Electrical Engineer Kansas Geological Survey

The Kansas Geological Survey at the University of Kansas seeks an Electrical Engineer

Position Overview

Using an engineering background, the Electrical Engineer will test, maintain, refine, design, build, and ready advanced geophysical equipment and associated components for field data acquisition. This position will have the freedom to conceive, design, and build hardware and software supporting data acquisition for a wide range of geologic applications. The Electrical Engineer will provide a leadership role in training of the proper use and handling of equipment. This person also will troubleshoot electronic equipment, often in a field environment, and repair or implement replacement options.

Application Deadline

Review of applications will begin November 8, 2021, and will continue until the position is filled.

Salary, Employment Status, and Fringe Benefits

Full-time position with benefits, subject to a six-month probation and annual performance reviews. The official title is Research Engineer. Salary is commensurate with qualifications and experience.

KU offers great benefits to employees with up to 22 days of paid vacation earned per year, 12 days of sick leave earned per year, nine paid holidays plus one discretionary day, a retirement program, medical and dental insurance, life and disability insurance, other benefit plan options, and State of Kansas discounts offered by various vendors. KU also offers employees educational and professional development opportunities. KU is a great place to work! The University actively encourages applications from members of underrepresented groups.

Exploration Services Section

The Kansas Geological Survey (KGS) Exploration Services (ES) section develops and uses several investigative methods to provide information about the subsurface, using both invasive and non-invasive approaches with a focus on higher resolution and accuracy while reducing cost.

The ES section provides drilling in support of water, energy, and basic subsurface research. It also runs a program designed to monitor changes and identify regional trends in the High Plains, Dakota, and alluvial aquifers, measuring about 1,380 wells in 47 central and



The S-27 RotoSonic drill rig, one of the three deep penetrating drill rigs operated by the Exploration Services section of the KGS.

western Kansas counties. As well, the ES section is responsible for installation, maintenance, and collection of data from earthquake recording stations in Kansas — both permanent stations and several temporary networks — to detect and analyze seismic activity.

Kansas Geological Survey

A research and service division of the University of Kansas, the Kansas Geological Survey studies the geology of Kansas, develops new techniques for exploring and analyzing geologic data, and produces and disseminates maps, reports, and scientific papers. The KGS, created in 1889, has an annual state budget of approximately \$6 million and employs more than 90 scientific researchers and technical support staff, and approximately 35 students, engaged in a variety of disciplines, including geophysics, energy resources, geohydrology, sedimentology, stratigraphy, petroleum geology, Quaternary geology, geoarchaeology, GIS and computer science, and public





A bungee-assisted weight drop attached to the front of a Bobcat Toolcat (shown here in Galena, Kansas) is one example of active seismic sources used by scientists at the KGS.



A KGS crew member measures groundwater levels in western Kansas. Levels are measured annually as part of a project to monitor the health of the state's groundwater resources.

outreach. In addition to core and data repositories at its headquarters in Lawrence, the KGS operates a well-sample library in Wichita that is a repository for rock samples from oil and gas wells drilled in the state.

The KGS is organized into four research areas energy research, geohydrology, geophysical exploration, and stratigraphic research — and a number of service sections. KGS researchers have available a variety of tools, equipment, and labs for the applied geosciences, including a state-of-the-art shallow seismic-reflection system, ground-penetrating radar, a direct-push unit, three drill rigs, well-logging unit, a distributed temperature sensing system, and electromagnetometers, as well as a core storage facility, the W. Lynn Watney Core Laboratory, a petrophysical core analysis lab, a soil and sediment laboratory, and an analytical chemistry lab.

Technical support includes editing, publishing, and cartographic services and full-service support for a diverse array of computing platforms and software, GIS, and web applications. The KGS also houses and operates the Kansas Data Access and Support Center, an important source of state geospatial data.

For more information about the KGS, visit our website: <u>http://www.kgs.ku.edu</u>.

About the University

Founded in 1865, KU is a major public research and teaching institution of 28,500 students and 2,600 faculty on five campuses (Lawrence, Kansas City, Overland Park, Wichita, and Salina).

About Lawrence

A city of approximately 95,000, Lawrence is located on a rolling landscape 35 miles west of the major metropolitan area of Kansas City and 20 miles east of Topeka, the state

capital. Home to Haskell Indian Nations University as well as KU, Lawrence offers the cultural and athletic events of a university setting. For more information about Lawrence, visit <u>http://www.lawrence.com</u>, Unmistakably Lawrence (<u>https://unmistakablylawrence.com</u>), and Lawrence Public Schools (<u>https://www.usd497.org</u>).

