

**Survey of Fossil Primates**  
**Anthropology 215 (01:070:215:01)**

**Fall, 2020**  
**S. Cachel**

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**This syllabus can be downloaded from the class Sakai site, accessible via the Rutgers Sakai portal (<http://sakai.rutgers.edu/portal>). Log on using your Rutgers University ID and password. Look under the Resources section of the class site. The file is called “215 syb 2020.”**

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Virtual Office Hours (Fall Semester): Wednesday 1-3 P.M., or by appointment

**Format of the Course:**

This is an online 3-credit course. The format of the course is Asynchronous Remote (AR). Classes will be online, but not at a set time. Students have 2 classes a week. Each of the 2 class sections consists of an online PowerPoint presentation and a recorded lecture given by the instructor (Cachel). The course material will be placed on the course Sakai site, and will be identified by the class topic for the session. The first session of the week will be put on Sakai on Monday morning; the second session of the week will be put on Sakai on Thursday morning. I will post an announcement on Sakai when the material has been placed on Sakai. When you check your Rutgers email account, you will see this announcement. Students are expected to finish these 2 sessions every week. However, because the format of the course is asynchronous, students can finish these sessions at any time during the week.

You must regularly check your Rutgers email account to receive updates on the class and assignments.

**Do not fall behind in the course!** You must complete each week's readings, and course material by the end of the week. The course material is cumulative, and is based on knowledge of and exposure to prior topics. The vocabulary, terms, and concepts used will change through time. If you skip sessions, or attempt to cram quickly through many sessions, you will have a difficult time, and you may fail the course.

**Course Description:** This is a course in physical anthropology. It deals with the evolution of non-human primates from their origin to modern times. It concentrates on evidence from the fossil record, but also deals with broad questions about the formation of the fossil record, biases in the record, reconstruction of the biology and behavior of extinct organisms from fossils, and major patterns of origin or speciation and extinction among primates and other mammals.

**Course Objectives:** To learn fundamental aspects of geology and vertebrate paleontology; to learn basic aspects of how the anatomy, behavior, and ecology of fossil animals are reconstructed; to learn how primate evolution contributes to a general understanding of evolution; to learn how to examine and interpret basic features of dental and skeletal anatomy; to learn how to extract and formally present important scientific data from videos created for the general public; to learn how to read technical papers or monographs, and use this information to present scientific data on a fossil species in a formal class PowerPoint presentation, and to write a short paper based on this presentation.

**Required Texts:**

The Rutgers University Bookstore in New Brunswick is currently closed because of COVID-19 precautions. The textbooks can be bought new or used or rented from [www.amazon.com](http://www.amazon.com).

1. Cachel, S. 2015. *Fossil Primates*. Cambridge University Press. (paperback)  
ISBN-13-978-0521183024.

2. Walker, A. & Shipman, P. 2005. *The Ape in the Tree. An Intellectual and Natural History of Proconsul*. Belknap Press.  
ISBN-13-978-0674016750.

Additional readings will be available as pdf files on the class Sakai site. The class Sakai site is accessible via the Rutgers Sakai portal (<http://sakai.rutgers.edu/portal>). Use your Rutgers Net ID and password to log on to Sakai. Material for the 2 assignments and class announcements will also appear on the class Sakai site. You must regularly check your Rutgers e-mail account to see class announcements.

**Attendance Policy:**

Students are expected to finish all work every week. If you miss classes, you must use the Rutgers University absence reporting website to indicate the date and reason for your absence. An e-mail is then automatically sent out to instructors. The URL for this website is <https://sims.rutgers.edu/ssra/>. In cases where students miss coursework for periods longer than a week, this website will automatically direct them to consult a Dean of Students for assistance, who will help to verify the circumstances of their absence. If students are absent from class for long periods without a verified cause, the Dean's Office may direct the Rutgers Police to conduct a "Wellness Check." Note: Health, accident, and family issues are valid reasons for missing class.

**Scholarship:**

The Rutgers School of Arts and Sciences mandates that instructors immediately report all cases of suspected plagiarism and cheating to the Academic Deans.

**Course Requirements:**

There is a Final Exam, worth 30% of the final grade. Additional course requirements are as follows: five video response papers, each worth 5% of the final grade (for a total of 25%); two assignments with take-home questions, each worth 10% of the final grade (for a total of 20% of the final grade); a thirty-minute PowerPoint presentation on a fossil primate species (15%), and a 5-7 page hardcopy summary with bibliography (15%)—for a total of 30%. For the PowerPoint presentations and papers on fossil primates, I will distribute a list of potential fossil species that can be covered during the 3<sup>rd</sup> week.

### **Course Topics:**

Week of September 1

Introductory; the International Geological Time Scale; the limits of the fossil record

Week of September 7

Sedimentation and stratigraphy; taphonomic processes; time-averaging

Species definition; how to define fossil species; macroevolution; patterns of origin and extinction

Cachel, pp. xiii-35

Week of September 14

Paleobiology—Bringing Fossils Back to Life; what is found in the fossil record and how this limits reconstruction; functional morphology; inferring function from structure

Reconstructing soft tissue—use of the living to reconstruct the dead; dentition and diet; od  
September 28

Cachel, pp. 36-89

Week of September 21

#### **Video 1: “Your Inner Fish—Part 1”**

Part 1 of a 3-part 2016 Nova series.

