

JOHN JAY COLLEGE OF CRIMINAL JUSTICE
524 W. 59th Street, New York, NY 10019
The City University of New York

NSC 107 LECTURE SYLLABUS

Science in Modern Society

FALL 2012 → M/W 2nd Period for Sects. 01-04 ♦ 3rd Period for Sects. 09-12 ♦ 6th Period for Sects. 21-24

Text: Natural Science Revised (2010) 5th Edition

Web Site: <http://jjcweb.jjay.cuny.edu/wbailey>

Lecturer: W. Bailey (wbailey@jjay.cuny.edu)

Rm. 3-77A ☎ (212) 237-8943 / Office Hrs. M/W 12:30 to 2:30 pm

NSC 107 – Introduction to Science in Society

Credits/hours: 6 hours: 3 hours lecture, 1 1/2 hours recitation, 1 1/2 hours laboratory; 4 credits

Course Summary: A course in the basic principles of atomic and molecular physical science, including concepts of measurement and data collection, the scientific method, the structure of matter and living organisms, with emphasis on the relationships between science and society.

Learning Outcomes

Reasoning

- Explain the basic steps of problem solving.
- Critically evaluate statements of “fact” or discovery in the media.
- Recognize science as a creative process.
- Differentiate between data analysis and interpretation.
- Discriminate between scientific and non-scientific resources.
- Judge the merit of scientific vs. pseudo-scientific conclusions.

Knowledge

- Collect, analyze and interpret data.
- Quantify uncertainty in measurements.
- Describe the basic components of a scientific investigation, and contrast this with non-scientific statements.
- Correctly use basic terminology in chemistry and biology.
- Recognize basic concepts in the physical and/or biological sciences toward interpreting the nature of scientific discoveries.

Practical skills

- Demonstrate safe lab practices.
- Outline the basic modes of measurement.
- Identify basic laboratory equipment and practice methods of experimentation and investigation.

Communication

- Practice forms of written and/or oral communication in the laboratory.
- Differentiate between popular and scientific writing and communication.

Prerequisites: MAT 104 or MAT 105 or the equivalent. May not be taken after CHE 108, ENV 108, FOS 108 or PHY 108.

Requirements/Course Policies

LECTURE

- ☑ STUDENTS ARE EXPECTED TO BE RESPECTFUL AND RESPONSIBLE IN THE CLASSROOM AT ALL TIMES.
- ☑ All beepers, cell phones, I-pods and other electronic devices **MUST** be turned off before all classes.
- ☑ All technical information presented in the research paper must be cited appropriately in the text and in the references section at the end of the paper. References should conform to the APA style, which can be found on the John Jay Library Web site (<http://www.lib.jjay.cuny.edu/research/apastyle.pdf>) or ask for a copy at the library reference desk. **For help with referencing and writing style please visit the College Writing Center located at 524 W. 59th Street on the first floor (01.68.00 to 01.68-05NB).**
- ☑ **THERE WILL BE NO MAKE-UP EXAMS.** IF A STUDENT MISSES EITHER EXAM 1 OR 2, THE REMAINING GRADES WILL BE CONVERTED TO **33¹/₃** POINTS EACH. ONLY STUDENTS TAKING THE FIRST TWO LECTURE EXAMS WILL RECEIVE AN ADDITIONAL BONUS OF 10 POINTS ON THE FINAL EXAM SCORE.

- ☑ **YOUR PERSONAL JOHN JAY PHOTO ID MUST BE PRESENTED AT ALL LECTURE EXAMS.** FAILURE TO SHOW A CURRENT JOHN JAY PHOTO ID OR PHOTO ID ACCEPTABLE TO THE INSTRUCTOR RESULTS IN DEDUCTED POINTS.
- ☑ STUDENTS ARE REQUIRED TO USE **#2 PENCILS** FOR ALL LECTURE EXAMS. PENCILS WILL **NOT** BE PROVIDED. POINTS WILL BE DEDUCTED IF THE INSTRUCTOR HAS TO GRADE THE SCANTRON BY HAND.
- ☑ **NO** PROGRAMMABLE CALCULATORS, CELL PHONES, iPADS, OR POCKET P.C.s (includes PDAs) ARE TO BE USED DURING EXAMS OR LAB QUIZZES.
- ☑ TO AVOID A SEVERE POINT DEDUCTION PENALTY, PLEASE ATTEND YOUR SCHEDULED LECTURE EXAM.

