Instructor Information

Instructor: Diane Quern
Office: 234 (cube B)
Mailbox: TBA
Hours: M-Th 8:15-9:15 or by Appointment
Phone: 701-812-2277
Email: dquern@uaptc.edu

*All emails and telephone calls will receive a response within two business days.

Chair: Thomas Russell 501-812-2705 trussel@uaptc.edu
Dean: Marcio Bryant-Howe, Phd 501-812-2342 mbryanthow@uaptc.edu

*If your emails and telephone calls do not receive a response within two business days, the appropriate chain of command is above.

Course Information

This is a sixteen week course that will include 3 lecture hours and 2 lab hours. Labs are required and used to reinforce the subject matter learned in lecture. (4 credit hours/special course fee) The meet times are as follows:

Physical Science : South Campus
Lecture: Tuesday and Thursday from 10:50-12:05, room #213
Lab: Thursday 12:10 – 2:00, room #211

Catalog Description

PHYS1401: Physical Science ACTS # PYSC1004

This is a general survey course of the physical sciences designed for general education. Course topics include physics and chemistry and may also include other physical science topics. Lab is required. Prerequisite: A score of 22 or above on the Math section of the ACT, or a score of 97 or above on the Accuplacer Elementary Algebra test, or a score of 50 or above on the COMPASS Math Placement test, or completion of all required zero (0) level mathematics coursework. The laboratory portion of this course is designed to reinforce concepts from lecture as well as to introduce each student to a variety of different laboratory techniques. (3 lecture hours/2 laboratory hours per week)

Course Materials

Required textbooks:
Chemistry: Atoms First, OpenStax website: https://openstax.org/details/books/chemistry-atomsfirst
College Physics, OpenStax website: https://openstax.org/details/books/college-physics


Required materials: Scientific calculator (TI 30, TI 83, or TI 84)

Mission Statement

University of Arkansas – Pulaski Technical College provides access to high-quality education that promotes student learning and enables individuals to develop to their fullest potential.

Institutional Learning Outcomes and General Education

UA-PTC supports a college-wide institutional learning assessment program which concerns effective instructional methods and promotes student learning achievement by assessing:

1. Communication
2. Critical Thinking
3. Cultural Awareness
4. Information Literacy
5. Professionalism
6. Quantitative Literacy
7. Technology Literacy

For more information, please consult the following website: https://uaptc.edu/sla

Department / Program Learning Outcomes

The Physical Science department, consistent with the College’s mission and the Division’s objectives, encourages the success of its students in the health related fields and academic disciplines emphasizing Critical Thinking and Quantitative Literacy by the following program outcomes:

1. The student will realize the definition of the specific discipline under study.
2. The student will assign and demonstrate the use of significant figures in numbers used in calculations resulting in values and units dictated by the rules of significant figures.
3. The student will begin with measurement values and units and make unit conversions between the Metric and American systems.
4. The student will build a pictorial and mental model of the chemical elements based on their internal and external structure.
5. The student will generate the appropriate electron configuration in both neutral and charged elements for use in making compounds.
6. The student will apply the rules of **naming compounds** to include ionic, covalent, acids, and bases.
7. The student will utilize the attractive properties of elements and ions in the formation of both the **ionic and covalent bond**.
8. The student will arrange both ionic and covalent compounds and some elements in the appropriate form of a **balanced chemical equation**.
9. The student will apply the **mole concept** to the balanced chemical equation to calculate the amounts of substances that are involved during a chemical change.

**Student Learning / Course Outcomes**

Upon completion of this course, the student should be able to explain, describe, discuss, recognize, and/or apply knowledge and understanding of the following:

- Scientific method
- Measurement and error
- Force and motion
- Work and energy
- Temperature and heat
- Electricity and magnetism
- Chemical elements and periodic trends
- Chemical bonding and atomic structure
- Chemical reactions and mole concept
- Atomic and nuclear physics

**Policies**

**Report a Complaint or Concern**

UA-PTC takes very seriously complaints and concerns regarding the institution. Most complaints or concerns of a specific nature should be initiated and resolved at the campus level through normal college processes whenever possible. UA - Pulaski Technical College receives and resolves complaints using a variety of methods. To report a complaint or concern, please follow the link below.

