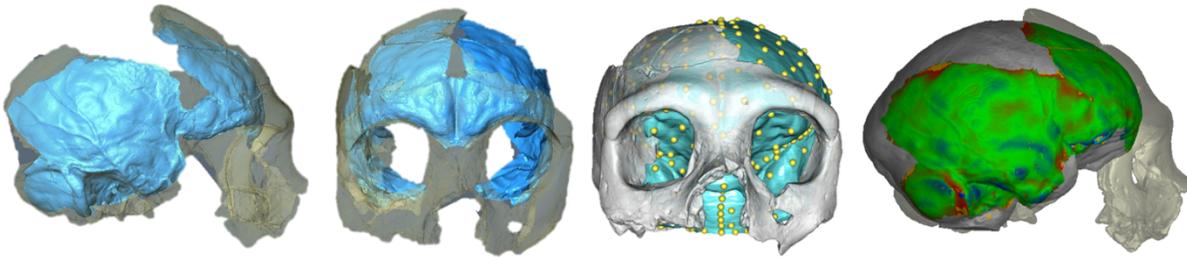


# Anth 211

## Virtual Anthropology (Intensive)

Spring 2020



Professor: Zachary Cofran  
Meeting location: Blodgett 101  
Meeting time: Friday 10:30–11:45  
Email: [zcofran@vassar.edu](mailto:zcofran@vassar.edu)  
Office: Blodgett Hall 323  
Office hours: Weekly: Tuesday 1–3 pm, and by appointment  
HEAD and Virtual Anthro labs: Blodgett 30 and 55a

The Digital Age opened exciting new possibilities for the study of human evolutionary anatomy. Imaging technologies such as laser scanning and computed tomography (CT) put high resolution physical data in a computer-based environment, allowing powerful visualizations and unprecedented analyses. This Intensive gives students experience with these types of questions, data, and methods used in “Virtual Anthropology.” After brief introduction to the concept of “Virtual Morphology,” students embark on an independent study in virtual data and methods as applied to Biological Anthropology. This half-unit Intensive may be taken for up to two semesters.

### Course objectives

- Understand the types of research questions asked in Biological Anthropology
- Learn to employ a virtual method appropriate for a given research question
- Appreciate the strengths and limitations of virtual anatomical data
- Conduct an original study—collect and scrutinize data to test a hypothesis
- Professional development—communicating ideas to colleagues in both informal and formal settings

### Readings

Beyond a few introductory readings at the beginning of the semester, students are responsible for finding, organizing, obtaining, and understanding and synthesizing their readings.

## Assessment

Grading mode of this Intensive is Satisfactory/Unsatisfactory, based on the student's final project, as well as attendance and participation in scheduled lab meetings. The following assignments and activities are required to earn a Satisfactory (i.e., passing) grade.

### Weekly homework & lab meetings

In the first five weeks of the semester, we will practice some virtual methods with weekly activities. Starting with the first class meeting, I will go over a specific virtual method, and assign an activity that must be completed before the meeting the following week, when we will discuss our experiences with the technology. Later meetings in the semester will generally be a bit more informal, including brief project proposal presentations (week 7), progress updates, etc.

Having more than two unexcused absences from lab meetings, and/or pronounced disengagement from meeting activities and discussion, warrants an Unsatisfactory grade for the course.

### Project proposal, outline & bibliography—Week 7

To ensure projects are appropriate and viable, each student must submit a brief proposal, as well as in-class presentation, including the following: 1) research question(s), 2) significance statement, 3) data that address the research question and where the data will come from, 4) specific hypothesis/-es to be tested, 5) potential method(s) to analyze data and the test hypothesis, and 6) bibliography that supports the proposal, containing relevant literature (e.g., previous approaches to the research question, debates among scientists, etc.).

The written proposal should be about two double-spaced pages (not including the bibliography). These should be submitted electronically, e.g. via email or shared on Google Drive. Presentations should be 5–10 minutes long, outlining the same information as the proposal. There is no required format; e.g., you can simply stand up and talk, or you could prepare a few slides.

### Project updates—Weeks 9–10

Relatively early in the process, students will briefly (i.e., 5–10 minutes) present the rest of the class with updates on their project's progress, such as how data collection is coming along, initial impressions of results, frustrations with technology, etc. These are meant to be a low-stakes, fun way to learn about one another's projects, and provide incentive for getting started on the project.

### Poster guidelines info session—Week 12

I will go over how to format a Powerpoint or Google slide for the research posters (see next), and provide advice on what content to include and tips on design.

### Final project symposium—Friday May 01

On the last day of class, students present research in medium of a conference poster. The formatting must follow AAPA guidelines (<http://bit.ly/2PNTC20>). To accompany the poster is a presentation abstract which summarizes the project's objectives, methods, results, and significance; this will also follow the AAPA guidelines (<http://bit.ly/2PN4ihk>).

## Semester schedule

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\* Schedule and content subject to change at professor's discretion.

### **Week 1: Overview of Virtual Anthropology**

#### Read before class

Zollikofer et al., 1998. Computer-assisted paleoanthropology. *Evolutionary Anthropology* 6: 41–54.

#### Homework for next week

- Read: Friess, 2012. Scratching the surface: the use of surface scanning in physical and paleoanthropology. *Journal of Anthropological Sciences* 90:1–25.
- Process an Artec scan from the shared folder. Select a scan file, and follow the instructions (posted to Moodle) to produce a 3D model or “mesh.” Enter your scan/specimen selection in the shared Google Sheet (Artec Studio tab), and save the final 3D mesh in the shared Public folder on the computer.

### **Week 2: 3D Surfaces**

Be ready to discuss Friess (2012) and your experience creating a 3D mesh from scans.

