONCURRENT ORAL PRESENTATIONS

**KARP 005**

**EXERCISE AND ITS EFFECTS**

**MODERATOR: CAY ANDERSON-HANLEY**

10:50 A.M. // AMY HAVEN
The Social Determinants of Health and the Obesity Epidemic: A Public Health Analysis of Childhood Obesity in Rural New York State

11:10 A.M. // ALICIA CLARKE
Effects on Exercise and Meditation on Reported Stress and Cortisol in an Undergraduate Population

11:30 A.M. // ALEXA PULEIO
Neuro-exergaming for Older Adults with Mild Cognitive Impairment (MCI): A Single Bout of Interactive Physical and Cognitive Exercise (iPACES v2.5)

11:50 A.M. // MICAELA HAYTON
Neuropsychological Effects of the Interactive Physical and Cognitive Exercise System (iPACES) for Youth on the Autism Spectrum

12:10 P.M. // ELIZABETH JOHNSON
Neuropsychological Assessment in the Age of Technology: Comparing Paper vs. Electronic Versions of the Stroop Task

**KARP 105**

**ORGANISMS**

**MODERATOR: SCOTT KIRKTON**

10:50 A.M. // MEAGHAN BARROS, ABIGAIL VALACHOVIC
The Effect of Sex and Pregnancy on Jump Performance in Grasshoppers

11:10 A.M. // TROY HANSEN
Analysis of the Structure of Anoline Dewlaps Using Multiple Imaging Techniques

11:30 A.M. // MATTHEW HOLDAWAY, JUSTIN ANDOLINA
Analysis of the Use and Perception of Motion in the Lizard Anolis sagrei

**LIPPMAN 012**

**KLEMM FELLOWS II**

**MODERATOR: TOM LOBE**

10:50 A.M. // SRUTI BANDLAMURI
Non-Communicable Diseases (NCDs) in Fiji: IndoFijians vs. iTaukei

11:10 A.M. // TAWREAK EDDINGTON
Argentinian Law and Human Rights

11:30 A.M. // EMMANUELA OPPONG
Exploring Healthcare at St. Joseph Hospital (Moshi, Tanzania)

11:50 A.M. // SHANNON WEST
Sri Lankan Healthcare: What Our Countries Can Learn from Each Other
SESSION II

10:50 A.M. – 12:30 P.M.  CONCURRENT ORAL PRESENTATIONS

**LIPPMAN 014**

**SPORTS AND FASHION**  
**MODERATOR: BRADLEY LEWIS**

10:50 A.M. // MAHA MIAN  
The Economics of Fashion: Do Newcomers to the Industry Have a Chance?

11:10 A.M. // ALAINA THAXTER  
Volleyball Net Monitoring System

11:30 A.M. // ALEXA ROSEN  
Advertising in eSports: Effects of Ad Animation and In-game Dynamics on Viewers’ Demand for Advertisement and Product Consumption

11:50 A.M. // PATRICK BROWN  
Efficiency of Sports Gambling Markets

**LIPPMAN 016**

**DEVELOPMENTS IN HEALTHCARE DELIVERY**  
**MODERATOR: CAROL WEISSE**

10:50 A.M. // RACHAEL ROSE PARISI, SOPHIA FOSTER  
Using ArcGIS Mapping Tools to Identify Potential Training Opportunities in End of Life Care

11:10 A.M. // SOPHIA FOSTER  
Development of an End of Life Care Training Module Using Videotaped Testimonies of Former Peer Caregivers

11:30 A.M. // THOMAS GAGLIARDI  
Mindfulness Meditation at Union College: The 2018-2019 Obenzinger Scholarship Project

11:50 A.M. // BRIAN LEE  
The New Trend in Medicine: Motivations, Perceptions and Care Coordination in Integrative Medicine
SESSION II

10:50 A.M. – 12:30 P.M. • CONCURRENT ORAL PRESENTATIONS

LIPPMAN 017

EFFECTS OF CLIMATE CHANGE
MODERATOR: KATHLEEN LOGIUDICE

10:50 A.M. // SOFIA BOSWELL
Tick-Borne Diseases are on the Rise in the United States: An Analysis of the Explanations Behind Tick Expansion

11:10 A.M. // ANGELICA DEDONA
Environmental Racism: The Next Refugee Crisis

11:30 A.M. // MARIELLE CHRISTIE
How to Combat Post-Natural Disaster Related Environmental Gentrification and Environmental Inequality Accelerated by Climate Change

LIPPMAN 101

POLITICS, RESOURCES AND IDEOLOGY
MODERATOR: ZOE OXLEY

10:50 A.M. // CALEB YOKEN
Cartel Practices and Policies in the World War II Era

11:10 A.M. // NATHAN LEVI
The Belt and Road Initiative: How China Hopes to Reshape Global Infrastructure and Influence

11:30 A.M. // GIZELA THOMAS
Corn in American History and Politics

11:50 A.M. // JUSTIN LANGE
Make America Great Again? American Conservatism and Donald Trump
SESSION II

10:50 A.M. – 12:30 P.M.  CONCURRENT ORAL PRESENTATIONS

OLIN 106
TENSEGRITY ROBOTS
MODERATOR: JOHN RIEFFEL

10:50 A.M. // THOMAS SIPPLE
Dynamics of a Tensegrity Robot Strut

11:10 A.M. // JONATHAN KIMBER
Developing Efficient Learning Policies for Tensegrity Robots

11:30 A.M. // ZONGLIANG JI
Explore the Behavioral Repertoire of a Wireless Tensegrity Robot by MAPElites Algorithms

OLIN 306
THE ASSEMBLY OF TECTONIC TERRANES AND ORIGINS OF MAGMAS
MODERATOR: HOLLI FREY

10:50 A.M. // WILL FISHER
Zircon Facies in the Paleocene-Eocene Orca Group Indicate a Provenance Link to the Chugach Terrane, Prince William Sound, Alaska

11:10 A.M. // MOLLIE POPE
Provenance of Sandstone Conglomerate Clasts of the Orca Group in Prince William Sound, Alaska

11:30 A.M. // REBECCA LIPITT
Crystallization Conditions of the Tumalo Tuff, Bend Pumice and Shevlin Park Tuff near South Sister, OR

11:50 A.M. // MADISON CORCORAN
Crystal-poor Rhyolite Plagioclase Textures at South Sister Volcanic Field in Central Cascade Arc, Oregon

12:10 P.M. // MATTHEW COLE
Laser Ablation U-Pb Zircon Dating by Triple Quad ICP-MS; Can Mercury Interference Removal Lead to More Precise Ages: An example from the Adirondack Highlands, N.Y.

