

# Fall 2019 EMS Faculty and Staff Meeting

## Agenda

- 3:00-3:05 Welcome (Kump)
- 3:05-3:10 Introductions of New Faculty and Staff (Kump)
- 3:10-3:30 Export Compliance Update (Wayne Mowery)
- 3:30-3:50 EMS Museum Vision (Jane Cook)
- 3:50-4:10 Update on GEMS Activities for the College (Colleen Swetland and John Lease)
- 4:10-4:30 ALLWE, Sustainability, and Strategic Goals for the College (Kump)
- 4:30-5:30 Reception to follow- Deike Ground Floor



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# Associate Dean for Graduate Education and Research

Melissa Brannen, Proposal and Award Generalist

Myava Thibault-Cuhel, Proposal and Award Generalist



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# Associate Dean for Undergraduate Education

Karen Marosi, Director of Student Engagement

Heather Moore, Administrative Support Assistant



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# Dean's Office

Andy Arnold, Director of Major Gifts

Maggie Bryan, IT Support Specialist

Jonathan Inhoof, Administrative Support Assistant

Emily Morrison, Development Assistant

Nick Turner, IT Support Specialist



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# Department of Energy and Mineral Engineering

Abbey Rickert, Administrative Support Assistant

Robert Rousseau, Records Specialist

Feifei Shi, Assistant Professor of Energy Engineering

Hilal Ezgi Toraman, Assistant Professor of Energy Engineering



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# Department of Geography

Trevor Birkenholtz, Associate Professor of Geography

Panagiotis Giannakis, Assistant Teaching Professor of Geography

Helen Greatrex, Assistant Professor of Geography and Statistics

Emily Rosenman, Assistant Professor of Geography

Mandy Thompson, Administrative Support Coordinator

Luke Trusel, Assistant Professor of Geography

Manzhu Yu, Assistant Professor of Geography



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# Department of Geosciences

Heike Betz, Research Technologist

Julia Krogh, Research Technologist

Jesse Reimink, Assistant Professor of Geosciences



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# Department of Materials Science and Engineering

Heather Dehnel, Marketing Communications Specialist

Min-Gyu Kang, Assistant Research Professor of Materials Science and Engineering

Ziguang Ma, Assistant Research Professor of Materials Science and Engineering

Christina Potter, Financial Coordinator

Sadie Spicer, Administrative Support Coordinator

Corynn Taylor, Financial Assistant

Shana Wagner, Engineering Support Specialist



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# Department of Meteorology and Atmospheric Science

Daniel Brouillette, Researcher

Tobias Gerken, Assistant Research Professor of Meteorology and Atmospheric Science

Muriel Go-Maró, Administrative Support Assistant

Kelly Lombardo, Associate Professor of Meteorology and Atmospheric Science

Christy Wellar, Financial Coordinator

Colin Zarzycki, Assistant Professor of Meteorology and Climate Dynamics



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# Earth and Environmental Systems Institute

Pamela Braff, Researcher

Cindy Etchison, Researcher

Matthew Lisk, Research Data Management Specialist

Caitlin Teti, Education Program Assistant

Francisco Tutella, Public Relations Specialist



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# Energy Institute

Grace Choi, Financial Assistant

Jennifer Matthews, Marketing Communications Specialist



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# John A Dutton e-Education Institute

Nick Thompson, Instructional Production Specialist



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# EMS Museum and Art Gallery Glass Shop

Briana Bennett, Research Technologist

Jane Cook, Director, EMS Museum and Art Gallery and  
Research Professor, Materials Science and Engineering



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# Export Compliance Basic Awareness

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**Wayne L. Mowery, Jr., Esq., ECoP<sup>®</sup>, LPEC<sup>®</sup>**

Senior Director of Compliance

University Export Compliance Officer

Empowered Official

Office of Ethics and Compliance

Office of Sponsored Programs

The Pennsylvania State University

227 West Beaver Ave., Suite 212

Phone: 814.867.2379

Fax: 814.863.2174

Email: [wlmowery@psu.edu](mailto:wlmowery@psu.edu)

<http://export.psu.edu>



# Export Compliance Basics

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## What are Export Controls?

1. Laws, regulations, and guidelines
2. Governing the export – visual, oral, physical, or experiential
3. Of controlled or sensitive items or information
4. To foreign locations or to foreign persons/nationals

Key Questions – Who, What, Where & Why?



# U.S Government Primary Export Control Regulations

U.S. Agency	Regulates	Regulation	Type of Controls	
State	Military Critical Technologies	ITAR (International Traffic in Arms Regulations)	Content Based NARROW (U.S. Munitions List)	
Commerce	Dual Use Technologies	EAR (Export Administration Regulations)	Content Based BROAD (Commerce Control List)	
Treasury	Sanctioned Countries & Individuals	OFAC (Office of Foreign Asset Controls)	Mix Based Content, Destination, End-User	

# Controls on Export of U.S. Nuclear Technology and Assistance under 10 CFR Part 810

- 10 CFR Part 810 (Part 810) requires U.S. persons to have authorization from the Secretary of Energy before transferring non-public civil nuclear technology and assistance (e.g., nuclear reactor blueprints or consulting services) to foreign nationals or entities.
- Certain exports are subject to existing “general authorizations” from the Secretary, while other exports require “specific authorization” in advance.
- For more information, consult with your organization’s export control officer or contact [Part810@nnsa.doe.gov](mailto:Part810@nnsa.doe.gov).