[Youtube.com/watch?v=E8ttoKGxEKe](https://www.youtube.com/watch?v=E8ttoKGxEKe).

I will give you several questions to answer before the video. Your response paper on these questions is due at the end of the week.

Reconstructing diet and ranging behavior from the chemistry of prehistoric enamel and bone

Cachel, pp. 90-102

Week of September 28

Biomechanics—form and function; joint structure: weight-bearing and locomotion; bone density and activity; behavior and the internal architecture of bones; CT-scanning; relative brain size; natural and artificial endocasts—is paleoneurology possible?

The Physical Environment: Paleogeography and Paleoclimatology

**Video 2: “Arctic Dinosaurs: Warm-Blooded Creatures of the Cretaceous”**

Transcript of a 2008 PBS Nova video.

<https://www.pbs.org/wgbh/nova/nature/arctic-dinosaurs.html>.

I will give you several questions to answer before the video. Your response paper on these questions is due at the end of the week.

Week of October 5

Special Lessons from the Pleistocene—patterns of evolution in Ice-Age mammals; rates of evolutionary change; refugia; extinctions

Special Lessons from the Pleistocene—climate change and evolution; re-colonizing depopulated areas; evolution on islands; body size changes; species interactions

**Video 3: Rise of the Mammals**

A 2019 PBS Nova video.

[pbs.org/video/rise-of-the-mammals-zuzg8t/](https://www.pbs.org/video/rise-of-the-mammals-zuzg8t/).

I will give you several questions to answer before the video. Your response paper on these questions is due at the end of the week.

Week of October 12

The Primate Fossil Record; a series of adaptive radiations; origins and extinctions

The Origin of Primates; primate relatives; primatomorphs; the North American fossil record

Cachel, pp. 102-119

Week of October 19

The earliest primate record; in the shadow of the dinosaurs; Paleocene primates

The Paleocene Extinction—The First Major Primate Extinction Event

**Prosimian Assignment.** Download the instructions for this assignment from our class site on Sakai. The assignment is due next week.

Cachel, pp. 120-135

Week of October 26

Origins and adaptive radiation of the Eocene Primates

**Prosimian Lab questions due**

Cachel, pp. 136-154

Week of November 2

**Video 4: “Madagascar: Attenborough and the Giant Egg”**

This is a 2011 episode of a series on Madagascar.

[imdb.com/title/tt1875512/](http://imdb.com/title/tt1875512/)

I will give you several questions to answer before the video. Your response paper on these questions is due at the end of the week.

Adapiform and Tarsiiform primates; tarsiers as living fossils;  
prosimian extinction in North America—why?

How do land mammals colonize Madagascar? The Malagasy primate radiation; the subfossil primates of Madagascar; human impact on Malagasy extinctions

Cachel, pp. 155-173

Week of November 9

First Anthropoids; Africa or Asia as center of origin for basal anthropoids

The Platyrrhine Radiation; across the South Atlantic by raft? South American Miocene primates

Primate fossils in the West Indies; colonizing islands; contrasting higher primate evolution in the Old and New Worlds

Cachel, pp. 174-213

Week of November 16

**Anthropoid Assignment.** Download the directions for this assignment from our class site on Sakai. The assignment is due next week.

The first catarrhines; early catarrhines of the African Eocene and Oligocene; monkey? ape? other? parapathecoids

Walker & Shipman, pp. 1-86

Week of November 23 (only one class this week.)

**Anthropoid Assignment due.**

The earliest hominoid radiation; the pliopithecids; African early to middle Miocene hominoids

Cachel, pp. 214-246; Walker & Shipman, pp. 87-135

Week of November 30

**Video 5: “Discovering Ardi.”**

A 2009 Discovery channel video.

[www.documentarytube.com/videos/discovering-ardi-ardipithecus-ramidus](http://www.documentarytube.com/videos/discovering-ardi-ardipithecus-ramidus).

I will give you several questions to answer before the video. Your response paper on these questions is due at the end of the week.

The proconsulids of Africa; fossil hominoids of Europe; *Dryopithecus*, the famous “oak ape” of Europe; Persistence of the pliopithecids—what does this imply?; ancestors of living African pongids in Europe?—out of Africa into Europe and back again?

Week of December 7

Special lessons from *Oreopithecus*, a 9 million year old ape from Italy; the Asian hominoid radiation; rich material from the Siwaliks and the Lufeng Basin; special lessons from *Gigantopithecus*, an 800 pound ape from SE Asia

Decline of the hominoids; extinction caused by climate change, habitat restriction, competition...?; victoriapithecids; Rise of the Old World monkeys late in time—the Plio-Pleistocene cercopithecoid radiation

Cachel, pp. 247-263; Walker & Shipman, pp. 136-250

**PowerPoint presentation and paper on a fossil primate species due on December 15, the first day of the Final Exam period.**

**Exam time, date, and details to be announced.**