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Course Descriptions & Prerequisites: This syllabus pertains to the courses offered within the General Chemistry Program specifically **CHEM C071 & C073** at the Ambler campus of Temple University, addition program courses include:

- **C071. Lecture/Recitation, General Chemistry I (3 s.h.) F S SS. Core: SA.**

Prerequisite: High School Chemistry. Mathematics placement into C074, Mathematics C073 with a grade of C or better or equivalent transfer. Credit is not permitted for both Chemistry C061 and Chemistry C071. Chemistry C073 is normally taken concurrently.

The first semester of chemistry for science majors, pre-professional students, and others in science related fields. A quantitative introduction to atomic and molecular structure, states of matter, basic thermodynamics, and solutions. **Mode:** Three hours lecture and one hour recitation per week.

Students that do not meet the prerequisites for CHEM C071 may want to consider CHEM 55.

- **C072. Lecture/Recitation, General Chemistry II (3 s.h.) F S SS. Core: SB.**

Prerequisite: Chemistry C071. Chemistry C074 normally taken concurrently.

The second semester of chemistry for science majors, pre-professional students, and others in science related fields. An introduction to thermodynamics, equilibrium, kinetics, electrochemistry, and descriptive chemistry.

Mode: Three hours lecture and one hour recitation per week..

- **C073. Laboratory I, General Chemistry (1 s.h.) F S SS. Core: SA. \$.**

Co-Requisite: Chemistry C071.

An introduction to experimental chemistry, including the determination of molecular weights, calorimetry, and fundamental analytical techniques.

Mode: Three hours laboratory per week.

- **C074. Laboratory II, General Chemistry (1 s.h.) F S SS. Core: SB. \$.**

Prerequisite: Chemistry C073. *Co-Requisite:* Chemistry C072.

Experiments in equilibrium, kinetics, acid-base and oxidation reduction titrations, electrochemistry, and synthesis of metal complexes.

Mode: Three hours laboratory per week.

Registration: Students should register for courses through their college academic advising office, for contact information for the various advising office and other registration information see: (http://www.temple.edu/registrar/registration_info.html). Students able to do so should register for course via OWLnet (<http://owl.net.temple.edu>) or the Diamond Line (215.204.2525).

Students may check course offerings via the TU Courses webpage (www.temple.edu/TUcourses).

Also see: Drop/Add, Withdrawal, Academic Advising (http://www.temple.edu/registrar/registration_info.html)

Drop/Add: Students may not add courses or change course sections after the first week of fall and spring semesters or the third day of the summer sessions.

Dropping the course within the first two weeks of the fall and spring semesters or the summer sessions results in the deletion of the class from the student's roster. After this time you may be permitted to withdrawal from the course (see below). A charge maybe assessed for schedule revision after the first week of classes during the fall and spring semesters and after the first two days of the summer sessions.

Also see: Registration

Withdrawal: During the first two weeks of the fall or spring semester or summer sessions, students may drop the 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 the adviser's permission [*You do not need your instructor's permission or 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.

Note: No student may withdraw from 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.

Also see: Registration, Incomplete, Academic Advising (http://www.temple.edu/registrar/registration_info.html)

Required Materials: The required text(s) for these course may be obtain from the University Campus Bookstore (<http://temple.bkstore.com/>, 215.204.7385) and Zavelle's Bookstore (215.763.1514, 1520 N. Broad).

CHEM 71 & 72: **Chemistry – Matter and its Changes** by Brady, John Wiley & Sons, 4th Edition.

CHEM 73 & 74: **General Chemistry Laboratory Manual** by Schwartz/Titus, John Wiley & Sons

“Red Safety Book” – General Guidelines for CST labs (*available from TU Copy Center, 601 Conwell Hall*)

Scientific calculators (with log and exponential functions) are required. However, it is the student's responsibility to learn how to use their calculator and keep it in good working order. The sharing of calculators will not be permitted during exams or quizzes. **Certain graphing calculators are not allowed on tests.** The current list of prohibited graphing calculators will be given in lecture.

