

## **Charge from University Integrative Committee Chair** (Dr. Melissa Jenkins)

7 mins

Radical Collaboration  
Ideation Forum  
(late March or early April)

How is Engineering collaborating  
across programs and units?

How is Engineering a model of  
radical collaboration?

How can more faculty get  
involved?



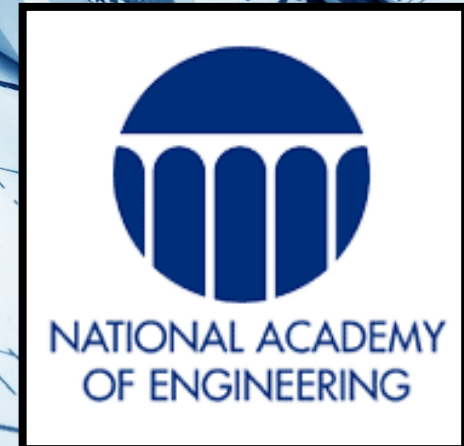
**Olga Pierrakos, Founding Chair & Professor, WFU Engineering**  
**January 19, 2022**

A profession that unleashes the spirit of **innovation** and **turns ideas into realities**.

Engineers constantly discover how to **improve our lives** by **creating bold new solutions** in unexpected, forward-thinking ways.

A profession that has direct and **positive effect** on people's everyday lives.

Engineers help us **meet the needs of the 21<sup>st</sup> century**.



1. Electrification
2. Automobile
3. Airplane
4. Water supply and distribution
5. Electronics
6. Radio and television
7. Agricultural mechanization
8. Computers
9. Telephone
10. Air conditioning/refrigeration
11. Interstate highways
12. Space flight
13. Internet
14. Imaging
15. Household appliances
16. Health technologies
17. Petrochemical technology
18. Laser and fiber optics
19. Nuclear technologies
20. High-performance materials

**Engineers innovate and improve lives!**

1. Energy conservation
2. Resource protection
3. Food and water production and distribution
4. Waste management
5. Education and learning
6. Medicine and prolonging life
7. Security and counter-terrorism
8. New technology
9. Genetics and cloning
10. Global communication
11. Traffic and population logistics
12. Knowledge sharing
13. Integrated electronic environment
14. Globalization
15. AI, interfaces and robotics
16. Weather prediction and control
17. Sustainable development
18. Entertainment
19. Space exploration
20. "Virtualization" and VR
21. Preservation of history
22. Preservation of species

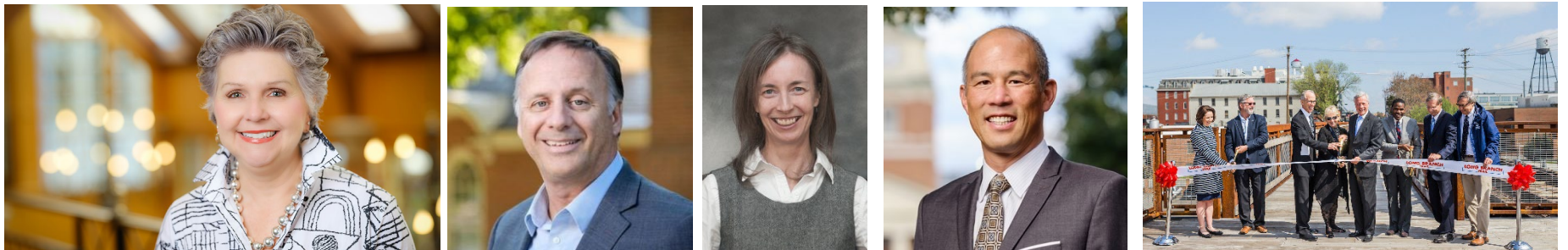
<http://www.engineeringchallenges.org/14373/GrandChallengesBlog/8275.aspx>

**Engineers create bold solutions for the future of our society.**

To make positive societal change,  
Engineers have to be radical collaborators.



# Grateful to WFU leaders at all levels who believed that Engineering belongs @ WFU



And so many others....

