

Geoscience Career Compasses: A Holistic Look at Skill and Competency Development in the Geosciences

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How does a student acquire skills?



co-cur·ric·u·lar



It's up to the student to do more...



Credit: Samuel Castonguay, from AGI's 2014 Life as a Geoscientist contest



Career Compass Geosciences

This career compass provides options, tips, suggestions, and strategies for how a student can obtain critical skills, experiences, and competencies in order to launch their geoscience career based on their academic standing. The content herein is based on data from the U.S. Bureau of Labor Statistics, interviews with personnel in the occupation, and research on available student opportunities.

Symbol
Key



Attend



Communicate



Network



Participate



Leadership



Internship



Scholarship



Fellowship



Academics



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Job Summary

A policy associate specializes in evaluating and shaping science policy through strong communication and networking. Although their tasks vary most policy associates work in one of four areas: collecting information and evaluating policies, sharing policy information with the public, coalition building with stakeholders, and informing government officials about science and the needs of the scientific community.

- Symbol Key
- Attend
 - Communicate
 - Network
 - Participate
 - Leadership
 - Internship
 - Scholarship
 - Fellowship
 - Academics



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Undergraduate

- Congressional Visits Day
- Blog about your participation in policy events
- Conference sessions, workshops, and webinars on geoscience policy; student government, and campus clubs
- Contact state geological survey, department of natural resources, or environmental protection department
- Oak Ridge Institute for Science and Education (ORISE) internship
- Scientific societies, on the Hill, in federal or state agencies, or in local government
- Engage with elected officials offices at the district or state level or in Washington D.C.
- Degree in the geosciences
Coursework or minor in a relevant subject like policy
- Research experience





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- Degree in the geosciences Coursework or minor in a relevant subject like policy
- Research experience

Graduate/Master's

- Congressional Visits Day
- Workshops and webinars on geoscience policy and science communication
- Events, activities, conference sessions about non-academic careers
- Plan or host a seminar speaker on geoscience policy in your department
- Clubs, student government, geoscience professional societies
- Scientific societies, on the Hill, in federal or state agencies, or in local government
- Engage with elected officials offices at the district or state level or in Washington D.C.
- NOAA's Knauss Fellowship National Academies Mirzayan Fellowship and Gulf Research Program Fellowship ORISE Internships, Fellowships, and Research Opportunities
- Degree in the geosciences Coursework or minor in a relevant subject like policy
- Master's thesis with connection to societal impacts, resource needs, or sustainability

Ph.D./Post-doc

- Conference session conveners and attendees
- Convene a policy session at a geoscience conference or host policy speakers in your department
- Plan an engagement with a government office
- Presidential Management Fellowship
- California Council on Science and Technology Policy Fellowships
- Congressional Science Fellowship
- American Association for the Advancement of Policy Fellowship
- Degree in the geosciences Coursework or minor in a relevant subject like policy
- Dissertation with connection to societal impacts, resource needs, or sustainability





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Job Summary

Atmospheric scientists study the present weather and future and past climate, and how those conditions affect human activity and the Earth in general. They may develop forecasts, computer models, collect and compile data from the field, assist in the development of new data collection instruments, or advise clients on risks or opportunities caused by weather events and climate change. They are adept at data analysis, uncertainty and risk analysis, computer science, and mathematics.

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Undergraduate

- Departmental activities, student government, clubs, societies
- Career webinars
- Conferences (travel grant, awards)
- Hone skills through community involvement and presentations
- Social media of research/outreach
- NOAA's Hollings Scholarship
- American Meteorological Society
- National Weather Association
- Naval Research Enterprise
- Forecast intern at government, television, or private sector
- NOAA NCAS-M ETSP for Sophomores
- Research Experience for Undergraduates, SOARS program, NCAR/UCAR summer internships
- NOAA or NASA Pathways, Minority University Research and Education Project, Educational Partnership Program with Minority-Serving Institutions, Woods Hole PEP
- Research and field experience
- Forecasting laboratories/contests
- Degree in meteorology, atmospheric science or other physical science
- Courses in math, physics, media and communications, engineering or computer science
- Broadcast meteorology demonstration
- Write senior thesis

