

# NSF Summer Research in Biocultural Anthropology

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COURSE:	Anth/Theo/MI 487/587	SEMESTER:	Sum 2002 [May 28-July 5]
PROFS:	Susan Sheridan, Ph.D. (631-7670)	CREDITS:	6 ND credits
	Robert Haak, Ph.D. (631-8820)	LOCATION:	Reyneirs 105 (Osteo Lab)
TA:	Jaime Ullinger, MA (631-4250)		Lab. for Biocultural Studies

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This lab-intensive course will explore the methods used in physical anthropology for studying individual human remains, as well as those employed to establish biocultural connections at the population level. Forensic techniques utilized in individual identification will be developed in the first portion of the course. You will become very familiar with human skeletal anatomy and bone physiology. Later, you will develop skills for bio-ethnographic analysis such as paleodemography, paleopathology, and the techniques used in the reconstruction of ancient health and nutrition. Ultimately, you will be able to identify fragmentary skeletal material typical of that found in many archaeological settings, and, using independent lines of evidence, establish a biocultural framework for ancient populations.

The primary objectives of this course are to: a) provide an opportunity to develop and expand your skills in the identification of human skeletal remains; b) lead you into the literature and allow you to develop an understanding of how skeletal remains can be used in reconstructing ancient patterns of adaptation and biocultural evolution; c) help you develop collaborative research skills; and d) demonstrate the power of an interdisciplinary approach.

The research will focus on the subadult segment of the Byzantine St. Stephen's monastic collection. These remains date to 5-7<sup>th</sup> century Jerusalem, exhumed from what has been heralded as the largest monastic complex in the region at the time. You will collect and analyze original data from these remains for a final class presentation in July.

The course will consist of significant laboratory time to work with the teaching and research collections, archival work for an understanding of Near Eastern archaeology, an active field trip program to visit sites related to your research, and a dynamic speakers series highlighting the importance of a holistic perspective in studying the past.

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## Required Texts:

Bass, WM. 1995. *Human Osteology: A Laboratory and Field Manual*. 4th edition. Columbia: Missouri Archaeological Society.

Laboratory Packet of Readings listed in the syllabus

## Supplemental Texts (available for reference in the lab):

- ❖ Buikstra, Jane E. and Douglas H. Ubelaker. (1994). *Standards for Data Collection from Human Skeletal Remains*. Fayetteville: Arkansas Archaeological Survey Research Series No. 44, 207+ pp.
  - ❖ Cartmill, M, WL Hylander, & J Shafland. (1987) *Human Structure*. Cambridge: Harvard Univ Press, 448 pp.
  - ❖ Gray, H, T Pickering, and R Howden. (1972). *Gray's Anatomy*. New York: Crown Publishers, Inc, 1257 pp.
  - ❖ Laydon, JH. (1994). *Human Dissection for the Health Sciences*. Boston: Little, Brown & CO. 327 pp.
  - ❖ McMinn, RMH and RT Hutchings (1988) *Color Atlas of Human Anatomy*. Chicago: Yearbook Medical Publishers Inc, 358 pp.
  - ❖ Scheuer, L and S Black. (2000) *Developmental Juvenile Osteology*. San Diego: Academic Press, 587 pp.
  - ❖ Shipman, P., A Walker, D Bichell (1985). *The Human Skeleton*. Cambridge: Harvard Univ. Press, 343 pp.
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This syllabus complements the Schedule of Events in your reader. Below you will find information about grading policies, readings to accompany each segment, and a brief outline of activities per week. For more complete information about daily events, please look to the Schedule or the information sheets for each speaker and/or field trip.

Key to Syllabus Components --

Guest Lectures     Ethics Discussion     Assignments     Field Trips

**May 28    Campus Tour** -- On the first day we'll meet for lunch, you'll tour campus, get all the needed paperwork (ids, parking, housing, email, etc), and gather again for dinner.

