

ANALYTICAL AND FIELD METHODS IN GEOBIOLOGY

EPS 189

Spring 2011

Prof. Dave Johnston (with F. Macdonald)

This course will serve as an introduction to the methods used in performing geobiological research. Samples collected during the MIT-hosted January field camp will be analyzed using a variety of low temperature geochemical techniques and light stable isotope mass-spectrometry. We will focus on the biogeochemical elements (Oxygen, Carbon, Sulfur, and Iron) that participate and/or drive microbial processes in marine sediments throughout Earth history. The second half of the course will be focused on a suite of microbiology experiments in order to familiarize students with additional aspects of geobiological research. This is a lab-based course that will be complemented with lectures, with the ultimate goal of writing and presenting results in professional formats (term papers in the model of a scientific journal article and presentations in the form of a professional meeting talk). Suggested prerequisites are EPS 186-187 (or equivalent) and attendance on the January MIT field course is encouraged, but not required.

Schedule: 1-hour lecture/week, as well as a 3-hour lab block

Section: TBD

Problem Sets: Homework assignments will be assigned throughout the term. These will cover relevant outside literature and put in place the background necessary to evaluate results.

Term paper/presentation: There will be a group presentation due at the end of the term, associated with a term paper, which pulls together the results gained through the first half of the semester. These papers will be submitted week 8 for peer review and week 10 for professor review. Final drafts are due at the time of the final exam.

GRADING

Term paper: (5% on peer review, 20% on presentation, 35% on paper) 60%

Participation: 30%

Problem Sets: 10%