[https://www.uaptc.edu/report-a-concern-complaint](https://www.uaptc.edu/report-a-concern-complaint)

**UA-PTC Attendance Policy**

Education at UA-PTC requires students’ active involvement in the learning process. Thus, students are expected to attend all classes and actively engage in all learning assignments and/or opportunities provided in their classes. Class attendance should be treated as mandatory by all students as attendance will be taken by all instructors during the first two weeks of class. Additionally, a written policy on student attendance that is tied to course objectives and included in a course syllabus will be provided for each course by instructors.

**Departmental Attendance Policy**
Agencies granting financial assistance may be notified of the violation of the attendance policy by students receiving financial aid.

Attendance is taken starting the first day of the semester, with the exception of students who enroll after classes have started. Teachers have the right to count students as absent if they arrive late to class, leave class early, or go in and out of the classroom during class time.

Any student who does not attend class within the first two weeks of class will be considered a “no show”

Instructors will not be able to drop a student due to nonattendance. Therefore, it is the students’ responsibility to drop the class if failing or receive a failing grade.

Each missed lab counts as a 0 for that lab. A student will be given a failing grade (F) for the class if you miss more than 4 labs sessions regardless of your overall grade in the course. You must sign in at the beginning of each Lab and Lecture. Failure to sign in at the required class/lab begin time is considered a miss. Tardiness counts as an absence. If you are more than 10 minutes late for a lab you will not be allowed to participate and will receive a zero for the day.

Course Policies

The UA-PTC Catalog rules and regulations will be enforced in this course at all times. Please consult the following website for more information: https://www.uaptc.edu/catalog

Professional behavior is required. Punctual attendance and intelligent participation are expected. Particulars as determined by the instructor are detailed in the paragraph below.

Appropriate behavior is expected for all communications, including any notes, email messages, or telephone conversations. Some guidelines for communication are included in this syllabus to help you.

Lecture:

The Pulaski Technical College Student Handbook rules and regulations will be enforced in this class at all times. No cell phones or pagers or other personal communication devices may be in use in the classroom. Turn off devices before entering the classroom. If your device rings, buzzes, plays music, or notifies you in any manner that you have an incoming call, you are to leave the class for the day. Personal communication devices cannot be used in lieu of calculators on exams. A student may not bring a child to lecture

Lab:

Students must wear eye protection when working with laboratory chemicals. To prevent the spread of transmittable disease, it is highly recommended that students provide their own eye protection (Chemical Splash-Proof Goggles). Contact lenses are not eye protection. Students will not be allowed to work in lab unless the pre-lab assignment is turned in at the beginning of the laboratory class period. Students without the pre-lab assignment will be given a zero for
that week’s laboratory experiment and will be required to leave the laboratory classroom. Students **may not** bring children to the laboratory portion of the course. Students may not bring items of food or drink into the laboratory classroom.

**Grading Policy**

Letter grades will be based on the following scale:

- 90 to 100%  A
- 80 to 89%   B
- 70 to 79%   C
- 60 to 69%   D
- 0 to 59%    F

The final grade in the course will be based on the weighted average of six categories with the following weights: Laboratory/Prelab Experiments (25%), Information Literacy (2%), Attendance (3%) Quizzes/ Homework (10%), Tests (40%), and Final exam (20%). The “percents” (**not** points!) of each assignment within a category will be averaged to give the pre-weighted value. Each category “percent” will then be weighted to give a contribution to the final course grade. These contributions will be summed and then divided by “100” giving the final course grade percent. A sample weighted average calculation is shown in the table below:

