

During the Fall/Spring semesters **lectures WILL meet during the 1st week** but the recitations & laboratories WILL NOT. The 1<sup>st</sup> meeting of the recitations & laboratories will be during the 2nd week of the semester.

**DISCLAIMER:**

Students are required to read and understand this document. The policies contained will help you survive the course and maximize your grade.

**COURSE:**

|             |                     |                           |             |                      |                           |
|-------------|---------------------|---------------------------|-------------|----------------------|---------------------------|
| <b>C071</b> | General Chemistry I | <i>Lecture/Recitation</i> | <b>C072</b> | General Chemistry II | <i>Lecture/Recitation</i> |
| <b>C073</b> | General Chemistry I | <i>Laboratory</i>         | <b>C074</b> | General Chemistry II | <i>Laboratory</i>         |

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**PRE-REQUISITES:**

[http://www.temple.edu/bulletin/policies/policies\\_part4.htm#prerequisites](http://www.temple.edu/bulletin/policies/policies_part4.htm#prerequisites)

Students are assumed to have a good understanding of high school algebra or have been placed into **MATH C073** or above. Students unsure of their background should consider the Chemistry 51-54 series and/or MATH C073 as a review before taking General Chemistry I.

**CHEM C071 IS A CO-REQUISITE FOR CHEM C073 & PRE-REQUISITE FOR CHEM C072. CHEM C072 IS A CO-REQUISITE FOR C074.**

Co-requisites courses must be taken either concurrently or completed previously with a **grade of "C-" or better**. Pre-requisites courses must have been completed previously with a **grade of "C-" or better**. Although it is common to take the lecture & laboratory (C071/C073 or C072/C074) concurrently, students may, as a result of credit-load, scheduling, or availability; take the laboratory portion of the course in a subsequent semester if the lecture is passed with a "C-" or better.

**STUDENTS THAT DO NOT MEET THESE REQUISITES MAY NOT RECEIVE A GRADE AT THE END OF THE SEMESTER.**

**REGISTRATION:**

Students may register for class at their college advising offices, or via OwlNet ([www.owlnet.temple.edu](http://www.owlnet.temple.edu)) or the Diamond Line (215.204.2525) with their 4-digit PIN. Open/Close status is best viewed via TU Courses ([www.temple.edu/TUcourses](http://www.temple.edu/TUcourses)). Students should also refer to sections: Pre-Requisites, Green Cards, & Drop/Add.

Please note that although all courses within the program are offered during the Fall & Spring semesters, there is reduced seating in "off sequence trailer courses".

**GREEN CARDS (CLOSED SECTIONS):**

Closed section override cards (*a.k.a. Green Cards*) will only be issued at the first class meeting of the respective RECITATION or LABORATORY (not Lecture), at which time the *true enrollment* of the section may be assessed.

Students must attend their **Rec** and/or **Lab** section(s) of choice during the 2<sup>nd</sup> week of the semester (Fall/Spring) in order to compete for a green card via a lottery system. It is recommended that students have 2<sup>nd</sup>/3<sup>rd</sup> choice sections to maximize the likelihood of taking the class this semester. (See Pre-Requisites)

It is strongly recommended that students requiring these courses or graduating seniors reevaluate their schedule in order to register for an open section. Students should check course openings frequently (daily - see Registration) particularly following exams, wash-out (billing) dates, and during the entire first week of the semester as students drop the course or alter their schedules and sections reopen.

**DROP/ADD:**

Also see Pre-Requisites, Green Cards, & Green Cards (Closed Sections). During the 1<sup>st</sup> week of the Fall/Spring semester (*Days 1 & 2 for Summer*), students may still register, **without coordinator signature, for any OPEN Lec/Rec or Lab sections**. During the 2<sup>nd</sup> week of the Fall/Spring semester (*Day 3 for Summer*), students may only register for OPEN Lec/Rec sections with coordinator permission.

**WITHDRAWALS: TU Policy (02.10.14)**

[http://www.temple.edu/bulletin/policies/policies\\_part5.htm#withdrawal](http://www.temple.edu/bulletin/policies/policies_part5.htm#withdrawal)

During the first two weeks of the fall or spring semester or summer sessions, students may withdraw from a course with no record of the class appearing on the transcript. In weeks three through nine of the fall or spring semester, or during weeks three and four of summer sessions, the student may withdraw with advisor's permission – there is no need to seek out an instructor's signature.