Incomplete Contracts: The issuance of a grade of “I” (incomplete) is a formal process requiring a signed contract between the student & instructor and approved by the Dean's office. To be eligible for an incomplete you must satisfy ALL the following criteria: (1) Currently have a passing grade in the course, (2) completed more than 50% of the coursework, (3) have documentation supporting the need for an incomplete for reasons beyond your control, and (4) sign the incomplete contract denoting required coursework and default grade.

Note: All prior coursework score will be used in the calculation of the student's grade. An incomplete does not permit the student to retake the course.

Also see: Withdrawals, UG Bulletin (<http://www.temple.edu/bulletin>)

Attendance: Attendance requirements vary depending on the portion of the course.

LECTURE: If absent consult the syllabus, a classmates, and/or Blackboard for material covered and announcements.

Due to the number of students in lecture you should not contact your lecturer inquiring about missed work. If you are absent for a lecture exam or lecture quiz, please see MAKE-UPS below.

RECITATION: If absent consult the syllabus, a classmates, and/or Blackboard for material covered and announcements, especially announcements about scheduling changes for quizzes. You should have your recitation instructor's contact information for the first day of class [or you may find them via the TU Cherry & White pages (<http://directory.temple.edu/>)]. You should send an email requesting conformation of material covered. In the event you are absent for a recitation quiz, a score of zero (0) will be recorded. You will not have an opportunity to make-up a recitation quiz.

LABORATORY: Attendance to the laboratory is required. A portion of your score is associated with physically performing the experiment. Therefore if you are absent your grade will suffer. If absent, you should immediately contact your laboratory instructor [you should have their contact information from the first class meeting or may find them via the TU Cherry & White pages (<http://directory.temple.edu/>)] to make arrangements to submit your current lab report which will be assessed a 20% reduction per day late. Therefore lab more than 5 days late will be record as zero.

Also see: Make-ups, Late Work, and Preparation for class

Make-ups: The make-up policy varied depending on the portion of the course.

LECTURE: If you miss a lecture quiz (announced or unannounced) a score of zero will be recorded. You will not have an opportunity to make up a lecture quiz. If you miss a lecture exam, you may be permitted to take a make-up exam. Make-ups are decided on a case-by-case basis; it is the student's responsibility to provide documentation supporting their make-up request by the time of the make-up exam.

Students that miss the announced make-up exam may have a score of zero (0) recorded and be advised to withdrawal from the course.

RECITATION: If you miss a recitation quiz, a score of zero will be recorded. You will not have the opportunity to make up a recitation quiz.

LABORATORY: Due to safety considerations you may not attend a laboratory for which you are not registered therefore you will not be permitted to make up a missed laboratory and a score of zero may be recorded.

Also see: Attendance

Inclement Weather: The University cancellation numbers are **101** (day) & **2101** (evening). The most accurate and up-to-date information can be obtained directly from the University (215.204.1975, WRTI, 90.1 FM, 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

Grading: Note that lecture & recitation will combine to determine your lecture grade (CHEM 71 or 72) and a separate grade will be issued for your laboratory (CHEM 73 or 74). Each lecture section will be graded independently of other sections so when measuring your performance it should be relative to your lecture section only.

LECTURE & RECITATION:

Lecture Assignments	10%
Recitation Quizzes (best 2 of 4)	10%
Exam I	15%
Exam II	15%
Exam III	15%
Final Exam:	35%

LABORATORY:

Lab Reports)	60%
Lab Exam I		20%
Lab Exam II		20%

Also see: Make-ups, Grading Disputes

Grade Disputes: In the event you wish to dispute the grading of a report, quiz, or exam you must bring your dispute to the instructor within two weeks of the assignment being returned for re-grade consideration. You are strongly encouraged to review assignments once returned to learn from past mistakes and better assess your standing in the class. After the two week period your instructor may only correct for tabulation errors.

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 (*100 Ritter Annex, 215.204.1280*). 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.

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, 1810 Liacouras Walk - Rooms 201, 215-204-8466, <http://www.temple.edu/msrc>*).