<table>
<thead>
<tr>
<th>Category</th>
<th>Pre-Weighted Value</th>
<th>Weight %</th>
<th>Weighted Contribution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Experiments</td>
<td>93</td>
<td>25</td>
<td>2325</td>
</tr>
<tr>
<td>Information Literacy</td>
<td>96</td>
<td>2</td>
<td>192</td>
</tr>
<tr>
<td>Attendance</td>
<td>65</td>
<td>3</td>
<td>195</td>
</tr>
<tr>
<td>Homework/Quizzes</td>
<td>95</td>
<td>10</td>
<td>950</td>
</tr>
<tr>
<td>Tests</td>
<td>85</td>
<td>40</td>
<td>3400</td>
</tr>
<tr>
<td>Final Exam</td>
<td>70</td>
<td>20</td>
<td>1400</td>
</tr>
<tr>
<td><strong>GRADE</strong></td>
<td></td>
<td></td>
<td><strong>8462 /100</strong></td>
</tr>
</tbody>
</table>

**Weighted Average**

84.62%  B
Exams:

There will be a total of 4 exams (NOT including the final exam). Each exam is worth 10% of your grade. See tentative course schedule for exam dates and chapters. There are no make up exams. The percentage on the Final will replace a missed exam or the lowest exam score (if none were missed).

Quizzes:

Quizzes will be given periodically throughout the semester via blackboard and in class. The quizzes will cover the information recently presented and will not be cumulative. Quizzes given on blackboard will be timed with only one attempt with the exception of the syllabus quiz. They will be available during the dates given in the course calendar.

Homework:

Worksheets will be given periodically and posted on blackboard. It is the student's responsibility to keep up with homework and ask questions regarding the assignments during office hours. The student should seek help from the tutoring office starting on the first day to take full advantage of these facilities. I will be available during office hours to assist with homework only after the student has attempted the assignment and has sought the appropriate tutoring. Tutor services in Rm 220. Schedules will be located outside the room.

Information Literacy:

Due date: March 15th. Hand out for guidelines will be supplied. Worth 2% of your grade.

* Instructors have one week to provide feedback and post grades for all assignments unless otherwise noted by a departmental policy that has been approved by the Dean of the School.

In an online class, eligibility for Financial Aid is based on student participation. Logging into the course does not constitute participation. For purposes of roster certification, students must complete a gradable attendance artifact.

Lab:

Labs are due the following week after completing the lab unless otherwise noted.

Academic Integrity

It is expected that all students who attend UA-PTC conduct themselves in a manner appropriate for the college experience. Academic integrity is a vital component of collegiate behavior. The UA-PTC catalog states, “The gaining of knowledge and the practice of honesty go hand-in-hand.”
The catalog also states, “The responsibility and authority of initiating discipline arising from violations of the rules against dishonesty during the process of the course are vested in the instructor of that course.”

The complete Academic Integrity Policy is in the UA-PTC code of conduct.

**Accommodation Policy**

Services for Students with Disabilities: UA-PTC is committed to fulfilling all federal requirements as stated in the Rehabilitation Act of 1973, the Americans with Disabilities Act of 1990, and the American with Disabilities Amendments Act (ADAAA) of 2008. Accommodations are available to students who have documented disabilities. Students who request accommodations must register with the Disability Services Office (Main Campus: 501-812-2738 or South Campus: 501-812-2862) and must provide current and relevant documentation.

Students requesting accommodations should inform the instructor at the beginning of the course or as soon as accommodations are approved. It is the student’s responsibility to provide their Accommodation Letter to the instructor. Accommodations are not retroactive and will only be provided once your instructor receives the Accommodation Letter.

**Student Code of Conduct**

All students are expected to abide by the UA-PTC Student Code of Conduct. For the full Student Code of Conduct, access the most current version of the UA-PTC Academic Catalog.

[http://uaptc.azurewebsites.net/docs/default-source/course-catalog/2017-18-academic-catalog.pdf?sfvrsn=a08a3038_2](http://uaptc.azurewebsites.net/docs/default-source/course-catalog/2017-18-academic-catalog.pdf?sfvrsn=a08a3038_2)

**Sexual Misconduct**

No person at Pulaski Technical College will, on the basis of gender, be excluded from participation in, be denied benefits of, or be subjected to sex discrimination, sexual harassment or sexual misconduct under any education program or activity. All college administrative policies and procedures regarding sex discrimination, sexual harassment, and sexual misconduct are in compliance with Title IX. Students who feel they are victims of sexual misconduct should contact the UA-PTC Title IX Deputy Coordinator for Students:

Michelle Anderson, Director of Student Life and Leadership  
Campus Center Building Room 216  
501-812-2756  
manderson@uaptc.edu

**Course Evaluations**

Students may be asked to evaluate their instructor and course near the end of the semester. These student evaluations are very important to the improvement in the quality of instruction.
and course materials. All results are anonymous and shared with the faculty only after the semester is over and grades have been posted.