The course will be recorded on the transcript with the notation of "W," indicating that the student withdrew. After week nine of the fall or spring semester, or week four of summer sessions, students may not withdraw from courses and will receive a letter grade.

A student may withdraw from no more than five courses during the duration of his/her studies to earn a bachelor's degree. A student may not withdraw from the same course more than once.

**TEXT:**

The required material for this program may be obtained from the campus bookstore (<http://temple.bkstore.com/>, 215.204.7385) and includes:

**Chemistry – Matter and its Changes**, John Wiley & Sons  
*Chem C071 4<sup>th</sup> Edition*                      *Chem C072 3<sup>d</sup> Edition*

**General Chemistry I & II Laboratory Manual** by Schwartz/Titus, John Wiley & Sons  
*The lab manual is included with the new textbook at no additional cost.*

**"Red Safety Books"** – General Guidelines for CST Labs, *TU Copy Center (Bright Hall)*

A Scientific calculator (with log and exponential functions) is required; a TI 30X is recommended. However, it is your responsibility to learn how to use the calculator & keep it in good working condition. Sharing of calculators will not be permitted during exams or quizzes.

Students are not permitted to use PDAs, cell phones, pagers or other electronics during exams & quizzes. Students that use such devices will earn a zero on the assignment and may receive an "F" in the course.

**INCOMPLETE CONTRACTS: TU Policy (02.10.13)** [http://www.temple.edu/bulletin/policies/policies\\_part3.htm#incomp\\_coursework](http://www.temple.edu/bulletin/policies/policies_part3.htm#incomp_coursework)

The grade of incomplete "I" is an institutional procedure and must be completed in its entirety with the coordinator in conjunction with the lecture instructor. Failure to notify the coordinator, who reports all grades to the University, may result in a grade of "F" being reported.

An "I" (Incomplete) may be filed (1) only if the student has completed the majority of the work of the course at a passing level, (2) only if the student's work for the course was not completed for reasons beyond the student's control, (3) and only once a signed, written agreement with the instructor is filed with the department regarding the nature of the work to be completed, the means by which the final grade will be determined, and the date by which the work must be completed (no greater than 1 year, commonly 6 months).

It is the student's responsibility to make contact with the instructor/coordinator to fulfill the contract.

**ATTENDANCE:**

By registering for this class you are making a commitment to attend, which includes arriving on time and remaining for the duration of the class. If you are unable to fulfill these commitments please drop the course.

In the event you are absent, you should make contact with the respective instructor via email ASAP (no later than 48 hours). Any absence, including hospitalization, bereavement, legal, etc. involving a graded assignment (exam, quiz, experiment, etc.) must be reported promptly, and when applicable, prior to the date of absence, to the instructor via email.

Comprehensive documentation is required for consideration for make-up, see Make-up. Without documentation a score of zero will be reported.

For any absence of three consecutive class meetings, the student must meet with their academic advisor to develop a "recovery plan" and/or discuss withdrawal from the course in conjunction with the coordinator.

- **LECTURE**

It is your lecture instructor's prerogative to take attendance in lecture and/or recitation and use it in the determination of your grade. See Make-up with regard to missed lecture exams.

- **RECITATION**

It is to your benefit that you attend the 50 min/week recitation where homework will be reviewed and quizzes may be administered. Attendance is mandatory **to your registered section** during quizzes. Students that are absent, late, or attend an alternate section will earn a score of zero. There are NO MAKE-UP QUIZZES.

It is the student's responsibility to take note of any announced (in lecture or recitation) schedule changes and their implications to graded work.

- **LABORATORY**

Students are required to attend their registered laboratory section at the scheduled time. Students that arrive to class more than 15 minutes late or after the lab quiz will not be admitted. Students that are late, absent, or otherwise not admitted to lab are permitted to make-up a maximum of two (2) experiments according to the make-up procedure, See Make-up. Communication with your instructor as indicated above is also required.

In addition, although absent, your lab report is due on the date specified and may begin accruing late points (-10 pts/day) if arrangements are not made for prompt submission. See Late Work.

### **INCLEMENT WEATHER:**

The Universities class cancellation numbers are **101** for day classes & **2101** for evening classes, starting after 4 PM. The most accurate and up-to-date information can be obtained directly from the University ([215.204.1975](tel:215.204.1975), [WRTI](tel:WRTI), [90.1 FM](tel:90.1FM), or <http://www.temple.edu>). In the event of a cancellation it should be assumed that any exams or graded work will be due at the next class meeting unless otherwise stated.

