



Contemporary Science

NSC 131.81

Winter 2019

Number of Credits: 4

Office: NA

Days Class Meets: T/R

Contact Phone: NA

Meeting Times: Lec: T/12-2:54; Lab: R/12-1:50

Contact Email: nydeggeirma@jccmi.edu

Location: Hillsdale Center Rm #11

Office Hours: T/R 3:00 – 6:00

Instructor: Dr. Irma Nydegger

Online: see JetNet

Course Description

An interdisciplinary course that introduces the nature of science as a process. Particular topics from biology, chemistry, physics, geology and astronomy covered with an emphasis on critical thinking and evaluating evidence to examine competing theories. This course is ideal as a first science course for students whose science background is minimal, who are anxious about science, or who have not had a science course for several years. Course includes a laboratory component.

Prerequisite(s)

ENG 090* and MAT 030* or higher

Course Goals

The purpose of this course is to show general education students how the scientific method is applied across all disciplines and to address some of the important scientific topics of our times. Students will have an opportunity to read from an online integrated science textbook, review lecture presentation and computer simulation material, perform weekly laboratories that support key concepts and produce a poster based on their own scientific experiment. In order to be successful in these activities students will need to be able to read a moderate amount of technical material, set up the scales on axes to graph data, find the slope of a line, make conversions between units, utilize scientific notation and make calculations following formulas to produce an experimental result. If you feel uncomfortable with any of these items, please contact your instructor as soon as possible.

Course Objectives

- Understanding how science works as a process, and applying the same critical thinking skills used to evaluate evidence to everyday situations
- Becoming more scientifically literate, especially concerning contemporary issues
- Obtaining a working knowledge of measurement techniques, the metric system and construction & interpretation of graphs, diagrams and tables
- Examining the interrelatedness of the sciences, and the relationship of scientific investigation and social values.

By performing at the 70% level on examinations over lecture material and laboratory skills and creating a group project, students will fulfill JC General Education Outcome #4 “Demonstrate Scientific Reasoning”.

Textbook

Please note that the following e-text and online homework were included in your tuition. You will be given the access codes the first day of class.

Conceptual Integrated Science by Hewitt et al. with Mastering Physics Online Homework System

Text Book Zero! *This text is in digital format.*

Extras

A calculator capable of exponents and scientific notation.

Electronic Device Usage

Electronic device usage is discouraged unless the content being viewed is directly related to material being covered in the classroom. Please make sure that cell phones are set on vibrate. Students do not have permission to make audio or video tapes of the class.

Grading Procedure

Students will be graded on five exams (400 points), twelve laboratories (100 points), five lab quizzes (100 points), one project (40 points), in-class (60 points) and out-of-class work (100 points). See the details below. There is no individual extra-credit available in this course.

Exams

All exams are a mixture of fill-in, multiple choice, problem solving, and essay questions based on specific topics. There is no time limit on any exam. The final exam will have cumulative questions. Students may use a calculator and an 8.5"x11" sheet of notes (both sides, handwritten or typed). The first four exams will be available at the JC Testing Lab for 1 week starting on the date shown in the table below.

JC Testing Lab hours are posted at: <https://www.jccmi.edu/testing-lab/>. A photo ID is required. If you are unable to make it to the testing lab, please see your instructor for alternate arrangements.

Each exam is worth 100 points. The lowest of score of the first four exams will be dropped. The final exam can NOT be dropped. Make-up exams will only be given in unusual circumstances. Exams can NOT be retaken under any circumstances.

Exam	Topics	Start Date
1	Nature of Science, Scientific Measurement	Jan 29
2	Atomic Structure, Periodic Table, Radioactivity, Nuclear Power Plants	Feb 19
3	Waves, Doppler Effect, Spectroscopy, Cosmology, Energy	Mar 19
4	Energy Transport, Sun, Solar & Wind Power, Climate Change, Seismic Waves	April 9
Final	Plate Tectonics, Earthquakes, Evolution & Cumulative Questions from each of the proceeding exams.	In Class on May 2

Laboratory

There are 12 laboratory exercises (not including the project). The first exercise is designed to familiarize the student with how experiments are to be conducted, measurement theory and data analysis. During the remaining 11 exercises, students will collect and interpret data to verify some well-substantiated result. While students will work in small groups, each student **must** turn in **their own** data & results. **All** analysis and conclusions **must be original** to the student submitting the work for a grade. Each laboratory is worth 10 points.