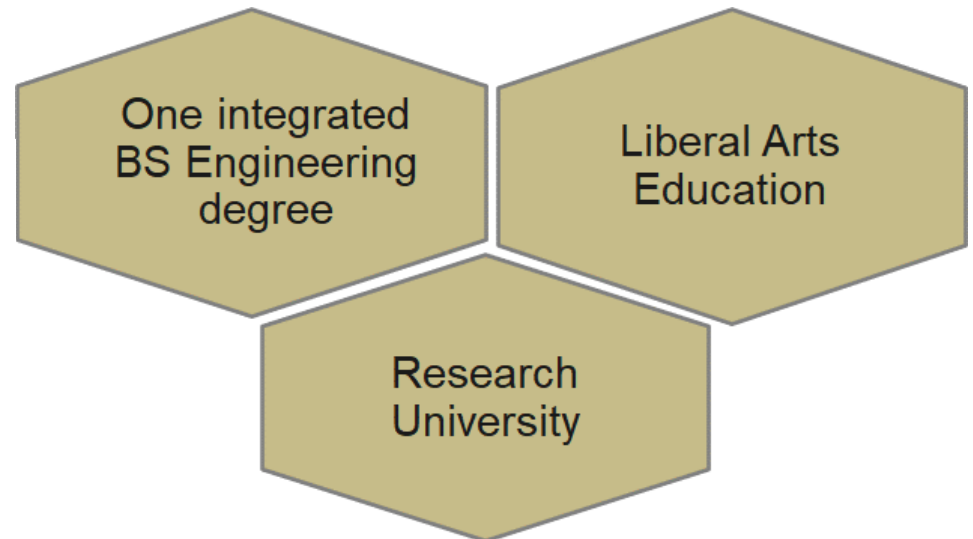
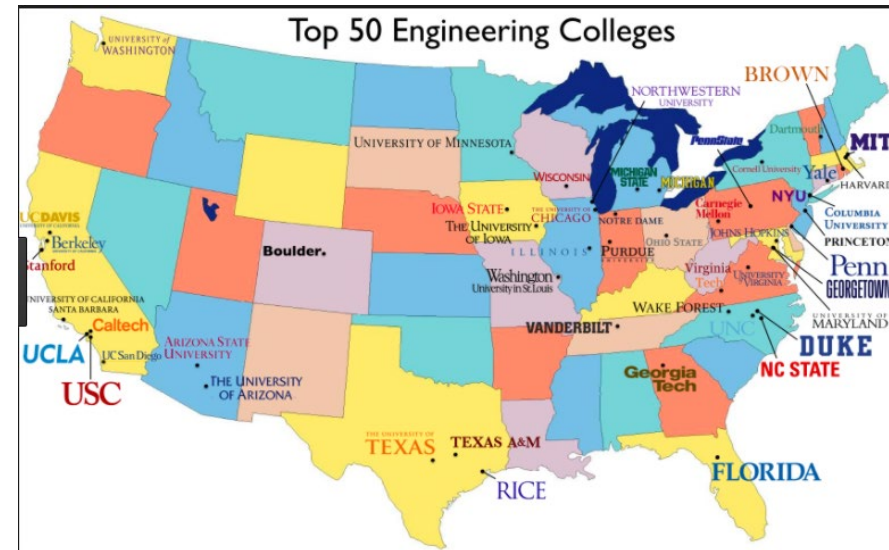
# WFU Engineering Educating the Whole Engineer

We launched the program six weeks before students arrived...summer 2017

Two course titles on the books (no curriculum)  
A beautiful building and empty spaces to realize a vision  
Some furniture and no equipment  
No departmental website to articulate a vision and mission  
Wonderful colleagues across the university ready to help us  
**We came here to reimagine engineering education!**

