The Undergraduate Showcase is an opportunity for students in undergraduate courses to present their work to the entire campus community. The showcase gives everyone on campus a chance to engage in dialogue about academic topics which range across campus, and to see the exceptional work being done by UND students.

THANK YOU FOR ATTENDING
The

UNDe rgraduate
SHOWCASE

May 3, 2018
Memorial Union, Second Floor

UND.edu/showcase
9:30 am – 10:45 am

**Aviation 485: Senior Capstone**
Instructor: Phillip Brandt

**Can the ATP minimums be reduced without an impact on safety?**
Andrew Woodard, Justin Dunn, Ryan Sherman

**Improving Negative Stigma around Mental Health in Aviation**
Elise Van De Putte, Ethan Rantala, Christopher Hallman, Daniel Bianca

**The Nature of the Airline Industry**
Shelby Scorse, Mark Lundsten, Wyatt Clark

**Regional Airlines Should Not Fly Under Mainline Colors**
Colton Nelson, Michael Fortuna, Taylor Asuen, Nicholas Swanson

**Effects of instrument approaches on fuel consumption in general aviation aircraft**
James Busch, Luke Wagner, Diego Read, Minsun Kang

**Automating Airlines**
Collin Griffin, Trent Piekarski, Augustine Torres, Connor Bechtel

**Restoring Open Skies: Addressing Subsidized Competition**
Patrick Klinger, Brian Carmean, Brock Rothschilder, Devin Weller

**ADS-B Will Reduce General Aviation Mid-Air Collisions**
Yu Takahashi, Matt Adamski, Dominic Gilbertson, Elizabeth Baranczyk
Pilot Exposure in High Altitudes and Space Travel
Alex Osowski, Alex Kacher, Saeed Al-Qahtani, Jessica Warfield

Mental Health, Pilots, and UND
Jason White, Gerardo Carpio, Patrick Leonard, Alex Sailsbury

Stadium Flight Restrictions
Swanye Martin, Drew Severson, Ryan Danielson

UAS completes Manned Operations
Joseph Richter, Torin Walhood, Kit Charleson, Jonathan Ernst

Single Pilot Operations
Shawn Ridgley, Collin Blair, Steven LeBlanc

Grand Forks as a research site for commercial UAS applications
Frank Albrecht, Brian Fay, Connor Monaghan, Jack Steine

Electronic Flight Bags
Daniel Scarborough, Joshua Carter

The Future of Supersonic Flights
Jenna Annable, Matthew Strand, Nicholas Foo, Zachary Neameyer

Security in Aviation
Michael Terry, Rachel Greene, Preston Pickert, Dane Barber
**Grand Challenge Scholars Program**
**Instructor:** Prakash Ranganathan

**Secure UAV Detection System through UAS Swarm Providing Airspace Counter-Autonomy Solutions**
Martin Pozniak, Joseph Englund, Joseph Schwalb

**Biology 480: Senior Capstone**
**Instructor:** Dr. Rebecca Simmons

**Gene Editing: Current Use and Implications for the Future**
Nora Rimatzki

**Vaccine Safety**
Todd Andersen

**The Application of Regenerative Medicine to Combat Infertility Using In Vitro Gametogenesis**
Sydney Chase

**Prosthetic Limbs: The Next Steps**
Matthew Briese

**Lupus**
Elyse Wiener

**Biology 481: Fisheries & Wildlife Senior Capstone**
**Instructor:** Steve Kelsch

**Should non-consumptive recreationists be taxed on their gear to help fund conservation?**
Madilyn Derby, Nicholas Lawson

**Impacts of Power Generating Facility Operations on Aquatic Ecosystems**
Lucas Knowlton, John Palarski, Luke Sorum
Chemical Engineering 412: Plant Design II  
Instructor: Wayne Seames

Carbon Dioxide Capture using Piperazine Absorption  
Madalyn Tessier, Russell Damsgard, Brandon Gill, Connor Willits