**May 29    Introduction to Byzantine St. Stephen's** -- A discussion of the format of the course and the materials that you will be working with. A brief introduction to the site of St. Stephens, and the information gleaned to date on the skeletal collection will be discussed.

- ❖ Sheridan, SG. (1999) "New Life the Dead Receive: The Relationship Between Human Remains and the Cultural Record for Byzantine St. Stephen's," *Revue Biblique*, 106(4):574-611.
- ❖ Barkay, G and A Kloner. (1986). "Jerusalem Tombs from the Days of the First Temple." *Biblical Archaeology Review*. March/April, pp. 22-39.

**May 29    Byzantine Monasticism w/Brian Daley, SJ** -- Dr. Daley will discuss daily life in early monasteries and the social/symbolic ramifications of this vocation.

- < V. Saradi (1997). "Byzantine empire." IN *The Oxford Encyclopedia of Archaeology in the Near East*. Vol. I., ed. by EM Myers, New York: Oxford University Press, pp. 394-398.
- < Moffatt, A. (1986). "The Byzantine child." *Social Research*, 53(4):705-723.
- < Talbot, A-M. (1990). "The Byzantine family and the monastery." *Dumbarton Oaks Papers*, 44:119-129.

**May 29    Library Visits** -- You will meet with Sherry Edwards at the Galvin Library to tour the biology holdings, then meet Kathy Ryan-Zeugner at the Hesburgh Library for a tour of the main library.

**May 29    Introduction to Biocultural Anthropology** -- The utility of forensic anthropology techniques for both individual identification and population studies will be explored using a skeleton from Wyoming as a case study.

- ❖ Sheridan, SG, JL Mobley-Tanaka, DP Van Gerven, and WL Shields. (1992). "A case of Late Prehistoric mutilation on the Northwest Plains." *Plains Anthropologist*, 37(141): 289-298.

**May 30    Bone Biology** -- This lecture will outline the basics of bone biology, development and physiology. You will gain an understanding of differential formation and types of bone tissue.

- ❖ Shipman, P, A. Walker, and D. Bichell. (1985). "Basic Concepts," in *The Human Skeleton*, Cambridge: Harvard University Press, pp. 9-17.
- ❖ Scheuer, L and S. Black. (2000). "Bone Development," in *Developmental Juvenile Osteology*. San Diego: Academic Press, pp. 18-31.

**May 30-31    Byzantine Video Study Guide** -- You will watch and discuss a two part program about the Byzantine Empire with Dr. Haak.

**May 30-31 Skull & Teeth** -- We'll review the bones and landmarks of the cranium. Using comparative anatomy, we will look at the form and function of the skull and mandible in modern and fossil hominids.

- ❖ Scheuer, L and S. Black. (2000). "The Teeth," in *Developmental Juvenile Osteology*. San Diego: Academic Press, pp. 148-161.
- ❖ Shipman, P, A Walker, and D Bichell eds. (1985) "Chewing" in *The Human Skeleton*, Cambridge: Harvard University Press, pp. 237-245.

**Optional Readings for Lecture:**

- ❖ Sheridan, SG, DM Mittler, DP Van Gerven, and HH Covert. (1991). "Biomechanical association of dental and temporomandibular pathology in a Medieval Nubian population." *AJPA*, 85:201-205.

**June 1 Reburial Debate** -- You will be divided into two groups to discuss the pros and cons of the reburial issue. Articles will be assigned for each side, a general information reference is listed below. A separate handout will detail the requirements for this assignment.

- ❖ Rose, JC, TJ Green, and VD Green. (1996). Nagpra is forever: Osteology and the repatriation of skeletons. *Annual Reviews in Anthropology*, 25:81-103.

**June 3 History of Israel/Palestine w/John Spencer** -- Dr. Spencer will speak about the history of the region to provide a temporal and geo-political basis for the course.