>500

US Engineering  
**INSTITUTIONS**



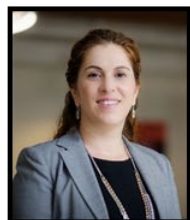


**~200 students in our program**



**40% + women  
20% + underrepresented  
20+ states  
10+ countries**

# Founding Team of Faculty & Staff



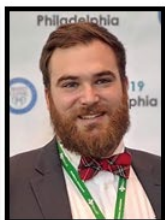
**Pierrakos**  
Chair & Professor



**Bachman**  
Visiting Assistant Prof.



**Clayton**  
Associate Prof.



**Crowe**  
Visiting Assistant Prof.



**Di Vittorio**  
Assistant Prof.



**Gross**  
Associate Prof.



**Henslee**  
Assistant Prof.



**Kengla**  
Visiting Assistant Prof.



**Kenny**  
Assistant Teaching Prof. & Engineering Academic Advisor



**Lowman**  
Assistant Prof.



**Luthy**  
Assistant Prof.



**Lutzweiler**  
Visiting Prof. of Practice



**Yazdani**  
Associate Prof.



**Young**  
Assistant Prof.



**Bailey**  
Academic Coordinator



**Jones**  
Lab & Studio Manager



**Koehler**  
ABET & Assessment Fellow



**Murphy**  
Instructional Technology



**Pappas**  
Research Scientist & Instructor



**Yeaman**  
Postdoctoral Fellow



**Wiinikka-Lydon**  
Postdoctoral Fellow

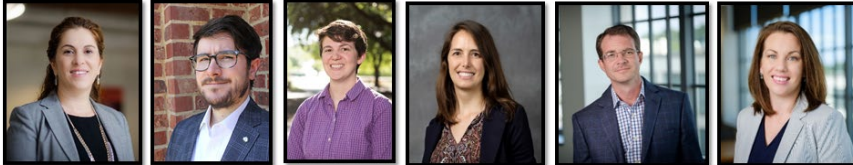
10 permanent faculty

2 permanent staff

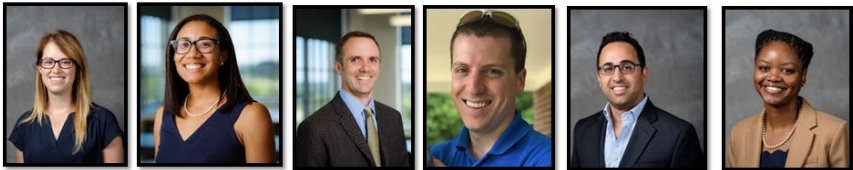
4 visiting faculty

4 visiting staff / scholars

8 part-time faculty



**Pierrakos** Biomedical / Mechanical  
**Bachman** Mechanical (Visiting)  
**Clayton** Civil  
**Di Vittorio** Civil / Environmental  
**Gross** Materials / Chemical  
**Henslee** Biomedical / Mechanics



**Kenny** Biological Systems  
**Lowman** Civil / Environmental  
**Luthy** Electrical / Computer  
**Lutzweiler** Structural (Visiting)  
**Yazdani** Biomedical / Mechanics  
**Young** Civil / Environmental

**Over 12 engineering disciplines represented in our full-time faculty**

**Recruit practicing and industry engineers from diverse sectors to teach with us**

**Integrated engineering knowledge that is traditionally siloed by co-teaching**

**Invite other WFU engineers to enrich the learning experience (e.g. WFU Facilities engineers, WFU IS, SoB engineers, industry engineers)**

**EGR 111 (4 hr)**  
– Intro to Engineering Design

**EGR 112 (4 hr)**  
– Intro to Engineering Experimentation

**EGR 211 (4 hr)**  
– Materials & Mechanics

**EGR 212 (4 hr)**  
– Transport Phenomena

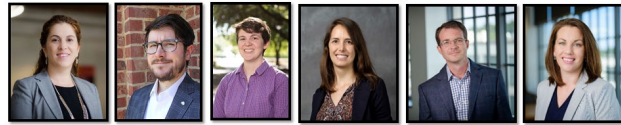
**EGR 311 (4 hr)**  
– Controls & Instrumentation

