

**University of Western Ontario  
Department of Anthropology**

**Anthropology 4420b/9104B**

***Introduction to Paleoepidemiology***

**Instructor: J.E. Molto**

**Room: SSC 3433**

**Office Hours: 11:00-1:00 Wednesdays**

**Teaching Assistant: Dr. Steve Naftel**

**Room SSC 3430**

**Office Hours: 12:30-2:30 P.M. Wednesdays**

**Lecture Lab**

**Room: SSC 2257**

**Time: 2:30-5:30 Wednesdays**

**Course Description**

The study of disease in ancient populations requires a multidisciplinary approach that integrates basic skeletal biological knowledge, clinical diagnostic skills, and epidemiological models integrated within archaeological contexts, including paleoenvironmental reconstructions. This course provides students with a detailed understanding of the complexities of diagnosing disease in archaeological samples and determining the health status of ancient populations.

**Prerequisite:** Ant 2226, skeletal biology (Ant. 3338) and/a course in pathology (recommended) or permission of the instructor.

**Required Text:** *Paleopathology* by Tony Waldron + articles on reserve in library

**Required readings:** additional readings will be assigned each week.

**: handout on terminology in paleoepidemiology**

**Grading:** 3 tests worth 80%; best counts 30%; Lab assignments 20% (Students must keep a lab book and hand it in at the end)

Graduate students are required to write a critical thinking paper worth 10% of their overall mark – their labs counts 10%!!! Also the grad students will present short summaries of their papers to the class on the last lecture day. The paper topics will be provided the first day of classes and are due the last week in March.

*Students are reminded of the penalties for cheating and plagiarism. See the University regulations governing student academic responsibilities. In case of medical problems a letter from a physician is required.*

## Lecture lab Schedule

- Jan. 11**      **Introduction: From paleopathology to paleoepidemiology**  
**Paleopathology versus paleoepidemiology**  
**Historical overview**  
**Key problems in the study of paleoepidemiology with emphasis on diagnosis**  
**Fundamentals of the biology of connective tissues**  
**Lesion descriptions and their distribution in the human skeleton**  
**Stages of investigation**  
**Classification of skeletal pathologies; VITAMINI model**  
**Summary: Handout of terms and concepts.**  
**Readings: chapters 1, 11 and 13**  
**Osteological Paradox Woods et al (core reading for the course)**  
**The state and future of paleoepidemiology. M. Cohen and Gillian Crane Kramer.**
- Jan. 18**      **The Paleoepidemiology of Congenital Disease**
- Introduction – definitions, epidemiology
  - Causes with emphasis on the epigenetic model
  - Axial skeleton – anencephaly, hydrocephaly, NTDs, spondylolysis
  - Appendicular skeleton – congenital hip dislocation, achondroplasia
  - Other: osteogenesis imperfecta
- Congenital disease in paleopathology problems computing prevalence data**  
**Lab 1 *Normal skeleton and types of pathological induced changes to hard tissues***  
**Readings: *chapters 1 and 10***  
**Congenital Disease. C. Roberts and K. Manchester**
- Jan. 25**      **Paleoepidemiology of Dental Disease**  
**Basic oral cavity and dental anatomy**
- Categories and etiology of dental disease
    1. Dental caries
    2. Periapical abscesses
    3. Dental calculus
    4. Periodontitis
    5. Antemortem trauma
    6. dental attrition
    7. antemortem toothloss
  - Dental disease and subsistence
  - Dental disease as a measure of overall human health
- Reading: *Chapter 12***  
**Lab 2: Examples of congenital defects and dental pathology**
- Feb. 1**      **Test #1 – 1.25 hours**

**Lecture: Investigation of arthropathies in paleoepidemiology**  
**Classification and recording problems**

- a) Mechanical forms of arthritis
- b) Inflammatory joint changes (Rheumatoid arthritis)

**Readings: Chapter 3, 4 and 5**

**Feb. 8 Paleoepidemiology of arthropathies**

- Spondyloarthropathies: DISH, CCPD and gout

**Pathogenesis and paleoepidemiology of trauma**

- a) Pathogenesis and rate of fracture repair
- b) Classification and analysis of trauma
- c) Trephination and amputation

**Reading: Chapter 4**

**Feb. 15 Tumours and tumour like processes of bone**

- a) Overview limitations of diagnosing neoplastic processes in dried bone
- b) General classification outlining the differences between benign and malignant tumours of bone
- c) Common benign tumours of bone encountered in paleopathology
- d) Examples of malignant tumours of the human skeleton diagnosis in antiquity

**Lab 3: Examples of arthropathies, trauma and tumours in paleoepidemiology**

**Reading: Chapter 9**

**Feb. 22 Reading week**

**Feb. 29 Test # 2**

**Mar. 7 Introduction to the study of the process of infection on human calcified tissues**

**Infectious diseases in human populations – historical overview**

- a) The biology of infection and inflammation
- b) The pathogenesis of osteomyelitis and periostitis
- c) Nonspecific and specific infections of the human skeleton

**Treponematoses**

- General pathogenesis of treponemal infection
- The osseous impact of syphilis, bejel and yaws
- Treponematoses in human populations; historical evidence

**b) Pathogenesis and paleoepidemiology of Brucellosis**

**Reading: Chapter 6**

- Mar. 14**      **Paleoepidemiology of Mycobacterial diseases in past populations**  
a) Overview of historical trends  
b) Skeletal changes associated with tuberculosis  
c) Skeletal changes associated with leprosy  
d) Molecular Paleopathology of mycobacterial diseases  
Hematologic and metabolic diseases of the human skeleton with emphasis on the anemias and osteoporosis  
Readings: *Chapters 2, 6 and 7*
- Mar. 21**      **Doing Paleoepidemiology: A Case study of a population from the Roman Period of the Dakhleh Oasis, Egypt.**  
**Handout**
- Mar. 28**      **Overview of controversies in paleoepidemiology**  
a) The Osteological Paradox  
b) The relationship between paleodemography and paleopathology  
Life table reconstruction and interpretation; and overview of problems in comparing prevalence data in paleoepidemiology  
c) Modeling in paleoepidemiology: A new trend with answers?  
c) Use of molecular paleopathology in the diagnosis and epidemiology of past disease  
d) Overview statistical approaches in paleoepidemiology; probability using Bayesian Stats and Likelihood ratios
- Reading: Chapter 13, The osteological Paradox Wood et al 1994.**
- Apr. 4**      **Grad student presentations (not tested)**  
**Lab 4: Infectious and metabolic diseases of the human skeleton**
- Apr. 11**      **Lab Test #3**