West Chester University

SCI 102 – Electricity with Chemical and Biological Applications

Sections 01, 02, and 03

Meeting Times: Section 01 - TR 9:30-11:30 am
Section 02 - TR 12:30-2:30 pm
Section 03 - TR 3:00 - 5:00 pm

Meeting Place: ~~Merion Science Center 109~~ On the internet

Instructors:	Jeffrey J. Sudol (Dr. Jeff)	Dr. Ling Zhong
Office:	Merion Science Center 102	Schmucker South 113
Office Phone:	610-436-2572	610-738-0398
Office email:	jsudol@wcupa.edu	lzhong@wcupa.edu
Office Hours:	M 2-4, W 2-3, F 2-4	TR 11:30-12:30

Course Description

SCI 102 is an inquiry-based science course for elementary education majors. The course is divided into three parts: physics, chemistry, and biology. In the physics part of the course, through a series of laboratory activities, students will learn both the charge model and the circuit model. In the chemistry part of the course, again, through a series of laboratory activities, students will learn about chemical reactions involving electron transfer and the formation of water in an acid-base solution, which serve as the foundation for understanding batteries. In the biology part of the course, students will apply their knowledge of physics and chemistry to the neuromuscular and the cardiovascular systems in humans.

Required Course Materials

- ✓ *The SCI 102 Workbook: Fall 2020* – delivered online as part of the course.

Microsoft Word and PowerPoint are required to complete the assignments in this course. This software is available for free through the following link: Information Services and Technology: Office 365. (It's not technically "free" - you already paid for it when you paid the "fees" that are bundled with your tuition.)

Website

This course has a D2L website associated with it. The course instructors will post all course documents and announcements on the D2L website on a regular basis. Please check D2L at least once a day for updates.

Course Goals

SCI 102 is an approved General Education course in the Sciences. The activities in this course, which include laboratory experiments (based on guided inquiry and the predictive learning cycle), writing assignments (recording observations in a journal and writing journal reports), and a final project (a self-directed experiment using the concepts and methods learned during the course), are designed to help the student meet the following General Education goals at West Chester University: (goal #1) communicate effectively, (goal #2) employ quantitative concepts and mathematical methods and (goal #3) think critically and analytically. (Click here for more information: Undergraduate Catalog: General Education Requirements).

Details regarding the student learning outcomes associated with each of the General Education goals appear in section on **Assessment** below.

Assessment

Your final grade in this course will be based on your performance in each of the three parts of the course with equal weight (33%).

Each part of the course has its own set of assessments, which are described in separate syllabi, one for each part of the course. In general, though, three forms of assessment will appear in all three sections of the course: journal reports, quizzes, and exams. Journal reports consist of a series of free-response questions based on the laboratory activities that you perform in class and address the following Student Learning Objectives within the General Education goals met by this course.

Communicate Effectively

Express oneself effectively in common college-level written forms.

Think critically and analytically

Use relevant evidence gathered through accepted scholarly methods, and properly acknowledge sources of information, to support an idea.

Reach sound conclusions based on a logical analysis of evidence.

Quizzes and exams contain a mix of free-response questions, short answer questions, often associated with diagrams of physical systems, and multiple-choice questions. These assessments address the following Student Learning Objectives within the General Education goals met by this course.

Communicate Effectively

Express oneself effectively in common college-level written forms.

Employ quantitative concepts and mathematical models

Employ quantitative methods to examine a problem in the natural or physical world.

Apply the basic methods and thought processes of the scientific method for natural/physical science in a particular discipline.

The instructors assign letter grades according to the following scale, rounding appropriately.

93 - 100	A
90 - 92	A-
87 - 89	B+
83 - 86	B
80 - 82	B-

.
.
and so on...

We also reserve the right to introduce different forms of assessment as needed and to alter the weight of each of the categories of assessment in the event of some unforeseen circumstance beyond our control.

Attendance Policy

The guided inquiry nature of this course makes attendance critical to your success. Because this course has multiple instructors and the structure of the course changes from one part to the next, the attendance policies for each part of the course are described in detail in separate syllabi.

Email Policy

Per the Undergraduate Catalog, you are required to activate and maintain the email account created for you by West Chester University. The instructors will not use any other email account to communicate with you. The instructors might not have internet access from home and might not forward their WCU email to their personal email accounts or cell phones. This means that an entire day might pass before an instructor responds to your message. Plan ahead.

