



US (AZ): AN INTRODUCTION TO ARTIFICIAL INTELLIGENCE FOR ARCHAEOLOGY PROFESSIONALS

Course ID: HIS 489

Session I: Feb 15-19, 2027

Session II: Apr 19-23, 2027

Session III: Dec 13-17, 2027

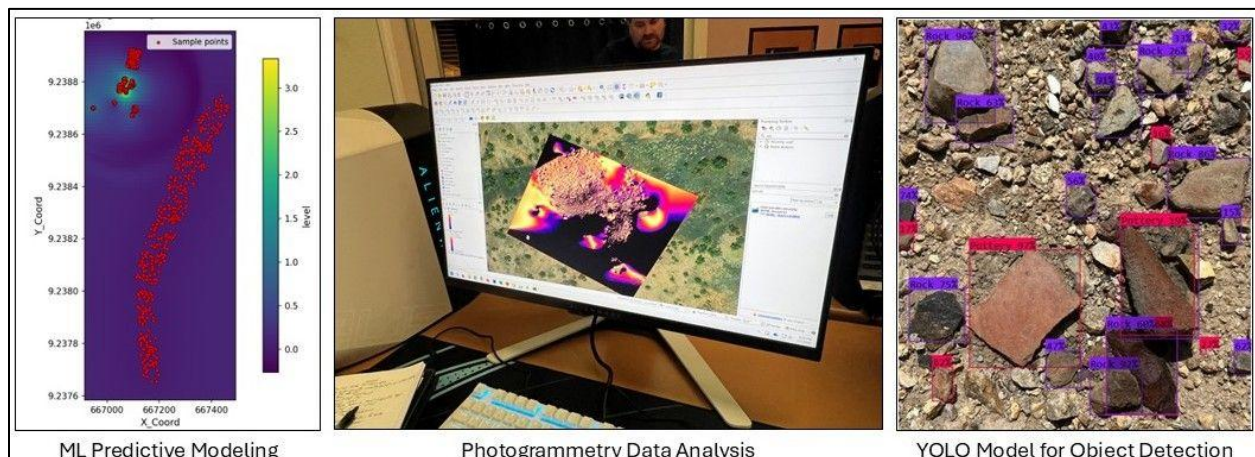
Academic Credits: 2 Semester Credit Units (Equivalent to 3 Quarter Units)

School of Record: Culver Stockton College

This program does not provide room and board. A list of off-campus accommodation will be provided during the online orientation. Several nearby restaurants within walking distance of NAU are available.

DIRECTOR:

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INTRODUCTION

This course provides introductory training for archaeologists and cultural heritage professionals who are new to artificial intelligence (AI) and want to understand what machine learning (ML), deep learning (DL), and large language models (LLMs) are, how they are useful in archaeology, and how they may be used to enhance research, reporting and productivity. This program will also address how to use these emerging technologies responsibly. This intensive, one-week, in-person training session introduces participants to these technologies from the ground up.

No prior programming experience is required. Participants will explore the most common uses of ML in archaeology, including automated structure detection, artefact classification, geographic

reasoning, predictive modelling, and textual analysis. Participants will train, run and evaluate simple models in guided workshops.

Participants will also learn how chatbots and other LLM-based tools generate and utilize text, why they “hallucinate” and how to fact-check their outputs against the archaeological record. Students will discuss what is at stake when these tools enter heritage decision-making, such as the Advisory Council on Historic Preservation’s initiative to use AI in Section 106 reviews and learn the basics of FAIR and CARE data principles. This course is designed for heritage management and archaeology professionals and students who wish to become informed, early adaptors but critical users of AI tools.

IMPORTANT DISCLAIMER

The Anthropocene Research Center was established to support field training in a range of sciences at sites within the U.S. & across the world. Traveling and conducting field work involves risk. Students interested in participating in any ARC program must weigh the potential risk against the value of education provided by the program of their choosing.

Risk is inherent in everything we do, and the ARC takes risks seriously. A committee of leading scholars review each field school location prior to approval. Once a program is accepted, the ARC continually monitors conditions at the program’s site and so we can provide an experience that is as safe as possible.

The ARC does not provide trip or travel cancellation insurance. Students are encouraged to explore such insurance policies on their own. Post Covid 19, most basic policies do not cover trip cancelation due to pandemics. If you wish to purchase an insurance policy that covers such contingencies, explore Cancel for Any Reason (CFAR) plans. [Insuremytrip.com](https://insuremytrip.com), [Squaremouth.com](https://squaremouth.com) or [Travelguard.com](https://travelguard.com) are possible websites where students may explore different insurance policies.

Students should be aware that conditions in the field are different than those experienced at home, dorms or college towns. Students will be exposed to the elements, live in rustic accommodation, and expect to engage in daily physical activity.

We do our best to follow schedule and activities as outlined in this syllabus. Yet local permitting agencies, political, environmental, personal, and/or weather conditions may force changes. This syllabus, therefore, is only a general commitment. Students should allow flexibility and adaptability as research work is frequently subject to modification.