- ❖ Hayes, JH and CR Holladay. (1982) "Introducing exegesis," in *Biblical Exegesis: A Beginner's Handbook*. Atlanta: John Knox Press, pp. 5-29.

**June 3 Axial Skeleton** -- You will begin a review of the bones of the axial skeleton as well as major features and landmarks. The comparative anatomy of limb structure and the evolution of bipedal locomotion will be the foci.

- ❖ P. Shipman, A Walker, W Bichell. (1989) "Upright Posture." *The Human Skeleton*. Cambridge: Harvard Univ. Press, pp. 332-339.

**June 3 Science as a Way of Knowing [Ethics Dinner w/John Spencer]** -- Dr. Spencer will discuss ethical models of conduct and explore science as a way of understanding our surroundings.

**Optional Readings for Lecture:**

- ❖ Moore, T. (1999). *Science as a Way of Knowing: The Foundations of Modern Biology*. Cambridge: Harvard University Press.

**June 4 Appendicular Skeleton** -- You will continue to work on identification including fragmentary remains as might be found in an archaeological context. By the end of this section you should be familiar with all of the bones of the human body. We will explore a current analysis of Byzantine monastic bones in a reconstruction of occupational stress in the lower limb. By combining the biological and historical records, a possible aspect of daily life is addressed, with cultural and historical ramifications of importance to numerous disciplines.

- ❖ Nordin, M and VH Frankel. (1989) "Biomechanics of the Knee." *Basic Biomechanics of the Musculoskeletal System*. Second Edition. Philadelphia: Lea and Febiger, pp. 115-134.

**Optional Readings for Lecture:**

- ❖ Bautch, R. (1999). "On Bended Knee: Correlations Liturgical and Anthropological From a Fifth-Century Monastery." *Koinonia*. XI.2:155-167.

**June 5 Jerusalem Liturgy w/Michael Driscoll** -- Dr. Driscoll will discuss aspects of the Jerusalem liturgy and provide a virtual tour of Byzantine pilgrimage sites in Jerusalem.

- < Dalmais, IH (1986). "The Eastern liturgical families," in *The Church at Prayer: An Introduction to the Liturgy*. Ed by IH Dalmais, PM Gy, P Jounel, and AG Martimort. Collegeville: The Liturgical Press, pp. 27-43.
- < Wilkinson, J [trans]/ (1981). *Egeria's Travels to the Holy Land*. Warminster, England: Ariel Publishing House, pp 54-89.

**Optional Reading:**

- < Driscoll, MS and SG Sheridan. (2000). "Every knee shall bend: A biocultural reconstruction of liturgical and ascetical prayer in V-VII century Palestine" *Worship*, 74(5): 453-468.

**June 5 Paleopathology** -- We will concentrate on the identification of skeletal indicators of diet and disease in skeletal remains.

- ❖ Ortner, DJ. (1992) "Skeletal paleopathology: Probabilities, possibilities, and impossibilities" in *Disease and Demography in the Americas*, J Verano and DH Ubelaker, eds. Washington: Smithsonian Institution Press, pp 5-13.
- ❖ Waldron, T. (1994). "The Development and Nature of Paleopathology," in *Counting the Dead: The Epidemiology of Skeletal Populations*. New York: John Wiley & Sons, pp. 1-9.

**June 6 Forensic Anthropology** -- You should be working extensively with the identification of fragments including isolated teeth. Age changes in the human skeleton, sexual dimorphism, and race determination will be this week's concentration.

- ❖ Bass, WM. (1987). "Forensic Anthropology: the American Experience." In *Death, Decay, and Reconstruction*. Manchester: Manchester University Press, pp. 224-239.
- ❖ Scheuer, L and S. Black. (2000). "Skeletal Development and Ageing," in *Developmental Juvenile Osteology*. San Diego: Academic Press, pp. 4-17.
- ❖ Goodman, A. (1997). "Bred in the Bones" *The Sciences*, March/April, pp. 20-25.

