NSCI 1020. Physical Science: Today’s World – Section L21

Summer 2020

Instructor: Kaori Tsukui-Shockey, Ph.D
ktsukuishockey@fordham.edu

Office Hours: After class and by appointment

Lecture: Tuesday, Wednesday and Thursday, 6:00 pm – 9:00 pm (Classroom TBA)

Labs: There will be 3 lab sessions during the semester. Laboratory attendance is mandatory and there will be no make-up session for the experiments. Lab sessions are scheduled during the regular class meeting time in LL 826 on July 9, 21 and 23.

Required Textbook:

Course Description:
This course is designed to introduce non-science majors to key concepts and theories in physics and chemistry with a focus on applications to Earth Sciences. I hope that by the end of the course, (1) you will be scientifically literate so that you can understand and assess scientific discoveries and policies that appear in news and affect your lives; (2) you will have gained practice in critical and analytical thinking via weekly reading and writing assignments and class discussion; and (3) you will cultivate curiosity and appreciation toward the wonders and beauties of the physical world in which we live.

Objectives of the Course:
By the end of the course, you should be able to:
1. Understand what energy is and why we talk about energy with respect to the physical world.
2. Describe the laws of thermodynamics.
3. Describe what electricity and magnetism is, and how they are related.
4. Describe the atomic theory of matter, its components and how these parts give rise to the unique qualities attributed to different material.
5. Describe four fundamental forces in nature.
6. Describe basic geological principles and plate tectonics and understand how the physical and chemical principles allow us to study the Earth.
7. Understand the history of Earth and evolution of life on Earth.
8. Understand and explain the cause and evidence for the current climate change.
9. Understand the inherent nature of uncertainty in science via hands-on experience in lab sessions and evaluate experimental procedures.

Lecture Style:
For the most part, my lectures will follow the textbook closely so the students are encouraged to read the assigned chapters (or assigned sections therein) to review and study for the quizzes and exams. Powerpoint slides will be provided after each class. Study guides that will outline all the topics and relevant sections and chapters from the textbook will be provided before each exam.
Assignments and Grades

**Attendance/Participation: (5%)**
- Attendance is mandatory. It is each student’s responsibility to sign the attendance sheet at the beginning of each class.
- If you cannot attend a class, you must let the instructor know in advance. You are responsible for any announcements and material that you miss.
- If a class has to be cancelled for unexpected reasons, an e-mail will be sent out prior to the start of class.
- Students are expected to give their full participation during class hours. This includes active participation in all class experiments and discussions. You will be graded for participating, not for accuracy.

**Quizzes: (15%)**
- There will be a ~10-minute quiz at the beginning of every class to assess the student’s understanding on the content covered in the previous lecture. This will give you an opportunity to review the old material and prepare for the exams.

**Homework: (20%)**

*Reading assignments*
- While it will not be directly graded, it is important and highly recommended for you to read the assigned chapters in Trefil & Hazen before each lecture. Having at least flipped through the assigned chapters will greatly help you understand the material that will be presented in class.
- Other readings, articles and additional lab instructions will be posted on Blackboard. These should be printed out and brought to class.

*Writing assignments & Problem sets*
- There will be ~4 writing assignments & problem sets. They are due at the beginning of the following class. Please upload your work on Blackboard before the deadline.

**Extra credit assignment (5%)**
- You are encouraged to visit the American Museum of Natural History on your own or with classmates to complete an optional extra credit assignment, which will be posted on Blackboard after Exam #2. To earn full credit, you must submit a completed assignment as well as a ticket stub before the deadline.

**Labs: (10%)**
- For each lab session, you must complete and submit a lab hand-out by the beginning of the following class.

**Exams: (15% each)**
- There will be two ~90 minute and closed-book exams. It will cover everything covered in lectures and labs.
- Exams will be graded and handed back to the students in a timely manner.

**Final Exam: (20%)**
- There will be a closed-book and cumulative exam. In addition to the material covered after Exam #2, you are encouraged to study the material that appeared on Exams #1 and #2.
- The final exam will be held on the University-scheduled date & time. If you have a valid reason to miss the final exam, you must contact the class dean within five University working days to apply for a deferred exam. Any student missing the final exam and does not qualify for a deferred exam will receive a course grade of ABS (absent) according to University guidelines. In such a circumstance, students must provide proof of extenuating circumstances in a timely fashion to avoid receiving an F for the course.
### Grading:

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Percentage</th>
<th>≥92%</th>
<th>A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attendance/Participation</td>
<td>5%</td>
<td>≥87%</td>
<td>A-</td>
</tr>
<tr>
<td>Quizzes</td>
<td>15%</td>
<td>≥82%</td>
<td>B+</td>
</tr>
<tr>
<td>Homework</td>
<td>20%</td>
<td>≥77%</td>
<td>B</td>
</tr>
<tr>
<td>Labs</td>
<td>10%</td>
<td>≥72%</td>
<td>B-</td>
</tr>
<tr>
<td>Exam #1</td>
<td>15%</td>
<td>≥67%</td>
<td>C+</td>
</tr>
<tr>
<td>Exam #2</td>
<td>15%</td>
<td>≥62%</td>
<td>C</td>
</tr>
<tr>
<td>Final Exam</td>
<td>20%</td>
<td>≥57%</td>
<td>C-</td>
</tr>
<tr>
<td>Extra Credit</td>
<td>5%</td>
<td>≥47%</td>
<td>D</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>105%</strong></td>
<td>&lt;47%</td>
<td>F</td>
</tr>
</tbody>
</table>

### Course Outline and Tentative Schedule

The schedule below is subject to change, and you are responsible for staying appraised of any changes to the schedule announced in class, on Blackboard and/or by email.