### **MAKE-UP:**

Also see Attendance. Make-ups are permitted based on the portion of the class missed.

- **LECTURE**

Make-up LECTURE EXAMS will only be offered in the event that an absence is beyond the student's control & comprehensive documentation is provided. The student must make reasonable efforts to contact with your lecture instructor (see Office Hours), ideally within 24 hours.

As a make-up exam may affect many students, the lecturer will, with due consideration of all students, set the make-up exam date, time, & location. If a student does not provide comprehensive documentation, valid reason, or failed to make timely contact with the lecturer no make-up exam will be offered.

- **RECITATION**

Regardless of the circumstances surrounding your absence during a recitation quizzes, there will be NO MAKE-UP QUIZZES; a score of zero will be recorded. However, the lowest two (2) quiz scores will be dropped from the calculation of your grade, see Grading.

- **LABORATORY**

Also see Late Work. Students that are late, absent, or otherwise not admitted into lab are permitted to make-up a maximum of two (2) experiments according to the make-up procedure as outlined in the beginning of the lab manual 'MAKE-UP REQUEST FORM' and the program webpage.

Students are required to make contact with their laboratory instructor per the Attendance section of the syllabus; failure to do so may result in rejection of your lab report when submitted.

Note that experiments are conducted on a weekly basis (generally *Mon-Fri* or *Tue-Mon*) and the opportunity to make up an experiment expires at the end of the week. *For a listing of laboratory meetings see TU Courses ([www.temple.edu/TUcourses](http://www.temple.edu/TUcourses))*. Due to limited seating it may not be possible to accommodate all make-up students during exceptionally popular times, particularly at the end of the week. It is the student's responsibility to make arrangements to make-up the experiment and complete all of the make-up documentation, including obtaining the signature of the make-up instructor. If the student is unable to make-up the experiment (including being turned away for lack of space), does not have all of the make-up documentation complete, or has already consumed their two make-up attempts; a zero will be recorded.

In the event a student is absent for a laboratory exam they will be bound by the parameters of a LECTURE EXAM MAKE-UP as described above, except that contact must be made with the laboratory instructor (see Office Hours), ideally within 24 hours.



**GRADING:**

Grades will be issued separately for the lecture and laboratory courses according to the guidelines below but may be altered by your lecture instructor per information disclosed during the 1<sup>st</sup> class meeting (see [Attendance & Homework](#)).

| <u>LECTURE/RECITATION</u>         |                                 | <u>LABORATORY</u> |                         |
|-----------------------------------|---------------------------------|-------------------|-------------------------|
| Lecture Exams                     | 3 @ 200 pts each                | Lab Reports       | 10 @ 60 pts each        |
| Lecture Final                     | 1 @ 300 pts                     |                   |                         |
| <u>Recitation and pop Quizzes</u> | <u>Best 4 out of 6 @ 25 pts</u> | <u>Lab Exams</u>  | <u>2 @ 200 pts each</u> |
| Total                             | 1000 pts                        | Total             | 1000 pts                |

All exams should be considered cumulative unless otherwise noted. THE CHEM C072 FINAL EXAM MAY BE AN ALL INCLUSIVE EXAM COVERING MATERIAL FROM THE ENTIRE YEAR OF GENERAL CHEMISTRY (CHEM C071 & C072).

Note that grades for the lecture and laboratory are calculated independent of each other, however it is expected that students that perform well in one course generally do well in the other as they learn and reinforce concepts but scores earned in one class will not be used in the other.

If graded work is submitted on time and in the proper format, every effort will be made to return it the following week. It is the student's responsibility to submit work directly to their instructor (see [Late Work](#)) and to collect it when returned. Your instructor is not responsible for uncollected work after 1 week.

See the [Course Schedule](#) for announced exams, quizzes, and experiments. All graded assignments will be administered during the week indicated. On occasion it may be necessary to alter the course schedule due to [Inclement Weather](#) or for instructional purposes. In such an event it is the student's responsibility to take note of the announced change.

Students should keep a record of all scores returned and confirm scores with their instructor at the end of the semester. In the event of a discrepancy (see [Grading Disputes](#)) the score will defer to that recorded in the grade book unless the graded work can be produced.

In the event you are absent for a graded assignment see [Attendance & Make-up](#), or if you will be submitting a laboratory report late see [Late Work](#).