# Export Compliance Basics - WHO

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## Who are Foreign Persons/Nationals?

Foreign Person/Foreign National: A term of exclusion –  
Anyone who is not...

1. A U.S. Citizen;
    1. Natural, or
    2. Naturalized
  2. A permanent resident alien (Green Card)
  3. Political Refugee or Asylee
- Foreign Person/Foreign National also includes foreign governments, foreign government agents, and foreign corporations or entities.

# Export Compliance Basics - WHO

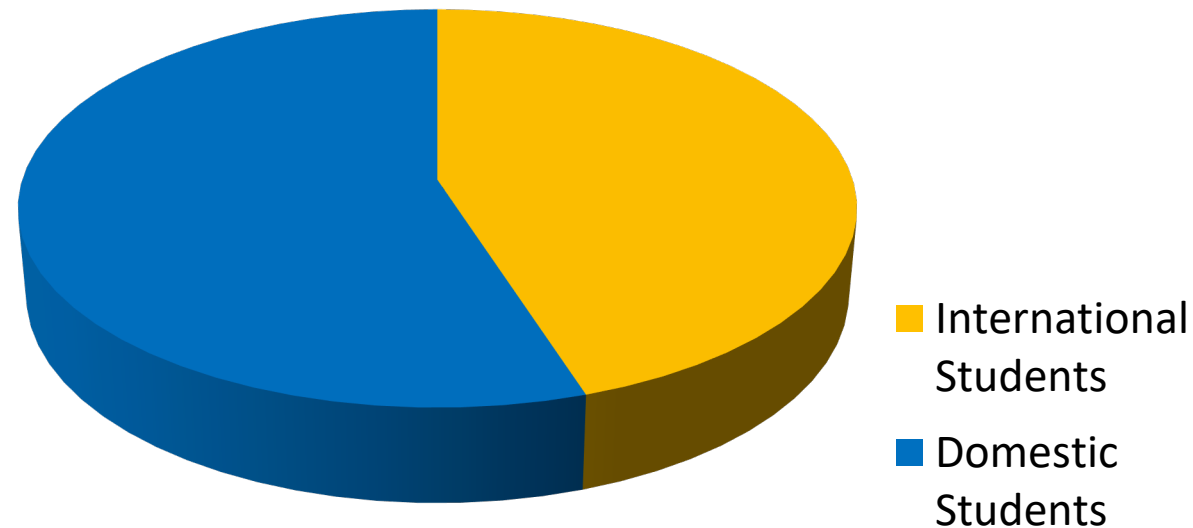
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- Foreign Persons/Nationals:
  - Students
  - Employees
  - Visiting Scientists
  - Collaborators
  - End-users
  - Sponsors
  - Suppliers

# Export Compliance Basics - WHO

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**Approximately 45% of the graduate students in the Penn State College of Earth and Mineral Sciences (UP) are international students.**



<https://factbook.psu.edu/factbook/StudentDynamic/MinorityEnrolbyEthnicity.aspx?YearCode=2019&FBPlusIndc=N> (Fall 2019)

# Export Compliance Basics - WHAT

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## What is Controlled?

U.S. Export Controls apply to various items:

1. All U.S. origin items/hardware/materials (at base controlled as EAR99)
2. All specifically designated items/hardware/materials – Either under the USML, the CCL, or other designate control lists
3. All technical data about controlled items as defined in the relevant control lists
  - Under the ITAR, very broad TD controls (use of the word “or” in definition)
  - Under the EAR, very limited Technology controls (use of the word “and” in most TD controls)
4. Defense services or support under specific regulatory controls (ex. ITAR services and/or OFAC embargoes)

# Export Compliance Basics - WHAT

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## What is not Controlled?

Export Controls expressly exclude a few items:

1. Non-U.S. origin items not in the U.S. (and not incorporating a significant amount of U.S. origin components).
2. Publicly available information
  - Published
  - Released at open conference/workshops
  - Patent information (published portions of patent)
3. Information or services provide as part of catalogue course instructional activities
4. Releases of technology/technical data in the U.S. by Universities to their bona fide full-time employees





# Export Compliance Basics - WHERE

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## Controlled Destinations

The term “export” is defined in the relevant regulations but generally includes the following:

1. Any physical transfer of controlled items outside of the U.S.
  - Physical items – controlled per regulatory requirements
  - Technology/Technical Data – may be controlled by mere possession internationally unless encryption/access restrictions requirements met
2. Any release of technology/technical data to a foreign person regardless of place of release (a “deemed export”)
3. Transfers related to restricted destinations – OFAC/NRC Regulations



# Export Compliance Basics - WHY

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## Controlled Uses

The actual end-use of an item may result in specific controls which would not otherwise be applicable to that item under the regulations. Examples:

1. Military end-uses of dual use (EAR) items;
2. Restricted end-uses under the EAR (Part 744), including nuclear, missile, chemical/biological weapon, and propulsion applications
3. Other nuclear end-use restrictions under the DOE or NRC regulations
4. End-uses and applications of technology/services in comprehensively embargoed locations and targeted sanctions programs

# Impact of Export Compliance at PSU

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- Foreign Travel - TSN
- Foreign Collaborations – Funded/Unfunded
- Sponsored Research
- Visiting Scholars
- Foreign Shipments
- Procurement Issues

# US Export Controls, China & Academic Institutions

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What to do about U.S./China relations and how they impact Chinese involvement and interests in U.S. higher education?



