

## Geologic Mapping (Division C)

**DESCRIPTION:** Students will demonstrate understanding in the construction and use of topographic maps, geologic maps, and seismic reflection profiles and their use in forming interpretations regarding geohazard risk and subsurface structure.

**A TEAM OF UP TO:** 2

**APPROXIMATE TIME:** 50 min

**THE COMPETITION:** Each team member is permitted to bring one three-ring binder (any size) containing information in any form from any source. The material must be 3-hole punched and inserted into the rings (notebook sleeves are allowable). Each team **MUST** have a protractor, ruler, non-programmable calculator, colored pencils, and an equal-area projection stereonet with tracing paper and pin.

Using information, which may include topographic maps, geologic maps, USGS quadrangles, seismic reflection profiles, drill cores, well logs, photographs, satellite images, paleomagnetic data, gravity surveys, map projections, or stereonets, participants will be asked to complete activities, using all available information to:

1. Be knowledgeable about *latitude/longitude, UTM, map projections, geologic time scale, methods for relative age dating, unconformities, field measurements (strike, dip, trend, plunge), major depositional environments, basics of rock formation, and plate tectonics*
2. Interpret *map signatures of intrusions, subsurface geometries, deformation sequences, and buried depositional features*
3. Identify *fold geometries, fault types, erosional patterns and, major structural elements (synforms, antiforms, synclines, anticlines, basins, monoclines, domes, saddles, etc)*
4. Construct *cross-sections (faults, folds, growth strata, etc), topographic profiles, topographic maps, new projections of mapped features, and stereonet projections of measured features*
5. Determine *bed thicknesses, true dip, levels of geohazard risk, and orientations of planes from points*

**SCORING:** All questions will have been assigned a predetermined number of points. The highest score wins. Selected questions having differentiated weights will be used to break ties.