All students must consult medical professionals to ensure they are fit to participate in a ARC field program. ARC is not qualified to provide medical advice. For all other concerns, please consult with ARC staff members or program director(s) – as appropriate.

COURSE OBJECTIVES

In this intensive training course, you will learn the core vocabulary and concepts of AI, ML, DL, and LLMs, and how they apply to archaeological questions. You will learn how a model is trained and tested, how to read basic evaluation results such as a confusion matrix, why models can fail, and how to check AI outputs before relying on them. You will leave able to judge when an AI tool is appropriate for a task in your own work and when it is not.

This course will take place at Northern Arizona University in Flagstaff, Arizona. Experiences will alternate between lectures, guided hands-on computer workshops, and discussion. Participants

will work with examples of the kinds of archaeological data most often used in ML applications (remote sensing imagery, artefact images and measurements, and archaeological report texts).

LEARNT SKILLS

We are aware and strongly support students who seek employment in the Cultural Resource Management sector – whether with private CRM companies or in government compliance agencies. CRM employers seek to understand the skills students learn in this course. To that end, we are listing all the skills students will learn during this program. Each skill will be ranked at one of three levels at the end of the course:

- ✓ **Basic:** Can perform the skill/task with some supervision.
- ✓ **Competent:** Can perform the skill/task without any supervision.
- ✓ **Advanced:** Can perform the skill/task and teach others how to do it.

Participants will be trained in the following skills:

Skill	Description
AI Literacy	Define and distinguish AI, machine learning, deep learning, and large language models; explain in plain terms how a model is trained and tested
ML Applications in Archaeology	Describe the main archaeological tasks where ML is used (e.g., structure detection, artefact classification, predictive modelling, text analysis) and their limitations
Preparing Data for ML	Organize and label a simple archaeological dataset, distinguish between supervised and unsupervised models, and explain why data quality, labelling, and classes matter
Running & Reading a Basic Model	Run a guided classification model and interpret accuracy, precision, recall, and a confusion matrix
Fact-Checking AI Outputs	Train and test a chatbot and image-generator outputs against the archaeological record; recognize hallucination, outdated knowledge, and bias
Responsible Use & Data Ethics	Apply FAIR and CARE principles; protect sensitive site locations and community data; identify appropriate and inappropriate uses of AI in CRM

COURSE SCHEDULE

Week 1

Time	Activity
Monday 9:00am-4:30pm	Welcome & Getting Started: Demystifying “AI” – machine learning, deep learning, and large language models, from early statistics to today Workshop: How a machine learns – train and test your first model with a guided notebook (no coding experience needed)
Tuesday 9:00am-4:30pm	Lecture: How machine learning is used across archaeology – artefacts, sites, landscapes, and texts Workshop: Classifying artefacts from measurements and images; reading a confusion matrix
Wednesday 9:00am-4:30pm	Lecture: Seeing with machines – remote sensing, structure detection, and predictive models (and why field checking still matters) Workshop: Evaluating a pre-trained detection model’s predictions against known sites
Thursday 9:00am-4:30pm	Lecture: Chatbots and large language models – how they generate text, bias, and costs

	Workshop: Fact-checking AI – testing chatbot answers against the archaeological record; using language models to organize, not invent, information
Friday 9:00am-4:30pm	Lecture: Responsible AI in heritage practice – FAIR and CARE principles, site-location security, and the Section 106 case Final Exam: Putting it all together – an AI use plan for a task in your own work Farewell & Personal Reflections: Final presentations & Evaluations

** Course schedule may be subject to change upon directors' discretion.*

TYPICAL WORKDAY

Each day of the bootcamp follows this schedule (8 instructional hours per day; 40 hours in total):

Time	Activity
9:00 am	Workshop & Lectures Activities Begin
10:00-10:15am	Morning break
12:00pm-1:00pm	Lunch break
3:00-3:15pm	Afternoon break
3:15-4:30pm	Workshop & Lectures Activities End

** Daily sessions combine lectures, guided hands-on computer workshops, and discussion.*

ACADEMIC GRADING MATRIX

Students will be graded based on their work as follows.

70%: Attend and participate in each scheduled day, including lectures, workshops, and discussions

30%: Final exam: an AI use plan for a task in your own work that identifies an appropriate tool, how its outputs will be checked, and the ethical and data-security considerations involved, presented to the class.

ATTENDANCE POLICY

The required minimum attendance for the successful completion of the bootcamp is 95% of the course hours. Any significant delay or early departure from an activity will be calculated as an absence from the activity.

An acceptable number of absences for medical or other personal reasons will not be considered if the student catches up on the bootcamp study plan through additional readings, homework, or tutorials with program staff members.