Graduate/Master's

- Present research at conference
- Publish research
- Present at community events, local schools, or public events
- Events, activities, and technical sessions at conferences
- Lead workshops at conferences
- Departmental committee, campus club, professional society
- AMS Summer Policy Colloquium
- Career webinars
- NCAR Innovator's program
- Workshops/NCAR ASP Colloquium
- NCAR's ASP Grad Student Fellowship
- AMS Graduate Fellowships
- NSF Graduate Research Fellowship
- Naval Research Enterprise
- NOAA or NASA Pathways Program
- NOAA's Chesapeake Bay and National Centers for Environmental Prediction internships, NOAA-NSF Graduate Research Internship
- Field, observational, or instrumentation experiences
- Forecasting laboratories/contests
- Degree in atmospheric science, geoscience, climate science, oceanography, mathematics or physics, engineering, computer science, chemistry
- Master's thesis related to atmospheric sciences

Ph.D./Post-doc

- Present at community events, local schools, or public events
- Present research at conference
- Publish research
- Departmental committee, campus club, professional society
- Research mentor for undergraduates
- AMS Summer Policy Colloquium
- Events, activities, and technical sessions at conference
- NCAR ASP Colloquium
- Career webinars
- NCAR's ASP Postdoctoral program
- NCAR/UCAR laboratories
- Presidential Management Fellowship
- NOAA/NRC Postdoctoral Program, NOAA Climate and Global Change Postdoctoral fellowship, Postdocs Applying Climate Expertise (PACE)
- AAAS Congressional Science
- NSF Graduate Research Fellowship
- Field, observational, or instrumentation experiences
- Degree in atmospheric science, geoscience, climate science, oceanography, mathematics, physics, or computer science
- Dissertation topic(s) related to atmospheric sciences





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Job Summary

Hydrologists study how water moves across and through the Earth's crust. They use their expertise to solve problems in the areas of water quality or availability. Hydrologists work in offices and in the field. In offices, hydrologists spend much of their time using computers to analyze data and model their findings. In the field, hydrologists may have to wade into lakes and streams to collect samples or to read and inspect monitoring equipment.

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Undergraduate

- Clubs, student government, or geoscience professional societies
- Hone skills through courses, community involvement, and conference presentations
- Geoscience professional society conference
- First Aid/ AED/CPR training
- OSHA HAZWOPER training
- Geologist in Training Certification (ASBOG Fundamentals Exam)
- Geoscience internship with a non-profit, for profit organization or company, research institution, or federal agency
- Degree in earth science, geosciences, or other natural science major
- Proficiency in using and understanding GIS
- Writing class outside the discipline (business or environmental law)
- Course work in math, chemistry, or microbiology
- Research experience
- Field experience
- Write a senior thesis

Graduate/Master's

- Present research at conference
- Publish research
- Events, activities, and technical sessions at professional society conference
- Departmental committee, clubs, geoscience professional societies
- First Aid/ AED/CPR training
- OSHA HAZWOPER training
- Geologist in Training Certification or Professional Geologist license (ASBOG Fundamentals of Geology Exam and/or the Practice of Geology Exam)
- Geoscience internship with a non-profit, for profit organization or company, research institution, or federal agency
- Degree in geosciences
- Coursework in advanced math
- Map creation software or groundwater modeling software
- Master's thesis related to groundwater/surface water interaction

Ph.D./Post-doc

- Develop interpersonal skills
- Present complex scientific concepts to nontechnical audiences
- First Aid/ AED/CPR training
- OSHA HAZWOPER training
- Geologist in Training Certification or Professional Geologist license (ASBOG Fundamentals of Geology Exam and/or the Practice of Geology Exam)
- Geoscience internship with a non-profit, for profit organization or company, research institution, or federal agency
- Degree in geosciences
- Coursework in advanced math
- Map creation software or groundwater modeling software
- Take a more focused approach in a discipline related to your career aspirations
- Dissertation topic(s) related to groundwater/surface water interaction

Also applicable at Ph.D. level





Job Summary

Hydrologic technicians gather and investigate data concerning water depth, flow, and quality. They collect water data using accepted industry procedures and equipment. They are responsible for equipment maintenance, decontamination and calibration to ensure the highest quality data are collected. Hydrologic technicians collect groundwater, stream, and lake samples for chemical or biological analysis and conduct field tests on these waters. They keep notes, check computations, and gather information for computer software analysis, and they enter data and prepare data for publication. They provide concise and actionable observations in the field and communicate that information to their supervisory personnel. Much of the technician's work is done outdoors in undeveloped and sometimes difficult terrain under all weather conditions.