Required Text (includes the lab manual): *Natural Science* Revised 5th Ed. by Carpi, A. & Egger, A., Kendall Hunt, Inc., Iowa (2010). Sold at the John Jay bookstore.

TEXT ISBN: 978-0-7575-6971-5 and **LAB MANUAL ISBN:** 978-0-7575-6970-8

Course Web Site: <http://www.visionlearning.com/myclassroom>

Score Calculation ↓

GRADING SCALE:	LECTURE EXAM 1 = 20 POINTS	or,	your score #1 _____ × 0.20
	LECTURE EXAM 2 = 20 POINTS	or,	score #2 _____ × 0.20
	FINAL EXAM = 25 POINTS	or,	final score _____ × 0.25
	LAB GRADE = 35 POINTS	or,	lab score _____ × 0.35
	TOTAL = 100 POINTS	↗	add for total points out of 100

COURSE CALENDAR

<u>Date</u>	<u>Lecture Outline</u>	<u>Reading Assignment</u>
M 8/27, W 8/29 & W 9/5	The Practice of Science – Matter and Energy	<ul style="list-style-type: none"> ▪ Lesson 1 ⇨ pp. 1-10, Lesson 3 ⇨ pp. 15-18, Lesson 5 ⇨ pp. 23-25, Lesson 6 ⇨ pp. 26-34 & Lesson 7 ⇨ pp. 35-40 ♦ Do quizzes at the end of each lesson.
M 9/10 & W 9/12	Atomic Structure	<ul style="list-style-type: none"> ▪ Lesson 9 ⇨ pp. 45-48 & Lesson 10 ⇨ pp. 49-52 ♦ Include quizzes. Note Quiz 10: Ques. 11 (p. 52) is on-line interactive.
W 9/19 & M 9/24	The Periodic Table and Chemical Reactions	<ul style="list-style-type: none"> ▪ Lesson 11 ⇨ pp. 53-57 & Lesson 12 ⇨ pp. 58-61 ♦ Include quizzes.
M 10/1, W 10/3 & W 10/10 (Follows Monday schedule)	Chemical Bonding	<ul style="list-style-type: none"> ▪ Lesson 13 ⇨ pp. 62-68 ♦ Include quiz.
M 10/15	EXAM 1	
W 10/17, M 10/22 & W 10/24	Acids, Bases and The Concept of pH	<ul style="list-style-type: none"> ▪ Lesson 16 ⇨ pp. 77-80 ♦ Include quiz.
M 10/29 & W 10/31	Balancing Chemical Equations	<ul style="list-style-type: none"> ▪ Lesson 8 ⇨ pp. 41-44 & Lesson 14 ⇨ pp. 69-72 ♦ Include quizzes. Omit Questions 4 through 7 on p. 44 and Question 8 on p. 72.
M 11/5 & W 11/7	Nuclear Chemistry	<ul style="list-style-type: none"> ▪ Lesson 17 ⇨ pp. 81-85 ♦ Include quiz. Omit Questions 6 and 7 on p. 85.
M 11/12 & W 11/14	Organic Chemistry	<ul style="list-style-type: none"> ▪ Lesson 24 ⇨ pp. 126-131 ♦ Include quiz.
M 11/19	EXAM 2	
W 11/21, M 11/26 & W 11/28	Biochemistry – The Energy Nutrients	<ul style="list-style-type: none"> ▪ Lesson 25 ⇨ pp. 132-135 & Lesson 26 ⇨ pp. 136-140 ♦ Include quizzes.
M 12/3 & W 12/5	Nucleic Acids and Protein Synthesis	<ul style="list-style-type: none"> ▪ Lesson 28 ⇨ pp. 148-156 ♦ Include quiz.
M 12/10 & W 12/12	The Immune System and AIDS	<ul style="list-style-type: none"> ▪ Lecture Notes also See on-line Module 29 ⇨ Immune Cells & HIV (Science Daily) link.