S&E N205
FLUID DYNAMICS
MODERATOR: ALI HAMED

10:50 A.M. // IAN SPECK
The Effect of Gaps on the Turbulent Flow Within and Above Canopies Resembling River Vegetation

11:10 A.M. // ADAM PETERLEIN, LINDSEY RANDLE
An Experimental Investigation of the Perturbation of a Turbulent Boundary Layer by Two Cylinders Arranged in Tandem

11:30 A.M. // THOMAS BYRNE
Design and Efficiency Analysis of a Horizontal-Axis Wind Turbine

11:50 A.M. // NATHAN HAMER
Design and Construction of a Dynamometer for the Union College Water Tunnel

12:10 P.M. // LIAM NADIRE
Liebau Pumping: A RIM-PIV Study of Valveless Pumping

WOLD 225
NANOTECHNOLOGY
MODERATOR: MIKE HAGERMAN

10:50 A.M. // JOCELYNE AKAMALIZA
Biopolymer Based Triboelectric Nanogenerators

11:10 A.M. // SCOTT AMBOS
Water Dispersible Cadmium Selenide Nanoparticles for Solar Energy

11:30 A.M. // YIFEI ZHU
Organically Modified Carbon Nanotube Thin Films for Electronic Applications
SESSION III

12:30 P.M.  ●  ENGINEERING TEAMS  ●  MACLEAN FAMILY ATRIUM, WOLD CENTER

ALLISON KING, SAMUEL VEITH, MARK SOLOMON, TYLER GREENWOOD, COLIN KEALLY, ELLIS WALDMAN, NICK DECHENE
Union College Baja Racing: Design of a Single Seat All-Terrain Vehicle

MADELEINE MILLER, DANIEL BRACK, SIRUS NEGAHAN
Union College Rocket Team

YU CHANG OU, PYAE SONE AUNG, LAM NGO, SAI HO, COURTNEY CASEY, AIKATERINI PETRIDOU, NIKOS PAPAIOANNOU, ILLYAS EL ARIF, KANE JAKLITSCH, ANTHONY YANG, EDWARD GEBARA
Union College Robotics Crew Micromouse Demos

AARON RAPAPORT, RODERICK LANDRETH, ALEXANDER PRADHAN
Engineering a Modular, Ultra Low Weight, High Lift, Remote Controlled Aircraft

12:30 P.M.  ●  MINERVA FELLOWS  ●  SCHAFFER LIBRARY

RANDI BROADWELL
Witkoppen Health & Welfare Clinic, South Africa

CLAIRE KELLY
Dharma Endeavours, India

MATTHEW LIQUORI, NICHOLAS WILLIAMS
Engeye, Uganda

ANGUS MCREYNOLDS
Union College Minerva Fellowship 2018-2019

EMMA PARECE, ISABELLE RHODES, LUKE MCCAFFREY
The Global Child, Cambodia

ENGINEERING a Modular, Ultra Low Weight, High Lift, Remote Controlled Aircraft
SESSION III

12:30 – 1:50 P.M. ● POSTER SESSION I ● SCHAFFER LIBRARY

THOMAS ANDRE
Fabrication and Characterization of Cerium- and Copper-Containing Aerogels

CHRIS AVANESSIAN
Microscopic Characterization and Elemental Mapping of Catalytic Aerogels

CHRIS AVANESSIAN
Calculating Surface Tension with Capillary Waves

ELSABECHU
Modeling Free Convection in Bryophytes Using Temperature Distributions Within the Canopy

ISABELLA BERGAMI
The Location, History and Current Activity of Kilauea in Hawaii

HELEN BLACK
Measuring the Mass of the Pisces-Perseus Supercluster with the APPSS Survey

KARA BROWN, ALEXANDER NEWHOUSE
A Novel GI Bleed Solution: SmartClips Achieving and Maintaining Hemostasis

NAM BUI
Optimal Error Handling Strategy for Conversational Agent

CARLY BURNS
Analysis of the United States Healthcare System and the Challenges Faced by Citizens of Lower Socioeconomic Status

ALAINA CHORMANN
Calibrating Hydroclimate Proxies in a Modern Southern Portuguese Speleothem

JACK EDSON
Using Atomic Force Microscopy to Characterize Local Material Environments in Developing Embryos

LYDIA HURSH
Women’s Rights Under Brehon Law

SAMUEL KEMP
Forces Between Inclusions on a Lipid Bilayer

DEREK KHNAIZIR
Global Impact of the U.S Economy: An Analysis of the Channels of Interconnection and their Transmission Effects

JONATHAN KIMBER
Efficiently Searching for Large Strong Uniquely Solvable Puzzles

SAMANTHA KRUZSHAK
Variability in Female Preference Traits of Fruit Flies

SAMUEL KUPIEC
Seward Fellows Independent Project: The Ecosystem of the Exhaust Catalysis Industry

MATTHEW LAROSA, RYAN PUGLISI, CHRISTOPHER O’BRIEN
Union College Catalytic Aerogel Testbed

NAOMI ARIELLE LAWTON
Modification of an Industrial Fungus to Disable a Gene Encoding an Enzyme for the Biosynthesis of the Amino Acid Tryptophan

GEORGIA MRAZ, JACOB FEINSTEIN, CHRISTOS KAKOGIANNIS
EXOFAST Analysis of Exoplanet Transits Observed at the Union College Observatory

CHARLES NELSON, EMMA MERLINO, BRENDAN LAING
Cannulation Pilot to Eliminate Recirculation During Hemodialysis

NATHAN OASIS
Bridging the Semantic Gap in Music

NICOLE PULLA
Jornaleras: The Unacknowledged Challenges of Women Day Laborers
SESSION III

