The equipment list for Geo. 660 contains several relatively expensive items that many of you may not already own. Below are some ideas on adequate equipment at reasonable prices. A little searching on the web can yield tremendous dividends.

**Boots**

Footwear is the single most important item for a field course. Good boots provides traction, protection and support for your feet. Tennis or basketball shoes are not adequate for the latter two reasons, nor are cowboy boots for the former. A wide variety of boot styles are available, from those with low- or high-top nylon/leather uppers, to all-leather boots. Leather boots provides maximum protection, support and, with the proper soles, excellent traction. Most today are designed with backpacking in mind, which requires relatively rigid uppers and maximum padding to provide comfort and support for carrying heavy loads. Once broken-in, a well-made boot of this type is unsurpassed for field use. They are the best at keeping feet dry, provide an important measure of protection from cactus spines and will usually (but not always) outlast a softer boot.

The major disadvantage of leather boots is price; a decent pair now costs over $150, with many in the $180-$250 range. Do you need leather boots at this price for 6 weeks of fieldwork? No. A well-made, cheaper pair of “soft” boots can be adequate if: 1) you’re relatively agile and light on your feet; 2) your field pack doesn’t weigh more than about 40 lbs.; 4) you’re not prone to kicking cactus. I worked in soft boots for many years and, although they lasted little more than one season, I’ve was very happy with the lowest-priced models of Merrill, Vasque and Asolo boots, which can often be found on sale (or on the web) for less than $80/pair. Well-made pairs by major manufacturers sell at list prices of $70 - $200. Less well-made boots tend to lack side support (foot tends to roll sideways when walking across slopes) and can quickly come apart (soles detach, front rand comes off) after limited use. High-top boots provide ankle support and will keep scree and dirt out when moving down-slope on loose ground. Gaiters serve a similar purpose in keeping debris out of your boots. If you are unsure about your footing on rough terrain consider bringing trekking poles (walking sticks).

Regardless of the boots you select, you will be much more comfortable if you use well-padded socks with a clean pair of thin sock liners. Sock liners wick moisture from your feet and are easy to wash/rinse at the end of a day.

**Rain gear**

A good, well-fitting, waterproof coat is a necessity, not a luxury. We have never experienced a summer where it didn’t rain. Two summers were exceedingly wet, raining nearly every day and for several days on end. We camp and cook outdoors and are in the field every day, rain or shine. Strong winds and colder temperatures often accompany rain in the mountains.
Adequate rain gear need not cost 100’s of dollars, but a $5 plastic poncho, which is only marginally better than a plastic trash bag, won’t work in such conditions, nor will a thin nylon shell sprayed with Scotchguard. Lower-priced ($20-50) raincoats and rain pants, which are usually made of plastic- or coated nylon, are adequate and widely available in a variety of styles. The best of the least expensive brands is probably Frogg Toggs. Medium-priced coats (typically $50-100) are somewhat lighter-weight, usually better ventilated, may have an attached hood and are thus more comfortable to work in. They are, however, no more water repellent than lower-priced varieties, sometimes less so. High-priced rainwear is general constructed of one or more “miracle” fabrics; lightweight materials that are touted to “breathe” while also being waterproof. In my opinion (based on several coats, boots, mittens, and a few other items) these fabrics are vastly overrated for the price. Nonetheless, such coats are generally ruggedly constructed, fit well, and typically have many desirable features (multiple pockets, armpit zippers, internal drawstrings, ancillary ventilation, etc.). Again, they are not necessarily more waterproof than much lower priced models. Ponchos and umbrellas don’t work well in windy weather. A baseball cap worn under a rain hood can greatly assist in keeping water and/or the hood off your face.

Regardless of what you type of coat you choose be sure it’s large enough to allow for insulating layers underneath. Have a pair of rain pants.

**Sleeping Bags and Pads**

This summer, you will spend about 21 nights sleeping on the ground in a tent. Nighttime temperatures in the Rockies can be as low as 30° in June and are commonly 40°-50°. Blankets are only marginally adequate in such conditions; a sleeping bag provides better heat retention and insulation. The enormous price range for sleeping bags reflects differences in insulating materials, weight and construction. At the high end are extremely light, down-filled bags made of waterproof, breathable fabrics that have a comfort range that extends to -30° F. These bags are uncomfortably warm for all but the coldest conditions. At the low end are cotton bags with natural or synthetic fiber insulation, some of questionable construction, that may or may not keep you warm at temperatures below 50°. In between is a very large spectrum of nylon shell, down- or synthetic fiber-filled bags that are more than adequate for summer camping in the US Rockies. Fiber-filled bags are light, dry quickly, are easy to clean, are nearly as warm as down, and pack to a small volume. Like wool, they provide warmth even when wet. Down bags are typically more expensive, slow to dry and nonfunctional when wet. If you are concerned about your sleeping bag keeping you warm, bring a pair of long underwear to sleep in and make sure you have a good sleeping pad. I also use a sleeping bag liner to extend the temperature range of my bag.

A sleeping pad or foam mattress provides insulation from cold ground and a measure of comfort. A closed-cell foam or inflatable pad provides the best insulation. A blanket beneath you sleeping bag is better than nothing.
Tents

The Department no longer supplies tents. Tent prices have come down in recent years and very well made, 2- or 3- person tents are available for $200 or less. In evaluating a tent for this summer, ask yourself the following: Will the tent withstand windy (30-40 mph) conditions? If it has fiberglass poles the answer is likely no. Is it waterproof (or can it be made waterproof) in a sustained, heavy downpour? If the tent fly does not extend most of the way to the ground the answer is no. Do I have all the parts? A waterproof ground cloth (a sheet of heavy mil plastic will do) keeps the floor of your tent from absorbing water and protects against punctures.

A folding chair is recommended for use in camp.

Clothing

You should have clothing that will allow you to live and work comfortably in both cold (40°) and hot (100°+) weather. Cold is best dealt with by wearing layers that can be donned and shed as needed. For maximum comfort your outermost layer should be windproof; rain coats/pants are adequate. Beneath this, a layer that will trap air (sweater, sweat shirt, fleece jacket, down vest, etc.) comes next, underlain by one or more thin layers (T-shirt, long sleeved shirt) that provide additional warmth and wick perspiration from your skin. Glove liners are a very good, warm alternative to standard gloves, which cause difficulties when using a pen or pencil. As much as 70% of your body’s heat loss occurs through your head; if you’re cold put a hat on.

A wide brim hat, bandanna, and sunblock are essential for working in the deserts of West Texas, New Mexico and throughout the Rockies.

Finally, you will be traveling or working outdoors nearly every day of the 3 weeks. You will load and unload your gear, along with coolers, cook boxes, tarps, etc., many, many times along the way. It is to your and everyone else’s benefit to travel light. Examine every piece of clothing you pack critically; do you really need it? Keep in mind that we will not be anywhere that requires anything more than field clothing, and that outer layers (shirts, field pants, jackets) can be worn even when dirty!

Field Gear

As indicated by the attached gear list, the equipment packet you purchased for Geo420K contains most of the items you will need for completing most of the field projects. Be sure to get a grain size card from the undergraduate office if you don’t have one – having an extra is also a good idea.