# US Export Controls, China & Academic Institutions

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## Gauging China's 'Influence and Interference' in U.S. Higher Ed

Report catalogs alleged complaints and interventions by embassy officials or individual students on American campuses. But can a compendium of concerning incidents encourage stereotyping?

By Elizabeth Redden // September 12, 2018

25 COMMENTS

Learn how we're shaping the future at [ourpotential.ca](http://ourpotential.ca)

<https://www.insidehighered.com/news/2018/09/12/wilson-center-releases-study-chinas-influence-and-interference-us-higher-ed>

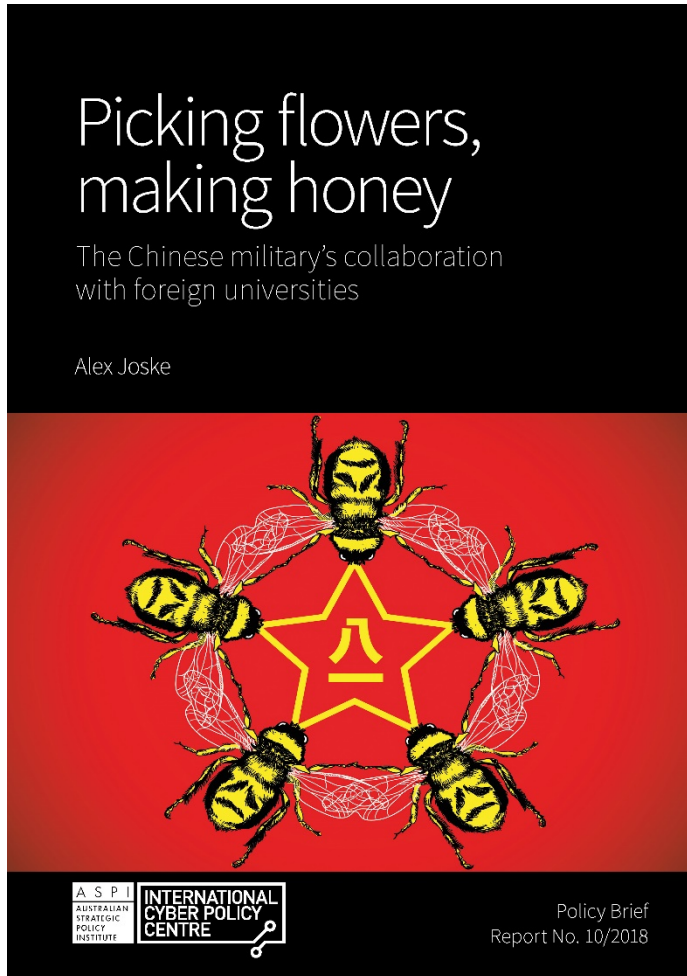


# US Export Controls, China & Academic Institutions

Picking flowers, making honey

The Chinese military's collaboration with foreign universities

Alex Joske



A S P I  
AUSTRALIAN STRATEGIC POLICY INSTITUTE

INTERNATIONAL CYBER POLICY CENTRE

Policy Brief  
Report No. 10/2018

## What's the problem?

China's People's Liberation Army (PLA) is expanding its research collaboration with universities outside of China. Since 2007, the PLA has sponsored more than 2,500 military scientists and engineers to study abroad and has developed relationships with researchers and institutions across the globe.<sup>1</sup> This collaboration is highest in the Five Eyes countries, Germany and Singapore, and is often unintentionally supported by taxpayer funds.<sup>2</sup> Australia has been engaged in the highest level of PLA collaboration among Five Eyes countries per capita, at six times the level in the US. Nearly all PLA scientists sent abroad are Chinese Communist Party (CCP) members who return to China on time. Dozens of PLA scientists have obscured their military affiliations to travel to Five Eyes countries and the European Union, including at least 17 to Australia, where they work in areas such as hypersonic missiles and navigation technology. Those countries don't count China as a security ally but rather treat it as one of their main intelligence adversaries.<sup>3</sup>

The activities discussed in this paper, described by the PLA as a process of "picking flowers in foreign lands to make honey in China" (採花築巢·中外融匯), risk harming the West's strategic advantage.<sup>4</sup> Helping a rival military develop its expertise and technology isn't in the national interest, yet it's not clear that Western universities and governments are fully aware of this phenomenon.<sup>5</sup> Some universities have failed to respond to legitimate security concerns in their engagement with China. Current policies by governments and universities have not fully addressed issues like the transfer of knowledge and technology through collaboration with the PLA. Clear government policy towards universities working with the PLA is also lacking.<sup>6</sup>

