

## Syllabus for NatSci 1A (Fall 2022)

\*Please note that the contents of this syllabus or schedule are subject to change. If changes are necessary, the entire class will be informed, and you will receive a new copy through Canvas.

### **Natural Science 1A**

**Semester: Fall 2022**

**Instructor: Dr. Harinder Singh Bawa**

**Lecture/Lab Email:**

Please contact me at

[harinder.singh.bawa@gmail.com](mailto:harinder.singh.bawa@gmail.com),  
[harinder.bawa@reedleycollege.edu](mailto:harinder.bawa@reedleycollege.edu)

Purchase ebook and HW platform:

Mastering Physics

<https://mlm.pearson.com/northamerica/masteringphysics/>

**Reedley College**

**Class No. 52066**

**Course (Lecture and Lab):**

**Monday/Wednesday: Lecture 4:30 pm-5:45 pm**

**Monday/Wednesday: Lab 6:00 pm-7:15 pm**

**Website:** To access the course

<https://scccd.instructure.com>

using your SCCCD username and password.

**IMP:** Because this is an on-campus class, you will need to comply with COVID 19 vaccine rules, which means that you need to be vaccinated or have a medical/religious exemption.

If you do not submit a request for a medical or religious exemption or provide proof of vaccination, you will be dropped from all your in-person classes prior to the beginning of the semester, including this one.

**If you are dropped, don't panic.** There are still things you can do. Here are some options:

- If you think there is a mistake: Take your proof of vaccine or your exemption paperwork to the campus One Stop office in the Student Center as soon as possible. They will help you process your paperwork and provide you clearance to come to class.
- If you have not yet gotten the vaccine: Visit the One Stop office right away; under some circumstances if you are immediately vaccinated you may still be able to take face-to-face classes this semester. If not, there are a number of late start classes and online classes you can take. Go to the One Stop office in the Student Center to discuss your options immediately.

Whatever you choose, please email me and let me know if I can expect to see you next week. My email id: [harinder.singh.bawa@gmail.com](mailto:harinder.singh.bawa@gmail.com)

**Course Objective:** This course provides an investigation of basic principles of physics and chemistry including matter, physical and chemical properties, energy, motion, light, atomic structure, bonding, solutions and chemical reactions. The interdependence of chemistry and physics will be emphasized. This course is intended for non-science majors.

**Textbook:** There is no traditional textbook; you will need to purchase the access code for Modified MasteringPhysics for Hewitt/Suchocki/Hewitt, Conceptual Physical Science, 6e - Instant Access with eText for Students. If you wish to have a traditional textbook you may go to the website for McGraw-Hill with an additional cost purchase a hard copy of the text, but to complete this course you must have access to the **Mastering Physics**. Instructions for registration are posted to Canvas.

**You are required to finish assignments and assessments online.** In addition, there will be important lecture and lab materials online. It is **YOUR RESPONSIBILITY** to come review the lecture and lab content when assigned.

## **Apps**

**Mastering Physics App:** Your access code will allow you to access the textbook and assignments. Although I have the assurance from the publisher that the content in your online assignments works for all electronics, this may not be the case. **It is your responsibility to find out if the content works with your electronic device.**

**Canvas App:** Canvas is fully functional on many types of smartphones and tablets. Compatible devices include platforms such as iPhone/iPad/iPod Touch, and Android. **However, it is recommended that you do not solely rely on one of these devices to complete your online course work. Access to a computer is still needed for many online activities.** Visit the Mobile section of the [Canvas Guides](#) website for more information. Once you have downloaded the Canvas Mobile App and are prompted to Find My School, search for: csuconnect.instructure.com

**Discord App:** My office hours will be primarily hosted on Discord which is another instant messaging and digital distribution platform for hosting communities. This platform will also allow study sessions and a place to collaborative on assignment during the course. (Refer in Canvas for how to install). Discord link: <https://discord.gg/JjBESwAhmy>

## **Communication Expectations**

- Identify yourself by your real name. Be mindful of your language, and avoid including personal information, such as phone numbers or addresses, in discussion forums. All communications should be transmitted with the intent to inform, inspire, etc. and not to offend or breach personal privacy.
- Use humor, joking, or sarcasm with caution. We often rely on non-verbal cues such as facial expressions to communicate joking or sarcasm, but these cues are not always clear in an online environment. These cues can be simulated with emoticons to reduce misunderstandings.

- Be Professional, Clear and Respectful. Clear and effective writing translates to clear and effective communication. Writing the way, you would speak is a good rule of thumb, use a positive tone and adhere to the same rules you would follow in face- to-face communications.