English 130: Composition II  
Instructor: Steven Rand

Creative Arts Summer Program: A Grant Proposal  
Sarah Frazier, Josie Nobles

Foreign Language After-School Program: A Grant Proposal  
Faith Rosebrough, Brody Swanson, Grant Bushaw

Improving Local Housing: A Grant Proposal  
J.P. Beauchemin, Sophia Wilhelm, Cal Chester, Dylan Bubendorf

Repowering Grand Forks: A Grant Proposal  
J.J. Burrill, Kai Rackley, Vinnie Gallo

Music 443: Methods and Materials for Middle School/Secondary Music  
Instructor: Melanie Popejoy

Why Music Matters: The Effects of Music Education in Learning and Life  
Haley Olson, Alison Borchardt, Hannah Rue, Sierra Vasilakes, Kryston Wiseley
11:00 am – 12:15 pm

Biology 480: Senior Capstone
Instructor: Rebecca Simmons

Genetic Discrimination
Erin Dingman

Honeybee Crisis
Troy Scott

Oral health and Diabetes
Amanda Steffes

Food Immunology
Matthew Amundson

Cancer Metastasis and Fer/FerT Tyrosine Kinase
Andrea Kelsch

Forensic Entomology and the Order Coleoptera
Carrie Pratt

Using Gene Therapy to Cure Cancer
Robert White

An Overview of Alzheimer’s Disease
Natalie Freking

Diet’s influence on the Diversity of Intestinal Bacteria
Daniel Todorovic

Vaccines
Rachel Decklever

Hydroponics: A Different way to Grow and Develop Plants
Spencer Meyer
The Effect of Urbanization on Local Wildlife Populations
Tom Longar

Insecticide Resistance
Josephine Moe

Human Enhancements with Advancing Technologies
Mason Lombard

Dietary Fats
Benjamin Harris

Addressing the Opioid Epidemic
Sean Montgomery

Communication 410: Research Methods in Communication
Instructor: Soojung Kim

Let’s be Blunt
Riley Hallaway, Marcus Vivier, Jacob Notermann, Isnino Shukri, Andrew Marsh

Effects of Binge Drinking at UND
Benjamin Olson, Abby Glockner, Danica Dutt, Ana Kuzara, Alyssa Gluck, Reina Ortega

Juul’s in the Rough
Jafar Kinsey, Kadee Cooper, Haley Harold, Krissy Morrison, Morgan Matson, Faith Kadelbach

Physical Activity
Jace Carlin, Chris Kline, Seth Skjervheim, John Volkert, Matt Johnson, Ian Collins

Know Your Facts
Brittany Dvorak, Toria Marturano, Dana Wegge, Mark Polipnick, Justine Buckmister, Jayden Kubishta
Mental Health and Stress Relief. What can UND Wellness do for you?
Michael Jaeger, Landon Thiel, Becca Wulf, John Gregg, Katie Kleven, Melanie Schindler, Sungwon Eom

English 130: Composition II
Instructor: Steven Rand

Time for a Change, A Fitness Program: A Grant Proposal
Peter Knutson, Anna McDonald, Alexey Moss, Jack Gilbertson

Better Education through Technology
Corey Sprague, Mckenzie Belfiori, Aaron Nelson, Mckenzie Holland

Social Media’s Impact on Students’ Financial Future
Zach Drayna, Garrison Hill, Tianyang Sun

The Food Backpack Program for Elementary Schools in Grand Forks
Krista Slusar-Mrazek, Davin Delaunay

Civil Engineering 431: Environmental Engineering
Instructor: Feng Xiao

Bio-Degradation of Petroleum Hydrocarbons
Quinn Huisman

Nutrition & Dietetics 441: Advanced Nutrition
Instructor: Amir Alakaam

Calcium Intake and Risk of Cardiovascular Disease in Women
Amanda Preuss

Honors Program
*Oral presentations in the Lecture Bowl
Honors & Anthropology

*Late Pleistocene Mammoth Kills: A Model for Gender Roles and Ideology in a Social Context
Morgan Amsley-Benzie