## What's the solution?

Understanding and responding to PLA collaboration will require closer engagement between governments and universities. While universities haven't self-regulated on this issue and haven't controlled the associated security risks, universities and researchers will not effectively limit the risks of PLA collaboration on their own until governments develop clear policies on it. Governments need to explore a wider range of tools for limiting technology transfer, including better scrutiny of visa applications by Chinese military scientists and further legislation targeting military end users. Governments should also consider increasing funding to strategic science and technology fields, while actively limiting problematic foreign investment in those fields. Universities must recognise the risks of such collaboration and seek to learn the extent and nature of their collaboration with the PLA by actively working with government, civil society and security professionals.



# US Export Controls, China & Academic Institutions

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## Chinese Companies Seek to Buy U.S. Campuses

When a Chinese company seeks to buy an American music college, opponents of the sale raise academic freedom concerns. Over the last several years, Chinese buyers have purchased a number of campuses in the U.S.

By Elizabeth Redden // October 15, 2018

19 COMMENTS

Learn how we're shaping the future at [ourpotential.ca](http://ourpotential.ca)  
**The potential is yours.**

<https://www.insidehighered.com/news/2018/10/15/chinese-companies-seek-buy-american-campuses>

# US Export Controls, China & Academic Institutions



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CHINA-UNITED STATES

## When trade war spills over into academic cooperation

Gerard A Postiglione and Denis Simon 05 December 2018

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As the United States and China were engaged in normalising relations in the late 1970s, Chinese leader Deng Xiaoping became adamant that China should have “a thousand talented scientists” who would be recognised around the world. Deng wanted quick approval to send several hundred Chinese to study at top American universities.

Over the past 40 years, diplomatic relations between the United States and China have steadily grown, even considering periodic strains over economic, political and military issues. Expanded economic and financial interdependence, along with finely tuned statecraft, have ensured that cool heads prevailed in times of stress, and thus cooperation across a wide array of domains has seemingly kept expanding over the last several decades.

**IREG 2019**  
Conference

*Rankings: a Challenge to Higher Education?*

8-10 May 2019

**BOLOGNA / ITALY**

See [www.srhe.ac.uk](http://www.srhe.ac.uk) for details.

Closing date for expressions of interest  
**31 January 2019**

SRHE 73 Collier Street London N1 9BE  
[srhe@srhe.ac.uk](mailto:srhe@srhe.ac.uk) • [www.srhe.ac.uk](http://www.srhe.ac.uk)  
Registered Charity No: 313850. Limited by Guarantee 868820

<https://www.universityworldnews.com/post.php?story=20181205124130653>



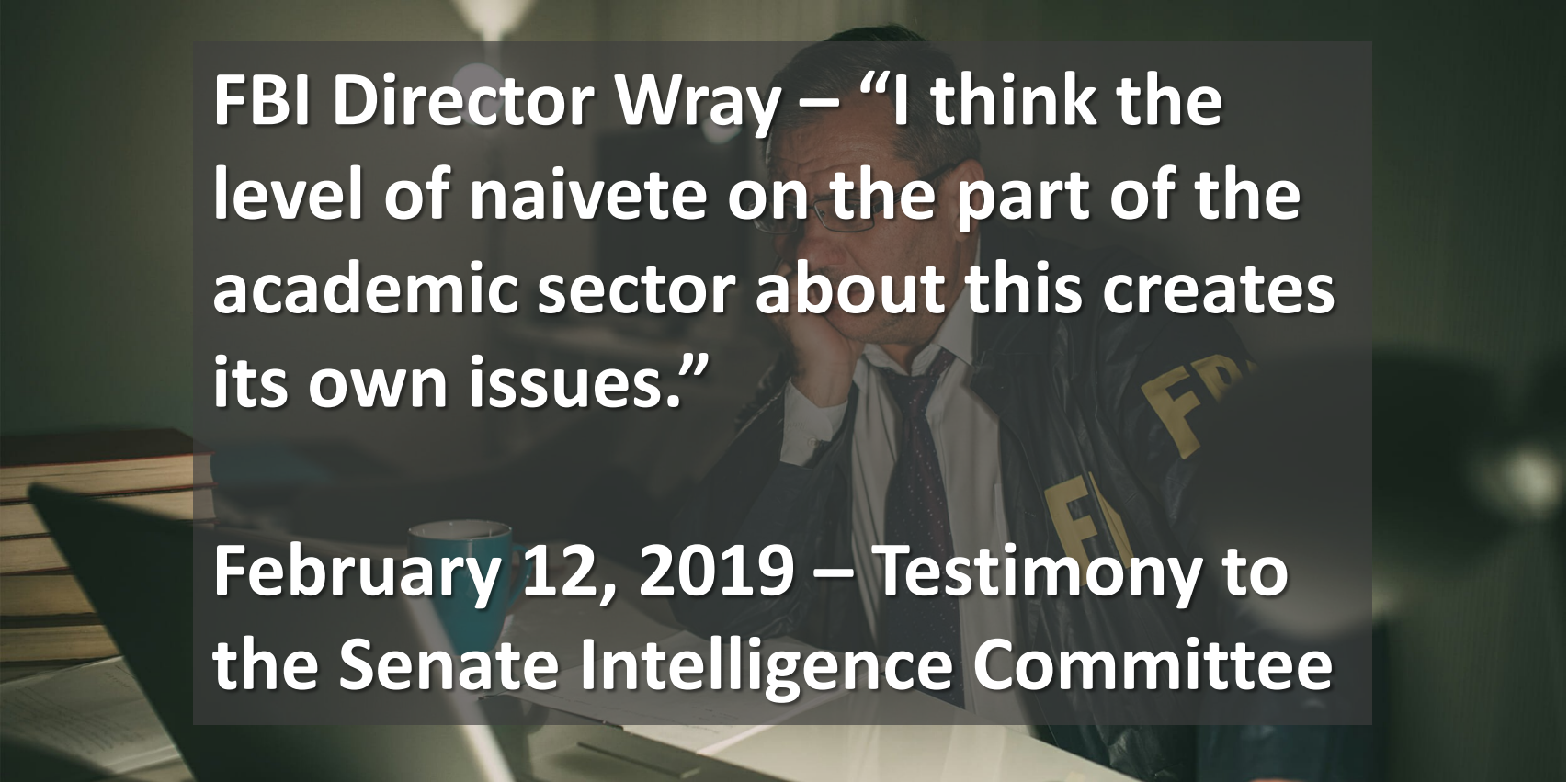
# US Export Controls, China & Academic Institutions

