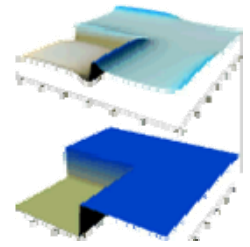


Applied Magnetism Spring Semester – GEOS 491 Monday 3:00-4:00; and Wednesday 2:00-4:00

Here's your chance to take a course covering topics that range in scale from minerals to the ionosphere. The time range of these topics is Precambrian to present day. I guarantee you will get to reinforce and apply much of your existing knowledge from geosciences courses (as well as a little calculus and physics) and will learn plenty of new connections among things you know.



Since the first published scientific treatises (Peregrinus, 1269; Gilbert, 1600) to now, magnetism has been central to geoscience:

- Geomagnetism impacts communications, auroras, and sheds insight on the core.
- Paleomagnetism confirmed continental drift and plate motions, measured distributed deformation of continental plates, discovered micro-continents, yields estimates of stratigraphic completeness, and provides constraints on the core dynamo.
- Aeromagnetic investigation lets us map plate sutures, constrain geotherm models, delineate mineral deposits, and estimate depth to crystalline rocks beneath sedimentary basins.
- Ground-based magnetic surveys help discover archaeological features, map contaminated environmental sites, and discover buried resources.

Learn about:

- how the auroras work
- calculating terrane trajectories
- measuring Precambrian Euler poles
- completing a ground-based magnetic survey in the field
- processing and interpreting magnetic data relevant to structure, minerals and energy exploration, and archaeological targets
- signal processing and potential field data
- applications and pitfalls of 2D and 3D forward and inverse modeling.

In short, you'll get a broad range of topics and applications, something pertinent to almost all future careers in geosciences, and a chance to refresh, apply and enhance all sorts of skills.

The course drifts among lectures, computation, problem sets, lab and field assignments, reports, with lots of software-based processing and interpretation. My overall objective is for you to be able to read, understand, and apply the professional magnetic literature to topics of your interest by the time the semester is over.