Honors, Political Science, & Computer Science

*Examining NoDAPL Through the Lens of Participation and Social Movement Theories
Zeinab El-Rewini

12:30 pm – 1:45 pm

Grand Challenge Scholars Program
Instructor: Surojit Gupta

Design of Multifunctional Materials for Sustainable Applications
Annie Miles, Margaret Ahmann, Makayla Platt, Mikaila Kringstad

Biology 480
Instructor: Dr. Rebecca Simmons

The Effects of the Gut Microbiota on Brain and Behavior
Jenna Smith

Streptococcus pneumonia Carriage, Inflammatory Risk Factors and Disease pathogenesis
Ifrah Sohail

The Public Opinion on Genetically Modified Foods and How That Could Change
Spencer Roll
The Cancer Immunotherapy Armamentarium: Assessment, Ambitions, and Amplitude
Natisha Corum

Malaria
Sean Doherty

Aviation 485: Senior Capstone
Instructor: Phillip Brandt and Zachary Waller

Autonomous Air Public Transportation
Ashton Stelljes, Ravindu Meddepola, Alondra Cochran

Incorporating mentorship programs that provide a direct route to major airlines will increase safety and efficiency of incoming pilots
Tariq Mela, Dylan Spaid, Matthew Schroll

Low Cost Air Carriers and Safety
Nicholas Gerroir, Michael Moran, Christian Stromsness

Airspace Re-identification
Bruce Nerheim, Matthew Barry, Sean Yamaguchi, Hans Klingemschmitt

The economic ability of supersonic air travel
Charles Mettille, Derek Stokes, Tom Eaton

FAA Third Class Medical Reform and it’s Effect on Pilots and General Aviation
Joshua Nelson, Mica McCarthy, Sanford Fogg, Stefan Swanson

Multi Crew Pilot License
Alexander Burnett, Shane Malloy, Matthew Skowron

Downsize the Boom
Scott Korum, Logan Bartolome, Joseph Redman

Modernizing U.S. Airports
Jeremy Tordsen, Matthew Adamson, Cole Hanson, Nathan Nickell

A Solution to Air Carriers Overbooking Flights that Benefits the Passengers and Airlines
Brady Scullen, Dominique Lord, Tomohiro Tanaka, Gee Abdulnor

Airport Security Alternatives
Patrick Mcguire, John Christenson, Michael Stell

Solving the U.S. pilot shortage utilizing foreign nationals
Ryo Serizawa, Jarrett Croy, Alex MacGregor

High Altitude Glide Slope
Doohyun Choi, Kyle Martineau, Michael Smith

Augemented Reality and the Future of General Aviation
Donald Rescigno, Gavin Becker, Adam Krainski

Why circular runways won’t work
Carl Ryan, Anthony Loehr, Lee Broadbent

Honors Program Poster Presentations

Women in Sondheim: A Materialist Feminist Review
Tyler Folkedahl – Musical Theatre & Honors

Executive Functioning Strength as a Predictor for Multitasking Performance
Kaitlin Reitz - Psychology

Glucose Transport in Human Placental Cells: Effect of Orexin A
Mitchell Rusten – Biology & Honors

Deposition of Iridium on HOPG
Joe Kitzman – Physics, Mathematics & Honors
Consumer Preferences of Acidity Levels in Drinking Water
Dustin Dutchuk – Chemistry & Honors

An Examination of Priming Effects for Phobia Symptoms
Rachel Bock – Psychology & Honors

The Effects of Mild Traumatic Brain Injury on Distractibility in Relation to Reading Comprehension
Taylor Baumler – Psychology & Rehabilitation and Human Services

Music 269: Opera Workshop
Instructor: Anne Christopherson

The Role of Women in Baroque Music
Maria Draper

*Musical Presentations
River Valley Room
Instructor: Simona Barbu

Fêtes galantes I, L. 80 by Claude Debussy
Haley Olson, soprano
Piano accompanist:
Mr. Keith Teepen

