



Universidad Nacional de Ancash - Santiago Antúnez de Mayolo
Department of Social Sciences and Communication Sciences
School of Archaeology



ARCHAEOLOGY 310499: Analytical Methods in Archaeology

Course Location:

Archaeological site and community of Hualcayán, located in highland Ancash, Peru

Lead Instructors:

Dr. Rebecca E. Bria
Lic. Erick L. Casanova Vasquez
Dr. Christine Pink
Emily Sharp

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Session 1: June 25 - July 23

Session 2: July 24 - August 21

Course Overview:



Taking place in the heart of the highland Andes of Peru, Analytical Methods in Archaeology is a unique approach to the traditional course in archaeological field methods. Through the course, students will not only learn the essential skills (mapping, excavation, artifact processing, etc.) of field archaeology, but also they will train in a range of specialized methods that are shaping innovations in the field today. Student participants will excavate monumental tombs and ritual spaces at Hualcayán (2400 BC–AD 1450), then focus their studies on either **Bioarchaeology** or **Artifact Analysis**. Students will also participate in supplementary training in **Geographic Information Systems (GIS)** and **3D Photogrammetry**. During the field school, participants will live and work with the rural, bilingual Quechua/Spanish-speaking community of Hualcayán (highland Ancash, Peru), which facilitates an important component of the field school: learning to ethically and respectfully conduct research on the remains of other people's heritage through **community collaboration**. Finally, students will travel to important archaeological sites and museums in four cities—Lima, Caraz, Huaraz, Chavín—and visit stunning natural features like high altitude lagoons and glaciers. This course is taught in conjunction with Dr. Rebecca Bria's research project called the *Proyecto de Investigación Arqueológico Regional Ancash* (PIARA; www.piaraperu.org), which has focused its investigations on the site of Hualcayán since 2009. Student instruction will be therefore embedded within the goals and practices of a long-term study of an ancient Peruvian community. As such, the scientific, student-produced results of the course will have a real impact on our knowledge of the ancient Andes.

What You Will Learn:

Analytical Methods in Archaeology provides detailed training in a variety of important archaeological methods. Students will split their time between learning general field and laboratory techniques and concentrating on their chosen analytical method. Although structured workshops and exercises will teach



essential skills, most learning will be embedded within the goals and practices of the professor's long-term research project on ancient community formation at Hualcayán. Therefore, the scientific, student-produced results of the course will have a real impact on our knowledge of the ancient Andes.

Through both targeted training and daily practice, student participants will learn how to properly lay out excavation units, how to draw plan maps and profiles of stratigraphic and architectural features, and how to digitally record and visualize data using iPads in the field. Regardless of their chosen concentration, students will attend workshops in

GIS, 3D Photogrammetry, artifact processing, analysis, and illustration, human skeletal analysis, total station mapping, textile analysis, and soil flotation. At the end of the field school, students will present the results of a group analysis project based on their chosen concentration. Students will also attend weekly lectures and discuss readings on Andean prehistory to properly contextualize the materials and results of their research findings.

Before the course begins, students will choose one of the following two concentrations:

Concentration 1: Bioarchaeology. Students will focus their studies on the excavation of ancient tombs and the analysis of human skeletal remains. PIARA has an incredible sample of mummified and non-mummified remains. Students will develop and/or refine their ability to: identify human bones, determine the sex and age of human remains, and document the number of individuals (MNI) present in commingled contexts. They will also learn more advanced bioarchaeological analysis skills by documenting ancient diseases and nutritional deficiencies (paleopathology), identifying evidence for mechanical and violent trauma, and recognize the techniques of trepanation and cranial modification. Students will also reconstruct mortuary practices at Hualcayán through a consideration of funerary architecture, context, entomology, and material association (textiles, ceramics, metal objects, and macrobotanical remains). Finally, students will learn the proper techniques for the cleaning and curation of skeletal materials. Participants must be comfortable working in small, enclosed tomb spaces.