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# US Export Controls, China & Academic Institutions

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A photograph of FBI Director James Wray sitting at a desk, wearing a dark jacket with 'FBI' on the sleeve, looking thoughtful with his hand to his chin. The background is slightly blurred, showing a desk with a laptop and a mug.

**FBI Director Wray – “I think the level of naivete on the part of the academic sector about this creates its own issues.”**

**February 12, 2019 – Testimony to the Senate Intelligence Committee**



# US Export Controls, China & Academic Institutions

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A photograph of FBI Director Christopher Wray sitting at a desk, talking on a mobile phone. He is wearing a dark jacket with 'FBI' on the sleeve. The background is dark and out of focus.

**FBI Director Wray – “I said what I meant, and I meant what I said!”**

**October 10, 2019 – FBI Academia Summit**



# US Export Controls, China & Academic Institutions

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- USG Economic Concerns
  - Communism vs. Capitalism
  - Economic security and commercial exploitation
  - Intellectual Property and talent exfiltration
- USG Security Concerns
  - IT exploits and intrusion concerns
  - Defense exploits and espionage efforts
  - Infiltration efforts: current political view of Chinese students and immigrant employees

# US Export Controls, China & Academic Institutions

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- Potential Triggers:
  - Talent Programs:
    - Viewed as “recruitment” and technology exfiltration tools.
    - Government regulations on disclosure of participation in foreign talent programs.
  - Gifts:
    - Gifts can be entry point to establish “relationship” for future exploitation
    - Evaluation of risk and confirmation of unrestricted nature of the gift/related activities

# US Export Controls, China & Academic Institutions

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- Potential Triggers:
  - Limited Access/Invitation Only Conference:
    - Sponsorship and field of technology focus should be reviewed (TSN)
  - Dual-use Sponsored Research Activities
    - Awareness of military/security related alternative applications of research efforts
  - Publicity/Goodwill Efforts
    - Requests/requirements for senior leadership access
    - Engagement in publicity centric events

# How to Find Out More

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- Internal Resources:

- [Penn State Export Compliance Website](#)

export.psu.edu

- [Office of Sponsored Programs Website](#)

www.research.psu.edu/osp/manage-awards/export-compliance

- Email helpdesk – [export@psu.edu](mailto:export@psu.edu)



# Export Compliance Basic Awareness

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**Wayne L. Mowery, Jr., Esq., ECoP<sup>®</sup>, LPEC<sup>®</sup>**

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University Export Compliance Officer

Empowered Official

Office of Ethics and Compliance

Office of Sponsored Programs

The Pennsylvania State University

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Phone: 814.867.2379

Fax: 814.863.2174

Email: [wlmowery@psu.edu](mailto:wlmowery@psu.edu)