**Information Literacy**

UA-PTC is committed to the Information Literacy Competency Standards for Higher Education as established by the Association of College and Research Libraries and endorsed by the National Forum on Information Literacy. Therefore, all courses will incorporate an information literacy component so that, by graduation, all students will be able to recognize the need for information, then locate, evaluate, synthesize, and communicate information in an ethical manner. Information literacy encompasses critical thinking, research, media, technology, health, business, and visual literacy skills to produce lifelong learners who can make informed decisions in the workplace and in their personal lives.

**Tentative Course Schedule**

<table>
<thead>
<tr>
<th>Week</th>
<th>Assignment/Activity</th>
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</table>
| 1    | Lecture – *Syllabus*  
Hmwk assigned: Syllabus Quiz (blackboard) and contract  
Lab Session – *No Labs* |
| 2    | Lecture – (CH 1)  
1.2 Physical Quantities and Units  
1.3 Accuracy, Precision, and Significant Figures  
Hmwk assigned: CH 1 homework problems  
Hmwk due: Syllabus Quiz, and contract  
Lab Session – *Graphical Analysis* |
| 3    | Lecture – (CH 1)  
Experimental error, Density  
Lecture –(CH1)  
Review for Exam 1  
Hmwk due: CH 1 worksheet  
Lab Session – *Laboratory Measurements* |
| 4    | **Exam 1 (CH 1) January 29th**  
Lecture –(CH 2)  
2.1 Early Atomic Theory  
2.2 Evolution of Atomic Theory  
Lab Session – *Identity of a Liquid* |
<table>
<thead>
<tr>
<th>Week</th>
<th>Content</th>
</tr>
</thead>
</table>
| 5    | Lecture – (CH 2)  
2.3 Atomic Structure and Symbols  
3.6 The Periodic Table  
Lecture – (CH 2)  
3.1 Electromagnetic Energy *"Line Spectra" at the bottom*  
3.4 Electron Configuration  
Lab Session – **Percentage composition of a solution** |
| 6    | Lecture- (CH 3)  
3.7 Molecular and Ionic Compounds  
4.1 Ionic Bonding  
4.2 Covalent Bonding  
4.3 Chemical Nomenclature  
2.4 Chemical formulas (mole section)  
4.4 Lewis Symbols  
6.1 Formula Mass  
Lab Session – **Chemical Reactions** |
| 7    | Lecture – (CH 3)  
6.2 Determining Empirical and Molecular Formula  
6.3 Molarity  
6.4 Mass and volume percentage  
7.1 Balancing Equations  
7.2 Classifying Chemical Reactions  
Review for Exam  
Lab Session – **Mole Calculations** |
| 8    | Exam 2 (CH 2&3) Tuesday Feb. 26th  
Lecture- (CH 4)  
2.2 Vectors, Scalars, and Coordinate Systems  
2.3 Time, Velocity, and Speed |
<table>
<thead>
<tr>
<th>Week</th>
<th>Lectures</th>
<th>Lab Sessions</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.4</td>
<td>Acceleration</td>
<td>Analyzing Motion</td>
</tr>
<tr>
<td>9</td>
<td>Lecture – (CH 4)</td>
<td>2.5 Motion Equations for Constant Acceleration in One Dimension</td>
</tr>
<tr>
<td>11</td>
<td>Spring Break</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Lecture – (CH 5)</td>
<td>6.5 Newton’s Universal Law of Gravitation</td>
</tr>
<tr>
<td>13</td>
<td>Lecture (CH 6)</td>
<td></td>
</tr>
<tr>
<td>Day</td>
<td>Topics</td>
<td></td>
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<tr>
<td>8.2</td>
<td>Impulse</td>
<td></td>
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<tr>
<td>7.1</td>
<td>Work: The Scientific Definition</td>
<td></td>
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<tr>
<td>7.2</td>
<td>Kinetic Energy and the Work-Energy Theorem</td>
<td></td>
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<tr>
<td>7.3</td>
<td>Gravitational Potential Energy</td>
<td></td>
</tr>
<tr>
<td>7.6</td>
<td>Conservation of Energy</td>
<td></td>
</tr>
<tr>
<td>7.7</td>
<td>Power</td>
<td></td>
</tr>
<tr>
<td>7.</td>
<td>Lecture- Review for Exam 3 (CH 4, 5, &amp; 6)</td>
<td></td>
</tr>
</tbody>
</table>

