

Entomology 333  
Rationale for Natural Science sequence

The material presented in Entomology 333, “Social Insects,” is very much dependent on the material presented in its prerequisite, Biology 101. Dr. Wenzel, who developed this course, is also a frequent instructor in Biology 101, and therefore has a solid understanding of the framework of biological knowledge acquired by students in Biology 101. This course examines research ranging from classical essays to modern research papers, and students review work by two Nobel laureates (Niko Tinbergen, Karl von Frisch) and a two-time Pulitzer Prize winner (Edward O. Wilson).

The major concepts of biology that are covered in Biology 101 include evolution, genetics, and bioenergetics. These concepts will be integrated throughout the discussion of insect societies in the “Social Insects” course. In the “Social Insects” course, students will use their knowledge of evolution to understand the forces that shape the development and maintenance of complex insect societies. At the same time, their exploration of these societies will reinforce and deepen their understanding of evolution, and introduce concepts related to the basis of intelligence and symbolic language, to social theory, to the organization of work, and mathematical relationships that determine functional elements ranging from economies of scale to allometry of body parts. Similarly, the students’ understanding of genetics will be deeper and more detailed after they have applied genetic concepts to the study of social organization, and examined the “inclusive fitness” and sex ratio manipulation of social insects as a means to perpetuate the genes of individuals within the colony, or of the colony within the population of colonies. An understanding of bioenergetics is critical to the analysis of the costs and benefits of social organization, and is reinforced throughout this course by cybernetic perspectives in organizing labor and maximizing efficiency of foraging and handling.

Because Entomology 333 builds on and expands the students’ understanding of the major concepts of biology introduced in 101, we request that the Biology 101-Entomology 333 sequence be approved as a two-course sequence in the Biological Sciences category of the GEC.