TRAVEL & MEETING POINT

We suggest you hold purchasing your airline ticket until six (6) weeks prior to departure date. Natural disasters, political changes, weather conditions and a range of other factors may require the cancelation of a program. The ARC typically takes a close look at local conditions 6-7 weeks prior to program beginning and makes a Go/No Go decision by then. Such time frame still allows for the purchase deeply discounted airline tickets while protecting students from potential loss of airline. Students will meet with project staff members on Monday morning, the first day of bootcamp, at 8:00 am at Northern Arizona University, Digital Archaeology Laboratory for a light breakfast, meet-and-greet, ground rules and orientation. The laboratory is located in Building #52, Bilby Research Center.

If you missed your connection or your travel is delayed, please call, text or email the project director immediately. Local emergency cellular phone contact information will be provided to all enrolled students.



Figure 1: Bilby Research Center, 15 E Runke Dr Flagstaff AZ 86011

PREREQUISITES

None. This is a hands-on, experiential learning opportunity and students will learn how AI is applied to archaeological research under the direction of specialists in the field. No prior programming or machine learning experience is required. Students are required to come equipped with sufficient excitement and curiosity. The work requires patience, discipline, and attention to detail.

MEALS & ACCOMMODATIONS

This program does not provide room or board. Students are responsible for their own accommodation and food. Flagstaff offers hotels, motels and short-term rentals at a wide range of prices. A wide variety of restaurants are available in town, as well as on the NAU campus.

A list of potential accommodation will be provided during the online orientation.

VISA REQUIREMENTS

This is a domestic program, and no visa is needed for U.S. Citizens.

Non-US Citizens are asked to check the United States embassy website at their home country for specific visa requirements.

PROGRAM ETIQUETTE

Life in the communities around Flagstaff is focused on the outdoors and it is a college town

Flagstaff is a diverse community with folks attracted to the area from around the world. The atmosphere is laid-back, touristic and collegiate. There will be several occasions to enjoy the local city spirit and experience some of the most beautiful landscapes in North America. When traveling in the area, you are expected to be a conscientious and well-informed visitor, observing safety first.

You will also have many opportunities to meet and work alongside local university and community members. As such, each student is expected to be a project ambassador. You are thus expected to be patient, kind, and courteous with peer participants and in public.

EQUIPMENT LIST

- A laptop to be used during this class (with permission to install software)

- Both lightweight jacket and outdoor wear as weather conditions change rapidly in northern Arizona.
- A positive attitude towards work, fun, study, and discovery!

PRACTICAL INFORMATION

- ✚ **International dialing code:** 001 (if dialing from outside the US)
- ✚ **Money/Banks/Credit Cards:** USD\$
- ✚ **ATM availability:** Many ATM machines are available throughout Flagstaff
- ✚ **Local Language:** English
- ✚ **Measure units:** degree Fahrenheit (°F), foot/yard/mile, pound (lb), quart/gallon.
- ✚ **Field units:** Meter (m.), Gram (gr.)
- ✚ **Time zone:** Local time is Mountain Standard time.

ACADEMIC CREDITS & TRANSCRIPT

Attending students will be awarded 2 semester credit units (equivalent to 3 quarter credit units). Students will receive a letter grade for attending this course based on the assessment matrix (above). This program provides a minimum of 40 direct instructional hours. Students are encouraged to discuss the transferability of credit units with faculty and the registrar at their home institutions prior to attending this program.

Students will be able to access their transcripts through our School of Record – Culver-Stockton College. C-SC has authorized the National Student Clearinghouse to provide enrollment and degree verification (at <https://tsorder.studentclearinghouse.org/school/select>). Upon completion of a program, students will get an email from C-SC with a student ID that may be used to retrieve transcripts. The first set of transcripts will be provided at no cost; additional transcripts may require payment. If you have questions about ordering a transcript, contact the C-SC office of the registrar at registrar@culver.edu.

REQUIRED READINGS

Bellat, Mathias, Jordy Didier Orellana Figueroa, Jonathan Scott Reeves, Ruhollah Taghizadeh-Mehrjardi, Claudio Tennie, and Thomas Scholten. "Machine Learning Applications in Archaeological Practices: A Review." *Journal of Computer Applications in Archaeology* 8, no. 1 (2025): 282–321. <https://doi.org/10.5334/jcaa.201>.

Gattiglia, Gabriele. "Managing Artificial Intelligence in Archeology. An overview". *Journal of Cultural Heritage* 71 (2025). Pp 225-233.

Kansa, Eric C. "Archaeology in the AI Era: Demystifying Powerful and Problematic Systems Shaping the Future of the Past." *Internet Archaeology* 71 (2026). <https://doi.org/10.11141/ia.71.15>.

Kansa, Eric, and Christopher Nicholson. "On the Dangers of Surrendering Cultural Heritage to "Artificial Intelligence."" *The SAA Archaeological Record* (September 2026): 19–21.

Bickler, Simon H. "Machine Learning Arrives in Archaeology." *Advances in Archaeological Practice* 9, no. 2 (2021): 186–191. <https://doi.org/10.1017/aap.2021.6>.