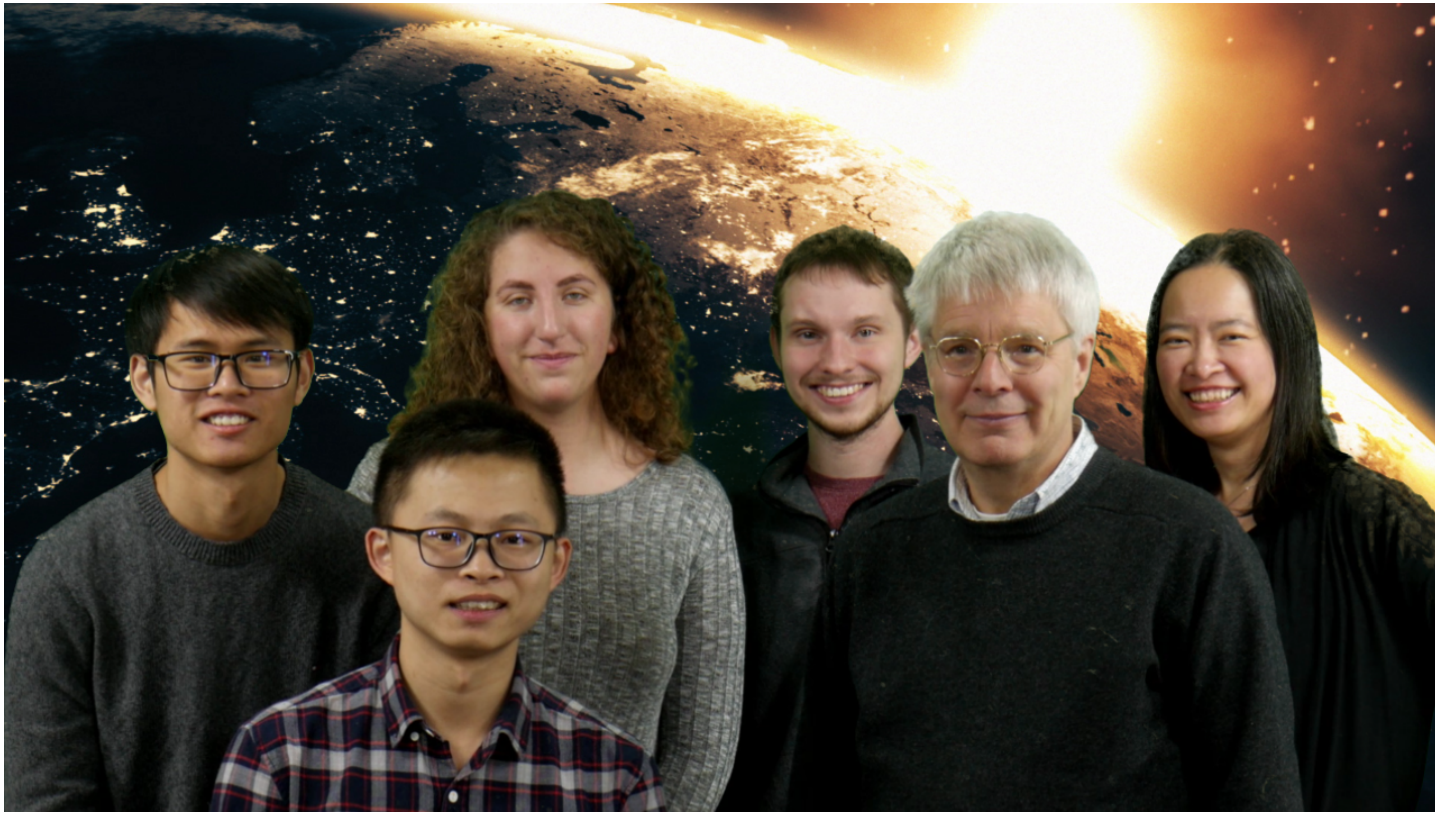
Geodata Science for Professionals Master's Program

College of Science: Department of
Earth, Atmospheric, and Planetary Sciences

Add to the Employment Value of Undergraduate Education:

- Get a Master of Science
- Work with state-of-the-art High Performance Computing environment for Big Data analytics
- Acquire applied research experience
- Personalized guidance to choose among various elective courses and small group immersion courses providing enrichment to career plans
- Earn one or more Graduate Certificates: Computational Science and Engineering, Applied Statistics, Geodata Analytics.



Contact for Information

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GDS Professionals

PURDUE UNIVERSITY

About the GDSP Program

Employers seek in today's advanced Science, Technology, Engineering, and Mathematics workforce skills in analytics and data science, including Big Data (Denecke, D. et al. 2017, *Council of Graduate Schools*). In the United States, however, geoscience curricula are in general not designed to capitalize on the digital revolution, especially the enormous growth in data science. Thus, there has been a disconnect between the jobs of the future and the curricula of the present.

Data science is highly technical and requires rigorous preparation in mathematics, statistics and computing. Specifically, in the context of geosciences, data science applied with the goal of improving the understanding of causal relations in physical systems also promotes better predictions, therefore risk assessments.

In response to the Purdue campus-wide data-science initiatives and the College of Science strategic plan, the Department of Earth, Atmospheric, and Planetary Sciences (EAPS) is prioritizing data science training, with applications to climate, weather forecasting, environmental science, natural resources, and energy data for decision-support and decision-making in the public and private sectors.

A key outgrowth of this initiative is the EAPS Master's Concentration of Geodata Science for Professionals (GDSP), integrating rigorous academic coursework, high-performance big data-science computing environments such as Hadoop systems and GPU computing, with real-life research and work experiences.

To apply, please visit
https://www.purdue.edu/gradschool/admissions/how-to-apply/index.html

Curriculum 31 total required credits

Geodata-science Core Courses
Take at least two (6 credits)
- Introduction to Analysis and Computing with Geoscience Data
- Time Series Analysis for Geosciences
- Geodata Science
- Geophysical Inverse Theory

Foundational Core Courses
Take at least three (9 credits), For example:
- Theory of Climate
- Radar Meteorology
- Ecosystem Ecology
- Introduction to Geodesy
- Introduction to Seismology
- Geographic Information Systems

Applied Geodata Courses
Take at least two (6 credits), For example:
- Forecast Verification
- Extreme Weather and Climate: Science and Risk
- Geodetic Data and Applications
- 3D Seismic Interpretation and Visualization
- Introduction to Reflection Seismology
- Geospatial Modeling and Analysis

Computational and Statistical Courses
Take at least two (6 credits), For example:
- Introduction to Computational Science
- Scientific Visualization
- Digital Signal Processing
- Statistical Methods
- Applied Regression Analysis
- Divide and Recombine with DeltaRho for Big Data & High Computational Complexity

Internship/Applied Research Experience (3 credits)

Geodata Science Seminar Oral Presentation
(1 credit)

For complete course list, please visit
www.eaps.purdue.edu/gdsp/requirements.html

Earn a Master of Science Degree

Apply
- Fall application due by March 15
- Spring application due by October 15 of the previous year

Format
- Full-time or part-time on campus
- 31 total required credit hours

Length
- Full-time students can often finish in three semesters
- Maximum four years

Fees
- Matching the Purdue standard Graduate/Professional tuition

Gain Professional Data-Science Skills, for Example:

- Remote sensing and GIS data analytics
- Weather and climate risk assessments
- Data-driven environmental hazard mitigation
- Seismic inversion and imaging
- Machine learning in seismology