<http://export.psu.edu>



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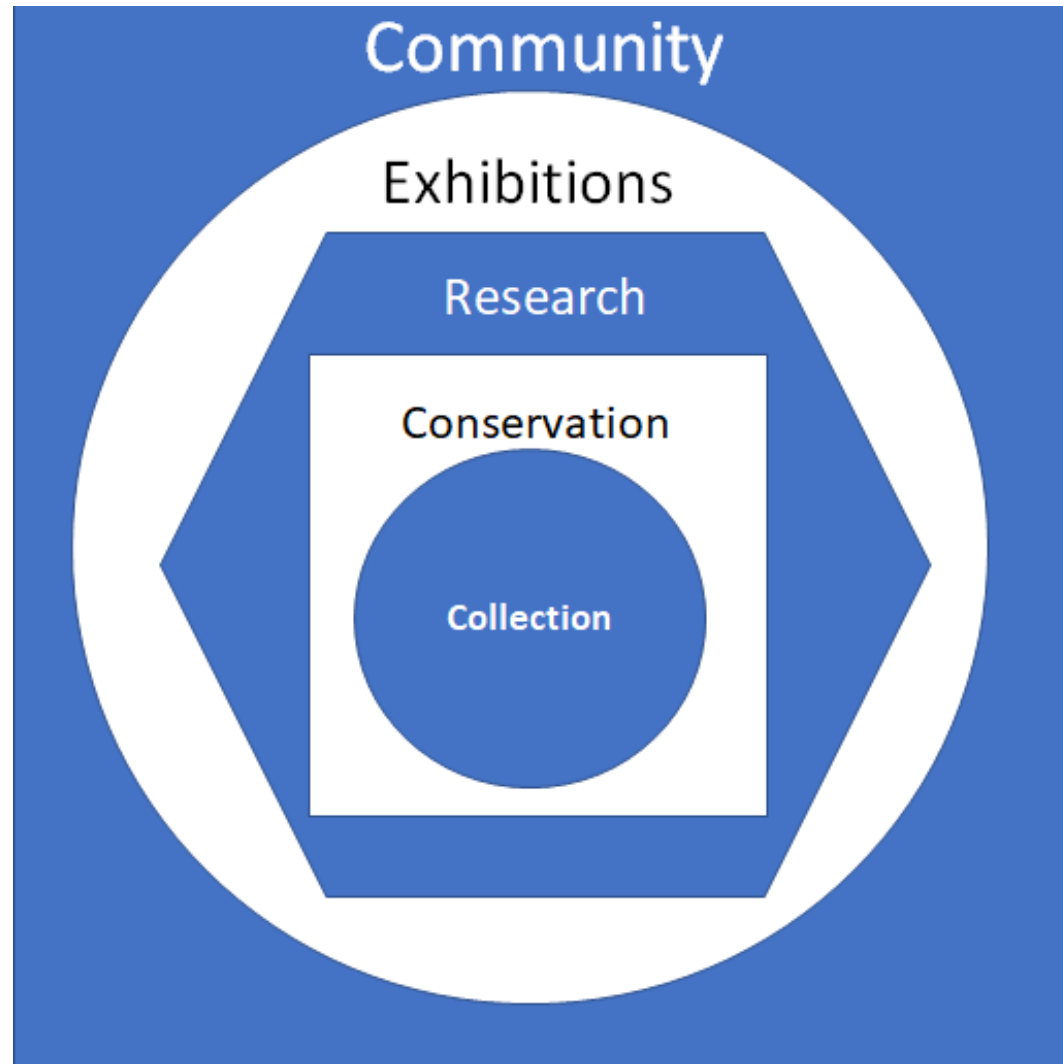
# The EMS Museum & Art Gallery

Dr. Jane Cook

Director, EMSM&AG

Research Professor, MatSE

# What IS a museum?



# Mission



## Earth and Mineral Sciences

The mission of the Earth and Mineral Sciences Museum & Art Gallery is to serve the college, university, and broader community as an informed educational and technical resource for science, art, and history of the earth and mineral sciences through the preservation, utilization, and promotion of our diverse collections.



Museum & Art Gallery is to serve the college, university, and broader community as an informed educational and technical resource for science, art, and history of the earth and mineral sciences through the preservation, utilization, and promotion of our diverse collections.

# Vision



## Earth and Mineral Sciences

We engage and unite the College and community as storytellers of the *Earth–Human–Atom* system  
—the heart of EMS

- Collections
- Community
- Education
- Exhibits
- Research



The mission of the Earth and Mineral Sciences Museum & Art Gallery is to serve the college, university, and broader community as an informed educational and technical resource for science, art, and history of the earth and mineral sciences through the preservation, utilization, and promotion of our diverse collections.

# What's Coming



- A single continuous gallery space along the First Floor Hallway of Deike
  - An integrated gallery with art, science, and history side-by-side, telling the whole story of the college: yesterday, today, and tomorrow
- Refreshed older exhibits with new content:
  - “Blue and White” case with more than minerals...
  - “Seismometer” interactive that tells HOW it works
- New Exhibits that tell cross-disciplinary stories
  - Silicon
  - Explosions
  - The Polyolith Obelisk

*“PLEASE, Call us BEFORE  
you call for the dumpsters!*

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# Development and Alumni Relations



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# GEMS (GRADUATES OF EARTH AND MINERAL SCIENCES)