**GRADING DISPUTES:**

In the event of a dispute over the grading of an assignment, the student must contact their instructor within two weeks of the assignment being returned to resolve the issue. If the dispute is still unresolved feel free to contact the coordinator (see [Office Hours](#)). After the two week window your instructor has no obligation to consider grade disputes.

Students should also confirm scores with their instructor before the last class meeting to assure there are no transcription errors. Once grades are submitted to the coordinator, scores become final.

In the event of a dispute of the course letter grade, the student must make contact with the coordinator (see [Office Hours](#)) within 6 months of the close of the semester. Grade changes must be approved by the Dean's office and are warranted only in the event there was an error in the calculation of the grade.

**CHEATING:**

Students are expected to uphold the highest levels of academic honesty including those working in laboratory pairs. All graded work excluding laboratory experiments are to be completed individually and following the parameters of the assignment. During the collaborative efforts of a lab experiment each student is expected to perform an equal amount of work and each student is responsible for writing their own individual lab report. Although collaboration and discussion are encouraged, reports are to be written in the student's own words.

Students that do not uphold the highest levels of academic honesty will be failed in the course and their names will be reported to the Dean's office for disciplinary action.

**HELP:**

Please take full advantage of all of the academic support services available at Temple University. These include your lecture, recitation, and lab instructors' office hours (see [Office Hours](#)) and the Math & Science Resource Center (MSRC, 17 Curtis Hall 215-204-8466, <http://www.temple.edu/msrc>). (Also see [Disability](#))

**OFFICE HOURS:**

As you will be in contact with your instructors frequently through the semester, particularly for laboratory and recitation, please use following to help you keep all of the information organized. Please write in your instructor information along with your locker combination below. (Also see <http://www.temple.edu/GenChem>)

Each of your instructors will hold a minimum of two hour of office hours each week. This is your time to address grading concerns, ask questions, or otherwise have contact with your instructor. Please limit your visits to posted office hour times or make an appointment with your instructor. (Also see <http://www.chem.temple.edu/faculty.html> for additional faculty contact information.)

| <b><u>Name</u></b> | <b><u>Office</u></b> | <b><u>Phone</u></b> | <b><u>Email</u></b>  | <b><u>Office Hours</u></b>        |
|--------------------|----------------------|---------------------|--|-----------------------------------|
| Dr James Varnum    | Cottage 7A           |                     | <a href="mailto:tua00154@temple.edu">tua00154@temple.edu</a> | To be announced<br>On line: _____ |
| Lab TA _____       | _____                | _____               | _____  | _____                             |

Additional class times taught by your TA: \_\_\_\_\_

Locker # \_\_\_\_\_ Combination \_\_\_\_\_

Note that student may be required to share lockers, so please do not keep personal items in your locker.

**DISABILITY:**

Persons with disabilities are entitled to reasonable accommodations and academic adjustments under Section 504 of the Rehabilitation Act of 1973. Student seeking additional information should contact Disability Resources & Services (Ambler Campus). Services include: note transcription, large print media, alternative testing environments, etc. Students utilizing DRS services must submit the "blue" alternative testing form to their instructor two weeks prior to the exam/quiz date.

Only students with proper DRS paperwork may utilize alternative procedures.

**HOMEWORK (RECITATION):**

It is the lecturer's prerogative to take attendance in recitation and to grade homework to be used in the determining of the lecture grade. Homework is expected to be completed and ready for review at the START of the recitation period. Material submitted after the start of class may be considered late at the TA's discretion.

See [Lab Preparation](#) regarding laboratory homework.

**LATE WORK:**

Late work should be hand delivered to your instructor. If you place your work in a mailbox, under an office door, or give it to a third party, we will not be held responsible for it becoming lost. If unable to hand deliver your work, please make a photocopy before submission and you must email your instructor to check their box. Under no circumstances should work be placed in your lecture instructor's or coordinator's mailbox. All late work will be assessed a **10 point deduction per day**.

Although absent graded assignments are still due on the date prescribed, see [Attendance](#).

**LAB PREPARATION:**

Students taking the laboratory are expected to have **read, outlined, and understand** the day's experiment as well as have completed the pre-lab exercise BEFORE coming to class. Students who are not prepared, at instructor's discursion, may be barred from the lab but may make-up the experiment (see [Make-Up](#)). This requirement is for your safety as well as the safety of your fellow students.

