Introduction
Field-based research is an essential part of the Earth Sciences, and forms the basis for a wide array of continuing geological studies. It is also an activity that provides an opportunity for undergraduates to work with a research team. This field-based, international Maymester course will examine the geological history of the southern Andes in NW Argentina. It will also allow students to experience aspects of the culture, architecture, and language of a South American, Spanish-speaking country shaped by contrasting civilizations over several millennia. The course will consist of three parts.

Instructor: Dr. Scott Paterson
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Office Hours: MW-11-12, and anytime my door is open.

TA: TBA

Course details
Instruction will be carried out by Professor Scott Paterson, Department of Earth Sciences, USC aided by USC graduate students Abigail Wesley, Alex Lusk and Snir Adila. Professors Pablo Alasino and Mariano Larrovere (both at La Rioja University, Argentina) will join the fieldwork in Argentina and act as additional research mentors. The Argentina professors and Argentina students will act as hosts and Spanish translators while in Argentina.

*Part A:* will be held during the Spring Semester 2019 preceding the field course. A total of five, 1.5 hr sessions, plus a one-day mapping exercise, will focus on an introduction to field research plus a discussion of the geological problems posed by the mountain chains and magmatism that form the South American Andes. Participation in the seminars will include verbal presentations by the participants: assessment will be provided prior to the following seminar. The seminars will be based on reading and evaluation of published literature and a few exercises relating to the topics listed below.
1. Plate-tectonic history of the Andes region.
2. Geodynamics of orogenic belts and mountain building.
3. Ductile shear zones and structural evolution of orogenic belts.
5. Geochemistry of plutons and volcanoes - exploring links between them.
6. Modern mapping techniques
7. Stable isotopes and fluid-flow.
Part B. consists of an ~28-day field trip including ~7 travel days, research in Anillaco (CRILAR) and mapping in two areas during which the students will investigate a set of interrelated research questions while mapping in two different mapping areas. USC students will be grouped with a mentor and selected Argentina students into mapping and research teams, although all participants will be working together on the same research objectives. Daily mapping and associated exercises will be carried out during the field course that will be completed during the evening and assessed while the field course is in progress.

Part C. Discussion sessions will take place during the evening of each field day, and a final discussion and “debriefing” will be held. These discussions will be designed to assist the students in the preparation of a term paper (which must include the two completed geologic maps) researching some aspect of the geological evolution of the area. The students will have a choice of topics, and will submit the term paper electronically by the official end date of the program.

Grading:

1 graded seminar presentation prior to the field trip 10%
3 graded exercises during the field trip, 20% each 60%
Term paper (topic must be approved by professor) 30%

The term paper will be due ~ June 7, 2019 after we return to USC.

Argentina Logistics
Students and faculty will stay in dorm rooms at the CRILAR research center, Anillaco, and in a hotel in the two field areas and travel in either a bus (with professional driver) or CRILAR research vehicles to field locations. To ensure safety in the field, students will always work in a research team together with an instructor and at least one Spanish speaking person, and there will always be more than one vehicle available for transportation. There are excellent publically funded clinics in each of the towns where we will stay, which can provide medical services as needed. Students will need to be in good health, physically fit, and able to walk in the field for distances up to 8 miles.

Recommended Preparation:
No required courses. However, the following courses are useful: Intro Earth Science course (e.g., GEOL105) and Intro to Field Techniques (GEOL-499)
Other useful courses: One or more of GEOL 315L Minerals and Earth Systems, GEOL 316L Petrologic Systems; GEOL 320L Surficial Processes and Stratigraphic Systems; GEOL 321L Structural Geology and Tectonics.

Statement for Students with Disabilities
Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to TA) as early in the semester as possible. DSP is
located in STU 301 and is open 8:30 a.m.–5:00 p.m., Monday through Friday. Website and contact information for DSP:
http://sait.usc.edu/academicsupport/centerprograms/dsp/home_index.html, (213) 740-0776 (Phone), (213) 740-6948 (TDD only), (213) 740-8216 (FAX) ability@usc.edu.

Statement on Academic Integrity
USC seeks to maintain an optimal learning environment. General principles of academic honesty include the concept of respect for the intellectual property of others, the expectation that individual work will be submitted unless otherwise allowed by an instructor, and the obligations both to protect one’s own academic work from misuse by others as well as to avoid using another’s work as one’s own. All students are expected to understand and abide by these principles. SCampus, the Student Guidebook, (www.usc.edu/scampus or http://scampus.usc.edu) contains the University Student Conduct Code (see University Governance, Section 11.00), while the recommended sanctions are located in Appendix A.

Emergency Preparedness/Course Continuity in a Crisis
In case of a declared emergency if travel to campus is not feasible, USC executive leadership will announce an electronic way for instructors to teach students in their residence halls or homes using a combination of Blackboard, teleconferencing, and other technologies.