ERIK PYTLAK, *PRESIDENT*

JOEL REED, *PAST-PRESIDENT*

DAVE ARCHACKI, *PRESIDENT-ELECT*

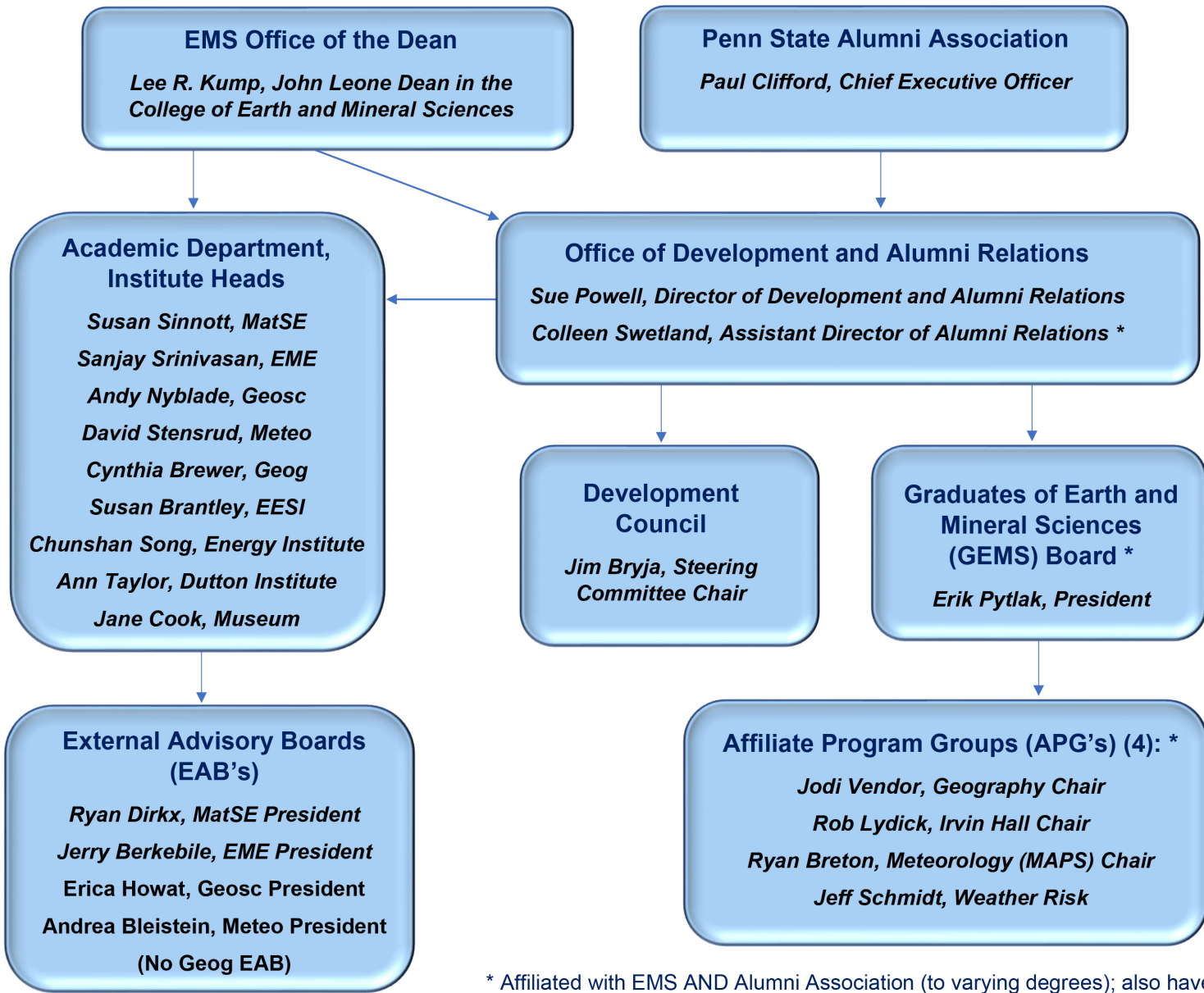
SCOTT BILLINGSLEY, *SECRETARY*

SUSAN LECHTANSKI, *COMMUNICATIONS SPECIALIST*

JOHN LEASE, *EVENTS COMMITTEE CHAIR & PRESENTER*

COLLEEN SWETLAND, *STAFF LIAISON & PRESENTER*





\* Affiliated with EMS AND Alumni Association (to varying degrees); also have access to some Alumni Association programs/materials/benefits

# EMS ALUMNI INTERFACE

# GEMS ACTIVITIES



- GEMS Alumni Achievement Awards
- Social Events
  - Professional Society Receptions
  - Regional Receptions
  - EMS Blue/White GOLD Tailgate
  - EMS Fall Tailgate
- Student Interaction
  - Showcase/Industry Forum Series
  - Diamond Award
  - TOTEMS
  - EMEX
  - Letter Writing Campaign
  - Professional Development Seminars
  - EMS Mentoring Program



# EMS MENTORING PROGRAM: PENN STATE LION LINK

## HISTORY:

- 2015-16: Program built by cross-functional team (DAR, GEMS, StuCo, Dev Council, Educational Equity)
  - Fall 2017: Kicked off with 30 student-alumni pairs
  - Fall 2018: Transitioned to LionLink -- 53 pairs
  - Fall 2019: 94 student-alumni pairs
- 
- **Ultimate Goal – encompass 10% of EMS undergraduate student population (junior/senior)**

*Program does not supplant critical relationship between the student and faculty advisor. The program is intended to build closer bonds between students, faculty and alumni and a collaborative approach to achieve student's career goals.*



