

Research Engineer (Electrical Engineer) Kansas Geological Survey

The Kansas Geological Survey at the University of Kansas seeks a Research Engineer (Electrical Engineer)

Position Overview

Using an engineering background, the Research Engineer will test, maintain, refine, and ready advanced geophysical equipment for field data acquisition. This person provides a leadership role in training of proper use and handling of equipment. This person also troubleshoots electronic equipment, often in a field environment, and repairs or implements replacement options.

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

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: <http://www.kgs.ku.edu>.



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 research assistant operates a Geoprobe direct-push rig as part of a DOE-funded project to assess the potential of nuclear magnetic resonance technology for shallow groundwater applications.

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 <http://www.lawrence.com>, Unmistakably Lawrence (<https://unmistakablylawrence.com>), and Lawrence Public Schools (<https://www.usd497.org>).

Application Deadline

Review of applications will begin July 19, 2021, and will continue until the position is filled.

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.



The W. Lynn Watney Kansas Geological Survey Core Laboratory is operated as a service to the people and industry of Kansas. Industrial users include the oil and gas industry, where determining the porosity and permeability of an underground reservoir can help determine the potential productivity of a field.

Perform as a field member of the annual water-level measurement program. Responsible for routine measurements and the proper operation of all guidance and data logging hardware and software systems. Assist in troubleshooting and resolving any issues arising from electronic systems, in an in-field environment. Responsible for preliminary analysis and safeguarding the accuracy of annual water-level measurements.

10% — Participate with data recording, transfer operations and data management of both temporary and permanent Kansas earthquake networks. Instruct and monitor earthquake technician on proper maintenance and installation of hardware at remote field operations. Field oversight in cases where remote interaction is not providing the 100% operational efficiencies will be performed.

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, 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 collaboration on KGS cell phones.

20% — Acting as an electronics specialist, evaluate and compare, 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. Troubleshoot complex electronic systems, correct

system problems or recommend options. Design, build, and implement specialized electronic components for a wide range of applications.

Required Qualifications

1. B.S. in Electrical/Computer Engineering plus 2 years of relevant experience.
2. Demonstrated experience with equipment repair as evidenced by application material.
3. Developed hardware, software, and/or firmware products as evidenced by application material.
4. Demonstrated experience with troubleshooting electronic systems as evidenced by application material.

Position Requirements

1. Ability to be away from home base for around ten days at a time, averaging 50 days per year.
2. Ability to work outdoors in challenging conditions for extended periods while performing repetitive and labor-intensive tasks over periods of several days.
3. Ability to lift and move up to 50 pounds short distances.
4. Ability to work independently and make decisions with remote guidance.
5. Ability to come up with innovative or unique solutions to problems involving electronic equipment at risk in real time.
6. The work in this position is required to be performed onsite, to include field work sites.

Preferred Qualifications

1. Demonstrated experience programming in C, C++, Quick-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

August 30, 2021; exact start date is negotiable.

Salary, Employment Status, and Fringe Benefits

Full-time position with benefits, subject to a six-month probation and annual performance reviews. Salary is \$65,000 or greater, 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 & 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.



The KGS Drill Core Library in Lawrence and the Wichita Well Sample Library store core, rock samples, and cuttings for research.



The Kansas Geological Survey on the University of Kansas west campus.

Application Procedure

Apply online only at <https://employment.ku.edu/staff/19322BR>. Complete the University of Kansas Unclassified Professional Staff profile and upload the required material:

1. Cover letter addressing the required and preferred qualifications and position requirements.
2. Resume.
3. Contact information for three professional references.
4. Unofficial college transcripts to determine education requirement.

Review begins July 19, 2021, and will continue until a qualified pool of applicants is received. For best consideration apply by the review date.

Contact Information

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EO/AA Employer

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