If asked to leave the laboratory, for any reason, by your instructor, please do so.

Upon arrive to lab and BEFORE the lab quiz the pre-laboratory exercise and lab report for the previous experiment are due. Submission after the lab exam will be considered late.

**LAB SAFETY:**

Students are required to conduct themselves in a professional and safe manner as outlined in the safety release form that you must sign and file with your instructor, before permitted to work in the lab. Students that are acting unprofessionally or unsafely will be ejected from the lab **without** the possibility of a make-up.

Although the majority of the substances used in this course are no more dangerous than what is found under your kitchen sink, in order to comply with Federal Laws and OSHA regulations, students are required to come to class dressed properly.

- (1) Shorts and mini-skirts are only permitted in the lab if you wear a full-length lab coat or apron at all times. (available through the HSC Bookstore: [215.707.3157](http://www.temple.edu/assistance/udc/coc.htm), [Student Faculty Center 1st Floor – Broad & Ontario Sts](http://www.temple.edu/assistance/udc/coc.htm))
- (2) Sandals or open toe shoe are not permitted in the lab at any time.
- (3) Students must ABSOLUTELY have a pair of **ANSI Z87.1** approved GOGGLES when working in the lab.

Students that come to class dressed improperly or without goggles will not be permitted to work in the lab but may make up the experiment according to the Make-Up procedure. If asked to leave the laboratory, for any reason, by your instructor, please do so.

In addition, the hygiene of lab rooms, balances & hoods are the responsibility of the entire class, and if left in an unsafe safe condition the entire class will have their grade reduced.

### **CODE OF CONDUCT:**

<http://www.temple.edu/assistance/udc/coc.htm>

Temple University is a community of scholars in which freedom of inquiry and expression are valued. Important aspects of attending the University as a student are having respect for the rights of others in the community, conducting one's self in a manner that is compatible with the University's mission and taking responsibility for one's actions. In addition to exhibiting appropriate maturity and self control, members of the University community are expected to conduct themselves in a manner in which they neither break laws nor cause mental, physical, or emotional harm to others.

To fulfill its functions of promoting and disseminating knowledge, the University has authority and responsibility for maintaining order and for taking appropriate action, including, without limitation, exclusion of those who disrupt the educational process. A complete copy of the Student Code of Conduct may be found at the **Student Assistance Center** (*A6 Student Center, 215.204.8531, <http://www.temple.edu/assistance/>*).

| <b>Fall Semester 2005</b>                                    |   |
|--|---|
| Fall semester begins   | <b>Monday, August 29</b>                      |
| Labor Day holiday  | Sunday, September 4 - Monday, September 5     |
| Last day to drop a course                                    | <b>Monday, September 12</b>                   |
| Deadline for application for January graduation              | Monday, October 17                            |
| Registration begins (Spring Semester)                        | Monday, October 17                            |
| Last day to withdraw from graduate and undergraduate courses | Monday, October 31                            |
| <b>*CALENDAR ADJUSTMENT</b>                                  | Tuesday, November 22 - Wednesday, November 23 |
| Thanksgiving recess  | Thursday, November 24 - Sunday, November 27   |
| Classes resume   | Monday, November 28                           |
| Weekday classes end  | Wednesday, December 7                         |
| Study days   | Thursday, December 8 - Friday, December 9     |
| Weekend classes end  | Saturday, December 10                         |
| Final Examinations   | Monday, December 12 - Saturday, December 17   |
| Winter recess begins   | Saturday, December 17 at 10:00 pm             |

[\\*TUESDAY, NOVEMBER 22 - FOLLOW YOUR THURSDAY CLASS SCHEDULE](#)  
[WEDNESDAY, NOVEMBER 23 - FOLLOW YOUR FRIDAY CLASS SCHEDULE](#)

