Office of the Associate Dean for Graduate Education and Research
Strategic Plan for 2020-25

Table of Contents

Mission, Vision and Values

Mission: To enable and promote the achievement of excellence in graduate education and research in the College of Earth and Mineral Sciences. The office provides the infrastructure, leadership, training and resources to promote integrated scholarly activity, research training, enhance research productivity, and increase external funding of research programs throughout the College, as well as compliance with all required standards of research administration

Vision: To become a leading hub for innovative and collaborative research that advances the frontiers of knowledge of how earth's systems, energy and materials interact with one another and humanity.

We embrace the Penn State **Values:**
- Integrity -- We act with integrity and honesty in accordance with the highest academic, professional, and ethical standards.
- Respect – We respect and honor the dignity of each person, embrace civil discourse, and foster a diverse and inclusive community.
- Responsibility – We act responsibly, and we are accountable for our decisions, actions, and their consequences.
- Discovery – We seek and create new knowledge and understanding, and foster creativity and innovation, for the benefit of our communities, society, and the environment.
- Excellence – We strive for excellence in all our endeavors as individuals, an institution, and a leader in higher education.
- Community – We work together for the betterment of our University, the communities we serve, and the world.

To which we add:
- Safety -- We strive to demonstrate leadership and a positive attitude towards health and safety.
- Resilience -- We strive to adapt and make changes that preserve the stability of our operations and mission in complex environments.

Planning Process

The strategic planning process for the Office of the Associate Dean for Graduate Education and Research (OADGER) of the College of Earth and Mineral Sciences consists of documenting and establishing a direction of our College's graduate education and research mission—by assessing both where we are and where we're going. The planning process was guided by a planning resource guide produced by the Office of Planning, Assessment, and Institutional Research at Penn State and the desire to build a flexible portfolio of strategic goals.

The first step of the planning process consisted of crafting Mission and Vision statements, as well as enumerating Unit Values upon which we can ground your own planning efforts. Once this guiding framework was in place, we developed a set of Goals, using thoughtful input from OADGER functional areas (division staff, members of the EMS leadership team and associate department heads for graduate education and research). Goals are reflective of the aspirations in our vision statement. Each of the Goals are supported by several Objectives, illustrating what the OADGER will need to accomplish to achieve the changes reflected by our goal. Each Objective is further broken down into Action Items. Action Items are the assignable sets of tasks which, when concluded, should result in accomplished Objectives. Action Items are where the "rubber meets the road" and represent strategies and tactics designed to finish Objectives. Progress towards achieving Objectives will be measured via Key Performance Indicators (KPI). In addition, we connect each of our Objectives to the university plan Foundations (F), Thematic Priorities (TP), and Supporting Elements (SE). This mapping of unit-level objectives to the university strategic plan helps us categorize our contribution and measure progress towards a collective institutional impact.

In order to promote clarity and focus about what we are trying to accomplish in the next five years, we adopted the SMART technique through setting Goals and Objectives in our planning process. This technique can be found in Peter Drucker's 1954 book, Management by Objectives, and it consists of setting goals and objectives that are *Specific, Measurable, Achievable, Relevant and Time-bound*.

4

Goal 1. Become the academic destination of choice for graduate education in EME, GEOG, GEOSC, MATSE and METEO

Our graduate students are a critical part of our educational mission and research enterprise. We have an abundance of highly qualified applicants, well-regarded graduate programs both nationally and internationally, and the impetus to be a place where everybody can participate, engage and thrive. Strengthening the competitiveness of our graduate programs, boosting graduate enrollment and advancing diversity and inclusion as a means to stimulate collaboration, engagement and innovation are some of the initiatives outlined under this strategic goal.