Concentration 2: Artifact analysis. Students will analyze excavated artifacts from Hualcayán to construct and interpret artifact assemblages across space and time. PIARA excavations have amassed an extensive and varied artifact collection from a variety of contexts and prehistoric periods; from this collection, or from artifacts uncovered during the field school, students will select a specific theme, area, and/or period to intensively study. Students will learn to perform detailed attribute analysis on these artifacts, with a primary focus on ceramics, with introductory training in the identification of animal remains (zooarchaeology),



lithics, and textiles. Training will include illustration, photography, and reconstruction/restoration. Students will also learn to process soils through fine-screening and flotation in search of small artifacts and macrobotanical remains. Participants will process new materials from current excavations as well as already excavated materials.

Students will also receive training in the following activities:

Supplementary training 1: Geographic Information Systems

(GIS). Students will learn how to collect, manage, process, and analyze spatial data using total station and GIS software. In the field, students will document environmental and architectural features using total stations and GPS units (survey) and perform attribute analysis of these features (landscape and architectural analysis). Data processing of these data in the laboratory will introduce several GIS techniques and analyses that are commonly employed in archaeology. In the lab, students will import, create, and manage spatial data, learning to: georeference maps, photographs, and satellite images; manipulate, generate, and convert different types of spatial data such as shapefiles, DEMs, and TINs; and process these data for 2D and 3D visualization. Students will also learn to manage and visualize excavation data in GIS. All students interested in these workshops must bring a laptop in order to participate in GIS activities. Instruction will focus on the open source application QGIS, but students wishing to learn using ArcGIS may do so if they arrive with a pre-installed version and student license.



Supplementary training 2: 3D Photogrammetry. Students will learn how produce 3D models of spaces and objects through photogrammetry techniques. In particular, students will learn how to properly take and then processes photographs using the program Agisoft Photoscan. Students will work in groups on project computers with licensed copies of Photoscan, or they may install a 30 day trial immediately before flying to Peru (the trial can only be installed once on any given computer!). Training will cover creating models of excavation units, architectural spaces, and portable artifacts. Students participating in GIS workshops will also learn to create georeferenced photogrammetry orthophotos and import them into a GIS.

For the final project, students will conduct original research in groups—data collection or analysis based on a topic specific to each student's chosen concentration. They will then prepare a final presentation that synthesizes the group's findings.



Community Collaborations are also an important part of students' experience. Students will learn what it means to work with and live in a rural Andean community. Students will not be isolated from the local people in their daily endeavors: young adults and adults from Hualcayán, as well as Peruvian students from the Universidad Nacional de Ancash - Santiago Antúnez de Mayolo (Huaraz, Ancash, Peru), will work alongside students, which provides a robust intercultural learning experience. In this pursuit, students learn how to ethically and respectfully conduct research on the remains of other people's heritage—by collaborating with them.

Beyond collaborations in daily fieldwork, students will also contribute to heritage, education, or wellness-focused projects in the Hualcayán community. At minimum, all students will spend the equivalent of one full day (8 hours) working on these projects. The details of this work will depend on the community's expressed needs and may include doing educational activities in the school, implementing projects in the community

museum, cleaning up trash in the village with the school children, painting buildings, assisting in a harvest, cataloging donated library books, or working with PIARA to prepare or host heritage-focused events.

Evaluation of students:

The evaluation of students in the course will be based on:

- Daily fieldwork or laboratory work (50%). This includes the student's ability and eagerness to learn, participate, follow instructions, and problem-solve during field and lab activities.
- Readings and lecture participation (10%). Readings and lecture attendance are mandatory and grades will be assessed through participation and engagement with the topics.
- Field Notebook (20%). Each student will keep a personal field notebook where they will take notes of all their daily activities, observations and preliminary interpretations. This notebook will be graded based on the evidence of the student's efforts to interpret and understand field activities throughout the season.
- Final presentation (20%). At the end of the course, each student will collaborate with 3-4 other students to prepare a 20-minute group presentation outlining the significance of the data they collected and analyzed in their concentration (Bioarchaeology or artifact analysis), and providing interpretations of this data in light of the lectures and assigned readings. Groups will focus their presentations around a specific theme, to be selected and discussed in advance with the course instructor.