**Optional Readings for Lecture:**

- ❖ Mittler, DM and SG Sheridan. (1992). "Sex determination in subadults using auricular surface morphology: A forensic science perspective." *Journal of Forensic Sciences*, 37(4):1068-1075.

**Exam:** In-class lab practical.  
~ June 10 ~

**June 10 OIT Demonstration** -- Bruce Harris of the Office of Information Technology will provide a tutorial on the use of Excel, demonstrating spreadsheet functions, calculations, statistical formulae, and graphing.

**June 11 Field Trip to New Melleray Monastery** -- A three day visit to a functioning Cistercian monastery where you'll engage in various activities and discussions with members of the community.

- < Readings from the New Melleray monastery web site included in your reader.

**Optional Reading:**

- < Monks of Gethsemani, *A History of the Order*.
- < Pennington, Basil. *The Cistercians: An Introductory History*.

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June 14-19      Guest Scientist Visit

**Kulubnarti Nubians: A Biocultural Model w/Dennis Van Gerven** -- Dr. Van Gerven will use his 23 years of work with the Kulubnarti Nubian collection to demonstrate the utility of the biocultural approach.

**Required Reading for Lecture:**

- ❖ Van Gerven, DP, SG Sheridan, and WY Adams. (1995). "The Health and Nutrition of a Medieval Nubian Population: The Impact of Political and Economic Change." *American Anthropologist*, 97(3): 468-480.

**Repatriation [Ethics Dinner w/Dennis Van Gerven]** -- Dr. Van Gerven will lead a discussion on repatriation, outlining the history of the treatment of human remains in the US and potential alternatives to reburial. No readings are required for this discussion as you will be well versed in the topic following your reburial debate earlier in the program.

**Growth & Development w/Dennis Van Gerven** -- Dr. Van Gerven will discuss various aspects of subadult growth and development, beginning with birth.

**Required Reading for Lecture:**

- ❖ Sibley, L, GJ Armelagos, and DP Van Gerven. (1992). Obstetric dimensions of the true pelvis in a Medieval population from Sudanese Nubia. *AJPA*, 89:421-430.

**Optional Reading for Lecture:**

- ❖ Sheridan, SG. And DP Van Gerven. (1997). "Female Biological Resiliency: Differential Stress Response by Sex in Human Remains from Ancient Nubia." *Human Evolution*, 12(4):241-252.
- ❖ Carlson, DS, GJ Armelagos, and DP Van Gerven. (1976). "Patterns of age-related cortical bone loss (Osteoporosis) within the femoral diaphysis." *Human Biology*, 48(2):295-314.
- ❖ Prendergast Moore, K, S Thorp, and DP Van Gerven. (1986). "Pattern of dental eruption, skeletal maturation and stress in a Medieval population from Sudanese Nubia." *Human Evolution*, 1(4):325-330.

**Statistical Methods w/Dennis Van Gerven** -- Dr. Van Gerven will teach you the statistical methods needed for your studies, and will help you with preliminary data analysis.

**Paleodemography w/Dennis Van Gerven** -- Dr. Van Gerven will discuss the various techniques used to construct a life table for ancient communities, and overview the benefits and limitations of such analyses.

**Required Readings for Lecture:**

- ❖ Wood, JW, GR Milner, HC Harpending, and KM Weiss. (1992). "The osteological paradox" *Current Anthropology*, 33(4):343-370.
  - ❖ Goodman, AH (1993). "On the interpretation of health from skeletal remains" *Current Anthropology*, 34(3):281-288.
  - ❖ Bocquet-Appel, J-P, and C Masset (1982). "Farewell to paleodemography" *Journal of Human Evolution*, 11:321-333.
  - ❖ Van Gerven, DP and GJ Armelagos (1983). "Farewell to Paleodemography? Rumors of its Death have Been Greatly Exaggerated" *Journal of Human Evolution*, 12:353-360.
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**June 18 Trip to Chicago's Field Museum w/James Phillips** -- Dr. Phillips will give an "insider's tour" of the Near Eastern collections at the Field Museum. You will be given time to explore the museum holdings. We will be joined by several faculty in the program as well as students from the Biochemistry NSF-REU program on campus.