Due to the fact that the laboratory rooms and equipment are not readily available, make-up laboratories will not be possible. However, the lowest two laboratory exercise grades will be dropped.

In order to fulfill the General Education Outcomes for a laboratory science course, students must complete 8 out of the 12 laboratory exercises. Failure to do so will result in a course grade of 0.0 regardless of the grades in the rest of the course.

Lab Quizzes

There are 5 lab quizzes. Students may use a calculator and one 8.5x11" sheet of notes (both sides, handwritten or typed). Each lab quiz is worth 20 points. Make-up quizzes will **only** be given in unusual circumstances. The topics are as follows:

Quiz	Topics
1	Introduction, Measurement, Density
2	Qualitative Analysis, Radioactivity
3	Spectroscopy, Energy Conservation
4	Specific Heat, Rock Identification, Project
5	Photosynthesis & Respiration, Cells & Microscopy, Evolution

Project

After the third laboratory, the students will be presented a list of scientific topics from which they can form valid hypothesis. Proposed hypotheses will be due **Feb 21**. Data taking will occur during laboratory meeting time #10. A poster presenting the results will be due **May 2**. Additional details will be made available on a separate handout. The project is worth 40 points.

In-Class Work

There are thirty lecture meeting times. Students actively participating during the lecture will receive two points. There is no way to make up missed in-class work.

Out-of-Class Work

Most of the assignments will be made available through Mastering Physics Online Homework system. If the student does not have internet access at home, they should set aside time to do this work utilizing college computer resources. Your access code for Mastering Physics is:

WSSCIS-EMAIL-PATEN-ENSUE-GUYOT-WISES

The course code for our section of NSC is:

MPNYDEGGER96023

Some topics may merit more essay-type answers. In those instances, the instructor will assign paper/pencil work. Either type of homework is due by the end date for the exam covering that material. Late out-of-class work will only be accepted in unusual circumstances.

Failure

See the Attendance Policy described below.

Grading Scale

GPA	MINIMUM POINTS	MINIMUM PERCENT
4.0	720	90.0%
3.5	680	85.0%
3.0	640	80.0%
2.5	600	75.0%
2.0	560	70.0%
1.5	520	65.0%
1.0	480	60.0%
0.5	400	55.0%

Academic Honesty Policy

Academic Honesty is defined as ethical behavior that includes student production of their own work and not representing others' work as their own, by cheating or by helping others to do so.

Plagiarism is defined as the failure to give credit for the use of material from outside sources.

Plagiarism includes but is not limited to:

- Submitting other's work as your own
- Using data, illustrations, pictures, quotations, or paraphrases from other sources without adequate documentation
- Reusing significant, identical or nearly identical portions of one's own prior work without acknowledging that one is doing so or without citing this original work (self-plagiarism)

Cheating is defined as obtaining answers/material from an outside source without authorization.

Cheating includes, but is not limited to:

- Plagiarizing in any form
- Using notes/books/electronic material without authorization
- Copying
- Submitting others' work as your own or submitting your work for others

- Altering graded work
- Falsifying data
- Exhibiting other behaviors generally considered unethical
- Allowing your work to be submitted by others

Course Management

See the following link for information on Drops and Withdrawals:

<https://www.jccmi.edu/registration-records/canceled-classes-drops-and-withdrawals/>

In accordance with JC's Incomplete Grade Policy, a student may request the grade of Incomplete if they are unable to complete the course work for some documentable unforeseen circumstance. The Incomplete will be granted if at least 50% of the assigned work in the course (including both assignments and exams) has been performed with sufficient quality (with an average grade of 2.0) and the student provides documentation of the circumstance. The student will be required to provide a detailed written schedule with due dates for making up the missing work during the following semester.

Makeup Policy

See individual course activities described under Grading Procedures for this information.

