

Syllabus: Analytical Methods in Bioarchaeology and Archaeology

Course Location

Archaeological site and community of Hualcayán, located in Huaylas, Ancash, Peru.

Course Dates

July 17 – August 13, 2020

2020 Managing Director and Lead Bioarchaeologist

Emily Sharp, Arizona State University
(emily.sharp@asu.edu)

2020 Co-Director

Lic. Erick Casanova Vasquez

Additional Instructors

Emily Briggs, University of Minnesota
Kelsey Jorgensen, Wayne State University
Brian McCray, Vanderbilt University

PIARA Director and Field School Advisor

Dr. Rebecca Bria, Boston University



Course Overview:

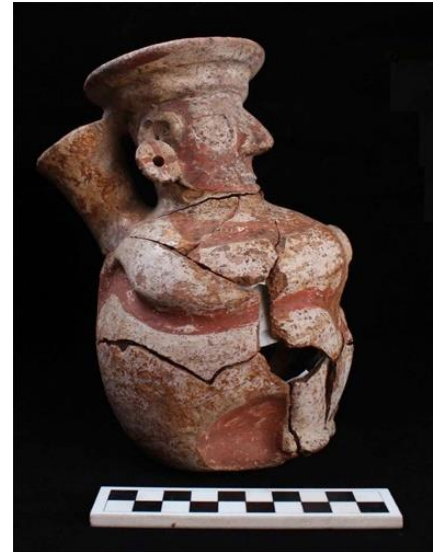
The PIARA Archaeological Research Project (www.piaraperu.org) will offer an exciting field school course, Analytical Methods in Bioarchaeology and Archaeology, taking place in the heart of the highland Andes in Ancash, Peru. In this course, students focus their studies on a particular analytical specialty in addition to gaining experience in fundamental **laboratory skills**. You will **analyze** human remains and/or artifacts excavated from prehistoric tombs and a monumental temple complex at the archaeological site of Hualcayán (2400 BC – AD 1450). You will focus your studies on one of the following methodological concentrations: **bioarchaeology** or **artifact analysis** and receive introductory training in **Geographic Information Systems (GIS)** and **3D mapping with photogrammetry**. You will not only learn essential, laboratory skills required of bioarchaeologists and archaeologists (mapping, artifact processing, etc.), but also gain exposure to a range of specialized methods that are shaping innovations in the field today.

During the field school, you will live and work with the rural, bilingual Quechua/Spanish-speaking community of Hualcayán, 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, you will travel to important archaeological sites and museums in three cities and visit stunning natural features like high altitude lagoons. The field school is open to both students and non-students, but all participants will receive six credit hours from the Universidad Nacional Santiago Antúnez de Mayolo (Huaraz, Peru). This course is taught in collaboration with the PIARA project co-director, Lic. Erick Casanova Vasquez, who will also serve as an instructor for this course in addition to several instructors with varying specialties.

What You Will Learn:

Analytical Methods in Bioarchaeology and Archaeology provides detailed training in a variety of important methods. Students will split their time between learning general laboratory techniques and concentrating on their chosen analytical method. Structured workshops will also teach essential skills. As students learn, they will be helping to produce real, scientific results. Therefore, student participation in the course will have a real impact on our knowledge of the ancient Andes.

Through both targeted training and daily practice, students will learn basic and advanced bioarchaeological methods, how to properly conserve archaeological materials, how to draw plan maps and profiles of above-ground tombs, how to digitally record and visualize data using iPads. Students will also attend workshops in GIS, 3D Photogrammetry, artifact processing, analysis, and illustration, human



skeletal analysis, total station mapping, 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. Final projects will take the form of academic conference posters, giving students an opportunity to learn how to present in an academic setting. Students will also attend lectures, have open lab time, and discuss readings on Andean prehistory, human osteology, and artifact analysis to properly contextualize the materials and results of their research findings.

Before the course begins, students will choose one of the following concentrations: 1) Bioarchaeology or 2) Artifact Analysis.

- Prior knowledge of human osteology or artifact analysis is not required. However, we will tailor your experience to your comfort level. For example, students with advanced knowledge in osteology will delve into more complex methods, such as transition analysis and pattern interpretation of cranial wounds, while students with beginner level knowledge can devote ample time to learning skeletal biology and foundational bioarchaeological techniques.
- All students will experience hands-on learning with both fragmentary and complete bones and pots. The lab will be open for at least 12 hours every day (8am – 8pm), and students may spend free time learning on their own or assist staff members with their research projects.
- There will be opportunities for daily interaction with our digital inventory and research databases. Instruction will emphasize critical thinking, problem-solving and theoretically-driven research.
- At the end of each week, a portion of the workday will be devoted to an ethics discussion (on topics related to legislation, colonialism, feminism).

Concentration 1: Bioarchaeology. Students will focus their studies on the analysis of over 11,000 bones and fragments of human skeletal remains excavated from ancient tombs across the site. PIARA has an incredible sample of mummified and non-mummified remains. Students will develop and/or refine their ability to: identify human bones, estimate sex and age at death, recognize taphonomic alterations, and document the minimum number of individuals (MNI) present in commingled contexts. They will also learn more advanced bioarchaeological analysis skills by diagnosing diseases and nutritional deficiencies (paleopathology), identifying evidence for accidental and violent trauma, and recognize the techniques of trepanation and cranial modification. Students will reconstruct mortuary practices at Hualcayán through a consideration of funerary architecture, body position, context, and material association (textiles, ceramics, metal objects, and macrobotanical remains). Finally, students will learn proper techniques for the cleaning and curation of skeletal materials and attend lectures on a variety of topics, including isotopic and genetic analyses.



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, 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, and introductory training in the identification of animal remains (zooarchaeology), lithics, and textiles. Training will also include illustration, photography, and reconstruction/restoration. Finally, students will learn to process soils through fine-screening and flotation in search of small artifacts and macrobotanical remains. Participants will work with materials from past excavations in our field laboratory with more than 10,000 artifacts.

Students will also receive training in the following activities:

Supplementary training 1: Mapping and 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 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 modeling with Photogrammetry. Students will learn how to produce 3D models of spaces and objects through photogrammetry techniques. In particular, students will learn how to properly take and then process 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 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 in the form of an academic conference poster.



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 Santiago Antúnez de Mayolo (Huaraz, Ancash, Peru), will work alongside you, providing a robust intercultural learning experience. In this pursuit, you will learn how to ethically and respectfully conduct research on the remains of other people’s heritage—by collaborating with them.

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

Evaluation of students:

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

- Daily laboratory work (70%). This includes the student’s ability and eagerness to learn, participate, follow instructions, and problem-solve during 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.
- Lab Notebook (10%). Each student will keep a personal 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 lab activities throughout the season.

- Final presentation (10%). At the end of the course, each student will collaborate with 3-5 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 research question, 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 Quechua community in a rural setting, providing an immersed cultural experience. Hualcayán is a community totaling around 500 people, 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 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 some movies to choose from (but bring your own too!). 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, 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.

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 activities will take place within the modern village and community of Hualcayán. We will work Monday through Friday each week between 8 am and 5 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 two-day mini tour of the region. First, we will visit the archaeological sites of [Wilcahuain and Ichic Wilcahuain](#). 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 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](#).