**Optional Readings for Guest Speaker:**

- < Phillips, JL and BG Gladfelter. (1990). A survey of the Upper Wadi Feiran Basin, Southern Sinai, *Paleorient*, 15(1):113-122.

**June 19 Zooarchaeology w/Justin Lev Tov** -- Dr. Lev Tov will speak about zooarchaeology's contribution to understanding past cultures, utilizing examples from various Near Eastern sites.

- < Reitz, E and E. Wing (1999). *Zooarchaeology*. Cambridge: Cambridge University Press, pp. 1-11.

**Optional Reading:**

- < Lev Tov, J and E Maher. (2001). Food in Late Bronze age funerary offerings: Faunal evidence from Tomb 1 at Tell Dothan. *Palestine Exploration Quarterly*, 133:91-110.

**June 20 Anastos Library Tour** -- David Jenkins will discuss the Byzantine library holdings.

**June 21 Trip to the Indiana University School of Medicine** -- You will meet with several scientists at the Medical School including Drs. David Burr, Alex Robling, Jiliang Li, and Richard Haak.

**June 24 Archaeological Methods w/Mark Schurr** -- You'll spend the day in the field with Dr. Schurr and his field school students excavating.

- < Schurr, MR. (1997). The Bellinger site (12 SJ 6) and the origin of the Goodall tradition. *Archaeology of Eastern North America*, 25:125-142.
- < Brown, JA. (1979). Charnel houses and mortuary crypts: Disposal of the dead in the Middle Woodland period. In *Hopewell Archaeology: The Chillicothe Conference*. Ed. by DS Brose and N Greber. Kent: Kent State University Press, pp. 211-219.

**June 25 OIT Demonstration** -- Bruce Harris will demonstrate Power Point.

**June 25 Childhood Health and Adaptability w/James McKenna** -- Dr. McKenna will speak about subadult health, drawing from his research on mother/infant co-sleeping.

- < McKenna, JJ. (2000). "Cultural influences on infant and childhood sleep biology and the science that studies it: Toward a more inclusive paradigm." IN *Sleep and Breathing in Children: A Developmental Approach*. Ed. by GM Loughlin, JL Carroll, and CL Marcus., New York: Marcel Dekker, pp. 99-130.
- < McKenna, JJ, SS Mosko, and CA Richard. (1997). "Bedsharing promotes breastfeeding." *Pediatrics*, 100(2):214-219.

**Optional Readings for Guest Speaker:**

- < McKenna, JJ and S Mosko. (1993). "Evolution and infant sleep: An experimental study of infant-parent co-sleeping and its implications for SIDS." *Acta Paediatr Suppl*, 389:31-6.

- < McKenna, JJ, EB Thomas, TF Anders, A Sadeh, VK Schechtman, and SF Glotzbach. (1993). Infant-Parent co-sleeping in an evolutionary perspective: Implications for understanding infant sleep development and the Sudden Infant Death Syndrome. *Sleep*, 16(3):263-282

**June 26-27 Professional Development Modules** -- Dr. Jan Poorman will discuss strategies for applying to graduate school, provide interview techniques, give practice GRE exams, and help you design a personal statement for applications.

**June 28 Univ. of Chicago's Oriental Institute w/Walter Kaegi** -- You'll tour the collections of the OI with Dr. Haak and hear a lecture about pilgrimage to the Holy Land by Dr. Kaegi.

- < Arculf, *De Locis Sanctis* web site printout in reader.