### **Course Structure:**

This course is Face To Face, which means it is self-paced with readings and videos to be completed each week. Each week you will assign a series of assignments from lecture and lab that you need to complete by the end of each week on Sunday. Optional Zooms sessions will be hosted every week and should content be discussed it will be recorded for you to view.

### **Learning Environment**

This fully online course is designed using asynchronous activities, assignments, discussions, and assessments. The course will make use of many common LMS (learning management system) tools, e.g., Canvas. Please be sure to read all the lessons and documents in the course so that you have the necessary information to complete the required activities. If your campus uses a different LMS than Canvas, we recommend you watch the "*Navigating this Course*" Video before getting started.

### **Learner Expectation**

- Ensure you have approximately 10 hours per week to spend on this course
- Review the assignments on the Course Schedule and print it out for easy reference as you complete each
- You are expected to plan your study time around the course schedule and recommended completion
- Check your email account regularly for updated information. Use e-mail for private messages to the instructor and other students. The discussion forum is for public messages.
- If you have questions or confusion about an assignment, act promptly! Check the Question Cafe to see if your concern has been addressed already and post your question there if you don't see an
- We are human and sometimes links or other pages need updating or become inactive.

### **Drop Dates and holidays:**

August 8 (M)	Start of Fall 2022 semester
August 19 (F)	Last day to drop a Fall 2022 full-term class for full refund
August 26 (F)	Last day to register for a Fall 2022 full-term class in person
August 28 (SU) person	Last day to drop a Fall 2022 full-term class to avoid a “W” in person
September 5 (M)	Labor Day Holiday (no classes held, campus closed)
September 9 (F) grading basis	Last day to change a Fall 2022 class to/from Pass/No-Pass grading basis
October 7 (F) this date)	Last Day to drop a full-term class (letter grades assigned after this date)
November 11 (Th)	Veterans Day (no classes held, campus open)
November 24-25 (Th-F)	Thanksgiving holiday (no classes held, campus closed)
December 5-9 (M-F)	Fall 2022 final exams week
December 9 (F)	End of Fall 2022 semester

### **Attendance and inclass Activity:**

Attendance credits depend upon how much you participate in in-class assignments, This includes your presence in class and your worksheets in timely fashion (**15% of your overall grade**)

### **Homework:**

Your homework would be posted mostly on Mastering Physics website/app. Due dates are also posted next to it. I don't accept late homework but if you have unforeseen circumstances and you are late by a day, you would be **deducted 10%** of your points in that HW/assignments. Its your responsibility to remember the due dates. Mostly for HW, the due date is Sunday of that week. **Your homework grade will account for 30% of your overall grade.**

**Term-Exams:** There will be 2(two) midterm-exams over the course of the semester. These tests are either multiple choice format or fill-in the blanks. **The exams combine to form 20% of your overall grade.** Dates are not fixed but we will have physics in Midterm1 (Chapter 0 and 1-4) and chemistry in Midterm2 (Chapter12-18).

**Laboratory:** In this semester, Laboratory experience gives you the chance to test the concepts and using virtual simulations. You would need to write Introduction and Conclusion along with the lab work assigned. **The labs will contribute 15% of your overall grade.**

**Final Exam (December 5, 2022):** There will be a final exam for this course that is cumulative (Majority from Chapter5-6 and few from midterm1/midterm2) with an emphasis on the material at the end of the semester. **The final exam will account for 10% of your overall grade.**

**Activity:** During the course each student will prepare a PowerPoint lecture on Physics/chemistry topics in syllabus that demonstrates a concept learned in this course. The activity should use materials that is readily available so that the students can repeat this activity with their school students. The minimum time for the lecture is 5 min and maximum time is 10 min. You can use any method, PowerPoint, demonstration, whiteboard etc to explain as if you are explaining to the students of the class. **This activity will account for 10% of your overall grade. *\*\*Helpful hints:*** Always start with introduction of yours, then topic you are going to explain, its basic definitions, formula, explanation of the topic, conclusion and in the end, you can relate the topic to its use in activities of our daily life.

### **Grading Policy:**

To calculate your grade, total all points earned and divide that number by the total points available. Course grades are non-negotiable; because extra credit points, exam curves, and low score replacement are offered the grading scale will not be adjusted; **I DO NOT ROUND UP your grades to the next letter grade.** The final course grade is based on:

<i>Percent Range</i>	<i>Grade</i>
90-100	A
80-89.99	B
70-79.99	C
60-69.99	D
Less than 60	F

I **WILL NOT** give an individual student separate extra credit at the end of the course to increase their percentage grade. I do not mind correcting honest mistakes so do not hesitate to contact me regarding them, but do NOT ask for special treatment. **You earn the grade you receive in this course.**

## College Policies

The college has several policies that you will be expected to adhere to in my course. The Policy on Students with Disabilities, the University Honor Code, the Policy on Cheating and Plagiarism, a statement on copyright, and the university computer requirement, portions of which are below, can all be found in the University Catalog (Policies and Regulations) and Class Schedule.