12:30 – 1:50 P.M. ● POSTER SESSION I ● SCHAFFER LIBRARY

HUNTER REINHARDT
Semiconductors, Business Organization and Technological Innovation in a Fragmented World

JOANA SANTOS, MATTHEW ROIZIN-PRIOR
Modification of the Rapid Supercritical Extraction Method to Make Aerogels for Specific Applications

IAN SCILOPOTI
Teleoperation of Robotic Systems in Virtual Reality

ALEXANDER SHAKIBAI
Morphological Analysis of Nanocomposite Films on Titanium Alloys for Biomedical Applications

JASON SINDONI, MARTIN PARGIELLO, PHOENIX MENDES
Observations of Koronis Family Asteroids during 2017-19 at the Union College Observatory

JAMES STANLEY
Testing Aerogels as Diesel Particulate Filters

KATHLEEN SWANSON
Bionanocomposite Films atop Titanium Alloys

SARAH TAHÂ
A Proposed Improved Inferior Vena Cava Filter Retrieval Mechanism Design

RAMSEY WALSH
Environmental Concern and the Global Financial Crisis in the European Union

EVA WILLARD-BAUER
Baseline Monitoring of Physical Parameters and Enterococci Levels in the Hans Groot Kill, Schenectady, N.Y.
SESSION III

12:30 – 1:50 P.M.  ●  POSTER SESSION II  ●  MACLEAN FAMILY ATRIUM, WOLD CENTER

ZAID AL-MOGHRABI
Optimization and Performance of Bifacial Solar Modules

HALLIE BATCHELDER
Emotional Manipulation in Hellenistic Art and Architecture

JACKSON BECKMAN
Light Pollution and Dark Sky Refuges: Human Enjoyment, Ecological Importance and Societal Challenges

BENJAMIN BECKWITH
The Physics of Rowing: Accelerometer and Video Analysis on Ergometers

CHRISTOPHER BENDIX
Heat Transfer in Mycelium

COLIN BROWNLEE
Design of Direct Clip Hanger for Sport Climbing

HANNAH CHRISTIAN
The Ketogenic Diet as a First-Line Epilepsy Treatment: A Meta-Analysis

SILAS CLEVELAND
Control of Thermally Activated Nylon Actuators

ANDREW CROUTH
Hydro-Power in Antiquity: 3D Printed Mills

BRANDON DEMPSEY
Use of Heat Pipes in PCM Latent Heat Storage

DANIELA DI CAPUA
Environmental Justice: The Disproportionate Burden Experienced by Minority and Low Socioeconomic Status Groups

KYLE DONEY
Digitizing Caesar: The Case for a Latin eReader

MATTHEW EGGLIN
Analysis for Phishing Prevention

OGHENERHONA ESEYADE
Characterizing DC Motors for Small Projects Using a Prony Brake

IRELEE FERGUSON
Neuropsychological Effects of the Interactive Physical and Cognitive Exercise System (iPACES) for College Students with Attention Deficit Hyperactivity Disorder

KEVIN GOLDBERG
Thermal Energy Storage Using Phase Changing Wax

JUSTIN GOLD, AIKATERINI PETRIDOU
Replicating Data Collection of Bayesian Optimization on a Six-Bar Tensegrity Robot

MOLLY GOODMAN
2019 Student Green Fee: The Eco-Renovation of Ozone House

JONATHAN GRAZIOSI
Main Controller of DC Microgrid

LISA GU
Automated Greenhouse Watering System for Schenectady ARC

NATHALIE GULLO
The Survival Processing Effect Through the Lens of Evolution and Self-Reference

JILLIAN GUTHRIE
Relativistic Electron Dynamics: An Upper Level Laboratory Experiment

ADAM HALL
Power Generation of Hybrid Photovoltaic and Thermoelectric Modules

SAI ZHUNG HO
Circuit Breaker Failure Analysis

DAVID KHAZEN
Drag Reduction on a Backward-Facing Step: Effect of Tabs and Their Spacing

TAYLOR KURTZ
Single Photon Experiments Using Spontaneous Parametric Down Conversion
SESSION III

12:30 – 1:50 P.M. ● POSTER SESSION I ● WOLD CENTER ATRIUM

**GRiffin Lamp**
Alternative Design for Uniform Quenching of Aluminum Samples

**Peter Leary**
Design and Evaluation of Cooling Systems for PV Modules

**Julian Martin**
Simulating Dragonfly Prey Flight with Parallel Robotics

**Quinn McCarthy**
Economic Effects of Retail Marijuana Legalization: Evidence from Colorado

**Max McGeown**
Temporal and Spatial Variation in Ion and Trace Mineral Concentration in Urban and Rural Streams in and Around Schenectady

**Duncan Mularz**
Twist Assist Bottle and Jar Opener

**Colin Murphy**
The Nature of Asset Bubbles and the Timing of Their Burst

**Yu Chang Ou**
Robotic Arm PID Controller

**Talia Paradiso**
Feminine Beauty as a Precursor to Fear in the Myth of Arethusa

**Justice Park**
Studying Visual Motion Perception in the Lizard *Anolis carolinensis* using the Optomotor Response

**Aikaterini Petridou, Justin Gold**
Replicating Data Collection of Bayesian Optimization on a Six-Bar Tensegrity Robot

**Brendan Pritikin**
Development of an Inexpensive Seismometer for Use in Educational Curriculum

**Nurupa Ramkisson**
The Effects of the ABC FSH Receptor Mutant on Follitropin Binding and Signal Transduction

**Aaron Rapaport**
Inkjet Printing of Solar Nanocomposites

**Peter Richmond**
Optimization of Solar Power

**Jacob Rothschild**
All-In-One CNC Machine

**John Schlater**
Ion Beam Analysis of Fabric Dyes from Myanmar

**Pranav Shrestha**
Mode-meter for distributed computing of Inter-area Oscillations in the Power Grid

**Jason Stack**
Design and Construction of Optical Tweezers

**Kevin Trigo**
Modeling an Expanding Universe

**Nelson Trombley**
Custom Circuit Board Design for Wireless Tensegrity Robots

**Thanh-Liem Vu**
Lead Diffusion in Iron Sulfides: Experimental Applications to Study the Differentiation of Iron Meteorites and Early Global Melting

