

Center for Archaeological Materials / Center for Materials Research in Archaeology and Ethnology

The mission of the Center for Materials Research in Archaeology and Ethnology (CMRAE), a consortium of eight Boston-area educational and cultural institutions, is to advance our understanding of prehistoric and nonindustrial societies through analysis of the structure and properties of materials associated with human activity. Plant and animal food remains, human skeletal material, as well as metal, ceramic, stone, bone, and fiber artifacts are the objects of study, along with the environments within which these materials were produced and used. At the Center for Archaeological Materials (CAM) at MIT, investigators concentrate on the materials processing technologies that transform natural materials into cultural objects.

At MIT, CAM is administered by the Department of Materials Science and Engineering (DMSE). In 1998–1999, DMSE established a new undergraduate major in archaeology and materials, Course 3-C, as well as an interdisciplinary doctoral degree program in archaeological materials. These are the only academic degree programs of their kind in the United States. During AY2004, three graduate students were enrolled in the PhD program and three majored in Course 3-C.

3.985J Archaeological Science, the CMRAE/CAM undergraduate subject introduced during the 1995–1996 academic year and offered jointly by DMSE, the Chemistry Department, and the Department of Earth, Atmospheric, and Planetary Sciences, continues to enjoy high popularity among students from CMRAE institutions. A total of 66 students enrolled, broken down as follows: 55 from MIT, 6 from Boston University, 3 from Harvard University, 1 from the University of Massachusetts, Boston, and 1 from Wellesley College; 12 faculty members from 5 CMRAE institutions lectured in the subject.

CMRAE and DMSE jointly received four years of funding from the Division of Materials Research at NSF. The \$1 million award will support an MIT Summer Institute (SI) in the Materials Science of Material Culture over the course of four years. Professor Heather Lechtman is principal investigator (PI) for the project and professors Dorothy Hosler, Linn Hobbs, and Samuel Allen are co-PIs. The purpose of the Summer Institute is to assist professors at liberal arts colleges in introducing materials science and engineering to their undergraduate curricula. At each two-week SI session, MIT faculty, faculty from undergraduate liberal arts institutions, and DMSE archaeological materials graduate students supported by the grant consider case studies that combine materials science and engineering with social science and humanities fields. The case study modules include intensive laboratory exposure to the processing and testing of materials. The pedagogic aims of the modules are to put people at the center of the materials polyhedron described by structure/properties/processing and product, and to provide case studies exemplifying these relationships that college professors can use to present engineering science and human sciences to their students.

The third two-week Summer Institute convened in June 2004. Twelve faculty members from 12 liberal arts colleges represented the fields of archaeology, art history, classics, chemistry, materials engineering, mechanical engineering, and physics. Professor Hosler and Professor Allen taught the first one-week module, Acoustics and Culture in Mesoamerica: Metals and Sound; Professor Hobbs, Professor Lechtman, and visiting scholar Mary Frame taught the second one-week module, Cloth and Other Fiber Technologies in the Andean World. Both modules incorporated intensive hands-on laboratory sessions providing the SI participants with a range of practical experience in the processing of metals, alloys, fibers, and cloth that they can call upon for use with their students. SI participants were highly committed, enthusiastic, and used their time together at MIT to discuss plans for incorporating the SI module material into their own curricula.

The SI philosophy is based on principles that the PIs consider fundamental to the design of higher education in the 21st century: (1) that science and engineering have their origins in multiple cultural traditions that account for their richness and permanence in human endeavors; and (2) that access to the social wealth of society lies in education that allows people to generate and interpret a wide range of data from a broad methodological base.

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Director

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More information about the Center for Archaeological Materials/Center for Materials Research in Archaeology and Ethnology can be found on the web at http://web.mit.edu/cmrae/cmrae_home.htm.