**Optional Readings for Guest Speaker:**

- < Kaegi, W. (1970). *Byzantium and the Decline of Rome*. Princeton: Princeton University Press.
- < Kaegi, W. (1992). *Byzantium and the Early Islamic Conquests*. Cambridge: Cambridge University Press.
- < Kaegi, W. (1990). Procopius the military historian. *Byzantinische Forschungen*, 15:53-85.
- < Kaegi, W. (1993). "Byantine logistics" Problems and perspectives. Ed by JA Lynn, in *The Feeding of Mars*, Boulder: Westview Press, p. 39-55.

**July 1 Byzantine Archaeology w/Jeffrey Blakely** -- Dr. Blakely will overview aspects of Near Eastern archaeology, including the Byzantine occupation of Caesarea Maritima.

- < Parker, ST. (1999) The Byzantine Period: An empire's new Holy Land. *Near Eastern Archaeology*, 62(3):134-180.

**July 1 Archaeological Ethics [Ethics Dinner w/Jeffrey Blakely]** -- Dr. Blakely will discuss aspects of archaeological ethics including the use of black market artifacts, and repatriation of Near Eastern collections.

**Optional Readings for Guest Speaker:**

- < Shiloh, D. (1997). "Bones of Contention." *Jerusalem Post Magazine*, July 25, pp 11-13.
- < Barkay, G. (1997). "Politics -- Not Religious Law -- Rules Ultra-Orthodox Demonstrators." *Biblical Archaeology Review*, November/December, pp. 56-58.

**July 2-4 Group Presentations** -- Each group will present their research results during the final week of class. You will be provided 45 minutes for presentation with questions and discussion by the class. The class is expected to draw upon information from the course to ask questions related to the research being presented.

**July 5 TCEs and Lab Clean Up** -- You'll fill out a detailed course evaluation and help put the lab collections back in order. We'll have a group lunch before parting company.

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**GRADING POLICIES:** The final grade will be based upon:

40% = **Paper & Presentation:** the research paper and presentation will each count for 20% of your final grade.

20% = **Exam:** the exam is a lab practical, therefore a **make-up test will not be possible.**

30% = **Class Participation:** this constitutes a significant fraction of your grade. You will be expected to read and discuss the articles listed above, and actively partake in the laboratory and ethics portions of the course. Your active participation in the discussions and learning process will ensure both a successful class, and a good grade in this category. There will be in-class assignments on occasion which will be included in this portion of your grade as well. And, you will have several lab activities to complete during the first portion of the class to help you learn the bones and landmarks. You will also be given regular quizzes to ensure you keep up with the readings, activities, and lectures.

10% = **Debate & Archaeology Project:** You will receive information about a debate on Repatriation as well as a Byzantine site to research, upon which you will draw with regularity through out the course.

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- You will be expected to have your reader and Bass with you every day as well as paper 'n such for notes.
- It is assumed you will have completed the readings before each class period - this will be particularly emphasized for the guest speakers.
- Be on time, especially for guest speakers. On field trips, we will not wait for late arrivals -- you will be on your own to get to the location if you miss the pick-up/meeting time (this might prove a significant inconvenience in western Illinois and/or Indianapolis...).
- There will be a weekly quiz which will cover information from the class lectures, speakers, readings and field trips.
- Remember this is a working laboratory, with many people coming and going. Be sure to leave yourself enough time each day to clean up your space, put the bones pack in their proper locations, return books, etc.
- The blue topped boxes contain the Byzantine St. Stephen's collection; the white topped boxes the teaching collection. Do not mix these up. Also, only use one box at a time to avoid any chance of placing bones in the wrong containers as you're learning to differentiate between bones, sides, sexes, etc.
- Treat the bones with respect, remember they belonged to someone's mother/father/sister/brother et al. No baseball caps on Fred, no pacifiers in the babies mouths.
- Reacquaint yourself with the rules in *Du Lac*. You will be expected to abide by all the rules of Notre Dame, regardless of personal convictions to the contrary. Failure to do so could lead to expulsion from the program.