**Guanxiao Yang**
Label-Free Imaging of Myelination in Adult Zebrafish Using Photoacoustic Microscopy
SESSION IV

1:50 – 3:30 P.M.  ●  CONCURRENT ORAL PRESENTATIONS

EMERSON HALL, TAYLOR MUSIC CENTER

ARTS
MODERATOR: JENNIFER MATSUE

1:50 P.M. // SOPHIE SHAPIRO
Institutions Around Avant-Garde Painting in 19th-century Paris

2:10 P.M. // SAMANTHA MILLER
Bridging the Dimensions Through Automated Canvases

2:30 P.M. // DANIEL TOLAND
Psychology, Emotion, and Jazz: Using Cognitive Music Theory to Understand Differences in Emotional Qualities of Classic and Contemporary Jazz Music

FEAR, DEATH AND RELIGION
MODERATOR: JOSHUA HART

1:50 P.M. // HANNAH WEEKS
Spirituality and Personality

2:10 P.M. // SAMANTHA MARIN
The Relationship Between Religiosity and Implicit vs. Explicit Death Anxiety

2:30 P.M. // CAROLINE EVERTS
Letting the Dead Speak: An Examination of Burial Practices and Social Identity

2:50 P.M. // KHOA TRAN
Between Life and Death: On the Tomb House and the Tomb Abandonment Ceremony of the Jarai Tribe of the Vietnamese Central Highland

KARP 002

VIOLENCE AND OPPRESSION
MODERATOR: GUILLERMINA SERI

1:50 P.M. // JACKSON SANDERS
Modern Day Slavery: An Analysis of How and Why the Universally Outlawed Practice Still Exists, if not Thrives

2:10 P.M. // DANIEL GOTTLIEB
Assessing the Cultural, Political and Economic Determinants of Terrorism

2:30 P.M. // EMILY EHRlich
Modeling the Relationships Among Adverse Childhood Events, Intimate Partner Violence and Body Esteem

2:50 P.M. // SULEYDI BETANCOURT
The Unheard Voices: A Content Analysis of Male Victim Narratives from an Online Forum

KARP 004

CHILDHOOD AND EDUCATION
MODERATOR: CATHERINE WALKER

1:50 P.M. // SARAH GOTTLIEB
Early Education Spending on Children Under Five: An Analysis of Influential Political and Economic Factors

2:10 P.M. // RYAN SCHAENMAN
The Effect of Family Structure in Adolescence on Adulthood Education, Earnings and Employment

2:30 P.M. // MICHAEL STALTERI
The Correlation Between Avoidant and Restrictive Feeding Intake Behaviors and Autism Spectrum Diagnostic Criteria of Children Based on Parent Report

2:50 P.M. // KWOK CHUN WONG
Politics and Storytelling: Chinese Primary School Textbooks, 1950 to the Present
SESSION IV

1:50 – 3:30 P.M.  •  CONCURRENT ORAL PRESENTATIONS

KARP 008

ENGLISH HONORS THESIS II
MODERATOR: JENELLE TROXELL

1:50 P.M. // KELSEY HARTSOE
Mirror in Disguise: An Exploration of Conflicts Between Desire and Performance and the Abstract and Reality Through Encounters with Simone de Beauvoir, Hannah Arendt, Jacques Lacan and Michel Foucault

2:10 P.M. // DEANNA SINTAY
Sister Nature: Ecofeminism in the Works of Margaret Atwood and Ursula Le Guin

2:30 P.M. // LIZA WOLF
The Scorned Woman: Ancient and Modern

2:50 P.M. // JANAE NIETO
Aphasia and Stutter Therapy: An Ailment Not to be Treated

KARP 105

BIOENGINEERING
MODERATOR: TAKASHI BUMA

1:50 P.M. // WILLIAM BROWN
Neurobox: A Battery Operated, Portable Recording Setup for Electrophysiology

2:10 P.M. // MATTHEW CAULFIELD
Optical Coherence Microscopy and 3D Visualization

2:30 P.M. // ANDREA HUEY
Designing a Low-Cost Ultrasound Pulser

2:50 P.M. // OWEN COREY
Cryopreservation of Human Mesenchymal Stem Cells in Covalently Crosslinked Polymeric Hydrogels

LIPPMAN 012

THE BISALPUR WATER PROJECT IN RURAL RAJASTHAN
MODERATOR: JEFFREY WITSOE

1:50 P.M. // JULIA BEEKMAN
India's Drinking Water Crisis

2:10 P.M. // HARRIS BEEMAN
The Bisalpur Water Project

2:30 P.M. // HANNAH JOSOVITZ, MITCHELL KABAKOW
Broken Faucets, Broken Promises in Radoli Village, Rajasthan

2:50 P.M. // KATHARINE BEAL, ALLISON REMMELL
Survey Results from Radoli Village, Rajasthan

3:10 P.M. // HANNAH JOSOVITZ
Methods for Teaching Disadvantaged Youth in Jaipur, India

LIPPMAN 014

ELECTIONS IN THE U.S.
MODERATOR: ZOE OXLEY

1:50 P.M. // NICHOLAS MEIXSELL
Publicly Financed Elections

2:10 P.M. // CHRISTINA CRAIG
The Role of Regional Identities on Depolarizing Partisans

2:30 P.M. // SARAH KAPLAN
A Cross County Examination of Fiscal Federalism in the 2016 Election

2:50 P.M. // MARGARET MCCORMICK
Representational Style and Congressional Elections: New York's 19th District in the 115th Congress

3:10 P.M. // EMILY BOBRUFF
The 2018 Midterm Elections: Gender, Media Representation and Campaign Strategies
SESSION IV

1:50 – 3:30 P.M. • CONCURRENT ORAL PRESENTATIONS

**LIPPMAN 016**

**TECHNOLOGY AND THE HUMAN CONDITION**

**MODERATOR: LORRAINE COX**

**1:50 P.M. // AVA RUSSELL**
The Impact of the Neanderthal Genome on Understanding Human Evolution

**2:10 P.M. // SOPHIA GEBARA**
Virtual Reality-altered States and the Human Condition

**2:30 P.M. // THOMAS BLEASE**
Calculating the Efficacy of Contemporary Cyberlaw

**2:50 P.M. // KATIE CASADO**
Online Terrorism and the Advent of the Online State

**3:10 P.M. // ALEXANDER TELLIDES**
The Implications of Artificial Intelligence on Society & Modern Ethics

**LIPPMAN 017**

**SCHENECTADY AND UNION**

**MODERATOR: KENNETH ASLAKSON**

**1:50 P.M. // ANTHONY BOONE**
“We Very Much are Looking for a New Ethnic Group”: The Legacy of the African Diaspora in Schenectady