Help

If you have special needs that the instructor should be aware of in order to help you to best learn course material, please let me know as soon as possible. Students requiring special assistance (including those affected by the Americans With Disabilities Act) should contact the Center for Student Success in Bert Walker Hall Room 138 (517-796-8414). Your instructor is available for tutoring during office hours. There are also free tutoring services at the Center for Student Success:

<https://www.jccmi.edu/center-for-student-success/tutoring-center/>

Important Dates: Winter 2019

DATE	EVENT
JANUARY 14, 2019	BEGINNING OF WINTER SEMESTER
FEBRUARY 2, 2018	IN-SERVICE DAY. NO CLASSES
MARCH 11-17, 2019	SPRING BREAK. NO CLASSES.
MAY 5, 2019	END OF WINTER SEMESTER
MAY 7, 2019	GRADES DUE

Student Responsibilities

Outside of scheduled lecture time, students should expect to invest time to review notes from previous lectures, preview posted course materials, read the textbook, and do the online homework. Outside of scheduled laboratory time, students should expect to invest time to read laboratory background material and answer the pre-lab questions. They should also expect to meet with their lab group outside of class to plan for their lab project and produce their poster presentation. For exams and lab quizzes, students should expect to invest time in studying all provided course materials and preparing their sheet of notes.

The generally accepted amount of study time for success in lab science classes is 1 – 2 hours for every class hour which translates to 3 – 7 hours of study per week. Studying is not simply the passive activity of reviewing the course notes. Studying utilizes active techniques such as comparing classroom discussion topics available on Jetnet with the textbook, making flash cards for vocabulary or ideas, watching posted videos and simulations, re-working problems, etc. Students unfamiliar with these study techniques should consult their instructor as soon as possible.

Attendance Policy

Success in this course is unlikely in this course if students do not attend regularly.

In compliance with Federal Title IV funding requirements, as well as college initiatives, reporting of student participation in classes will occur at three designated times each semester. Instructors will assign one of three non-transcripted letter symbols to each student during each reporting period (see below). Students identified as no longer participating will be dropped or administratively withdrawn from the class, and students identified as needing academic assistance will be contacted.

Participation/Progress Symbols

- H – The student is not doing acceptable work and needs **H**elp to be successful.
- Q – The student has not participated and the instructor believes they have unofficially withdrawn (**Q**uit). These students will be dropped/withdrawn from the class.
- V – The instructor **V**erifies that the student is participating and doing acceptable work

Caveat

In case of unforeseen circumstances (e.g. school closing policies, instructor illness, etc.), revisions to this syllabus may be necessary.

Calendar

All dates are approximate and subject to change. See the separate daily course calendar for a more detailed listing of topics and assignments.

WEEK #	DATE	TOPICS	LABORATORY
1	January 15	Nature of Science; Scientific Method	Introduction & Safety
2	January 22	Scientific Method; Conversions	1. Introduction to Data Taking & Analysis
3	January 29 Exam 1 Starts	Atomic Structure; Periodic Table	2. Measurement
4	February 5	Radioactivity	3. Density
5	February 12	Nuclear Power Plants	4. Qualitative Analysis Lab Quiz 1
6	February 19 Exam 2 Starts	Waves; Doppler Effect	5. Radioactivity Hypothesis Due
7	February 26	Spectroscopy; Cosmology	6. Spectroscopy Lab Quiz 2
8	March 5	Energy; Heat	7. Energy Conservation Experiment Worksheet Due

9	March 11	Spring Break	
10	March 19 Exam 3 Starts	Sun; Solar Power	8. Specific Heat
11	March 26	Earth's Atmosphere; Wind Power; Climate Change	9. Rock Identification Lab Quiz 3
12	April 2	Earth's Structure; Seismic Waves	10. Project Data Taking
13	April 9 Exam 4 Starts	Plate Tectonics	11. Photosynthesis & Respiration Lab Quiz 4
14	April 16	Evolution	12. Cells & Microscopy
15	April 23	Evolution	13. Evolution
16	April 30	Review; Final Exam	Poster Presentations Lab Quiz 5