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Undergraduate

- Geoscience professional society conference
- Clubs, student government, or geoscience professional societies
- Hone skills through public speaking or science communication courses, conference presentations
- Events, activities, and technical sessions at professional society conference
- Geoscience internship with a non-profit, for profit organization or company, research institution, or a state or federal agency.
- First Aid/ AED/CPR training
- OSHA HAZWOPER training
- Geologist in Training Certification or Professional Geologist license (ASBOG Fundamentals of Geology Exam and/or the Practice of Geology Exam)
- Associate's or bachelor's degree in Earth science, geosciences, or any natural science
- Writing course outside the discipline (business or environmental law) or technical writing course
- Basic understanding of GIS and GPS
- Course work in math, hydrogeology, chemistry, environmental compliance and regulations, environmental engineering, applied geology, or microbiology
- Develop excellent note-taking skills
- Field experiences
- Research experiences
- Instrument experiences with emphasis on data collection, data quality, and data reliability (mechanical aptitude is a plus)
- Write a senior thesis





Career Compass Geosciences



Geoscience Policy Associate

Oceanographer

Hydrologist

Atmospheric Scientist

GIS Professional

Planetary Scientist

Geophysicist

Data Scientist

Hydrologic Technician

Engineering Geology Technician

Science Communicator



K-12 Teacher

Science Writer

Environmental Geologist

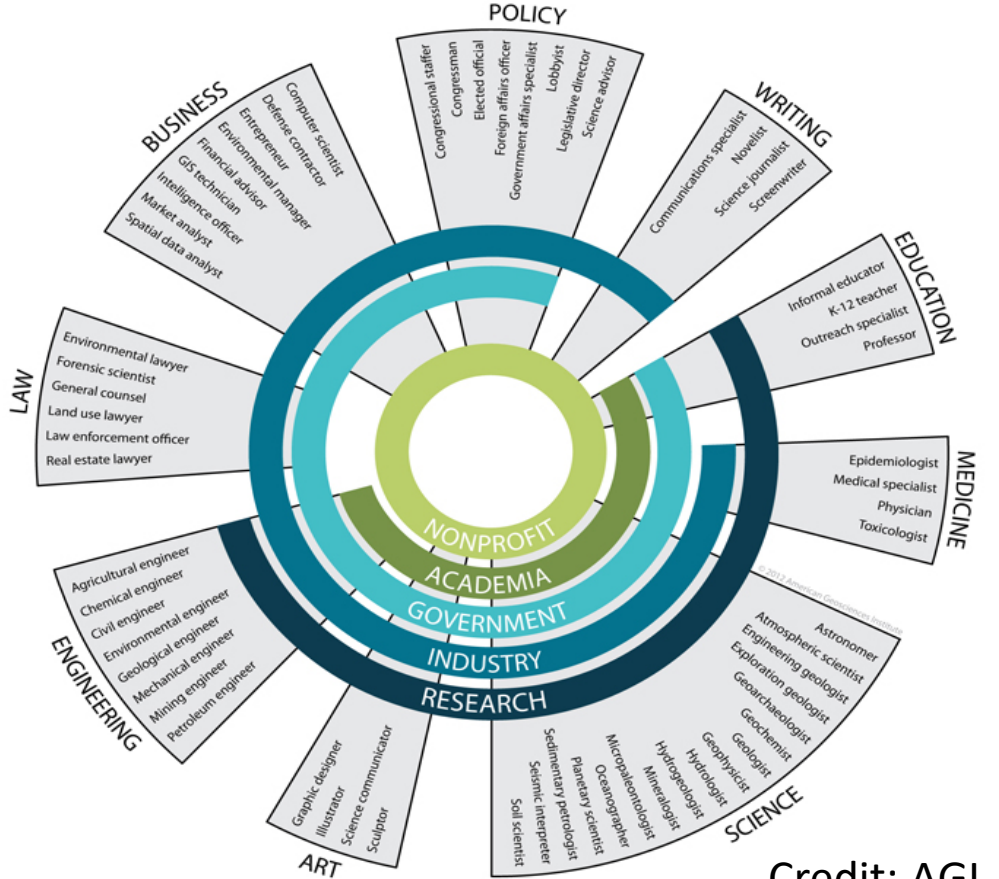
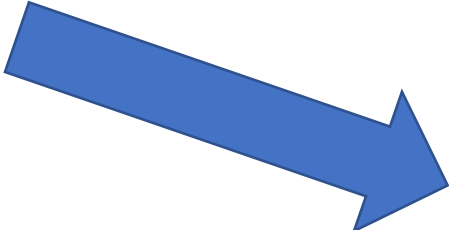
Soil Scientist