Department of Sciences

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ATTENDANCE

Students are expected to attend all class meetings as scheduled. Excessive absence may result in a failing grade for the course and may result in the loss of financial aid. The number of absences that constitute excessive absence is determined by the individual **lab** instructor, who announces attendance guidelines at the beginning of the semester in the syllabus for the course. Students who register during the Change of Program period after classes have begun are responsible for the individual course attendance policy.

There will be no make-up exams. If a student misses either exam 1 or 2, the remaining grades will be converted to **33½** points each. Only students taking the **first two** lecture exams will receive an additional bonus of 10 points on the final exam score.

Grade of INC (Incomplete)

An Incomplete Grade may be given only to those students who would pass the course if they were to satisfactorily complete course requirements. It is within the discretion of the faculty member as to whether or not to give the grade of Incomplete.

Accommodations for Students with Disabilities: Students with hearing, visual, or mobility impairments; learning disabilities and attention deficit disorders; chronic illnesses and psychological impairments may be entitled to special accommodations under the Americans with Disabilities Act (ADA). In order to receive accommodation, students must register with the Office of Accessibility Services (O.A.S., Room L.66.10NB, 212-237-8185, <http://www.jjay.cuny.edu/2023.php>) which will define, for both students and faculty, the appropriate accommodations. Faculty are not allowed to work directly with students to attempt to accommodate disabilities, and accommodations cannot be applied retroactively (after-the-fact).

Statement of the College Policy on Plagiarism: Plagiarism is the presentation of someone else's ideas, words, or artistic, scientific, or technical work as one's own creation. Using the ideas or work of another is permissible only when the original author is identified. Paraphrasing and summarizing, as well as direct quotations require citations to the original source. Plagiarism may be intentional or unintentional. Lack of dishonest intent does not necessarily absolve a student of responsibility for plagiarism. It is the student's responsibility to recognize the difference between statements that are common knowledge (which do not require documentations) and restatements of the ideas of others. Paraphrase, summary, and direct quotation are acceptable forms of restatement, as long as the source is cited. Students who are unsure how and when to provide documentation are advised to consult with their instructors. The library has free guides designed to help students with problems of documentation.

This course will utilize the services of **Turnitin.com**, a plagiarism prevention system approved by the College Council. All students must submit an **electronic copy** of their final paper using either the Word, WordPerfect, RTF, PDF or HTML format (**including the reference page**) to **Turnitin.com** for processing by the date listed. **In addition, a printed original** must be submitted to the lab instructor by the scheduled date (instructors may also require an electronic copy). All electronic files should be scanned for viruses **before** submission. Students transmitting electronic viruses will be **heavily** penalized.

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NSC 107 LAB

Instructor: _____

Student's Name: _____ Section _____

LAB POLICY

GRADING SCALE: LAB GRADE REFLECTS 35% OF LECTURE GRADE

LAB PARTICIPATION: (5 points) Includes adherence to safety rules, attendance, punctuality and lab station cleanup.

An attendance roster will be read at the beginning of the period and **closed 15 minutes after** the start of the session. Any persons who have not responded by that time or arrive later will be counted as late. **Two** lateness marks will equal **one** absence. **Three** absences will incur a deduction of **one** point from lab participation. Students arriving late must contact the instructor at the end of the session **before** leaving the lab.

Submitted labs are given one of three marks. **(1)** ✓+ indicates a completed/above average lab. **(2)** ✓ indicates a completed lab and **(3)** ✓- indicates an incomplete or late lab. A student that is absent on the day of a scheduled lab will automatically receive a ✓- when submitting copied material **within one week** of the assigned date. **No** labs will be accepted **after 1 week** from the scheduled date. Report sheets should be **legibly** filled out in **black ink only**. There are **no** make-up labs. Lab **report sheets** can be printed off from the *Visionlearning* web site. PLEASE TURN IN SEPARATE LAB REPORT SHEETS ONLY. LAB MANUALS WILL **NOT** BE COLLECTED.