Lab Session – Conservation of Momentum

<table>
<thead>
<tr>
<th>Day</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exam 3 (CH 4, 5 &amp; 6) – Tuesday April 9th</td>
<td></td>
</tr>
<tr>
<td>Lecture (CH 7)</td>
<td></td>
</tr>
<tr>
<td>13.1</td>
<td>Temperature</td>
</tr>
<tr>
<td>13.3</td>
<td>The Ideal Gas Law</td>
</tr>
<tr>
<td>14.1</td>
<td>Heat</td>
</tr>
<tr>
<td>14.2</td>
<td>Temperature Change and Heat Capacity</td>
</tr>
<tr>
<td>14.3</td>
<td>Phase Change and Latent Heat</td>
</tr>
<tr>
<td>14.4</td>
<td>Heat Transfer Methods</td>
</tr>
</tbody>
</table>

Lab Session – Conservation of Energy

<table>
<thead>
<tr>
<th>Day</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lecture (CH 8)</td>
<td></td>
</tr>
<tr>
<td>18.1</td>
<td>Static Electricity and Charge: Conservation of Charge</td>
</tr>
<tr>
<td>18.2</td>
<td>Conductors and Insulators</td>
</tr>
<tr>
<td>18.5</td>
<td>Electric Field Lines: Multiple Charges</td>
</tr>
<tr>
<td>18.3</td>
<td>Coulomb’s Law</td>
</tr>
<tr>
<td>22.1</td>
<td>Magnets</td>
</tr>
<tr>
<td>22.3</td>
<td>Magnetic Fields and Magnetic Field Lines</td>
</tr>
<tr>
<td>22.4</td>
<td>Magnetic Field Strength: Force on a Moving Charge in a Magnetic Field</td>
</tr>
<tr>
<td>22.9</td>
<td>Magnetic Fields Produced by Currents: Ampere’s Law</td>
</tr>
<tr>
<td>23.2</td>
<td>Faraday’s Law of Induction: Lenz’s Law</td>
</tr>
</tbody>
</table>
|   | 20.1 Current 20.2 Ohm’s Law: Resistance and Simple Circuits  
|   | 20.4 Electric Power and Energy  
|   | 21.1 Resistors in Series and Parallel  
|   | Lab Session – **Induction and Electromagnets**  
| 16 | Lecture (CH 8)  
|   | Lecture Review for Exam 4 (CH 7 & 8)  
|   | Lab session: **Magnetism and Electrical Circuits**  
| 17 | **Exam 4 (Chapters 7 & 8) Tuesday April 30th**  
|   | Lecture - Review for Final  
| 18 | **Final Exam** (Comprehensive) – May 7th 10:30-12:30  

**Final Exam Schedule: May 7th 10:30-12:30**

Disclaimer: This schedule is a guide for the semester. The instructor reserves the right to amend the schedule as necessary.
Course Agreement Form

Read, complete, and return to instructor:

I have read the course syllabus for Diane Querns Fundamental Chemistry I class at Pulaski Technical College, and I understand its content. I also understand the rules for the class, and I will follow and abide by these rules, including those relating to attendance, assignments, grading criteria, plagiarism, and behavior.

______________________________
Semester

______________________________
Date

______________________________
Print name

______________________________
Signature

______________________________
UA-UA-PTC Email address

______________________________
Telephone