Grading:

Students taking this course will be graded on the following scale:

A = 90-100%

B = 80-89%

C = 70-79%

D = 60-69%

F = 59% and below

Room and Board Arrangements:

Students will live in the heart of a traditional Andean community in a rural setting, providing an immersed cultural experience. The Hualcayán community totals around 400-500 people and is composed of bilingual Quechua/Spanish-speaking farmers growing quinoa, potatoes, beans and wheat, and raising animals such as pigs, cows, chickens and guinea pigs (called *cuy*). PIARA has recently completed construction on a new project house with a large lab space, kitchen, bathrooms, showers, and several spacious sleeping quarters. This adobe and concrete building is a ten-minute walk from the archaeological site and will serve as our home, kitchen, classroom (with projector) and laboratory. All students are required to bring their own sleeping bag and sleeping mat for the floor (accepted applicants will receive a detailed supply list). Hualcayán has a beautiful view of the Callejón de Huaylas valley, and has several other archaeological and natural features within a short walking distance from the village including a waterfall, and students are encouraged to explore the area during free time.



We also have a library of archaeology books to read and reference.

In the evenings at Hualcayán we will have a movie projector and movies to choose from. We also have a courtyard where students and staff can socialize. Two telephones will be available to make and receive international calls. Chores will rotate and include helping our cook prepare dinner, dishwashing, boiling water, getting lunch ready for the field, bathroom duty, and sweeping. Students must be willing to live in close quarters with others (including Peruvian students who may not speak English), have a general attitude of cooperation, and have fun while working hard! Prior Spanish or Quechua language training will enrich this experience, but this is not a requirement as the course is instructed in English.

Schedule of Activities:

You will fly into Lima the day your session begins. Depending on what time you fly in (many flights into Lima arrive late), this day can be spent relaxing in the hotel, acclimating to your new environment, or exploring the Miraflores neighborhood on your own. The second day we will spend in Lima visiting the Museo Nacional de Antropología, Arqueología e Historia del Perú and the archaeological site and museum of Huaca Pucllana. Students will also have time to shop for any last-minute necessities. To kick off the field season we will also treat you to a banquet-style lunch where students can try many world-renowned Peruvian dishes.

We will spend the third day busing to Caraz (~10 hours, located at 2285 m/7497 ft) and students will have time to explore the local market and begin acclimating to the altitude before heading up to Hualcayán early on day four (1.5 hours from Caraz, located at 3150 m /10,335 ft). Caraz is a beautifully preserved colonial town with a pleasant atmosphere and warm climate. Caraz is known for its bakeries, sweets, and ice cream, and there are pharmacies and internet cafes to do last minute shopping and emailing before heading to Hualcayán. In Caraz you will experience the coming together of rural and city life.

All field and laboratory activities will take place within the modern village and community of Hualcayán. We will work Monday through Friday each week between 8 am and 4:30 pm with an hour break for lunch, and Saturdays will be half days from 9 am to 1 pm and often dedicated to workshops. We will have a cook who serves breakfast at 7 am and dinner at 7 pm each day. Sundays will be a day of rest to do as you please, such as hike to nearby natural or archaeological features, wash clothes, watch or play soccer games in the plaza, watch movies, or just read and relax.

At the end of the project we will have a party featuring a pachamanca feast, a traditional Andean-style barbecue cooked in the earth with hot stones. This will give you an opportunity to thank community members for their hospitality and celebrate all the hard work accomplished!

After we leave Hualcayán, we will take a three-day mini tour of the region. First, we will travel up the Llanganuco gorge to visit the beautiful lagoon and archaeological site of Keushu, located immediately below the stunning Huandoy and Huascarán glaciers. We will then travel to the city of Huaraz, the regional capital of Ancash, which will serve as our base for visiting the incredible archaeological monument of Chavín de Huántar. The final day you may visit the Archaeological Museum in Huaraz or visit the thermal mineral baths of Monterrey. Huaraz has exciting nightlife and a wide and eccentric range of bars and restaurants with local and international food as well as several cafes. Huaraz is always filled with adventure travelers from all over the world. Finally, we will have an end-of-season celebration in Huaraz with alpaca burgers (or vegetarian alternatives!) at Creperie Patrick.

Community Service

At minimum, all students will collaborate on the equivalent of one full day (8 hours) of service with the community of Hualcayán. This may include cleaning up trash in the village with the school children, doing educational activities in the school, painting buildings, harvesting, cataloging donated library books, or working with PIARA to prepare or host heritage-focused events.

