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

Summer Session II 2020

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

URL for the Course: https://meet.google.com/zky-yreh-rrn
Please copy and paste this address in Google Chrome with your Fordham University credential to join the synchronous online lecture at the class time.

Class Meeting Times:
We will meet every Tuesday, Wednesday, and Thursday from 6:00 pm to 9:00 pm EST (June 30 - August 4). There will be three virtual lab sessions during the semester. These sessions will take place during the regular class time.

Office Hours:
Virtual office hours will be held from 3:30 pm to 4:30 pm EST every Thursday. The one hour is divided into four 15-minute blocks and you can sign up for one or more blocks on Google Calendar (an invite will be sent out to your email on the first day of class). During your appointment, I will be available over Google Hangouts (please log in with your Fordham credential from Google Chrome) to video-chat.

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 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 what the four fundamental forces are.
6. Describe basic geological principles and plate tectonics and understand how the physical and chemical principles allow us to study the Earth and its history.
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.
Format of the Class:
For the most part, my lectures will follow the textbook 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, which will be my main mode of teaching, will be posted on Blackboard after each class. There will be at least one or two breaks during the online meeting. Blackboard will be utilized in every aspect of this course, including communicating any announcements, posting course material (lecture slides, lab hand-outs, assignments and etc.) and submitting all of your assignments, quizzes, and exams. The grade for each assessment will also be posted on Blackboard in a timely manner.

Assignments and Grades

Attendance/Participation: (5%)
• Attendance in online class meeting is mandatory. I will take attendance in every class.
• If you cannot attend a class, you should let the instructor know. 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 discussions. You will be graded for participating, not for accuracy.

Quizzes: (15%)
• There will be a ~10-minute quiz at the end of every class (except for the days when there is a lab or an exam) to assess the student’s understanding on the content covered in the lecture. This will give you an opportunity to review the material while fresh 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 or sections in Trefil & Hazen before each class. The assigned chapters/sections are indicated in parentheses in Course Outline and Schedule section of this syllabus (page 3).

Writing assignments
• There will be 3 homework assignments. The assignments will be posted on Blackboard, and the student should submit their work on Blackboard before the deadline.

Extra credit assignment (5%)
• You have an opportunity to complete an optional extra credit assignment, which will be announced in class on July 1. This will be due on July 30.

Labs: (10%)
• For each lab session, you must complete and submit a lab worksheet.

Exams: (15% each)
• There will be two ~75-minute-long and open-book exams that will take place during the regular class time.
• The exams will be emailed to you a few minutes before the start of the exam. Once finished, the exam should be uploaded in a designated folder on Blackboard before the deadline.
• The exams will consist of ~10 short answer questions.
Final Exam: (20%)
- There will be a 90-minute-long, open-book and “cumulative” exam that will take place during the regular class time on the last day of class (August 4).
- In addition to the material covered after Exam #2, you are encouraged to study the questions that appeared on Exams #1 and #2.
- The final exam will consist of ~12 short answer questions.

Grading:

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Course Outline and Schedule

*T&H refers to the required textbook by Trefil and Hazen. The numbers that follow refer to the chapter and section that the student should read for the lecture.
*Assignments are shown in blue under the day on which they are assigned.

**WEEK 1: June 30 and July 1**

**Tuesday (June 30)**
- **Online lecture (@ 6:00-8:15 pm EST)**
  - Welcome and introduction to the course
  - *Prologue: Challenges of the 21st century* (Read T&H 3.5)
  - Climate change (Read T&H 18.2; 19.3; 19.4)

**Wednesday (July 1)**
- **Online lecture (@ 6:00-8:30 pm EST)**
  - Climate change in a geological perspective
  - Earth as a system
  - What is science and scientific method (Read T&H chapter 1)
  - End-of-class quiz

**Homework assignment #1** - Read an article of your choice on the current climate change and write a 2-page summary. Due next Tuesday.