Objective 1.1. Strengthen value proposition of graduate education in EMS

KPI: Conversion of graduate applications to offers, accepts, and enrollment

F: F2-Engaging our Students

TP: TE4-Prepare our students for success in their careers and in life

SE: NSE-No supporting element connection

Action 1.1.1. Assess the competitiveness of funding packages offered to graduate students conducting research

Action 1.1.2. Embed inclusive teaching and mentoring practices in graduate education and research training

Action 1.1.3. Organize events that foster cross-departmental integration

Objective 1.2. Boost resident graduate enrollment over declining National trends

KPI: Resident graduate enrollment figures over time

F: F1-Enabling Access to Education

TP: NTP-No Thematic Priority Connection

SE: OP-no specified sub-classification

Action 1.2.1. Explore non-traditional recruitment practices to expand networks of candidates

Action 1.2.2.   *Grow EMS endowment fund base to increase offering of competitive financial assistance packages for graduate students and enable better response to changing demographics and applicant financial needs*

Action 1.2.3.   *Intensify our commitment to our existing Fellows Incentive Program to boost the number of NSF Fellows and similar caliber recruits in future cohorts*

Objective 1.3.   **Diversify our graduate student body through effective recruitment, and retention of URM graduate students via transformation in practices, policies, and resources**

KPI: URM and international graduate student enrollment

F: F3-Engaging Principles of Inclusion, Equity and Diversity

TP: NTP-No Thematic Priority Connection

SE: OP-no specified sub-classification

Action 1.3.1.   *Grow international relations and pipeline for international students from diverse backgrounds*

Action 1.3.2.   *Examine admissions requirements to assess vulnerability to bias, adequacy as accurate indicators of talent, and relevance to success*

Action 1.3.3.   *Devote resources to competitive recruitment and retention of URM graduate students*

Goal 2.   Advance and Diversify EMS' Research Portfolio

EMS has a great intellectual capacity. Outlining a strategic plan with ambitious advancements in highly interdisciplinary earth, minerals, materials, and energy research is core to our research mission. In particular, convergence research is a tactical strength of our college in addressing great societal challenges. Penn State's rich multidisciplinary character and research institutes model provide a robust foundation to build upon for a greater share of federally funded research. In addition, corporate partnerships present a growing opportunity for research, engagement and translation of discovery into practice, as well as a means of building additional research capacity.

Objective 2.1.   Identify emerging research opportunities, and develop transformational science and engineering solutions at the interface of our disciplines and society

KPI: Proposals submitted/awarded/expenditures by funding source

F: F6-Ensuring a Sustainable Future

TP: SP1-Drive fundamental science relevant to critical problems

SE: NSE-No supporting element connection

Action 2.1.1.   Leverage the interdependencies and synergies among all EMS disciplines for a comprehensive systems approach to studying the Earth

Action 2.1.2.   Create opportunities to build interdisciplinary research teams in pursuit of large-scale extramural grant opportunities

Action 2.1.3.   Advocate for, and liaise EMS research with Federal funding agencies, with the help of Penn State's Office of Government and Community Relations

Action 2.1.4.   Grow private foundation and philanthropic funding of EMS research in coordination with the office of Development and Alumni Relations

Objective 2.2.   Advance the EMS' data analysis, assimilation, integration, and uncertainty quantification as it pertains to Earth systems

KPI: Funding and research output, productivity of research communities and centers

F: F6-Ensuring a Sustainable Future

TP: SP3-Improve modeling capability

SE: IS4-Build and manage state-of-the-art information technology

Action 2.2.1.   Build research communities around Big Data

Action 2.2.2.   Assess and develop cyberinfrastructure for computational, data, and analytic support for Earth systems research

Objective 2.3.   Promote industry funded R&D, technological development and innovation

KPI: Industry funding levels, patent disclosures, provisional patents, patents and licenses, spinout performance

F: F5-Driving Economic Development

TP: SP2-Develop technologies for implementation

SE: CO4-Streamline translation of Penn State discoveries

> *Action 2.3.1.   Support the start-up and extension of research partnerships with industry, with the help of Penn State's Office of Industrial Partnerships and Corporate Engagement*
>
> *Action 2.3.2.   Inform our researchers of the resources available to deploy their scholarship for the betterment of society, and assist them in doing so*
>
> *Action 2.3.3.   Build on our existing Earth and Mineral Sciences Innovations for Sustainability (EMSIS) program to realize the commercial potential of our researchers' intellectual property*

Goal 3.   Enhance EMS infrastructure and shared support services

Quality infrastructure and shared support services play a key role in sustaining our stature as a world-class research unit in a major research university. Our physical workspace is the backbone of our work environment and culture. EMS students, faculty and staff have access to some outstanding research facilities and resources, but those coexist with aging infrastructure in need of reconditioning. Modernization of EMS' physical space, and habilitation of flexible, inclusive spaces for community building, administrative support, and deploying cutting edge research are proposed as a strategic goal.

