

STEM Careers at the EAA

GIS Analysts (GEOGRAPHIC INFORMATION SYSTEMS)



What does a GIS Analyst Do?

A GIS Analyst is a digital cartographer (map maker). They create spatial datasets, prepare maps and maintain databases used in engineering, architecture, government, agriculture, and other fields. This will include civic planning, natural resource management, transportation planning, construction and public services within the local city government and state level.

College Courses

To become a GIS analyst requires a bachelor's degree. Geometry, Statistics, and Remote Sensing make up some of the recommended coursework.

Recommended High School Courses

Environmental Science, Geography, Statistics, and Computer Science

Typical Employers

Local, state and federal government agencies such as NOAA (National Oceanic and Atmospheric Administration) and NASA (National Aeronautics and Space Administration) are major employers of GIS analysts to manage land records, and economic development.



Aquatic Biologist

What does a Biologist Do?

A Biologist is a scientist who studies living things. A special type of Biologist, an Aquatic Biologist, studies the living organisms found in water environments.

College Courses

To be a Biologist requires a bachelor's degree, but a master's degree would benefit advancement in this field. Recommended courses are Organic Chemistry, Microbiology, Genetic Principles, Ecology, and Anatomy.

Recommended High School Courses

Biology, Nutrition & Health, and Environmental Science

Typical Employers

Departments of Fish and Wildlife are interested in hiring Wild-life Conservationists and Marine Biologists. Universities and clinical research organizations, Sea World and Disney Parks & Resort require biologists to help maintain life support for their aquatic ecosystems on exhibit.



Geologist

What does a Geologist Do?

A Geologist is an Earth Science specialist who studies the Earth and how it changes. This is done by looking at rocks, minerals, precious metals and gems. Geologists study how rock formations are created and how they impact the natural environment. A special type of Geologist, a Hydrogeologist, studies how water moves through the rocks and the Earth.

College Courses

To be a Geologist or Hydrogeologist requires a minimum of a 4-year bachelor's degree. Minors can include Math, Physics, Earth Sciences or GIS (Geographic Information Systems). A certification license may be required for specific fields (ex. American Association of Petroleum Geologists).

Recommended High School Courses

Physics, Chemistry, Earth Science, Natural Resources, Mathematics, Geography, and Environmental Science

Typical Employers

Private firms such as Valero, Exxon and Shell hire Geologists. So do government agencies such as the Department of Energy and the Bureau of Land Management, environmental resource and protection agencies and environmental consulting firms.



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EDWARDS AQUIFER EDUCATION

The EAA was created to manage, enhance, and protect the Edwards Aquifer system. Your awareness and understanding of our shared natural resource is the first step towards preserving it for future generations. The EAA's education program offers a wide range of resources for students and educators to explore, learn, and understand our Edwards Aquifer system. All presentations, materials, and resources are provided **FREE** of charge to schools and organizations within our jurisdiction.



K-1st Karston's Friends (30 Minutes)

This program employs our lovable Texas Blind Salamander, Karston, to help students personalize water concepts through chants, games, songs, and stories. We currently offer two Karston Programs. Water Conservation with Karston teaches students how to conserve water at home and in their communities, while Karston and Friends introduces them to additional endangered species of the Edwards Aquifer. Current program resources are found on our website. When available, our huggable Karston mascot enjoys coming to visit as well.

2nd-3rd Spring Water Species (30 Minutes)

An EAA Aquifriend takes eager students on a virtual journey through the three zones of the aquifer while they learn about the endangered species of the Edwards Aquifer. This program creatively engages students by combining technology with audience participation. Students gain a new awareness of the various aspects of water including hydrology, geology, and the importance of water conservation.



4th-5th Aquiferium (30-45 Minutes)

This presentation takes students back 100 million years to when the Edwards Aquifer was first created. From the geology of the Edwards Aquifer to the physics of moving water, students will explore this unique resource and our dependence on clean fresh water. Also included in this study is a brief overview of the unique species that now call it home.