Responsibilities

- 20% Conceives, designs, and implements microcomputer/microcontroller systems/software as well as electronic and mechanical devices for the testing of advanced geophysical data acquisition and processing research. Helps evaluate commercially available seismic instruments/components based on literature, laboratory, and field testing, fitness for KGS geophysical research, and determination of potential design flaws. Participates in development, pre-planning, and excursions as necessary to ensure electronic readiness for seismic research projects. Programming to manage data formats. Monitors and evaluates overall fitness of seismic hardware and software for rapid deployment.
- 10% Principle oversight and facilitator in preparing, updating, delivering, and retrieving electronic field systems for KGS and collaborators working on annual water-level measurement program. Programming and revising of specialized software for android devices. Options to perform as a field member of the annual water-level measurement program. Responsible for educating on the proper operation of all guidance and data logging hardware and software systems used by several state agencies. Assists in troubleshooting and resolving any issues arising from electronic systems. Responsible for preliminary analysis and safeguarding the accuracy of annual water-level measurements.

- 10% Participates with data recording, transfer operations, and data management of both temporary and permanent Kansas earthquake networks. Instructs and monitors earthquake technician on proper maintenance and installation of hardware at remote field locations. Field oversight will be necessary in cases where remote interaction is not providing the 100% operational efficiencies.
- 40% Participates in research planning and development for a wide range of projects and programs using engineering background and expertise to determine optimum electronic systems and/or devices for purchase, to design, or construction, based on project goals. Projects/programs including but not limited to seismic, GPR, drilling, water level, earthquake, land surveying, and logging as well as other KGS sections as need for expertise arises. Responsibility for all section computers, plotters, and printers (purchasing, setup, and updates); with additional oversight of KGS cell phones.
- 20% Acting as an electronics specialist, evaluates and compares, often without the aid of schematics or other published technical information, expected versus actual performance of a variety of specialized electronic and mechanical devices. Applying electronic/engineering principles in the formulation and implementation of a solution that may involve repairing, rebuilding, redesigning, or discarding the equipment. Independently investigates and determines appropriate solutions to problems with KGS electronic equipment. Troubleshoots complex electronic systems, corrects system problems, or recommends options. Designs, builds, and implements specialized electronic components for a wide range of applications.



KGS seismic work at the Macksville sinkhole in Pawnee County.



A KGS researcher installs an earthquake monitor in Sumner County.

Required Qualifications

- 1. Associate's degree in electrical engineering technology with 3 years of relevant experience OR B.S. in Electrical/ Computer Engineering plus 1 year of relevant experience.
- 2. Demonstrated experience with diagnosing/ troubleshooting electronic equipment malfunctions and successful repair as evidenced by application material.
- 3. Developed hardware, software, and/or firmware products as evidenced by application material.

Position Requirements

- 1. Valid driver's license.
- 2. Occasional travel around ten days at a time, averaging 25–30 days per year.
- 3. Work outdoors in challenging conditions for periods of several days.
- 4. Lift and move up to 30 pounds short distances with or without accommodation.
- 5. Work independently and make decisions with remote guidance.

Preferred Qualifications

- 1. Demonstrated experience programming in C, C++, and Visual Basic.
- 2. Knowledge of DGPS/RTK systems and data protocols.
- 3. Experience with field-based telemetered data systems.
- 4. Seismic acquisition systems field experience.
- 5. Familiarity with programming apps on android devices.

Tentative Start Date

December 13, 2021; exact start date is negotiable.



The Kansas Geological Survey in the University of Kansas West District.

Application Procedure

Apply online only at <u>https://employment.ku.edu/</u> <u>staff/20379BR</u>. Complete the University of Kansas Unclassified Professional Staff profile and upload the required material:

- 1. Cover letter address each required and preferred qualification and each position requirement.
- 2. Resume.
- 3. Contact information for two or more work references. Provide relationship to the references.
- 4. Unofficial college transcripts to determine education requirement.

Review begins November 8, 2021, and will continue until a qualified pool of applicants is received. For best consideration, apply by the review date.

Contact Information

Annette Delaney, Human Resources Kansas Geological Survey, University of Kansas <u>adelaney@ ku.edu</u> or 785-864-2152

EO/AA Employer

https://policy.ku.edu/IOA/nondiscrimination