This is a course in reading and writing about primary literature in the study of interactions of plants and animals. Readings in **bold** are required. Others may be mentioned in class as background (likely ones are **red** in the syllabus; rely on posted lectures for those in **red**). Find articles in **bold** with your netid and password at [http://library.uic.edu/](http://library.uic.edu/). Search under e-journals first by journal, then by author, year, volume, and/or page numbers. Lectures are posted on [http://blackboard.uic.edu/](http://blackboard.uic.edu/). No text is required, but anticipate photocopying costs if you need paper copies of class outlines and articles. An optional text is “Howe, H.F. & L.C. Westley. 1988 or 1992. *Ecological Relationships of Plants and Animals*. Oxford University Press, NY.” (UIC bookstore or online, new or used). The book helps with organization, but key material will be posted in lectures on Blackboard. The syllabus may be updated during the semester.

### Introduction

Jan 13-15 Paradigms, hypotheses, relevant domains and an example: de La Peña-Domene et al. 2014

### Herbivory

Feb 3-5 Synergism, biotic effects: Rasmann et al. 2011, Kohl et al. 2014

### Mutualism

Feb 24-26 Getting along: Riffell et al. 2013, Brosi & Briggs 2013
Mar 3 Mapping dispersal: Jordano et al. 2007

**MARCH 5 EXAM 100 POINTS** (class, readings; open book; no laptops) lectures Jan 13-Mar 5

### Evolution


**MARCH 24-25 SPRING BREAK**

March 30-April 9 Essay 3 No class: YOUR SYNTHESIS, Choice of topics posted on Blackboard March 30

### Community Context

April 14-16 Nework components & implications: Burkle et al. 2013
April 21-23 Conservation and agriculture: McConkey et al. 2012, Lu et al. 2010
April 28-30 Out there: Gilman et al. 2010, Tilman & Snell-Rood 2014

**MAY 6 3:30-5:30 EXAM 100 POINTS** (class readings; open book; no laptops) March 10 – April 30

<table>
<thead>
<tr>
<th>Exam option</th>
<th>Grades: chose 1 option (500 pts)</th>
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<tbody>
<tr>
<td>Two assigned 2-4 pages (2x50)</td>
<td>100</td>
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<tr>
<td>Synthesis 8-12 pages</td>
<td>100</td>
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<tr>
<td>Exam (essay, open book) March 5</td>
<td>100</td>
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<tr>
<td>Exam (essay, open book) Finals week</td>
<td>150</td>
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<tr>
<td>Class participation (show up and talk)</td>
<td>50**</td>
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* Research-paper option:  List of 5-10 potential topics - January 20; list culled to 3 potential topics - February 3; 1 page outline of 1 essay - February 17; final due May 6 (Optional early draft 21 April). This option is for those who want to explore something of particular interest. I collaborate in selecting relevant topics, suggesting readings, and development.

** Attends and participates regularly up to 50 pts; attends often but little participation 40 pts; irregular attendance and contribution 30 pts; neither 0 pts. And levels of participation in between....
**Course objectives**

This course integrates basics from lecture and primary literature. The objectives are to use the scientific literature to: (1) understand mechanisms, processes and importance of plant and animal relationships; (2) explore variations in the scientific method through detailed discussion of articles from scientific journals; (3) sharpen communication skills through discussion and writing about 1st literature; (4) learn to use the 1st literature. Most of the course is thinking and writing about 1st literature or reviews written for other biologists (college students are not the intended audience). I emphasize the process of doing and interpreting science, not imparting information.

In the past I have lectured on chapters of a text (Howe & Westley 1988, 1992) for basic things that do not change (a high-crowned tooth is still a high-crowned tooth). Figures, tables and short explanations from the text will be part of the lectures posted on Blackboard.

In case you want the text for organization (the course follows the same organization as the text) or more explanation of basics, the bookstore will carry the text. Cheaper, sometimes much cheaper, used versions are available online (e.g. [www.amazon.com](http://www.amazon.com), [www.bn.com](http://www.bn.com)).

**Reading 1st literature.**

Articles are not textbooks. There is nothing to memorize. Use the outline below to learn to quickly grasp the context, approach, and interpretations of an article, and see where the study could go and where its limitations lie. This is reading "critically." By mid-course, you should take 20–40 minutes to get the gist of any paper assigned.

I Why was the paper written? (abstract/introduction)
   - What is the intellectual/theoretical context?
   - What is the paper supposed to show?

II What was the approach? (methods section)
   - Observation?
   - Experiment?
   - Field? Lab? Whole organisms? Components of organisms?
   - What is the system?
     - Species? Place/habitat?

   Limitations? What can the approach/design/system show? Not show?

III What were the results? (results section)
   - Author's perception of results?
   - What are graphs and tables supposed to say?
   - What did they say?
   - Skeptic's perception
     - What is demonstrated beyond question?
     - What is questionable?

IV What are the implications? (discussion section)
   - How does the study strengthen the research area?
   - How does the study change the research area?

V What is NEAT about the study? What provokes useful thought, or provides a useful example?
   - Does the SYSTEM have anything special to offer?
   - Does the APPROACH have anything special to offer?
   - Do the METHODS have special promise for other studies?
   - Do the RESULTS nail down important issues, or suggest new lines of investigation?
   - Is the INTERPRETATION exciting, even if methods fail?

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1 As the adage goes, "Better to light a candle than curse the darkness." You can get lost in darkness-cursing if all you learn how to do is dismember the work of others. It would be a stretch to suggest that all papers in scientific journals are important contributions to knowledge. Side shows, superfluous stuff, and dead ends are the rule. But many papers that are limited in their strict application or even flawed in methods, analysis, or interpretation end up starting new lines of inquiry, or add anomalies that make old lines of inquiry untenable. Learn to enjoy the process of science, warts and all.
Articles are available on the electronic library website at http://library.uic.edu/. What is listed is a minute proportion of those accessible to you in the library. Older references, including some classics, are in the bibliography of the text. For people who want to follow up a particular set of phenomena (e.g. deceptive pollination, defense by metal accumulation) later or for a research paper, overviews in red (not required reading) are good places to start. Everyone should read papers in bold carefully. Parts of other examples of papers not in bold may be indicated in a powerpoint of a class; you are responsible only for what is used in class on the powerpoint. If a mention in class of papers not in bold is unclear, look up the title and abstract to get the drift. ALL students taking this course need to use the electronic library to acquire readings. If you don’t have access to a computer, drop the course!


Dudash, M. R. and C. B. Fenster. 2001. The role of breeding system and inbreeding depression in the


Emmons, L.H. 1989. Tropical rain forests: why they have so many species and how we may lose this biodiversity without cutting a single tree. Orion 8: 8-14.


Biology 65: 689–713.


Most term papers serve student interests and are basically fun. A few go further. One on cow gut mutualists led to an epiphany for junior Erin Argyilan, who dropped plans for vet school, got a Ph.D. here, and is now a professor in Indiana. Other term papers have led to dissertations at other universities. The following are former (infinitely revised) publications that started as term papers from my UIC courses. This is an unusual outcome, but interesting.


Ken Schmidt got interested in plant defenses as components of resource quality for squirrels. The idea led to part of his dissertation.


In elite research universities this is not uncommon; graduate students are urged to, and are motivated to, develop and publish ideas they get from courses, seminars, late nights staring at the moon, or whatever. Three of my grad publications (one major, two minor) were from courses. Most of the UIC people above were grads when they first had their ideas. David Zaya was a sophomore in this course.