

## Instructor Notes

Implementation of “Investigating the footprint of climate change on phenology and ecological interactions in north-central North America” at Del Mar College

Instructors: David J. Gris  and R. Deborah Overath

Course info: This module was implemented in two sections of BIOL 1407 (BIOLOGICAL CONCEPTS II - EVOLUTION, DIVERSITY, STRUCTURE, FUNCTION AND ENVIRONMENT)/ Lecture & Lab at Del Mar College, an independent community college. The course is intended for biology majors but may be taken as a science course for the core curriculum requirement.

Gris ’s class was a dual credit course with high school juniors and seniors. Overath’s class was a section reserved for biology majors because it is part of Del Mar’s participation in the HHMI SEA-PHAGES program ([seaphages.org](http://seaphages.org)).

Implementation: We pretty much used the TIEE materials as written EXCEPT we moved the order to complete the temperature section, including the “data cherry picking” part of the exercise BEFORE moving onto the phenology part of the module. In addition, we had students start in lecture time with a “pre-lab” exercise designed to lead students through how to make scatterplot and line graphs in Excel, as well as when each is appropriate. This “pre-lab” exercise was a very slightly modified version of one provided by the phenology module author, Dr. Kellen Calinger. We also divided up both the temperature graphing and the phenology graphing among groups rather than having each student or each student group work with all the data. Note that we began the temperature sections in immediately after completing the “pre-lab” exercise with each group of 2-3 students working on temperature data from two of the “divisions.” For the phenology sections each group of students being assigned one species to graph and data were shared.

Some additional details:

We found the “pre-lab” exercise, which is basically an Excel tutorial, essential in getting all students up to speed and comfortable with Excel.

Gris  completed the pre-lab exercise and all the temperature sections within one 2 hour 50 minute lab and then the phenology sections in the following week’s lab, with plenty of time for discussion.

Overath began with the “pre-lab” exercise in a 1 hour and 20 minute lecture period and then moved onto the temperature sections. All groups got at least through the “Regional Long-Term” section. Students completed the rest of the module in the 2 hour and 50 minute lab that followed with some time for discussion.

**Assessment:**

Both instructors checked students graphs as they worked and Overath had each group email their graphs and turn in their written answers for spot checking (to make sure all students understood the main points). Students received lab participation points for their graphs and contributions to the discussion. In both classes, additional assessment occurred in the form of final exam questions.