<table>
<thead>
<tr>
<th>Date</th>
<th>Lecture (Assigned chapters from Trefil &amp; Hazen)</th>
<th>Lab</th>
<th>Homework</th>
</tr>
</thead>
<tbody>
<tr>
<td>6/30</td>
<td>Introduction to the course / Climate Change (19)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7/1</td>
<td>Earth as a System / Scientific Method (1) / Motion (2)</td>
<td></td>
<td>HW #1 (due 7/7)</td>
</tr>
<tr>
<td>7/7</td>
<td>Electricity and Magnetism (5)</td>
<td></td>
<td>HW #2 (due 7/8)</td>
</tr>
<tr>
<td>7/8</td>
<td>Electromagnetism (6) / Atom (8)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7/9</td>
<td>Energy (3) / <strong>EXAM #1</strong></td>
<td>#1 Optics</td>
<td>Lab #1 (due 7/14)</td>
</tr>
<tr>
<td>7/14</td>
<td>Therodynamics (4)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7/15</td>
<td>Atom (8) / Chemical Bonds (10)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7/16</td>
<td>Chemical Bonds (10)</td>
<td></td>
<td>HW #3 (due 7/21)</td>
</tr>
<tr>
<td>7/21</td>
<td>Radioactivity (12) / Nuclear Force (13)</td>
<td>#2 Calorimetry</td>
<td>Lab #2 (due 7/22)</td>
</tr>
<tr>
<td>7/22</td>
<td>Formation of the Solar System (14) / <strong>EXAM #2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7/23</td>
<td>Plate Tectonics (17)</td>
<td>#3 Electrochemistry</td>
<td>Lab #3 (due 7/28)</td>
</tr>
<tr>
<td>7/28</td>
<td>Formation of the Earth and Geology (18)</td>
<td></td>
<td>HW #4 (due 7/30)</td>
</tr>
<tr>
<td>7/29</td>
<td>Rock Cycles (18) / Geological Principles</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7/30</td>
<td>History of Earth (25)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8/4</td>
<td>Review</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TBD</td>
<td><strong>FINAL EXAM</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Classroom Policies & Expectations

Communication:
• Please make sure your contact information is up-to-date on Blackboard as I will be using it regularly to make announcements about the course. Students are expected to check their e-mails on a regular basis. If I need to make any changes to the course schedule and etc., I will communicate to you via Blackboard and email.

Classroom Policies:
• Usage of electronic devices, such as cell phones or laptops, will not be permitted during the quizzes and exams. Cell phones must be on silent or turned off during class. Exchanging instant messages and emails is strictly prohibited during class sessions.
• Students can form small groups for the purpose of completing experiments and discussions. However, be advised that students in groups should share the workload appropriately and everyone must participate in group discussions and activities.

Laboratory Etiquette and Safety
• No eating or drinking in the laboratory
• Clothing, shoes and hairstyle should be appropriate and not interfere with lab operations or present any hazard.
• Treat all laboratory equipment carefully.
• Maintain a clean lab bench and surrounding floor.
• Report immediately any accidents or breakages, no matter how minor.

Make-up Policies:
• Students are expected to turn in all assignments on time unless they receive explicit permission from me in advance of the assignment deadline. Extensions are handled entirely at my discretion based on the circumstances. Late assignments submitted without extenuating circumstances will receive a zero.
• There will be no make-up sessions for the lab experiments.
• If you must miss an exam because of serious circumstances, please contact me as soon as possible regarding a make-up exam. If you miss an exam without any prior communication with me, you will receive a zero. As for the final exam, see “Final Exam” on page 2.

Academic Integrity and Discipline:
Assignments (unless specifically identified as assignments that may be accomplished and submitted as a group) and examinations must reflect each individual’s understanding and achievement. Written submissions must be in your own words. If you use another person’s words the source(s) must be properly cited. Cheating will not be tolerated. It is the responsibility of each student to be aware of and abide by the University Code of Conduct. For further information on Fordham University’s code of conduct and policy regarding academic integrity, refer to the following:
https://www.fordham.edu/info/21683/student_handbook
https://www.fordham.edu/info/25380/undergraduate_academic_integrity_policy

Students are expected to abide by the University Code of Conduct and maintain the highest standards of honesty, effort, and performance. Any student who falsifies or plagiarizes an assignment or examination will be subject to failure in the course involved. Dishonest behavior also includes, but is not limited to using unauthorized material in an examination and aiding or permitting another student to copy an assignment or examination. Such behavior is subject to the same penalty as plagiarizing. Depending on the circumstances, evidence of dishonest scholarship may lead to expulsion from the University.
Reasonable Accommodations:
If you are a student with a documented disability and require academic accommodations, please register with the Office of Disability Services for Students (ODS) in order to request academic accommodations for your courses. Please contact the main ODS number at 718-817-0655 to arrange services. Accommodations are not retroactive, so you need to register with ODS prior to receiving your accommodations. Please see me after class or during office hours if you have questions or would like to submit your academic accommodation letter to me if you have previously registered for accommodations. (taken from Undergraduate Faculty Handbook Section 8.2)

University Inclusion Policy:
The Department of Natural Sciences affirms as part of our mission that we value and accord respect to all of our students. Therefore, as a matter of policy, instructors in our department are asked to call students by their preferred names and preferred pronouns. Please let your instructor know your preferred name and preferred pronoun in person or over email.

***Please refer to the syllabus uploaded on Blackboard for the most up-to-date version***