**2:10 P.M. // EMILY COELLO**
Uncovering an Institutional History: Rev. Lewis Lockwood, Eliphalet Nott and Union College’s Involvement in the Advancement of 19th-century African-Americans

**2:30 P.M. // CAMERON DREHER**
A Sociological Examination of First Year Residence Life at Union College (NY)

**2:50 P.M. // DALILA HADEN**
The Effect of Higher Education on Adolescent Intersectional Identity Formation

**3:10 P.M. // SOPHIA LANGNER**
Masculine Identity and Campus Life

**OLIN 106**

**GREEN ENERGY**

**MODERATOR: RICHARD WILK**

**1:50 P.M. // CHRISTOPHER WILK**
Energy Modeling of Ainlay Hall

**2:10 P.M. // ANDREW WOJTOWICZ, ZACHARY NISLICK**
Design of a Density-Driven Solar Thermal Water Pasteurization System

**2:30 P.M. // SUNAN SUN**
Testing and Evaluation of Various Solar Energy Applications

**2:50 P.M. // DAVID KOVAL**
Design Optimization of a Multi-Energy Storage System for Electric Vehicles

**3:10 P.M. // PHILLIP PANICI**
Is the Use of Fossil Fuels for Electricity Generation Declining as Renewables Become More Popular?

**S&E N205**

**SUSTAINABLE MATERIALS**

**MODERATOR: J. STEPHEN HORTON**

**1:50 P.M. // NICHOLAS GARCIA**
Extending an Open Source Transcriptome Analysis Tool for Application to Fungal Biomaterials

**2:10 P.M. // ANNA HAROOTUNIAN**
CRISPR Editing of the Gene FST4 in an Industrial Fungus Used in Commercial Biomaterials

**2:30 P.M. // SARAH SUBIK**
Bamboo: A More Sustainable Alternative to Downhill Ski Core Materials

**2:50 P.M. // BRIAN HARKNESS**
Natural Composite Beam Design and Construction for 2019 SAMPE Bridge Contest
SESSION IV

1:50 – 3:30 P.M. • CONCURRENT ORAL PRESENTATIONS

WOLD 128

INNOVATIVE DESIGNS
MODERATOR: BRAD BRUNO

1:50 P.M. // TAYLOR COBB, SAMUEL KUPIEC, JACOB PESSIN
Union College Aero Team: Conquering Challenges of Autonomy and Carbon Fiber Construction

2:10 P.M. // JIASEN ZHENG
Design and Performance Study of a Permanent-Magnet Rotary Refrigerator Demo

2:30 P.M. // BRIAN ZICK
Remote Desktop Power Switch

2:50 P.M. // PYAE SONE AUNG
Open Source Mobility Device for Children with Disabilities

WOLD 225

BIOCHEMISTRY
MODERATOR: KRISTIN FOX

1:50 P.M. // LE MINH NGUYEN
Enzyme Kinetic Characterization and Substrate Specificity of Schizophyllum Commune Metacaspases

2:10 P.M. // CHARLOTTE MINEO
Using Low and High Affinity Calcium Binding Site Mutants to Gain Insights into the Calcium-Dependent Activation of Metacaspase 1 From Schizophyllum Commune

2:30 P.M. // BRIANNA CUMMINGS
Auto-proteolysis of Type 1 Metacaspases in Schizophyllum Commune

2:50 P.M. // MAXIMILLIAN TAM
Synthesis of Metacaspase Inhibitors

3:10 P.M. // ALEXA CARUSO
Impact of Single Nucleotide Polymorphisms on HPA-Axis Functionality in Depression

3:30 P.M. // MARGOT O’BRIEN
Impact of Single Nucleotide Polymorphisms in HPA Axis Functionality in Obese Population
SESSION V

3:40 – 5:00 P.M. • CONCURRENT ORAL PRESENTATIONS

KARP 002

MEDIA AND THE SHAPING OF OPINION
MODERATOR: SUZANNE BENACK

3:40 P.M. // GEORGIA GARDNER
Have Scripts for Initiation of Adult Sexual Behavior Changed in 80 Years? Evidence from Top Box-Office Films

4 P.M. // ANNIKA MORRILL
Weegee the Famous: The Making of Myth in the Time of Murder Inc.

4:20 P.M. // SCOTT HOJLO

4:40 P.M. // MAYA NEWELL
#JUUL: Social Media and the Making of a Moral Panic

KARP 005

EVOLUTIONARY BIOLOGY
MODERATOR: ROMAN YUKILEVICH

3:40 P.M. // DAVID LOVE
Searching for the Operating Model of Sexual Selection in Drosophila athabasca

4 P.M. // JAMES LAGRAFF
Experimentally-Imposed Evolution of Drosophila athabasca

4:20 P.M. // HANNA WHITEHOUSE
Diplostomum spathaceum Effects on Fish Behavior: Adaptive or Pathogenic?