K-12 Career Days

Staff geologists, hydrologists, mathematicians, engineers, and/or biologists will discuss their careers including the required education and experience necessary, daily responsibilities, and how their work enables the EAA to manage, enhance, and protect the Edwards Aquifer. Presenters may demonstrate tools and technology used in their professions.



K-12 STEM Days

A hands-on, minds-on exploration of water science! This presentation is a mostly self-driven Water Lab in which students can measure water quality, test for pH, learn to take the temperature of the water, look at fresh water microorganisms through a microscope, and pore over aquifer rocks and fossils.



6th-College Secondary Presentations

Programming is dependent on staff availability.

Hydrogeology
Discover the unique geology of the Edwards Aquifer – sandwiched between the Glen Rose formation below and the Del Rio Clay formation above.

Biology
Students will learn what classifies as an endangered species, basic principles of the Endangered Species Act, and how to identify the Endangered Species of the Edwards Aquifer.

Chemistry
Scientists will demonstrate and allow students to test samples of Edwards water for pH, conductivity, temperature, dissolved oxygen, and total alkalinity.

Technology (Data Management)
Students will learn how and why certain types of data are continually collected and maintained such as: well data, surface water analysis, rain gauge, and weather station measurements.

Engineering (Aquifer Protection)
Presenters will discuss how engineering, or problem solving, can help filter polluted water runoff after flood events.

Mathematics (Numerical Computer Modeling)
Presenters explain how they develop mathematical, statistical, and computer models that can calculate the inflows, outflows, and storage capacity within the aquifer.

CEMEX CEMEX EDUCATOR EXCURSION SERIES

Why should students have all the fun? Get access to exclusive aquifer-related locations and personal interaction with staff geologists, hydrologists, and biologists while earning CPE hours and Gifted and Talented credit. Educators can gain hands-on experience and leave with kits/materials to carry on the learning experience to their students. All excursions, supplies, transportation, and food are free—generously provided by the Edwards Aquifer Conservancy through funding from the CEMEX Corporation.

The **EAA** is a registered State Board for Educator Certification (SBEC) Continuing Professional Education (CPE) provider offering the following teacher training opportunities:

AquiTechs October 8, 2018
Prepare to have a BLAST! Travel to CEMEX- one of the largest quarries in the United States to learn how innovative industry monitors and conserves water. Hike through the Nature Center and pose for a photo aboard gigantic truck!



Gorgeous Gorge March 15, 2019
Unearthed by the flood of 2002, the Canyon Lake Gorge reveals what life was like 100 million years ago. Come learn about the geology and biology of the area just northwest of New Braunfels. Hike along the limestone layers to spot ancient fossils and even dinosaur footprints!

Mill Mania! June 7, 2019
Let your inner child run free as you dig into a virtual rainstorm, collect rainwater, meet zebrafish and immerse yourself into a silo aquifer. This trip to the Science Mill in Johnson City is sure to spark your curiosity and creativity. All museum exhibits are TEKS aligned.

What's in a Name? July 19, 2019
Cool off underground! Join EAA Staff for a tour of Cave Without a Name. Sitting just outside of Boerne, this amazing limestone cave stays at a constant 66 degrees year-round. Explore the six rooms of the cave to learn about stalactites, stalagmites and more.

NEW!! NEW THIS FALL

Ever wanted to visit the Edwards Aquifer? The EAA has an interactive, go-anywhere, virtual underground experience for you! A 3D Cave Simulation is bringing previously inaccessible environments to students of all ages. This one of a kind virtual experience will take students down a 150-foot rappel into one of the largest sinkholes in the area. Encounters with troglobitic fauna are sure to inspire and excite an understanding of the Edwards Aquifer as never before. Presentation requires a dark room and a max of 25 students.

More information about our educational programs can be found at <https://www.edwardsaquifer.org/news-and-education/multimedia-library/online-resources>.