Career Compass Geosciences

**WISH
LIST**

**Petroleum Geologist
Geoscience Illustrator
Environmental Lawyer
Mining Engineer
Financial Advisor
Information Specialist
others ...**



Credit: AGI



Career Compass
Geosciences

How to access these?

<https://www.americangeosciences.org/workforce/compass>

Need one in a field where your students get jobs?

Connect us to an alumni in one of these fields?

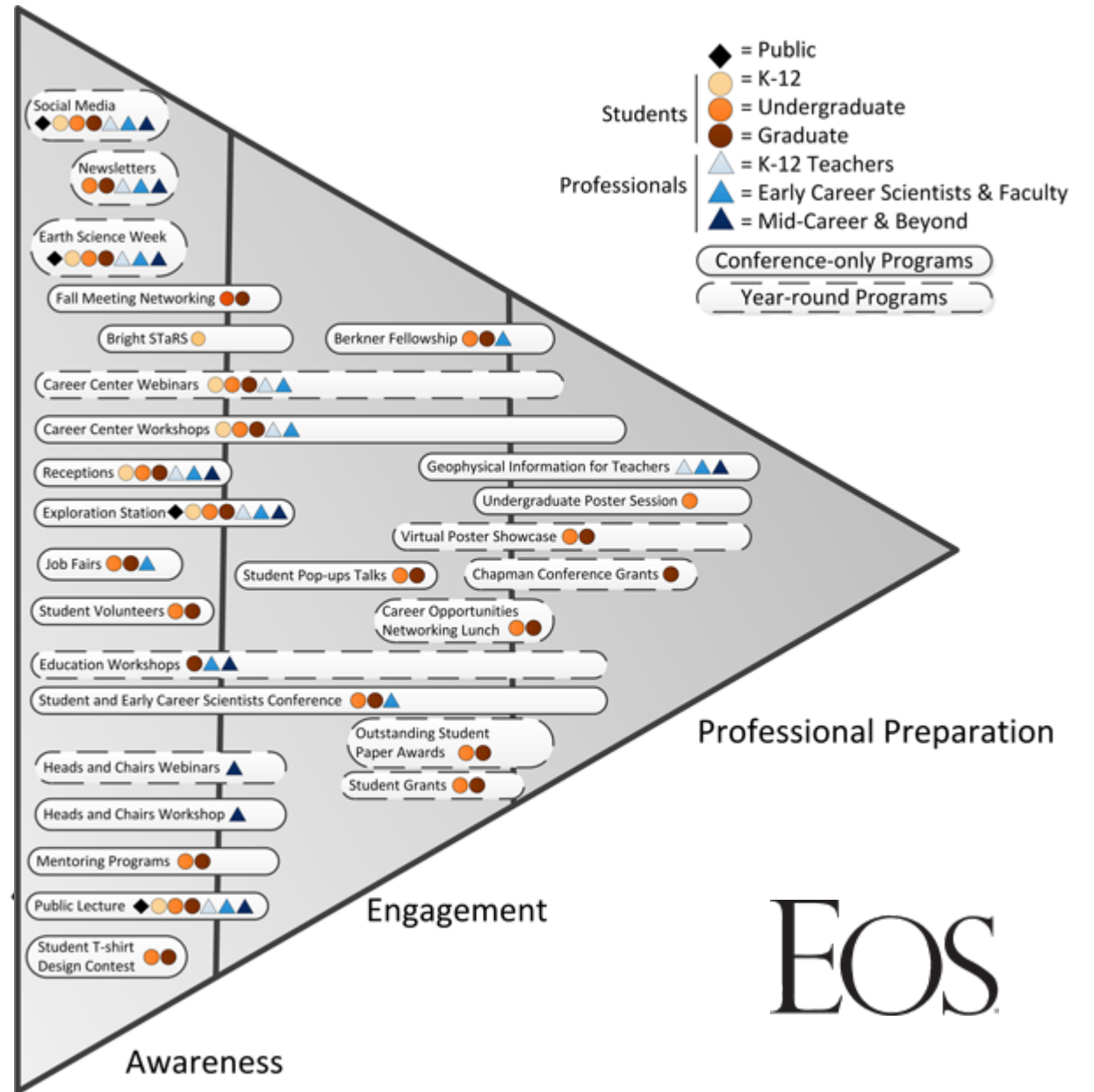
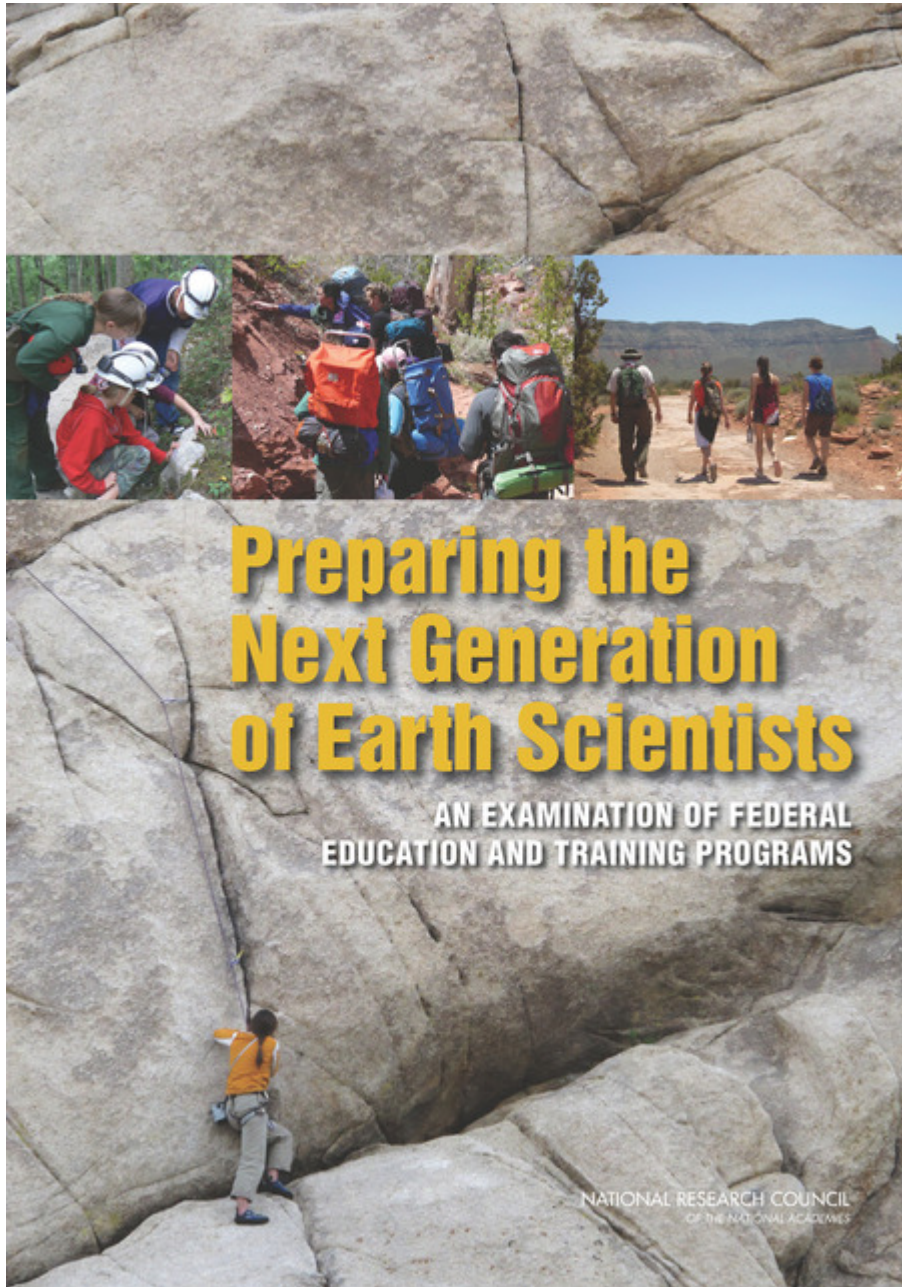