Students are required to observe **all** safety rules, including wearing safety glasses during lab work and cleanup. STUDENTS WITHOUT SAFETY GLASSES WILL BE BARRED FROM THE LAB FOR THAT PERIOD AND WILL RECEIVE AN ABSENT MARK. LAB INSTRUCTORS WILL **NOT** SUPPLY SAFETY GLASSES FOR **ANY** STUDENT.

2 QUIZZES: (10 points each)

Questions will include multiple choice, fill-ins and calculations using a non-programmable calculator. Calculators may **not** be shared. Students are required to answer all questions using either a **black** ink pen or pencil. There will be **no** make-up quizzes.

LAB REPORT: (10 points)

An assignment related to the natural sciences **4-5** typed pages in length is *mandatory*. Topics and the report format will be discussed during the **first** class meeting (See back of lab syllabus and report topics handout). Please refer to the *John Jay Undergraduate Bulletin 2012-2013*, pp. 230-1 regarding POLICY ON ACADEMIC INTEGRITY).

OFFICE HOURS: By appointment only. Please see your individual lab instructor regarding office hour schedule.

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NSC 107 LAB SYLLABUS – Fall 2012

Section _____

Revised (2010) 5th Ed. Lab Manual - Carpi & Bailey (downloading report pages requires Adobe Acrobat Reader)

<u>Date</u>	<u>Lab #</u>	<u>Experiment</u>
M 8/27 (R)	Intro	<ul style="list-style-type: none"> • Safety Rules p.vi • Units of Measure, Unit Conversion, and Problem Solving. REQUIRES A NON-PROGRAMMABLE CALCULATOR. → See Module 2 found on-line, or The Metric System pp. 11-14 of lecture text. See also on-line Resources and <i>Further Exploration</i> sections at end of Module 2.
W* 8/29 (R) & W 9/5 (L - Part 1)	1	<ul style="list-style-type: none"> • Scientific Notation & Significant Figures → See Module 2 found on-line, or The Metric System pp. 11-14 of lecture text. See also on-line Further Exploration section on <i>Basic Math: Scientific Notation</i> at end of Module 2. • The Metric System pp.1-3 (Part 1)
M* 9/10 (L - Part 2) & W 9/12 (L - Part 3)	2a 2b	<ul style="list-style-type: none"> • Measuring Liquids p.5 (Part 2) • Density Determination pp.5-7 (Part 3) → See Module 4 found on-line, or Density pp. 19-22 of lecture text. See also on-line Resources and <i>Further Exploration</i> sections at end of Module 4.
W 9/19 (R) & M* 9/24 (L)	3 4	<ul style="list-style-type: none"> • Conservation of Mass in Chemical Reactions pp.9-11 • INSTRUCTOR DEMO: Decomposition Reactions-Electrolysis of Water pp.13-15
M 10/1 (R) & W 10/3 (L)	7 6	<ul style="list-style-type: none"> • Formula Writing pp.27-29 (included in 10/1 recitation) • Conductivity pp.23-25
W* 10/10 (R) (Follows Monday schedule) & M* 10/15 (L)	5	<ul style="list-style-type: none"> • Model Building pp.17-22
W* 10/17 (R/L - Part 1) & M* 10/22 (L - Part 2)	10a 10b 11	<ul style="list-style-type: none"> • pH of Common Substances p.39-41 (Part 1– Labs 10a & b) • pH of Over-the-Counter Drugs p.42 • Acid-Base Titration pp.43-45 (Part 2)
W 10/24	<input checked="" type="checkbox"/>	LAB QUIZ 1
M 10/29	<input checked="" type="checkbox"/>	NATURAL SCIENCE REPORT DUE 📄
M 10/29 (R) & W 10/31 (L)	13	<ul style="list-style-type: none"> • Manufacturing Aspirin pp.51-55 (Part 1)
M 11/5 (R) & W 11/7 (L)	14	<ul style="list-style-type: none"> • Weighing dried Lab #13 sample & determining % yield incl. in 11/5 (R) • Analgesics and Thin-Layer Chromatography pp. 57-59 (Part 2)
M 11/12 (R) & W 11/14 (L)	15	<ul style="list-style-type: none"> • Making Soap pp.61-63
M 11/19 (R) & W 11/21 (L)	16	<ul style="list-style-type: none"> • Nutrients in Foods: Part 1 – Carbohydrates & Proteins pp.65-70
M 11/26 (R) & W 11/28 (L)	17	<ul style="list-style-type: none"> • Nutrients in Foods: Part 2 – Fats & Iodine Number pp.71-76
M 12/3 (R), W 12/5 (L – Part 1) & M* 12/10 (L – Part 2)	18 19	<ul style="list-style-type: none"> • The Cell pp.77-84 (Part 1) • DNA and Protein Sequencing pp.85-87 (Part 2)
W 12/12	<input checked="" type="checkbox"/>	LAB QUIZ 2