KARP 008

CLASSICS
MODERATOR: MARK TOHER

3:40 P.M. // KATHRYN RITER
Aristophanic Comedies: Creating Social Bonds with Humor

4 P.M. // DEVLIN DALEY
Understanding the Lived Experience of Ancient Roman Gardens

4:20 P.M. // MITCHELL TOOLAN
An Exploration of Latin Color Terms in Vergil’s Aeneid 1-6

KARP 105

CELLS
MODERATOR: LAURIE TYLER

3:40 P.M. // KELSEY MASSELLI
Development of Metal Containing Anticancer Drugs Through Investigation of their Topoisomerase Inhibition

4 P.M. // COLLEEN MORAN
Flow Cytometry Analysis of Anastasis in Cultured Mammalian Lymphocytes

4:20 P.M. // HALLE NAGORSKY
Intracellular Abnormalities in Human Infantile Neuronal Ceroid Lipofuscinosis Patient Cells
SESSION V

3:40 – 5:00 P.M.  •  CONCURRENT ORAL PRESENTATIONS

LIPPMAN 014
INTERNATIONAL RELATIONS
MODERATOR: CIGDEM CIDAM

3:40 P.M. // ALEXANDER ELLENTHAL
Analyzing the German-Soviet Relationship Between 1918-1941

4 P.M. // VICTORIA CARTER
Hope for Another Humanitarian Intervention? Rwanda, Kosovo, Libya and the Consequences of the Responsibility to Protect (R2P) on Myanmar

4:20 P.M. // ALASTAIR ALLEN
Saudi Arabia and Iran: An Analysis of the Current Conflict from the Constructivist Perspective

4:40 P.M. // KATYA WELCH
Are Sanctions Effective? A Case Study of United States Sanctions Imposed on the Russian Federation

OLIN 106
COMPUTER SCIENCE
MODERATOR: MATTHEW ANDERSON

3:40 P.M. // JACOB KARAUL
Motion Capture Enabled Research at Union College

4 P.M. // IAN SCILIPOTI
A Virtual Reality Interface for Interactive Terrain Modeling

4:20 P.M. // RIANNA QUIOGUE
Preventing Browser Fingerprinting by Randomizing Chromium Browser Attributes

OLIN 306
WATER AND THE ENVIRONMENT
MODERATOR: MASON STAHL

3:40 P.M. // CONNOR HORAN
Characterizing the Waters of Six Rivers in Upstate New York with a Focus on Hydrologic Controls on Water Quality

4 P.M. // JACK WASSIK
Connecting the Age and Fraction of Riverine Labile Organic Carbon to Watershed Geology and Land Use

4:20 P.M. // SOPHIA BUTE
Union College Water Initiative: Helping Educate the Public About the Quality of Their Drinking Water

4:40 P.M. // PAIGE WEBSTER
Politically-Made Disasters: An Analysis of Three Water Crises in the United States

S&E N205
BIOMECHANICS
MODERATOR: RONALD BUCINELL

3:40 P.M. // HUNTER CONSTABLE
Evaluation of Intervertebral Disc Generation and Recovery

4 P.M. // ARDEN KELLNER
The Benefits and Drawbacks of Barefoot Running

4:20 P.M. // TERRY YE
Investigating Material Characterization on Achilles Tendon With and Without Treatment

S&E N304
PHYSICS AND ASTRONOMY
MODERATOR: SAMUEL AMANUEL

3:40 P.M. // AIYANA POULIN
Automated Surface Photometry of Galaxies in Groups
SESSION V

3:40 – 5:00 P.M. ▶ CONCURRENT ORAL PRESENTATIONS

4 P.M. // CAMERON YANG
The Particle-Particle Particle Mesh Method for Magnetic Dipoles

4:20 P.M. // THOMAS GAGLIARDI
Coffee Chemistry: Monitoring and Analyzing the Degradation of 5-Caffeoylquinic Acid During Roasting

WOLD 128

DRONES
MODERATOR: JOHN SPINELLI

3:40 P.M. // BLAIR HAGEN
Using a Drone as an Antenna Relay for Obstructed Ground Stations

4 P.M. // DAVID MORLEY
Design and Implementation of Telemetry and Autonomous Control Systems for Two Remotely Controlled Aircraft

4:20 P.M. // WENHAO YANG, ANTHONY YANG XU
Gesture Control Quadcopter

4:40 P.M. // WENHAO YANG
Gesture Controlled Quadcopter System

WOLD 225

ENVIRONMENTAL CHEMISTRY
MODERATOR: LAURA MACMANUS-SPENCER

4 P.M. // STEPHANIE KEARING
Investigation of the Photolysis of the Common UV Filter Chemical Octyl Dimethyl Para-Amino Benzoic Acid and Its Photoproducts

4:20 P.M. // NICOLE DEROSIER
Study of the Photolysis and Cellular Toxicity of the Organic Ultraviolet Filter Chemical 3-(4-Methylbenzylidene) Camphor and Its Photoproducts

4:40 P.M. // MICHAEL ALDOROTY
Analysis of Perfluoroalkyl Acids (Pfaas) in Contaminated Soils from Bennington, VT
STEINMETZ DANCE PERFORMANCE

FRIDAY, MAY 10  ●  4 P.M  ●  NOTT MEMORIAL

The 2019 Lothridge Festival of Dance
FACULTY SPONSOR / DIRECTOR OF DANCE: MIRYAM MOUTILLET

Faculty Choreography and Guest Artists

DARA DEWI
CHOREOGRAPHED BY KADEK DEWI ARYANI
DANCE BROUGHT BACK FROM THE BALI MINI-TERM

RESILIENCE
CHOREOGRAPHED BY MIRYAM MOUTILLET
MUSIC BY ORANGE BLOSSOM
Emily Alston, Sydney DeCesare, Emma Kelly, Arielle Lawton, Rebekah Lindsey, Alex Merrill, Mary Melo and Michela Michielli

DISQUIET
CHOREOGRAPHED BY LAURIE ZABELE CAWLEY
MUSIC BY MAX RICHTER /VIVALDI
Emily Alston, Leigh Cavanaugh, Alex Kucinski, Emma Kelly, Arielle Lawton, Mary Melo, Danielle Pinney, Abby Polott, Portia Taylor and Shannon West

MOTHER
CHOREOGRAPHED BY ERIC HATCH
MUSIC BY RUPAUL
Yesenia Negron and Portia Taylor

THE DANCE EXPERIENCE
CHOREOGRAPHED BY JOAN KILGORE ANDERSON
Leigh Cavanaugh, Savannah Jelks, Emma Kelly, Lilly Kurker, Mary Melo, Michela Michielli and Florainne Walcott-Taylor

Student Choreography

COIN TOSS
CHOREOGRAPHED BY SYDNEY DECESARE
MUSIC BY ANDY IORIO
Leigh Cavanaugh, Madalyn Engvold, Sydney DeCesare, Portia Taylor and Shannon West