Disability Statement

If you require special accommodations because of a disability, please meet with each of the instructors as soon as possible to discuss your needs. Supporting documentation from the Office of Services for Students with Disabilities (OSSD) is required. For more information regarding this policy, click here: Undergraduate Catalog: Services for Students with Disabilities.

Policy Regarding Grade Assignments

Grade assignments are final and cannot be changed once submitted at the end of the semester, unless a clerical or computational error is discovered. "No Grade" assignments are made only under extraordinary circumstances. Credit by Examination is not available for this course. For more information, click here: Undergraduate Catalog: Grade Changes.

Academic Integrity Statement

If you commit a violation of academic integrity, you will receive zero credit for the entire course. This is not negotiable. For more information regarding violations of academic integrity, click here: Undergraduate Catalog: Academic Integrity Policy.

Student Code of Conduct

The instructors will dismiss students from class for any violation of the Student Code of Conduct and initiate the disciplinary action appropriate to the violation. For more information regarding violations of the student code of conduct, click here: Student Code of Conduct.

Reporting Incidents of Sexual Violence

The University requires faculty members to report to the University's Title IX Coordinator (610-436-2433) incidents of sexual violence that students share with faculty. Faculty members are also obligated to report to the person designated in the University Protection of Minors Policy incidents of sexual violence or abuse of a student who was, or is, a child (a person under 18 years of age) at the time the abuse allegedly occurred. Detailed information regarding the reporting of sexual violence and the resources that are available to victims of sexual violence is available at the webpage for the Office for Diversity, Equity, and Inclusion at the following address: https://www.wcupa.edu/_admin/diversityEquityInclusion/default.aspx.

Emergency Preparedness

All students are encouraged to sign up for the University's free WCU ALERT service, which delivers official WCU emergency text messages directly to your cell phone. For more information, visit https://www.wcupa.edu/wcualert/. To report an emergency on campus, call the Department of Public Safety at 610-436-3311 or 911.

University Sanctioned Events

If you will be participating in a University sanctioned event that occurs at the same time as an exam, you must notify your instructors of your participation in the event at least one week prior to the exam. Documentation supporting your participation in the event is required. We will then make arrangements for you to take the exam at a later date. For more information on University Sanctioned Events, click here: Undergraduate Catalog: University Sanctioned Events.

Intellectual Property Statement

All the course materials, including the PowerPoint lectures and exams, are the intellectual property of the instructors or another author as cited. Your use of these materials is restricted to your own studies for the duration of this course. It is a violation of Federal Law for you to distribute copies of these materials to anyone in any format at any time.

Course Schedule

Day	Date	Section	Topic
T	Jan. 26	Physics	Lab #1: The Charge Model, Part I
R	Jan. 28	Physics	Lab #2: Circuits
T	Feb. 02	Physics	Lab #3: Current
R	Feb. 04	Physics	Lab #4: Resistance
T	Feb. 09	Physics	Lab #5: Capacitance, Part I
R	Feb. 11	Physics	Lab #6: Capacitance, Part II
T	Feb. 16	Physics	Lab #7: The Charge Model, Part II
R	Feb. 18	Physics	Lab #8: The Circuit Model
T	Feb. 23	Physics	Physics Exam
R	Feb. 25	-	***No Class - Take a Break***
T	Mar. 02	Chemistry	Observing Changes
R	Mar. 04	Chemistry	Atoms and Elements
T	Mar. 09	Chemistry	Chemical Bonding
R	Mar. 11	Chemistry	Acids and Bases
T	Mar. 16	-	***No Class - Spring Break***
R	Mar. 18	-	***No Class - Spring Break***

continued...

Course Schedule (continued)

Day	Date	Section	Topic
T	Mar. 23	Chemistry	Determination of an Activity Series
R	Mar. 25	Chemistry	(Voltaic Cells) Batteries
T	Mar. 30	Chemistry	Electrolysis and Fuel Cells
R	Apr. 01	Chemistry	Rechargeable Batteries
T	Apr. 06	Chemistry	Chemistry Exam
R	Apr. 08	-	***No Class - Take a Break***
T	Apr. 13	Biology	Lab #1: Bioelectricity
R	Apr. 15	Biology	Lab #2: Electromyogram
T	Apr. 20	Biology	Lab #3 Part I: The Cell Membrane
R	Apr. 22	Biology	Lab #3 Part II: The Cell Membrane
T	Apr. 27	Biology	Lab #4: Action Potentials
R	Apr. 29	Biology	Lab #5: Somatosensory Map
T	May 04	Biology	Lab #6: Electrocardiogram
R	May 06	Biology	Lab #7: Stress
R	May 13	Biology	Biology Exam