Also see: Office Hours

Office Hours: Your instructors are required to hold a minimum of 2-hours of office hours per week. This is an excellent time to seek help or discuss grading issues. Use the space provided below to record your instructor’s name, contact information, and office hours. Additional contact information may be obtained from either the Chemistry Department Directory (<http://www.chem.temple.edu/main/people.asp>) or the University Cherry & White Pages (<http://directory.temple.edu/>).

	<u>Name</u>	<u>Office</u>	<u>Email</u>	<u>Office Hours</u>
Lecturer:	Dr James Varnum	203 Dixon	tua00154@temple.edu	TBA
Recitation:				
Laboratory:				

Also see: University Cherry & White Pages (<http://directory.temple.edu/>)

Late Work: Late work should be hand delivered to your instructor. If placed in a mailbox, under an office door, or delivered by a third party, we can not be held responsible for your work becoming lost. Information in the attendance section may also be relevant here. If unable to hand deliver your work it is strongly recommend that you make photocopy before submission AND that you email your instructor regarding your submission method & time. Note that late work is assessed a penalty of 20% per day, becoming a zero after 5 days.

Also see: Attendance

Preparation for Class: It is assumed that students are coming to class prepared. A prepared student should:

LECTURE: Have read the chapter/sections to be covered BEFORE class and download any relevant notes or worksheets from Blackboard.

RECITATION: Have attempted ALL of the homework problems assigned for the session AND come to class prepared to discuss these problems. If you have questions or difficulties with these problems this is the time to get them addressed before the next exam or quiz.

LABORATORY: Have read the ENTIRE experiment for the day. This includes the theory AND the procedure. You are also required to complete the pre-laboratory exercise for submission at the start of class as well as a handwritten outline (in your own words) of the experimental procedure. This outline should not be a verbatim copy of the procedure but a synopsis detailed enough for you to follow without having to flip through the manual. Some students have created pictorial outlines. Either is acceptable, as long as it helps in completing the experiment in a timely manner.

Note: Students that are not prepared for lab will be asked to leave as they may pose a danger to themselves or other students. Since you can not make-up an experiment a score of zero will recorded for the day.

Also see: Attendance, Make-ups, And Late Work

Lab Safety: Laboratory safety is our first concern, preceding even instruction. You are required to comply with all safety regulation or risk expulsion from the class and the consequences to your grade. Your instructor will provide more details and there is an outline of policies in the lab manual, however a few key items include:

- (1) Goggles (*ANSI Z87.14 approved*) are required to work in the laboratory and must be worn at-all-times. Street glasses or sunglasses may not be substituted. **Students are expected to provide their own goggles** available from the Bookstore, Zavelle's, or the Health Science Campus Bookstore (*215.707.3157, Student Faculty Center 1st Floor – Broad & Ontario Sts*).
- (2) Lab coats are recommended to work in the laboratory. Lab coats in a variety of sizes may be provided in your laboratory. If you wish to have your own personal lab coat they may be obtained from the Health Science Campus Bookstore (*215.707.3157, Student Faculty Center 1st Floor – Broad & Ontario Sts*).
- (3) Proper footwear, which covers the toes, is required.

Also see: Lab Manual Safety Documents

Course Schedule: The following is a tentative schedule and is subject to change.

*Lecture mid-term examinations will take place during the normal lecture meeting time.