“Allegretto quasi Minuetto – Trio” from Sonata for Cello and Piano in E Minor, Op. 38 by Johannes Brahms
Zephaniah Pearlstein – cello
Matthew Sebald – piano

Romance by Carl Maria von Weber
Paul Murray – Trombone
Matthew Sebald – Piano
“Allegro agitato” from Etude- Tableaux, Op. 39 by S. Rachmaninoff
Jonas Fisher – Piano

*Escape* for 6 triangles by D. Worder
Elijah Gray, Jason Mastel, Katie Ellis, Rachel Agan Muniz, Lane Lindseth
Accompanist: Mitch Geiger

*Songs for Digital Natives* by Jonas Fisher and Michael Thompson
Michael Thompson – Tenor
Jonas Fisher - Piano

*Technology 499:*
Instructor: David Yearwood

*AUTO H2O*
Tasha Laudenbach, Charlie Rognerud, Jared Staehr

*Push up Gauntlet*
Chad Robertson, Andres Pederson

*Capture It*
Shelby Jorgenson, Paige Myers

*Breeze EZ*
Alex Hassebroek, Trevor Parson

*n’Stock*
Michael Marquett, Nicole Thorson

*Connect & Create*
Joseph Andresen, Stephanie Hollman

*CNC Barcode*
Kody Hughes, Brett Dostal

*Finde RFID*
Zack Orvik, Kade Paulson, Matthew Wavra
Fresh Case  
Zihan Zhong, Marshal Swenson

Smart Barbs detection System  
Jacob Hanson, Nathan Orr, Kathryn Mcphail

Swift  
Jacob Gallagher, John Rice, Benjamin Delzer

2:00 pm – 3:15 pm

Aviation 485: Aviation Capstone  
Instructors: Phillip Brandt & Zachary Waller

Foreclosure of the Flying Palace  
Zachary Blake, Riley Roehrig, David Lerch

Biology 480:  
Instructor: Dr. Rebecca Simmons

Nanotechnology Implementation in Future Healthcare  
Hunter Evanson

English Coulee Project  
Instructors: Alena Kubatova, Gregory Vandeberg, Ryan Zerr, Sarah Cavanah

Coulee Cleanway: Modeling & Analysis of the English Coulee Physiochemical Environment, UND Campus, Grand Forks  
Paul Schoeneberger, Taylor Wyum, Matthew Picklo, Katherine Moller

Grand Challenge Scholars Program  
Instructor: Reza Fazel-Rezai

Brain Computer Interface  
Nicholas Bergum
**English 130: Composition II**  
Instructor: Steven Rand

**Jobs on the Go: A Grant Proposal**  
Emmie Wiener, Duke Frommer, Sean Getz

**Gender Inequalities: Combating Female Oppression Through Education: A Grant Proposal**  
Sidney Hanson, Jared Hoffman

**Laptops for Low Income Students of Grand Forks Central High School: A Grant Proposal**  
Connor Lipp, Gus Tandberg, Nick Mott, Alyssa Schultz

**Roughrider Tourism: A Grant Proposal**  
Billy Kendall, Alex Morrison, Noah Streccius, K.C. McConn

**Sociology 475: Capstone**  
Instructor: Daphne Pederson

**Women’s mental health and illicit drug use**  
Carly Downs

**Sociodemographic Predictors of Getting a Flu Shot**  
Ryan Chrest

**Gender, Race, and Lawyer’s Career Satisfaction**  
Cassandra Poitra

**Work-to-Family Conflict among Law Enforcement Officers**  
Kaylin Anderson

**The Value of a College Degree**  
Dylan Scherr

**Perceptions of Risk Using Marijuana**  
Leslie Woinarowicz
Drug Use and Social Class
Morgan Mathison

Sexual Assault and Health
Selena Garza

The Drugs Made Me Do It: High School Students, Substance Use, and Bullying Behaviors
Miranda Gardner

Family Structure, Attachment Quality, and Healthy Adult Relationships
Nicholas Bergum