EVOLVING
CHOREOGRAPHED AND DANCED BY EMILY ALSTON, SHYAN BROWN, CARLY CHERCHES, SYDNEY DECESARE, PORTIA TAYLOR AND SHANNON WEST
MUSIC BY BEN PLATT

THE REAL WORLD
CHOREOGRAPHED BY EMILY RASMUSSEN
MUSIC BY LUNCHMONEY LEWIS
China Campagnuolo, Leigh Cavanaugh, Rachel Eisenberg, Alex Kucinski, Lilly Kurker, Emily Rasmussen, Dami Oluwadara and Juls Sweet

ABOUT-FACE
CHOREOGRAPHED BY EMILY ALSTON
MUSIC BY APHEX TWIN
Emily Alston, Shyan Brown, Leigh Cavanaugh, Meesha Gupta, Emma Kelly, Mary Melo, Felika Poblah, Virali Shah and Larissa Umulinga

MANMOHINI
PERFORMED BY SHREYA SRIVASTAVA
MUSIC BY AR RAHMAN

PLEASE NOTE: For safety reasons, the audience capacity of the Nott Memorial is limited, and space is available on a first-come, first-served basis. Overflow seating will be available in Reamer Campus Center auditorium, where the performance may be viewed on streaming video. The order of pieces is subject to change and will be available in programs distributed at the performance.
Student Dance Clubs

AFRICAN DANCE CLUB *The Sounds of Africa*
CHOREOGRAPHED BY MARILE NORBURN AND OUMOU ZAKARIA
MUSIC BY BALAYA, GBONA AND OVA
Jocelyn Akamaliza, Jossara Dos Santos Dias, Melisa Depina, Dessources Domond, Adenike Hickson, Marile Norbrun, Emmanuella Oppong and Oumou Zakaria

BHANGRA UNION *Bhangra Blowout*
CHOREOGRAPHED BY DANIELLE GREGG, KAYLYN HUNG, DRISHTI PATEL, ALAN PERROTTI, VIRALI SHAH
Eлина Dave, Christie Dionisos, Rachel Eisenberg, Danielle Gregg, Komal Hombal, Kaylyn Hung, Savannah Jelks, Dhea Kothari, Eeshan Kurnar, Maha Mian, Bonnie Moon, Aneri Patel, Dhruv Patel, Drishti Patel, Alan Perrotti, Ruchi Raval, Sapan Shah, Virali Shah, Dhara Shukla, Devneet Singh, Dharshini Suresh, Tiffany Vembenil, Mia Villeneuve and Arjun Wali

HIP-HOP CLUB
CHOREOGRAPHED BY CHINA CAMPAGNUOLO, CHRISTIE DIONISOS AND MAHA MIAN
MUSIC BY ARIANA GRANDE, BLUE FACE, JAY PARK
Hayley Bennett, Athena Bo, China Campagnuolo, Christie Dionisos, Hannah Ellen, Taylor Frielings, Julia Greene, Lilly Kurker, Rebecca Lippitt, Maha Mian, Danielle Pinney, Abby Polott, Virali Shah and Portia Taylor

IN-UNISON STEP TEAM
CHOREOGRAPHED BY FELIKA POBLAH AND CORRINE JEAN-GILLES

LATINX DANCE CLUB *Amor y ritmo*
CHOREOGRAPHED BY CYNTHIA PAZ AND BONELYN DE LOS SANTOS
MUSIC BY PRINCE ROYCE & MARC ANTHONY AND LOS HERMANOS
Gianna Morton, Cynthia Paz, Bonelyn De Los Santos, Edwin Palma Solis, Aleks Szumilo and Leanne Torres

UNION K-POP
CHOREOGRAPHED BY LIA KIM, KYLE HANAGAMI, JIN STAR, KEONE MADRID
MUSIC MIX BY TWICE, RED VELVET, PENTAGON, MOMOLAND, CLC, BTS
Emily Alston, Meichai Chen, Yixin He, Sophie Hurwitz, Maha Mian, Juliet Park, Portia Taylor and Mushan Zhong

UNION COLLEGE DANCE TEAM
CHOREOGRAPHED BY CARLY CHERCHES, DANIELLE PINNEY AND SHANNON WEST
MUSIC BY OLLY MURS
Kathryn Bangser, China Campagnuolo, Carly Cherches, Leigh Cavanaugh, Sydney DeCesare, Isabella Demyan, Julia Greene, Alex Kucinski, Lilly Kurker, Mary Melo, McKenna Palczak, Danielle Pinney, Abby Polott, Emily Rasmussen, Julia Waszak and Shannon West

SPONSORS
Mrs. Joan and Mr. David L. Henle
William E. and Anna S. Lothridge 1879 Fund
Charles D. Lothridge ’44 / Edward Villella Fellowship
The Stephanie C. Davis Dance Residency
The Gail and Carl George Annual Fund
The Joan Gould Scholarship

FACULTY AND STAFF
Laurie Zabele Cawley / Coordinator of the Dance Program
Eric Hatch / Hip Hop Dance Adjunct
Robert Bovard / Technical Director
Brittney Belz / Costume Coordinator
Andy Iorio / Musical Director-Audio Editor
Ryota Matsue / Photographer-Filmmaker
Lee Walls / Learning Environments Services—Live Streaming
Victoria Rotondi / Theater and Dance Administrator
Isabella Demyan, Jana Davis and Shannon West / Work Study

FOR THIS PERFORMANCE WE WOULD LIKE TO THANK:
STEINMETZ CONCERT 2019

FRIDAY, MAY 10 ● 8 P.M ● MEMORIAL CHAPEL

Union College Chorale and Union College & Community Orchestra
MUSIC DIRECTOR: CONRAD CHU

Program

UNION COLLEGE & COMMUNITY ORCHESTRA
AN OUTDOOR OVERTURE
Aaron Copland (1900-1990)

UNION COLLEGE CHORALE
MADRIGAL, ‘APRIL IS IN MY MISTRESS’ FACE’
Thomas Morley (c. 1558-1602)

‘THE SPRING TIME OF THE YEAR’ FROM FIVE ENGLISH FOLK SONGS
Ralph Vaughan Williams (1872-1958)

‘THE LOBSTER QUADRILLE’ FROM LEWIS CARROLL’S ALICE IN WONDERLAND
Irving Fine (1914-1962)