### ATTENDANCE AND DROP/ADD POLICY

- Your success in this course requires that you finish the work **on time** for each lecture and lab. Excuses for late submissions will be honored at my discretion. Most announcements will be placed on Canvas but find a “buddy” which can update you about the announcement if you miss. I will drop students (both enrolled and waitlisted) based on the following policy:
- Student not finishing the first week of assignment and the first lab. If contacted, student not responding via canvas message/by email.

### Cheating and Plagiarism:

I DO NOT TOLERATE CHEATING. PERIOD. Most of you are future teachers and if you do not know the basic information in this course, it will affect next generation. The University policy reads, "Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one's grade or obtaining course credit; such acts also include assisting another student to do so. Typically, such acts occur in relation to examinations. However, it is the intent of this definition that the term 'cheating' not be limited to examination situations only, but that it includes any and all actions by a student that are intended to gain an unearned academic advantage by fraudulent or deceptive means. Plagiarism is a specific form of cheating which consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e., their intellectual property) so used as one's own.

### Subject to Change Statement:

This syllabus and schedule are subject to change in the event of extenuating circumstances. If you are absent from class, it is **your responsibility** to check on announcements made while you were absent.

### Diversity Statement:

“Respect for Diversity: It is my intent that students from all diverse backgrounds and perspectives be well served by this course, that students’ learning needs be addressed both in and out of class, and that the diversity that students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender, sexuality, disability, age, socioeconomic status, ethnicity, race, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally or for other students or student groups. In addition, if any of our class meetings conflict with your religious events, please let me know so that we can make arrangements for you.

## Lecture Content (Topics)(Class # is Lecture Slide on Canvas)

1. Measurement and Fundamental Properties **(All in Class 1)**
  1. Fundamentals of measuring length, area, volume and mass
  2. Density of materials
  3. The scientific method
2. Motion, Forces and Energy
  1. Motion of objects as related through the concepts of position, displacement, speed, velocity, and acceleration **(Class 2)**
  2. Interpretation of distance vs. time and speed vs. time graphs **(Class 2)**
  3. The relationship between a net force and the motion of an object **(Class 2)**
  4. Explain how action and reaction forces are related to each other **(Class 2)**
  5. Basic forces in the universe including electrostatic, gravitational, and magnetic **(Class 4,7,10)**
  6. Forms of energy including solar, chemical, magnetic , electric , nuclear , and thermal**(Class07)**
  7. The relationship between net force, work, and kinetic energy **(Class 03)**
  8. Conservation of energy, and how energy is transformed form one form to another **(Class 03)**
  9. The nature of heat (thermal energy) and heat transfer (conductive, convective, radiant) and their relationship to temperature and temperature measurement **(Class 06)**
3. Structure and matter **(All in Class 7)**
  1. Atomic theory and basic atomic structure including the relationships between sub-atomic particles
  2. Periodic Table of Elements and periodic trends to atomic structure
  3. Characteristics of the atomic, ionic, and molecular classes of matter
  4. Phases of matter (solids, liquids, and gasses) and the connections between the properties using a particle model
  5. Classification of matter-elements, substances, compounds, mixtures
  6. Basic characteristics of solutions, including acids and base, and their relationship to the pH scale
4. Matter and its Changes **(All in Class 8)**
  1. Phases of matter and associated phase changes
  2. Chemical and physical changes, and classifying chemical and physical properties of matter
  3. Basic principles of chemical bonding and chemical activity
  4. Energy changes during chemical reactions
5. Electricity and Magnetism
  1. Electric charge and how charge is transferred from one object to another
  2. Models of electric current, voltage, resistance, and their interrelationships
  3. The construction and operation of simple electrical circuits and the difference between series and parallel combinations of resistors
1. Waves and Light
  1. Longitudinal and transverse waves
  2. Properties and sound
  3. Doppler effect and interference
  4. Electromagnetic radiation (light), the electromagnetic spectrum and sources of light

5. Relationship between wavelength (or frequency) and color
6. Color perception
7. Reflection and refraction of waves.

**Labs to cover: (Subject to change depends upon the week lecture)**

### **Physics**

1. Measurements/units
2. Position, displacement, velocity, and acceleration
3. Forces and Newton's Laws
4. Exploring Gravity
5. Projectile Motion
6. Virtual collisions
7. Electricity and Magnetism
8. Bending of Light
9. Buoyancy (Density and Floating Object)

### **Chemistry**

1. Building an atom
2. Analyzing concentration of the solution
3. Energy forms and Specific heat in Calorimetry