The Effect of Sex, Race, and Social Class on Political Party Identification
Jenna Laurin

Characteristics that Shape European’s Attitudes Towards Immigration
Niklas Hoilund

Family, Peer, and Media Influence on Teenage Smoking in Minnesota
Kai Nerhus

Race and the Perception of Treatment and Behavior in Police Encounters
Selena Kibira

3:30 pm – 4:45 pm

Biology 480:
Instructor: Rebecca Simmons

The Impact of the Human Gut Microbiome on Health and Medicine
Alexander Woods
Decreasing Deforestation in the Midst of Exponentially Growing Population
Cayde Enns

Forensic Science Advancements
Blake Harstad

Building Artificial Intelligence with Evolutionary Biology
Doson Nguyen

Anthrax and Biological Warfare
Kale Enget

Biology 481: Fisheries and Wildlife Capstone
Instructor: Steve Kelsch

The Effects of Climate Change on Temperature Dependent Sex Determination
Jordan Darley, Hannah Chaussee

Plastic Debris Accumulation in Marine Environments
Justin Leegard, Travis Potter

Factors impacting vigilance behavior in Loxodonta Africana
Chey Letourneau

Methods of Nitrogen Enrichment in Grassland Plant Communities Associated with Nematodes and Bacteria
Sally Torgerhagen, Hunter Westacott

Management of Large Predators in North America
Ryan Hart

English Coulee Project
Instructors: Alena Kubatova, Gregory Vandeberg, Ryan Zerr, Sarah Cavanah
Mathematical Modelling of English Coulee: Tanks in Series
Matthew Picklo

Civil Engineering 490: Special Topics
Instructor: Howe Lim

Self-Sufficient Disaster Relief Water Filtration System
Jenna Greenlees

Geography 454:
Instructor: Gregory Vandeberg

Hydropower: Oahe Dam
Alex Beck

Wind Energy Production in North Dakota
Siri Bergsgaard

Invasive Bermese Python Range in South Florida, and Increases Due to Climate Change
Ariel Bialik

World Food Insecurity
Kayla Dunwoody

Causes of Famine in Sudan and Sahel Region of Africa
Genavie Haraldson

Solar Energy Development in Minnesota
Jared Hoffman

Conservation of Water Resources in South Africa
Isaiah Hylden

Assessment of Methodologies for Calculation of Carbon Offset in Boreal Forest Biomes
Noah Irby

Wind Energy in the United States
Seth Kreil

Climate Change in South Asia
Jaylen Larson

Climate Change Impact on the Amazon Basin
Amber Lautt

Shelterbelts/Field Windbreaks Degradation & Removal in Western Grand Forks County, ND Soil & Water Security
Skye Leake

Geography Capstone Project
Mitchell Meindel

Flood Risks in North Dakota and Potential Mitigation Techniques
Seth Mowrey

Wind Energy Production in the Midwestern United States
Tessa Philpott

Powering the Lifestyle of UND Students Without the Utility Grid
Isaac Plovanic

Germany’s Transition to Electric Vehicles and Its Impact on the Power Grid
Dominique Rapsch

Global Warming and Ice Out Time Changes on the Laurentian Great Lakes
Shawn Seeger

Water Dispute on the Nile River
Samuel Sherman
The Scope and impact of climate change on the North Dakota Flora and Fauna
Devin Snarski

Oil Spills and Development: Potential Impacts of the Dakota Access Pipeline in North Dakota
Zoee St Claire

Common Practices Contributing to Poor Water Quality, Especially Nutrient Enrichment in Streams
Taylor Wyum

Music 269: Opera Workshop
Instructor: Anne Christopherson

Teacher Henry Purcell’s Opera “Dido and Aeneas” in a Modern Day Vernacular
Bethany Loock, David Fehr, Kalli Sonnenburg

Allegro Women’s Choir
Instructors: Melanie Popejoy and Anne Christopherson

Seeing your sound: the applied use of audio-visual technology in the choral classroom
Michael Thompson