UNION COLLEGE CHORALE AND UNION COLLEGE & COMMUNITY ORCHESTRA
PSALM 104 FOR MIXED CHOIR AND CHAMBER ORCHESTRA
Hilary Tann, John Howard Payne Professor of Music

UNION COLLEGE & COMMUNITY ORCHESTRA
SYMPHONY NO. 6 IN F MAJOR, OP. 68 “PASTORAL SYMPHONY”
I. ALLEGRO MA NON TROPPO (AWAKENING OF CHEERFUL FEELINGS ON ARRIVAL IN THE COUNTRYSIDE)
II. ANDANTE MOLTO MOSSO (SCENE BY THE BROOK)
III. ALLEGRO (MERRY GATHERING OF COUNTRY FOLK)
IV. ALLEGRO (THUNDER, STORM)
V. ALLEGRETTO (CHEERFUL AND THANKFUL FEELINGS AFTER THE STORM)
Ludwig van Beethoven (1770-1827)

Union College & Community Orchestra

VIOLIN I
Heather Chan, Concertmaster
Kartik Nath
Dalila Haden
Celia Murray
Bob Brannon
Virginia Boyle Traver
Jennifer Cornell
Ann K. Seidman

VIOLIN II
Daniel Knorr, Principal
Anna Benninger
Gabrielle Beauregard
Cheryl Szczepkowski
David Wilkinson
Carol Blom

VIOLAS
Andrew Snow, Principal
Carol Ball
Edith Kliman
Pui Yee Hung
Stephanie Dosiek
Amy Clodgo

CELLOS
André O’Neil, Principal
Soroush Saririan
David Gordis
Joann Bonafede

DOUBLE BASSES
Qiushi Yao, Principal
Timothy Maines
Tara Kristensen

FLUTES
Elizabeth Day, Principal
Beth Devlin (+ Piccolo)

OBOES
Diane Baltazar, Principal
Hanna Birkhead

CLARINETS
Leo Minami, Principal
Christos Kakogiannis
Kathryn Brannon

BASSOONS
Jennifer Fullam
Laura Canham-Lunde

HORNS
James Henry Scott, Principal
Gus Birkhead
Josef Schmee
Charles Thompson

TRUMPETS
Nicholas Meixsell, Principal
Daniel Toland

TROMBONES
Robert Reifsnyder, Principal
Brock Mendoza

TIMPANI & PERCUSSION
Michael Yuzynko
STEINMETZ CONCERT 2019

SATURDAY, MAY 11 • 2 P.M
EMERSON AUDITORIUM, TAYLOR MUSIC CENTER

Union College Jazz Ensemble
MUSIC DIRECTOR: PROFESSOR TIM OLSEN

Program

Union College Chorale

SOPRANOS
Madison Corcoran
Zihe Li
Yizhi Lin
Giselle Perkowski
Qiyue Zhang

ALTOS
Alison Goldbetter
Lydia Hursh
Jessica Matli
Emma Moger
Hope Noonan-Stoner

TENORS
Emmanuel Bakou
Nathan Gillespie
Raphael Kummer-Landau

BASSES
Maxwell Fineberg
Noah Lehman-Borer

ALTO SAX
Ally Atkins
Ethan Lampert

TENOR SAX
Andrew Elliott
Jonathan Fields

TRUMPET
Ryan Bosanko
Nick Meixsell
Dan Toland

TROMBONE
Scott Koszer

PIANO
Zach Pine Maher

GUITAR
Arden Kellner

BASS
John Hursh
Khoa Tran

DRUMSET/PERCUSION
Matt Cole
Andrew Giordano

VOCALS
Sam Riordan

BASIE STRAIGHT AHEAD
Sammy Nestico

SALT PEANUTS
Gillespie/Clarke

MINNIE THE MOOCHER
Calloway/Mills

HEMAYOUN
Amir ElSaffar

SIMPLICIDAD
Tim Olsen

MY WAY
François/Revaux/Anka

THAT’S LIFE
Kay/Gordon

TRUTH
Kamasi Washington
Working closely with their professors—in classrooms, labs, studios, archives and in the field—Union students delve into topics that inspire and challenge them intellectually and creatively.

For one day each spring, the College suspends classes so that students can share their academic and creative interests and talents in the Steinmetz Symposium: a campus-wide celebration with peers, professors and families.

Held annually since 1991, the symposium features an extensive array of oral presentations, posters, performances and exhibits. The day is part of Union’s Recognition Weekend, which includes Prize Day on Saturday, a tribute to student achievement in all fields.

The Steinmetz Symposium celebrates a culture of personal discovery that integrates coursework, faculty mentorship and peer collaboration to deepen students’ understanding of subject and self.

The Steinmetz Symposium is named for one of the College’s most renowned faculty members, Charles Proteus Steinmetz (1865-1923), who taught electrical engineering and applied physics. Also a chief engineer for General Electric Co., he was widely regarded as America’s leading electrical engineer and, after Thomas Edison, perhaps the most recognized name in the field.

Among his many contributions, Steinmetz fostered the development of alternating current, which made possible the expansion of the nation’s electric power industry. Born Carl August Steinmetz in Breslau, Germany (now Wroclaw, Poland), Steinmetz studied in Breslau, Zurich and Berlin, pursuing a broad course of scholarship that included astronomy, biology, chemistry, electricity, physics and political economy.

He received his Ph.D. in 1888 and was forced to flee Germany after writing a paper critical of the government. He settled in New York City, where he developed the law of hysteresis, which enabled engineers to design better electric motors for use in industry. He joined General Electric Co. in 1892 and relocated to Schenectady.

In 1902, he became professor of electrical engineering at Union. Three years later, he took charge of Union’s new electrical engineering program. After World War I, Steinmetz ceased lecturing at Union, but he remained an active friend of the College the rest of his life.

Active in the community, he chaired the city’s school board and parks commission. He also served as president of the Common Council.

In 1914 “Duplex Drive Brougham” Detroit Electric automobile that belonged to Steinmetz is on permanent display in the first-floor corridor between the Wold and Olin buildings. Steinmetz and Thomas Edison are memorialized in statues along Schenectady’s Erie Boulevard.

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