Objective 3.1.   Use physical space to foster innovative and inclusive EMS communities.

KPI: Progress on renovation and construction projects, use of shared spaces.

F: F2-Engaging Our Students

TP: SP4-Fully engage our research infrastructure

SE: IS2-Invest in resources creatively and systematically

Action 3.1.1.   Design and create shared spaces that foster social integration of EMS communities.

Action 3.1.2.   Strengthen physical infrastructure for performing and deploying cutting-edge research.

Action 3.1.3.   Grow a technical support network for the planning and management of research infrastructure.

Objective 3.2.   Create training and onboarding processes for research faculty, postdoctoral scholars and staff.

KPI: Participation in onboarding and training programs, and participant feedback

F: F0-No Foundation Connection

TP: TE3-Support and empower our outstanding faculty and staff

SE: CO2-Provide expanded access to Penn State resources

Action 3.2.1.   Extend and adapt junior faculty training to research faculty and postdoctoral scholars.

Action 3.2.2.   Create EMS Postdoctoral Scholars Academy program

Action 3.2.3.   Offer annual training for principal investigators on proposal and award management.

Objective 3.3.   Expand our safety-centric culture and foster a positive attitude towards health and safety

KPI: EHS reviews, compliance and continuous improvement of safety protocols

F: F0-No Foundation Connection

TP: EH4-Facilitate wellness within the Penn State community

SE: OP1-Improve the design, oversight, integration, and effectiveness of organizational processes

Action 3.3.1: Establish expectations and performance goals that drive continuous improvement in safety and health.

Action 3.3.2: Sustain a safety-centric culture that includes positive reinforcement, recognition, and reward elements and performance expectations for safety and health.

Action 3.3.3: Grow staff support for laboratory and research safety by providing tools, training, and support (safety and health resources) to achieve an injury free workplace.

Goal 4.   Adopt Operational Practices that Build Resilience, Agility and Protect Business Continuity

Our capability to adapt to changes, and the ability to innovate through the adoption of new technologies, build resilience and agility in all our functions. Developing flexibilities in content delivery through online education, increasing reliance on IT resources, and implementing processes of continuous operational improvement and innovation are the basis of this strategic goal.

Objective 4.1.   Build flexibilities in graduate course content delivery through online and hybrid instruction methods

KPI: Graduate course and program offering by modality of delivery

F: F1-Enabling Access to Education

TP: DI4-Make online education and personalized learning central to our 21st-century land-grant mission

SE: IS3-Drive innovation and discovery

Action 4.1.1.   Enable the development of high-quality, relevant remote content in graduate education

Action 4.1.2.   Support a culture of innovation in online teaching and learning in coordination with academic departments and the John A. Dutton e-Education Institute

Objective 4.2.   Develop new practices for effective, nimbler research administration

KPI: proposal submission workflow and timeline, as well as success rate.

F: F0-No Foundation Connection

TP: NTP-No Thematic Priority Connection

10

SE: OP1-Improve the design, oversight, integration, and effectiveness of organizational processes

> *Action 4.2.1.   Review upfront proposal preparation process and identify opportunities for improvement*
>
> *Action 4.2.2.   Create adaptive research administration frameworks for dynamic planning and management*
>
> *Action 4.2.3.   Develop internal mechanisms for pre-award quality control to increase effectiveness of proposal submissions*

Objective 4.3.   Promote a culture of innovation in the pursuit of all operational functions

KPI: adoption of new business tools and measures of efficiency and effectiveness in operational functions

F: F0-No Foundation Connection

TP: DI2-Living with digital innovation

SE: OP3-Develop a culture of academic business modeling to support innovation

> *Action 4.3.1.   Harness the full power of the tools available to us to promote streamlined workflow, improve business communication and increase operational efficiency*
>
> *Action 4.3.2.   Adopt diverse communication modalities to support business process and deliver enterprise communications*
>
> *Action 4.3.3.   Coordinate training sessions and workshops in response to ADGER staff needs for continuous improvement through technological innovation and change*