Week Starting		Comments	General Chemistry I (71/73)				
			Mon	Tue	Wed	Thur	Fri
1 (Mon) 28-Aug		Lecture > Recitation > Lab >	Chapters 1-2				
			No Recitation (Main Campus)				
			No Lab (Main Campus)				
<i>After the Labor Day holiday the lab & recitation weekly schedule will run from Tuesday-to-Monday until Thanksgiving.</i>							
2 (Mon) 4-Sep			Labor Day	CH 2-3			
				1 & 2			
			Check-in				
3 (Mon) 11-Sep		9/11 Last Drop Quiz	CH 3				
			1 & 2	2 & Quiz			
			Check-in	M&D			
4 (Mon) 18-Sep		Mid-Term	CH 3			Exam*	Exam*
			2 & Quiz	2 & 3			
			M&D	Hydrate			
5 (Mon) 25-Sep			CH 4				
			2 & 3	3			
			Hydrate	EF			
6 (Mon) 2-Oct		Quiz	CH 4				
			3	3 & Quiz			
			EF	RS			
7 (Mon) 9-Oct			CH 5				
			3 & Quiz	4			
		Lab Exam	RS	Lab Exam			
8 (Mon) 16-Oct			CH 6				
			4	4			
			Lab Exam	Vinegar			
9 (Mon) 23-Oct		Mid-Term	Exam*	Exam*	CH 6		
			4	5			
			Vinegar	MW			
10 (Mon) 30-Oct		10/30 Last Withdrawal	CH 7				
			5	5 & 6			
			MW	REDOX			
11 (Mon) 6-Nov		Quiz	CH 7-8				
			5 & 6	6 & Quiz			
			REDOX	Heat-M			
12 (Mon) 13-Nov			CH 8				
			6 & Quiz	7			
			Heat-M	Hear-RXN			
13 (Mon) 20-Nov		11/21 & 11/22 Calendar Adjustment	CH 9			Thanksgiving Holiday	
			7	8			
			Hear-RXN	RXN Cu			
14 (Mon) 27-Nov		Mid-Term Quiz Lab Exam	CH 9 & 10			Exam*	Exam*
			8			9 & Quiz	
			RXN Cu			Lab Exam	
(Mon) 4-Dec		12/7 & 12/8 Study Days	CH 10				
			9 & Quiz				
			Lab Exam				

During Calendar Adjustments: Tuesday will follow a Thursday schedule & Wednesday will follow a Friday schedule.

The final examination schedule is available from http://www.temple.edu/registrar/exam_schedule.html

Readings: It is assumed that students have read the chapter before attending lecture and have attempted the homework problems prior to recitation.

Emphasis is placed on concepts illustrated in the problems worked in class.

Chemistry 71	
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
Ch 2: 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
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
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
Chemistry 72	
Ch 11: Gases	2, 7, 10, 14, 22, 23, 27, 36, 54, 58, 62, 66, 76, 80, 84, 88, 92, 96, 100
Ch 12: Intermolecular Attractions	3, 7, 8, 10, 13, 21, 26, 33, 40, 43, 56, 86, 88, 94, 98, 102, 104, 106
Ch 13: Solids	1, 3, 9, 18, 23, 92, 94, 100, 106
Ch 14: Solutions	5, 6, 9, 12, 16, 26, 29, 30, 34, 65, 67, 71, 75, 77, 79, 81, 83, 89, 91, 95, 107
Ch 15: Kinetics: Rates of Reaction	5, 6, 9, 10, 17, 22, 24, 25, 34, 41, 50, 59, 64, 66, 70, 72, 78, 80, 82, 84, 90, 94, 96, 98,
Ch 16: Chemical Equilibria	5, 13, 19, 21, 23, 27, 33, 39, 41, 45, 47, 51, 55, 61, 63
Ch 17: Acids & Bases: A Second Look	1, 5, 8, 13, 19, 21, 37, 40, 42, 44, 46, 50, 56, 58, 66, 70, 72, 74
Ch 18: Equilibria of Weak Acids & Bases	1, 2, 14, 25, 28, 33, 37, 42, 48, 50, 54, 56, 62, 64, 66, 76, 80, 82, 84, 98, 100, 104, 108, 16, 118
Ch 19: Solubility	3, 5, 7, 11, 14, 16, 18, 22, 24, 32, 34, 36, 46, 48, 52, 56
Ch 20: Thermodynamics	5, 12, 19, 20, 22, 24, 25, 26, 30, 54, 58, 60, 64, 66, 68, 72, 74, 82, 86, 90, 92, 100, 104
Ch 21: Electrochemistry	1, 4, 41, 47, 51, 54, 55, 66, 68, 70, 72, 80, 86, 88, 82, 94, 98, 104, 106, 114

Experiment Listing

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