**CHAPTER LISTING** (4<sup>th</sup> Edition of Brady-Sense, CHEM C071/C073)

|  |   |
|--|---|
| Ch 1: Atoms & Elements   | 10, 11, 13, 20, 22, 23, 24, 25, 26, 29, 30, 34, 36, 37, 40, 42, 44, 45, 47, 50, 52, 55, 58, 59, 61, 62, 64, 65, 66, 68, 70, 74, 76, 80, 82  |
| Ch2: Compounds & Chem Rxn  | 2, 4, 5, 6, 7, 9, 10, 11, 14, 16, 17, 20, 22, 23, 26, 28, 29, 32, 33, 34, 39, 42, 43, 44, 48, 49, 51, 53, 55, 59, 60, 62, 65, 71, 73, 75, 77, 79, 81, 83, 85, 89, 93, 95, 97, 99, 101             |
| Ch 3: Measurement  | 1, 5, 6, 7, 8, 10, 11, 12, 13, 15, 18, 20, 22, 26, 28, 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 56, 58, 62, 64, 68, 70, 72, 74, 78, 84, 94   |
| Ch 4: The Mole   | 2, 4, 5, 6, 9, 14, 16, 19, 22, 24, 26, 28, 30, 32, 34, 36, 42, 44, 52, 54, 58, 62, 64, 68, 72, 76, 80, 84, 88, 92, 94, 96, 100, 104, 106, 110, 114, 116, 120, 122                                 |
| <b>Test of Fact &amp; Concept (Pages T1 &amp; T2) – Note Required but Strongly Recommended</b> |   |
| Ch 5: Rxn Between Ions   | 1, 2, 7, 8, 9, 11, 13, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 37, 41, 43, 45, 48, 50, 53, 54, 55, 57, 59, 60, 62, 66, 70, 76, 78, 80, 82, 84, 88, 90, 96, 98, 102, 104, 108, 112, 118, 124, 130, |
| Ch 6: REDOX  | 1, 8, 9, 12, 15, 20, 22, 25, 27, 29, 35, 37, 39, 43, 45, 51, 57, 59, 63, 67, 69, 71, 77, 81   |
| Ch 7: Energy & Chem Change   | 3, 4, 7, 10, 12, 14, 18, 19, 43, 49, 53, 57, 65, 67, 69, 73, 75, 79, 83, 91, 93, 97, 101  |
| <b>Test of Fact &amp; Concept (Pages T3 &amp; T4) – Note Required but Strongly Recommended</b> |   |
| Ch 8: Quantum Mechanics  | 1, 3, 4, 7, 8, 16, 24, 34, 41, 50, 58, 61, 63, 68, 72, 73, 77, 85, 87, 91, 95, 99, 105, 109, 111, 115, 121, 125, 129, 131, 133  |
| Ch 9: Chem Bonding – General   | 2, 3, 5, 9, 12, 13, 15, 22, 32, 37, 39, 46, 55, 56, 68, 70, 76, 78, 82, 84, 88, 90, 92, 94, 98, 102, 108, 110, 114, 115, 116, 122,  |
| Ch 10: Chem Bonding – Structure  | 1, 2, 3, 7, 10, 23, 24, 35, 42, 54, 56, 58, 60, 66, 68, 70, 72, 76, 80, 82, 86, 88, 90, 97  |
| <b>Test of Fact &amp; Concept (Pages T5 &amp; T6) – Note Required but Strongly Recommended</b> |   |

(3<sup>rd</sup> Edition of Brady, CHEM C072/C074)**EXPERIMENT LISTING**

|                 |  |                   |  |
|-----------------|--|-------------------|--|
| <b>M&amp;D</b>  | Measurement and Density                    | <b>Sol'n Prep</b> | Solution Preparation & Beer's Law        |
| <b>Hydrate</b>  | The Empirical Formula of Select Hydrates   | <b>VP</b>         | The Vapor Pressure of Water              |
| <b>EF</b>       | Empirical Formula & Stoichiometry          | <b>REDOX-Titr</b> | Oxidation-Reduction Titration            |
| <b>RS</b>       | Reactions and Solubility                   | <b>Rate</b>       | Determination of a Rate Law              |
| <b>Vinegar</b>  | Titration Vinegar - An Exercise in Quality | <b>Keq</b>        | Determination of an Equilibrium Constant |
| Control         |  | <b>A-B Ind</b>    | Acid-Base Indicators                     |
| <b>MW</b>       | Titration of an Unknown Acid               | <b>A-B Titr.</b>  | Acid-Base Titrations                     |
| <b>Redox</b>    | REDOX Reactions - The activity Series      | <b>Ksp</b>        | Solubility Product & Common Ion Effect   |
| <b>Heat-M</b>   | Specific Heat of Metals                    | <b>Ecell</b>      | Electrochemistry: The Zn-Cu Cell         |
| <b>Heat Rxn</b> | Heats of Reaction and Solvation            | <b>Ion</b>        | Synthesis of a Complex Ion               |
| <b>Rxn Cu</b>   | Reactions of Copper                        |                   |  |