**Extra credit assignment** – Listen to a BBC podcast on the Paleocene-Eocene Thermal Maximum and answer questions about the program. Due in class on July 30.
WEEK 2: July 7, 8 and 9

Tuesday (July 7)
- **Online lecture (@ 6:00- 8:30 pm EST)**
  - Views of the universe; gravity; Newton’s laws (Read T&H chapter 2)
  - End-of-class quiz

Wednesday (July 8)
- **Online lecture (@ 6:00-8:30 pm EST)**
  - Newton’s laws
  - Electricity and magnetism (Read T&H chapter 5)
  - End-of-class quiz
  - Information about Exam #1

Thursday (July 9)
- **Online lecture (@ 6:00-6:45 pm EST)**
  - Magnetism (Read T&H chapter 5)
- **Exam #1 (@ 7:00-8:15 pm EST)**

Week 3: July 14, 15 and 16

Tuesday (July 14)
- **Online lecture (@ 6:00-7:15 pm EST)**
  - Electromagnetic waves (Read T&H chapter 6)
- **Online Lab #1 on optics (@ 7:15- 8:15 pm EST)**

**Lab #1 worksheet** – Please answer all the questions and complete the worksheet. **Due thus Thursday.**

Wednesday (July 15)
- **Online lecture (@ 6:00-8:15 pm EST)**
  - Energy and 1" law of thermodynamics (Read T&H chapter 3)
  - Properties of heat and 2" law of thermodynamics (Read T&H chapter 4)
  - End-of-class quiz

**Homework assignment #2** – Answer Investigation Question 1 on p. 97 and Discussion Question 13 on p. 73 in your textbook. **Due next Tuesday.**

Thursday (July 16)
- **Online Lab #2 on energy (@ 6:00-7:00 pm EST)**
- **Online lecture (@ 7:00-8:30 pm EST)**
  - The periodic table; the structure of the atom; spectroscopy (Read T&H chapter 8)

**Lab #2 worksheet** – Please answer all the questions and complete the worksheet. **Due next Tuesday.**

WEEK 4: July 21, 22, and 23

Tuesday (July 21)
- **Online lecture (@ 6:00-8:30 pm EST)**
  - Chemical bonds; states of matter; common chemical reactions (Read T&H chapter 10)
  - Information about Exam #2
  - End-of-class quiz

Wednesday (July 22)
- **Online lecture (@ 6:00-6:45 pm EST)**
  - Redux reactions (Read T&H 10.6)
- **Exam #2 (@ 7:00-8:15 pm EST)**
Thursday (July 23)
- Online Lab #3 on electrochemistry (@ 6:00-7:30 pm EST)
- Online lecture (@ 7:30-8:30 pm EST)
  - The nucleus of the atom (Read T&H 12.1; 12.2)

Lab #3 worksheet – Please answer all the questions and complete the worksheet. Due next Tuesday.

WEEK 5: July 28, 29, and 30

Tuesday (July 28)
- Online lecture (@ 6:00-8:15 pm EST)
  - Radioactivity and radiometric dating (Read T&H 12.3)
  - Nuclear reactions (Read T&H 12.4; 14.2)
  - Evolution of stars (Read T&H 14.3; 14.4)
  - End-of-class quiz

Wednesday (July 29)
- Online lecture (@ 6:00-8:30 pm EST)
  - Origin of our solar system (Read T&H 16.1; 16.2)
  - Plate tectonics (Read T&H chapter 17)
  - The rock cycles (Read T&H 18.4)
  - End-of-class quiz

Homework assignment #3 – Please watch a NOVA program “Making North America: Origins” and answer questions about the program. Due this Thursday.

Thursday (July 30)
- Online lecture (@ 6:00-8:15 pm EST)
  - Epilogue: Time travel through Earth history (Read T&H 18.2; 25.1; 25.2; 25.3; 25.5)
  - Information about the final exam
  - Review

WEEK 6: August 4

Tuesday (August 4)
- Online lecture (@ 6:00-6:30 pm EST)
  - Q&A time
  - Farewell
- Final Exam (@ 6:45-8:15 pm EST)

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.
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.
- 25% will be deducted every 24 hours from assignments submitted late without extenuating circumstances.
- 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.

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 contact me if you have questions or would like to submit your academic accommodation letter to me in case you have previously registered for accommodations. (taken from Undergraduate Faculty Handbook Section 8.2)
https://www.fordham.edu/info/20174/disability_services

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 over email.

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