**EGR 312 (4 hr)**  
– Computational Modeling

**EGR 313 (1 hr)**  
– Capstone Design 1

**EGR 314 (4 hr)**  
– Capstone Design 2

**EGR 315 (4 hr)**  
– Capstone Design 3



**Pierrakos**  
Biomedical / Mechanical

**Bachman**  
Mechanical (Visiting)

**Clayton**  
Civil

**Di Vittorio**  
Civil / Environmental

**Gross**  
Materials / Chemical

**Henslee**  
Biomedical / Mechanics



**Kenny**  
Biological Systems

**Lowman**  
Civil / Environmental

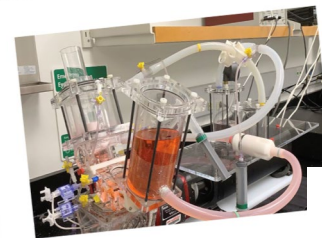
**Luthy**  
Electrical / Computer

**Lutzweiler**  
Structural (Visiting)

**Yazdani**  
Biomedical / Mechanics

**Young**  
Civil / Environmental

## Interdisciplinary research labs



Claudia Falcon  
Applied Mathematician

**Environmental Sensing Research**  
(Electrical/Computer Engineer &  
Environmental Engineer)

**Biological and Cellular Research**  
(Biomedical Engineer & Civil Engineer)

**Computational Modeling Research**  
(Civil Engineer & Environmental Engineer)

**Multidisciplinary Research**  
(Biomedical/Mechanical Engineer,  
Structural Engineer, Applied Mathematician)

# Radical Collaboration with Colleagues Across WFU

**EGR 111 (4 hr)**  
– Intro to  
Engineering  
Design

**EGR 112 (4 hr)**  
– Intro to  
Engineering  
Experimentation

**EGR 211 (4 hr)**  
– Materials &  
Mechanics

**EGR 212 (4 hr)**  
– Transport  
Phenomena

**EGR 311 (4 hr)**  
– Controls &  
Instrumentation

**EGR 312 (4 hr)**  
– Computational  
Modeling

**EGR 313 (1 hr)**  
– Capstone  
Design 1

**EGR 314 (4 hr)**  
– Capstone  
Design 2

**EGR 315 (4 hr)**  
– Capstone  
Design 3



**Monique O'Connell**  
**History**



**Jesse Pappas**  
**Psychology (full-time  
postdoc)**



**Joe Wiinikka-Lydon**  
**Religious Studies /  
Philosophy (grant funded)**



**Stephanie Friede**  
**Anthropology**



**Jennifer Gentry**  
**Studio Art**



**Stan Meiburg**  
**Sustainability &  
Environmental Policy**



**Dan Cohen**  
**Entrepreneurship**



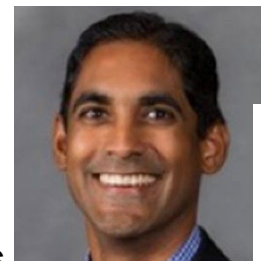
**Eric Stottlemeyer**  
**Environmental  
Rhetoric**



**Alisa  
Russell**  
**English  
Writing**



**Amol  
Joshi**  
**Business**



**John  
Sumanth**  
**Business**



**Raina  
Haque**  
**Law**

# Radical Collaboration

We encourage our students to explore

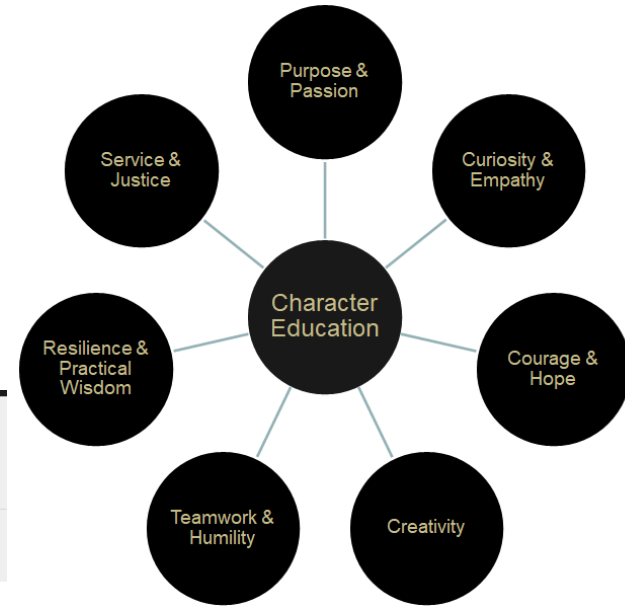
Computer science  
Mathematics / Statistics  
Chemistry / Biology  
Environmental science  
Environmental studies  
Physics  
Economics  
Neuroscience  
Music / Studio Art  
Art History

Entrepreneurship  
Psychology  
Philosophy  
Latin American studies  
Middle East & South Asian  
Studies  
Chinese Language & Culture  
German / Russian / French  
Theatre  
Writing

Over 50% of our engineering students pursue minors or a second major alongside their engineering degree.



*We must remember that intelligence is not enough. Intelligence plus character - that is the goal of true education.*  
Dr. Martin Luther King, Jr.