GRADING SCALE: LAB GRADE REFLECTS 35% OF LECTURE GRADE

- ① Recitations (R) are held on Mondays **and** labs (L) on Wednesdays. You must attend **both** days to receive full credit for lab.
- ② Lab participation includes adherence to safety rules, attendance, punctuality and lab station cleanup.
- ③ **Please do not bring food or beverages into the lab. Do not dispose of food in the waste receptacles.**
- ④ All labs will be performed on the scheduled day and time only. **NO MAKE-UP LABS.**
- ⑤ Each individual is responsible for lab station cleanup—**not** the lab technician!
- ⑥ **THERE WILL BE NO MAKE-UP QUIZZES.**
- ⑦ **NO PROGRAMMABLE CALCULATORS, CELL PHONES, iPADS, POCKET P.C.s (incl. PDAs) ARE ALLOWED FOR LAB QUIZZES.**

* Shows that recitation and lab days have been switched.

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NSC 107: Natural Science Paper Requirements

The purpose of this assignment is two-fold: A) to give students experience performing independent research and writing on a topic, and B) to give students a sense of the process of scientific discovery and how current 'facts' have come to be known. Choose a topic that interests you.

1. The paper due date is listed on the syllabus. A **one-page draft** is due early in the semester and will be returned with comments before the paper is due. There will be no exceptions, no extensions and no make-ups. The paper is worth 10 points toward the total 35 points of your lab grade; your paper will be graded on content, grammar, spelling and proper appearance. Avoid using pronouns in the first person such as, I, me, my, mine etc., in your writing style.
2. The paper is to be a 4-5 page science research report (a required title page and reference page are additional). Double-spacing, **12 point Times Roman font**, with 1 inch margins on all sides are required.
3. You are required to use at least 3 different reference sources for your material. The textbook along with encyclopedias (includes Wikipedia) cannot be used as a source. All technical information presented in the paper must be cited appropriately in the text and in a references section at the end of the paper. References should conform to the APA style, which can be found on the John Jay Library Web site (<http://www.lib.jjay.cuny.edu/research/apastyle.pdf>) or ask for a copy at the library reference desk. **For help with referencing and writing style please visit the College Writing Center located at 524 W. 59th Street on the first floor (01.68.00 to 01.68-05NB).**
4. This paper is an independent project and must be worked on alone. You must either choose a topic from the list provided by your laboratory instructor or have your own topic approved by your instructor. You must submit a list of 3 topics (in order of preference) to your instructor by the date listed.
5. Plagiarism will not be tolerated. **Any student suspected of copying material from another student, a printed source or a Web site will receive a zero on the assignment. Students may be further penalized by the instructor e.g., failing of the course and/or recommendation to the Vice President for Student Development for additional disciplinary action.** Attempting to use a paper written by another student, for another class or by a Web service is plagiarism and will be treated as such (please refer to the *John Jay Undergraduate Bulletin 2012-2013*, pp. 230-1 regarding POLICY ON ACADEMIC INTEGRITY).
6. This course will utilize the services of **Turnitin.com**, a plagiarism prevention system approved by the College Council. All students must submit an **electronic copy** of their final paper using either the Word, WordPerfect, RTF, PDF or HTML format (**including the reference page**) to **Turnitin.com** for processing by the date listed. **In addition, a printed original** must be submitted to the lab instructor by the scheduled date (instructors may also require an electronic copy). All electronic files should be scanned for viruses before submission. Students transmitting electronic viruses will be **heavily** penalized.