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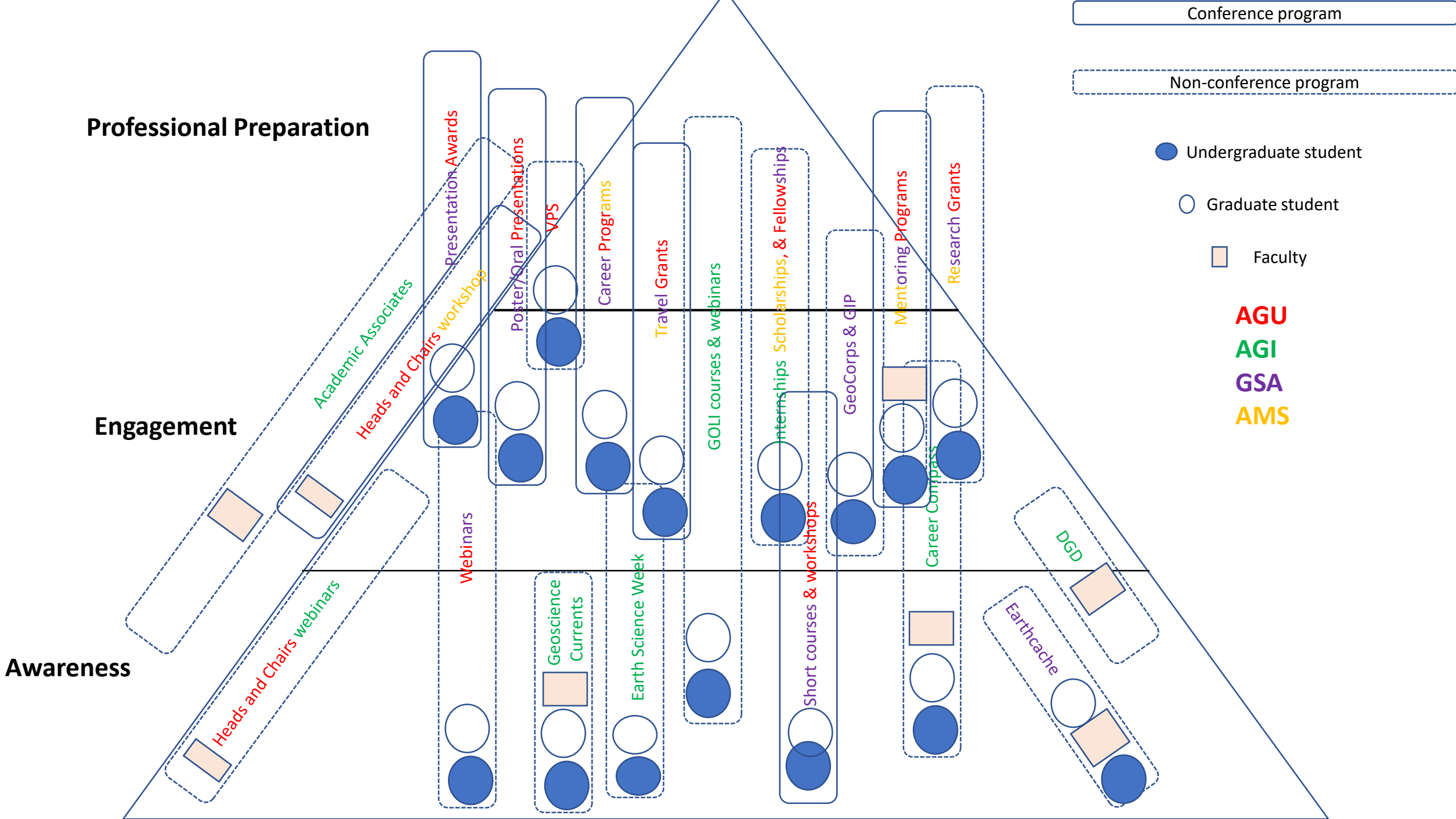
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SPACE SCIENCE

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EOS



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