INTRODUCTION
This is a course that is part of a set of science courses developed by a team of science and science education faculty from the University of Illinois at Chicago and community colleges in the Chicago area and designed in particular for elementary education majors. It carries Course Distribution Credit in natural science for UIC and it is required for elementary education majors at UIC’s College of Education. The course covers material in both chemistry and biology.

COURSE MEETINGS
Lectures: 2:00-3:15 Tuesdays / Thursday. SES 238.
Labs: Monday, 9:00-10:50, Friday 9:00-10:50, or Friday 11:00-12:50 4068 SEL

PERSONNEL
Instructors
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Teaching Assistants
Joy Peplinski, jpepli2@uic.edu
(j Friday labs)

Personnel

MATERIALS:
• iClicker
• Laboratory notebook (spiral bound book with carbonless copies on perforated pages that enables you to turn in the copy of your data pages at the end of lab).
• Homework will be done on MasteringBiology (CourseID: MBNATS106S16 and MasteringChemistry (CourseID: MCNATS106S16) sites. Students will need a login code for MasteringBiology that comes with the textbook or that is purchased separately. For MasteringChemistry you may use the code the publisher has issued for us: ???.
• Other material will be assigned that you will need to download from the Internet. One item that will be needed for the Nutrition Project of the course is the USDA’s Nutritive Value of Foods by Susan E. Gebhardt and Robin G. Thomas. This is available on blackboard and for free download from the USDA at:
**Assessment and Evaluation:**

**Introductory Essay:** Explain a bit about who you are, including, but not limited to your previous science and math experiences, why you are taking this class, your intended major, your personal goals and expectations, and your current interest level in science (low, medium and high) along with an explanation as to why you rank your interest level the way you do. This is worth **20 points**.

**Course Projects:** Two course projects/presentation that are completed in groups and presented during lab sections. The first one is a Nutrition project and the second one you get a choice of choosing a molecular biology, genetic engineering and cloning related topic or an invasive and endangered species related topic. Each is worth **50 points**.

**Exams:** Three exams that will consist of multiple choice and free response. Each exam is worth **100 points**.

**Exam corrections and reflections:** When your first two exams are graded and returned to you, you are then responsible for correcting any errors (i.e. this is required). For the first two exams, you may be able to earn additional points for some of these corrections. In addition to writing out correct responses, reflect and then write out what factors contributed to the original error. Also write a paragraph describing how you prepared for the exam, whether or not you believe your preparation was adequate, if your exam score is a reasonable measure of your level of understanding of the concepts (including why or why not), and finally, what you will do differently to prepare in the future. (2 × 20 points = 40 points)

**Lab Reports:** 12 labs, graded 0-10. **120 total points**

**Reflective Journals:** 5 throughout the course. Each is worth **25 points**, for a total of 125 points.

**Clickers:** Clickers will be used in most lectures, so be sure to bring them to every class. Your attendance and participation will determine how many clicker points you receive during the semester. Clicker points are worth up to **25 points**.

**Homework:** We will be assigning homework every week. These will have different numbers of questions. At the end of the semester we will take the total number of available points and scale it to create a homework score between 0 and 100. Hence, if the total number of points on homework turns out to be 500, we will multiply that score by 0.20.

**Final Essay:** Evaluate your own progress throughout the semester by explaining whether of not the course goals and objectives (see the first page of this handout) and your personal goals and objectives were fulfilled, assign yourself a grade, and provide the rationale for your grade. This will be due during final exam week. The final essay is worth **20 points**

**Course Grade:** Your course grade will be determined based upon the total number of points you earn this semester.

- Journals (5) 125 points
- Labs (12 reports) 120 points
- Exams (3 hourly) 300 points
- Projects (2) 100 points
- Exam corrections (2) 40 points
- Homework (approx. 15) 100 points
- Introductory and Final Essays 40 points
- Clicker points 25 points
- TOTAL 850 points
Grades are assigned based upon your final percentage of points earned:
  90-100% is an A       70-79.9% is a C       59.9% and below is an E
  80-89.9% is a B       60-69.9% is a D

**Academic Honesty:** Cheating is not tolerated in the class. Work together, but do not cheat! The UIC materials on academic integrity are online at the link below. You are urged to look them over. If you are caught violating this academic honesty policy, it will result in a zero on that particular work and may result in a failing grade for the course.