**Wake Forest News**

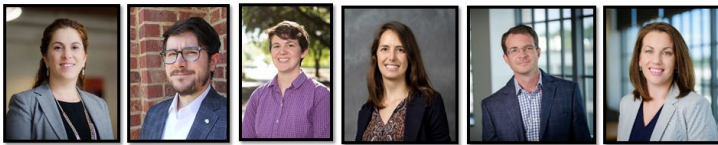
Headlines   Experts   Resources

THE

**KERN      FAMILY**

FOUNDATION

## WFU awarded \$700K+ to advance new model for engineering education



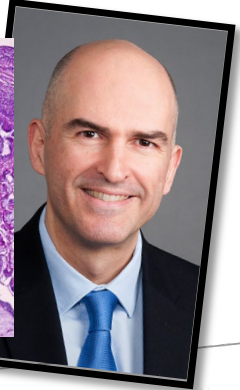
**Pierrakos**   **Bachman**   **Clayton**   **Di Vittorio**   **Gross**   **Henslee**  
Biomedical / Mechanical   Mechanical (Visiting)   Civil   Civil / Environmental   Materials / Chemical   Biomedical / Mechanics



**Kenny**   **Lowman**   **Luthy**   **Lutzweiler**   **Yazdani**   **Young**  
Biological Systems   Civil / Environmental   Electrical / Computer   Structural (Visiting)   Biomedical / Mechanics   Civil / Environmental