# OVERARCHING THEMES

- **For Students:**

- A formalized, structured mentoring program to facilitate:
  - Career decisions
  - Internship/job opportunities
  - Advice on curriculum and coursework
  - Contribute to a more successful transition from student to professional life

- **For Alumni:**

- Organized, direct way to reconnect to the College and Penn State
- Connect with early- and mid-career professionals to tap into time and talent
- Facilitate increase in alumni engagement, both in volunteer and philanthropic support



## LOOKING FORWARD

- Collaborate with Office of Undergraduate Education/Engaged Scholarship to better serve the undergraduate population and partner with EMSAGE programming.
- Increase alumni mentor pool to match and/or surpass the growth of the undergraduates (currently at 95 alumni mentors).

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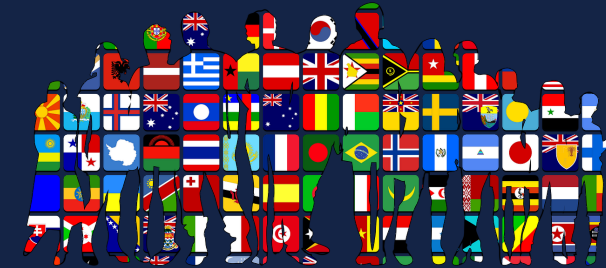
# ALLWE

Survey Results:

<https://www.ems.psu.edu/allwe>

Make a recommendation:

[https://www.ems.psu.edu/form/allwe-survey-feedback.](https://www.ems.psu.edu/form/allwe-survey-feedback)



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# Sustainability



# Strategic Planning

University Plan: minor revisions

College Plan: Due July 31, 2020

Department/Institute Plans: Due May 31, 2020



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# Strategic planning: aspirations

We aspire for a faculty, student body, and staff that reflects or exceeds the diversity of our Commonwealth and broader constituency, and will institute policies and procedures to achieve that goal in the coming decade.

Recognizing that the affordability of an undergraduate degree is reduced dramatically with every semester enrolled beyond the conventional 8-semester degree, we will strive through our curricular review and advising to ensure that students have every opportunity to graduate on time.



# Strategic planning: education

Beyond our traditional and current expectations, we need to ensure through our curricula, course offerings and student engagement opportunities, that every student who graduates from EMS has basic competency in

- data analysis, and familiarity with machine learning and artificial intelligence
- systems thinking, life-cycle assessment and sustainability principles
- the science and societal implications of climate change
- business acumen and entrepreneurship
- risk management
- online education for lifelong learning

and an appreciation for the valuable perspectives of a disciplinarily, culturally, ethnically, racially and gender- and sexual-orientation-diverse community.



# Strategic planning: education

We will embrace the concept of the “living laboratory,” collaborating with other units including the Office of Physical Plant to ensure energy and environmental literacy through active learning.

Every student who graduates from EMS will have completed at least one engaged scholarship activity.



# Strategic planning: research

In our research, we will

- maintain our focus on advancing understanding through basic research, while
- demonstrating that we are addressing important problems facing society, for example by
- increasing our emphasis on interdisciplinary research, integrated systems approach, legal and policy implications, stakeholder engagement, and industrial partnerships in, among other research areas,



# Strategic planning: research

- renewable energy and net-zero emissions energy systems
- energy storage
- carbon and climate risk management
- carbon capture, utilization, storage and mineralization
- water resources and the energy-water-landscape nexus
- natural hazards
- quantum materials
- biomaterials and biomineralization
- data assimilation and predictive science
- planetary system science
- critical minerals, and
- environment (natural and built), food security and human health.





# Strategic planning: outreach

In our outreach, we will offer EMS as a neutral forum for addressing pressing societal problems, especially in the energy and natural resources/environment/materials space.



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# What is the College of Earth and Mineral Sciences?



**PennState**  
College of Earth  
and Mineral Sciences

**3M** Science.  
Applied to Life.™\*



**PennState**  
College of Earth  
and Mineral Sciences

*We are*

Earth and Mineral Sciences



**PennState**  
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*We are*

# Energy and Materials for Society



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*We are*

# Environmental Modeling and Sensing



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Ethics, Management and Solutions



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# Exploration and Mining for Sustainability



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Engineering Merged with Science



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EMS

Science and  
Engineering for  
Global Challenges



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# Agenda

- 3:00-3:05 Welcome (Kump)
- 3:05-3:10 Introductions of New Faculty and Staff (Kump)
- 3:10-3:30 Export Compliance Update (Wayne Mowery)
- 3:30-3:50 EMS Museum Vision (Jane Cook)
- 3:50-4:10 Update on GEMS Activities for the College (Colleen Swetland and John Lease)
- 4:10-4:30 ALLWE, Sustainability, and Strategic Goals for the College (Kump)
- 4:30-5:30 Reception to follow- Deike Ground Floor



# Centre County United Way

- November kickoff: Penn State Goal is to raise \$750,000
- Ways EMS can support the 28 United Way partner agencies
  - Payroll deduction pledge
  - Support fundraising activities organized by the EMS United Way Committee

