what employers want

PROFICIENCY in **critical thinking/problem solving** skills.

PROFICIENCY in **communicating** effectively to scientists and non-scientists.

MASTERY of **solving problems**, especially those requiring spatial and temporal (i.e. 3D and 4D) interpretations.

MASTERY of **making inferences** about the Earth system from observations of the natural world combined with experimentation and modeling.

MASTERY of **working with uncertainty**, non-uniqueness, incompleteness, ambiguity and indirect observations.

MASTERY of the **ability to access and integrate information** from different sources and to continue to learn.

PROFICIENCY in **understanding and using scientific research** methods.

PROFICIENCY in **quantitative skills** and the ability to **apply** them.

PROFICIENCY in **integrating data** from different disciplines and applying systems thinking.

PROFICIENCY in and MASTERY of strong **field skills** and a working knowledge of GIS.

PROFICIENCY in working in **interdisciplinary teams** and across cultures.

PROFICIENCY in **computational skills** and the ability to manage and analyze large datasets.

MASTERY of **technology** and versatility in its use (i.e. Google Earth, tablets, smartphones, apps).

here's how we can help

IU GEOLOGIC FIELD STATION

COURSES lead to CAREERS in GEOSCIENCES

INDIANA UNIVERSITY

JUDSON MEAD GEOLOGIC FIELD STATION

we teach the geological skills

1. HOW SYSTEMS WORK AND INTERACT
Evolution of the atmosphere through geologic time; Hydrosphere: ocean, ice, surface water, groundwater; Lithosphere: rock cycle, deformation, structure, tectonics; Pedosphere/surface: geomorphic, erosion, and surface processes, landscape evolution; Biosphere: paleontology, ecosystems (and paleoclimate); Natural resources, energy; Natural hazards

2. PROCESSES
Geo-mechanics/Stress State/Rheology; Geological Time/Earth Evolution; Plate Tectonics/Geodynamics; Tectonic Processes; Depositional Processes; Crystallization Processes; Geochemical Cycles – C, H_2O, N, P

3. TOOLS
Statistics/Uncertainty/Probability; Cartography; Geography and spatial thinking; Field Methods; Remote Sensing; Age Dating; Analytical/Numerical Modeling; Seismology/Geophysical sensing

4. NONLINEAR COMPLEX SYSTEMS
Size of systems – complexity of scale and interactions; Feedback loops, interactions, forcings; Implications and predictions

5. CONVENTIONAL CONCEPTS OF GEOLOGIC TIME
Paleontology, superposition; Relative vs absolute age; Tools to determine absolute age (radioisotopes, stable isotopes, etc.), precision of data, limitations

6. SURFACE PROCESSES
Stream/River flow, morphology, deposition, erosion, effect of floods; Transport relationships (all surface processes); Surface mechanical processes; Karst formation; Glacial till and overburden thickness

7. EARTH MATERIALS
How to measure, scale of measurement; Mechanical characteristics; Scales of heterogeneity; Processes and conditions of formation; Localizing mechanisims for deposits; Fluid dynamics, flow and fluid chemistry

8. EARTH STRUCTURE
Mechanical and compositional layers; Tools for defining Earth structure (seismic waves, analysis of earthquakes, etc.); Stress and strain; Rock mechanics and deformation processes; Fractures, faults, folds, other structural features, etc.; Basin formation; Episodic nature, planning perspectives, uncertainty; Structural controls on resource accumulations

so you will have the professional skills

2. 3. 5. GEOSCIENCE THINKING
Temporal and spatial thinking; Systems thinking; Geologic reasoning and synthesis; Asking appropriate questions; Understand context of problems; Problem solving in 3-D and 4-D; Ability to work on problems with no clear answers; Managing uncertainty in problem solving; Working by analogy, inference and the limits of certainty; Intellectually flexible - applying skills in new scenarios

1. 3. 4. 5. TECHNICAL SKILLS
Data collection and interpretation, use of data and application; Evaluation of data, data quality, purpose of collecting data, understanding of how data will answer questions; Understanding data and uncertainties; Make predictions with limited data; Use of appropriate methods, reading and interpreting graphs; Probability and statistics (to understand risk); Understanding of scale; Encourage critical thinking; Experience with authentic research, collection of new information

3. 6. 7. 8. FIELD AND TECHNOLOGY SKILLS
Field camp and/or field mapping experiences; Improves spatial cognition, creative problem solving, teamwork, geoscience synthesis; Data-supported field skills are unique and essential, difficult to replicate or substitute; Technological diversity (need skills and training beyond point, click, and type) - i.e. not just black box

1. - 8. NON-TECHNICAL SKILLS
Science writing and verbal communication; knowing your audience; Listening skills; Goal setting; Managing problems on the front end; Solution-oriented approaches; Time management; Ethics, ethical awareness and conduct; Emotional literacy, learning styles, awareness of implicit bias

for your career in

Academia
Construction firms
Department of Natural Resources
Environmental engineering
Environmental consulting
Environmental law
Geoarchaeology
Geochemistry or biogeochemistry labs
Geology/Environmetal education
Government intelligence agencies (NSA, CIA, military intelligence)
State highway departments
Hydrology/Water resources
Military engineering
Mining
Museum curation
Paleontology
Park services and conservation
Petroleum industries
Science writing/journalism
Space agencies (e.g., NASA)
USGS and State geological surveys

contact us

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