**Projects with WFU School of  
Medicine (Atrium Wake Forest  
Baptist)**



**Projects with WFU Facilities,  
the Office of Sustainability,  
Centers, Institutes, etc.**



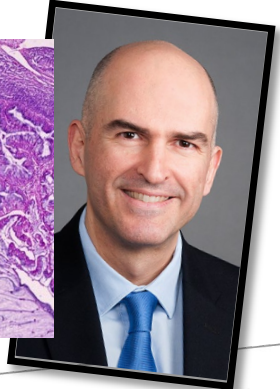
**Projects with Community  
Partners**







**Projects with WFU School of  
Medicine (Atrium Wake Forest  
Baptist)**



## Projects with Purpose!

## Bold solutions that help people!



**Projects with Community  
Partners**



Kaleideum™





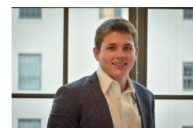
Claire Griffin  
BILLINGS, MT



Hank Shaw  
OAKLAND, CALIFORNIA



Ayana Edwards  
HUNTERSVILLE, NC



Jacob Safee  
TAMPA, FL



Maxim Belyayev  
GLASTONBURY, CT



Lucy Vaughn  
SAN FRANCISCO, CA



Marguerite Walk  
NEW ORLEANS, LA



Zack Pagnani  
WASHINGTON, DC



Regan O'Donnell  
COHASSET, MA



Cameron King  
HAMPSTEAD, NC



Goran Jovanovic  
ASHBURN, VA



Noah Handwerk  
CLEMMONS, NC



Wells Barefoot



Trevor Taub  
MANHATTAN BEACH, CA



Bryan Bennett  
RIDGEWOOD, NJ



Hao Tong  
SHANGHAI, CHINA



Margaret Nyamadi  
CHARLOTTE, NC



Ethan Cooley  
CHARLOTTE, NC



Morgan Wallace  
TETON VILLAGE, WY



Adero Mandala  
BALTIMORE, MD



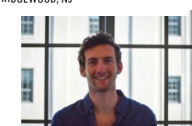
Charles Cadena  
NORTH PLAINFIELD, NJ



Gabrielle Prichard  
RALEIGH, NC



Luis Pons  
LEON, MEXICO



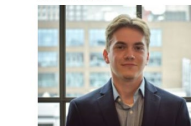
Max Album  
ROCHESTER, NY



Nicholas Rucinski  
ARY, NC



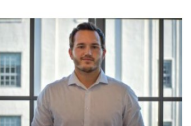
Liza Fahey  
PHILADELPHIA, PA



Kenneth Edwards  
SOUTH EGREMONT, MA



Zhijun Zhang  
TIANJIN, CHINA



Dayton Diemel  
HUDSON, WI



John Hobson  
WAKE FOREST, NC



Drew Foreman  
WINTER PARK, FL



Aidan McCormack  
SAN FRANCISCO, CA



Jemima Odetokun  
ATLANTA, GA



Bradford Dhillon  
ANNAPOLIS, MARYLAND



Jack Holekamp



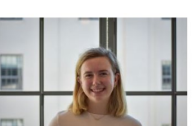
Braylan Martinez



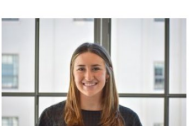
Charlotte Van Houtven  
CHAPEL HILL, NC



Chloe Beatty  
WINSTON-SALEM, NC



Meredith Vaughn  
GREENSBORO, NC



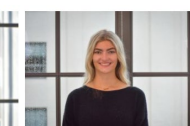
Danielle Cantoni  
NAPERVILLE, IL



Garrett Odell  
ANNAPOLIS, MARYLAND



Hannah Grimm  
CHARLOTTE, NC



Sophie Ballou  
YORK, MAINE



**Completed over 15 engineering projects across the engineering curriculum.**

**Pursued over 20 minors (beyond engineering). Over 50% have pursued minors (and multiple ones) or a second major.**

**50% participated in study abroad.**

**50% participated in undergraduate research.**

**70% participated in internships across diverse sectors of engineering practice.**

**Diversity (gender, ethnicity, race, geography)! 40% women. 26% ethnic/race diversity. 18 US states & 3 countries.**

**Post graduation plans: 70% industry/government. 20% graduate school. 10% professional schools.**



Claire Griffin  
BILLINGS, MT



Cameron King  
HAMPSHIRE, NC



Morgan Wallace  
TETON VILLAGE, WY



Zhijun Zhang  
TIANJIN, CHINA



Charlotte Van Houtven  
CHAPEL HILL, NC

Claire Deady  
WINSTON-SALEM, NC

Meredith Vaughn  
GREENSBORO, NC

Domena Canton  
NAPERVILLE, IL

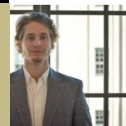
Garrett Oden  
ANNAPOLIS, MARYLAND

Charlotte  
CHARLOTTE, NC

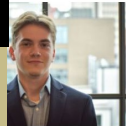
York  
YORK, MAINE



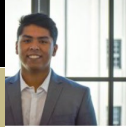
Donnell  
MA



Le  
C



Edwards  
MONT, MA



artinez



Accreditation  
Board for  
Engineering and  
Technology



Engineering  
Accreditation  
Commission

We will be ABET Accredited come  
August 2022!!!!



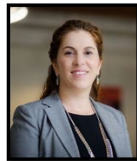
Accreditation  
Board for  
Engineering and  
Technology



Engineering  
Accreditation  
Commission



## Accreditation Board for Engineering and Technology



**Pierrakos**  
Chair & Professor



**Bachman**  
Visiting Assistant Prof.



**Clayton**  
Associate Prof.



**Crowe**  
Visiting Assistant Prof.



**Di Vittorio**  
Assistant Prof.



**Gross**  
Associate Prof.



**Henslee**  
Assistant Prof.



**Kengla**  
Visiting Assistant Prof.



**Kenny**  
Assistant Teaching Prof. & Engineering Academic Advisor



**Lowman**  
Assistant Prof.



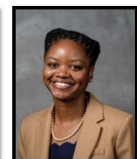
**Luthy**  
Assistant Prof.



**Lutzweiler**  
Visiting Prof. of Practice



**Yazdani**  
Associate Prof.



**Young**  
Assistant Prof.



**Bailey**  
Academic Coordinator



**Jones**  
Lab & Studio Manager



**Koehler**  
ABET & Assessment Fellow



**Murphy**  
Instructional Technology



**Pappas**  
Research Scientist & Instructor



**Yeaman**  
Postdoctoral Fellow



**Wiinikka-Lydon**  
Postdoctoral Fellow



**My hope is that you see Engineers as catalysts  
and positive agents of change for all  
in our higher education and innovation ecosystems.**

**At WFU, Engineering is a liberal art!**

**Olga – [pierrao@wfu.edu](mailto:pierrao@wfu.edu)**



# “What is expected of a great university?”

University Integrative Committee.....  
Proposing a **Radical Collaboration  
Ideation Forum**  
(late March or early April)



**Let's envision together.**

**Let's solve the grand challenges facing society together.**

**Let's produce fearless professionals and agents of change for jobs that exist and jobs that do not exist yet.**



University Integrative Committee.....  
Proposing a **Radical Collaboration  
Ideation Forum**  
(late March or early April)

<https://jamboard.google.com/d/1Xp4lgkbQijuBXiPvpNH7mozJ9pA8pekhhbQTF8soAyoo/viewer?ts=61e887e1&actionButton=1>