#### Homework for next week

Reconstruct the Nariokotome cranium. Download the digitized cranial bones (frontal, occipital, import them all into Artec Studio, and attempt to place and orient them into a reasonable anatomical position. Export the reconstruction as a .ply file mesh, with your initials, and save to the Public folder. We will compare reconstructions in Week 3.

### **Week 3: Geometric morphometrics and R**

#### Read before class

Bastir et al., 2019. Workflows in a virtual morphology lab: 3D scanning, measuring, and printing. *Journal of Anthropological Sciences* 97: GM section only (p. 113–118)—*don't worry about sliding semilandmarks, but focus on the basics like Procrustes superimposition and Figure 4.*

#### Homework for next week

Place landmarks on both a human cranium, and your Nariokotome reconstruction. Estimate missing landmark(s) and perform Procrustes superimposition.

### **Week 4: CTs and Endocasts**

#### Read before class

Ogihara et al., 2018. Chapter 1 and first part of Chapter 2. In Bruner et al., eds, *Digital Endocasts: From Skulls to Brains*, pp. Springer Japan, Tokyo, pp. 1–13.

#### Homework for next week

Select a non-human primate cranium from the shared folder, and create its endocast using two methods: 1) segmenting the endocranial cavity from CT scans in Avizo/Amira, and 2) extracting the endocranial surface from a 3D mesh in the R package 'Arothron.'

**Week 5: Geomagic & applying shapes**

Read before class

Hammond et al., 2013. Precision and accuracy of acetabular size measures in fragmentary hominin pelvises obtained using sphere-fitting techniques. *American Journal of Physical Anthropology*

Homework for next week

Fit spheres to femur heads in Geomagic DesignX.

**Week 6: Project brainstorm**

No regular meeting — open office hours during usual class time

**Week 7: Project proposals & presentations**

1–2 page project proposals due

5–10 minute presentations outlining project proposal

**\*\*\* SPRING BREAK 06–22 MARCH \*\*\***

**WEEK 8: Work week**

No regular meeting — open office hours during usual class time

**WEEK 9: Project updates 1**

First half of the alphabet will give brief presentations outlining their progress

**WEEK 10: Project updates 2**

Second half of the alphabet will give brief presentations outlining their progress

**WEEK 11: Work week**

AAPA Conference — Prof Cofran away

**Week 12: Poster guidelines**

**Week 13 (01 May): Project Poster symposium**

## Territory Acknowledgement

The Vassar campus exists on lands that were once home to the [Delaware](#) Nation, the Delaware [Lenape](#) Tribe, and the [Stockbridge-Munsee](#) Band of Mohican Indians. Although many sources reference the Wappingers as the indigenous peoples of our campus, they were a confederacy of Native peoples who organized at one time in response to Euro-American incursions into the area.

## Course Policies

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### Attendance

You are allowed up to two excused, penalty-free, no-questions-asked absences throughout the semester. Exceptions to this rule can only be made with appropriate documentation from Health Services or the Dean of Students.

### Assignment submission and late work policy

Assignments must be completed and submitted on time. If you think you will need a little more time to complete a given assignment, let me know before it is due so we can make alternate arrangements.

### Disability accommodation

Academic accommodations are available for students registered with the Office for Accessibility and Educational Opportunity (AEO). Students in need of disability (ADA/504) accommodations should schedule an appointment with me early in the semester to discuss any accommodations for this course that have been approved by the Office for Accessibility and Educational Opportunity, as indicated in your AEO accommodation letter.

### Academic Integrity

All work you submit must be your own. You may discuss assignments with colleagues, but you may not turn in the same work. When you use references, other people's ideas, and especially other people's direct words, you absolutely must cite them. For more information, see pages 58–59 of the Vassar College Regulations (<http://bit.ly/2bMuogv>) and "Going to the Source" (<http://bit.ly/2bMuNQ8>). Plagiarism and other academic misconduct will result in a grade of 0 on the assignment and referral to the College's Academic Panel.

### Title IX Responsibilities

Vassar College is committed to providing a safe learning environment for all students that is free of all forms of discrimination and sexual harassment, including sexual assault, relationship abuse, and stalking. If you (or someone you know) has experienced or experiences any of these incidents, know that you are not alone. Vassar College has staff members trained to support you in navigating campus life, accessing health and counseling services, providing academic and

housing accommodations, helping with legal protective orders, and more.

Please be aware all Vassar faculty members are “responsible employees,” which means that if you tell me about a situation involving sexual harassment, sexual assault, relationship abuse, or stalking, I **must** share that information with the Title IX Coordinator. Although I have to make that notification, the Title IX office will only provide outreach by email. You will control how your case will be handled — you don’t have to read or respond to the email, and it is completely up to you whether to pursue a formal complaint. Our goal is to make sure you are aware of the range of options available to you and have access to the resources you need.

If you wish to speak to someone privately, you can contact any of the following on-campus resources:

- Counseling Service ([counselingservice.vassar.edu](http://counselingservice.vassar.edu), [845-437-5700](tel:845-437-5700))
- Health Service ([healthservice.vassar.edu](http://healthservice.vassar.edu), [845-437-5800](tel:845-437-5800))
- Nicole Wong, SAVP (Sexual Assault and Violence Prevention) director ([savp.vassar.edu](http://savp.vassar.edu), [845-437-7863](tel:845-437-7863))
- SART (Sexual Assault Response Team) advocate, available 24/7 by calling the CRC at [845-437-7333](tel:845-437-7333) and asking for SART

The SAVP website ([savp.vassar.edu](http://savp.vassar.edu)) and the Title IX section of the EOAA website ([eoaa.vassar.edu/title-ix/](http://eoaa.vassar.edu/title-ix/)) have more information, as well as links to both on- and off-campus resources.