[http://dos.uic.edu/studentconductprocess.shtml](http://dos.uic.edu/studentconductprocess.shtml)
**Course Schedule**

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<thead>
<tr>
<th>Week / Dates</th>
<th>Topic</th>
<th>Instructor</th>
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| 1/11-1/15   | Matter: classification, changes and composition  
Nature of chemical bonds and chemical reactions | Wink |
| 1/18-1/22   | Electron dot and Lewis structures and periodic table  
Covalent bonding, electronegativity and bond polarity | Wink |
| 1/25-1/29   | Common bonding patterns of H, C, O and N  
Organic functional groups and solubility | Wink |
| 2/1-2/5     | Cells: prokaryote and eukaryote  
Structure and function of cells, including organelles | Muller |
| 2/8-2/12    | Amino acids, proteins, carbohydrates, fatty acids  
Macro- and micronutrients; essential amino acids | Wink |
| 2/15-2/19   | Exam I on Week 1-5 material: **Tuesday, 2/16**  
DNA and protein synthesis | Muller |
| 2/22-2/26   | Chromosomes, cell division and sexual reproduction | Muller |
| 2/29-3/4    | Mitosis and meiosis | Muller |
| 3/7-3/11    | Energy through respiration and photosynthesis | Muller |
| 3/14-3/18   | Animal physiology  
Exam II on Week 6-9 material: **Thursday 3/17** | Muller |
| 3/21-3/25   | Spring Break |  |
| 3/28-4/1    | Animal physiology  
Kingdoms and how life is organized | Muller |
| 4/4-4/8     | Kingdoms and how life is organized | Wink |
| 4/11-4/15   | Evolutionary thought and evidence for evolution | Muller |
| 4/18-4/22   | Ecology  
Ecosystems including element cycles | Muller |
| 4/25-4/29   | Environmental chemistry including air and water pollution;  
Energy and fuel | Wink |
|             | **Exam III on Week 10-15 material: Finals Week** |  |
NATS 106 Spring, 2016
Lab Schedule

IMPORTANT NOTE ON LABS: With the MLK Jr. Holiday on 1/19, the Monday lab from weeks 2-14 is held the week after the scheduled week. So, the week 2 lab is done by the Monday lab group on 1/27, etc.

<table>
<thead>
<tr>
<th>Week / Dates</th>
<th>Lab / Other notes</th>
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| 1                  | Monday, January 11  
                     Friday, January 15  
                     Three Decades of Pennies  
                     *Introductory Essay due Friday, January 15* |
| 2                  | Friday, January 22  
                     Monday, January 25  
                     Floating Eggs  
                     *Journal 1 due Friday, Jan 22* |
| 3                  | Friday, January 29  
                     Monday, February 1  
                     “The Diaper Lab” |
| 4                  | Friday, February 5  
                     Monday, February 8  
                     Cells & Bacteriology  
                     *Journal 2 due Friday, Feb 5* |
| 5                  | Friday, February 12  
                     Monday, February 15  
                     Albumin Testing |
| 6                  | Friday, February 19  
                     Monday, February 22  
                     DNA Lab |
| 7                  | Friday, February 26  
                     Monday, February 29  
                     Paternity testing in Whooping Cranes  
                     *Journal 3 due Friday, Feb 26* |
| 8                  | Friday, March 4  
                     Monday, March 7  
                     Mitosis / Meiosis |
| 9                  | Friday, March 11  
                     Monday, March 14  
                     **Project:** Molecular Biology, Cloning and Genetic Engineering (presented in lab) |
| 10                 | Friday, March 18  
                     Monday, March 28  
                     Combustion |
| 11                 | Friday, April 1  
                     Monday, April 4  
                     **Project:** Human Nutrition (presented in lab)  
                     *Journal 4 due Friday, April 1* |
| 12                 | Friday, April 8  
                     Monday, April 11  
                     The Diversity of Life |
| 13                 | Friday, April 15  
                     Monday, April 18  
                     Natural Selection  
                     *Journal 5 due Friday, April 15* |
| 14                 | Friday, April 22  
                     Monday, April 25  
                     Owl Pellets & Energy Flow Through Ecosystems  
                     *Final Essay due Friday, April 29* |
Journals give you the chance to state your understanding of important concepts and they give us the chance to assess your level of understanding while it is developing. You will not be penalized if you have misconceptions or if your understanding is incomplete. The whole point of the journals is to allow you to think about and write about the concepts to help you improve your depth of understanding. Present the science the way you understand it and we will respond to let you know how you are doing.

The topics for the five journal assignments will be the material covered in the previous weeks. This is organized on the course schedule under the heading “Weekly Topics.” Each journal entry will cover three double-spaced pages. They will have about 700-900 words and will include the following components.

<table>
<thead>
<tr>
<th>Journal Component</th>
<th>Characteristics</th>
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<tbody>
<tr>
<td>1. Current Understanding:</td>
<td>Two or more paragraphs about your understanding of an assigned topic. You do not need to talk about every topic. The writing should include (a) what you know about the topic and (b) links to specific points about the chemistry in the topic. The writing should be in the form of “I know…” statements, describing what you understand. (15 points).</td>
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<td>Making connections:</td>
<td>This follows up on the topic you discussed in component 1. You should give one or more paragraphs where you state specific connections between the topic and your everyday life or your career choice (5 points)</td>
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<td>Report on progress:</td>
<td>One paragraph in which you state the concepts or skills that you find unclear or a struggle, how you are progressing, what is working for you, and what external factors are causing you trouble (for example, you were stuck working too many hours one week so you unable to spend enough time that week on chemistry). (5 points)</td>
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Journal entries must be submitted via the Blackboard course site by Friday evening of the week they are due. We will provide feedback on each journal entry a week later. The first journal is due Friday January 23rd.