

# Chem 130: Chemistry for Funeral Services

## Spring 2010

**Instructor:** Kathy Lawler

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**Lectures:** 5:30 pm – 7:35 pm, HeEd 702

**Course Content Website:** Chem 130 link on [www.chemistreet.net](http://www.chemistreet.net)

**Course Information/Grades:** Los Rios eLearning, <https://d2l.losrios.edu/>

**Office:** HeEd 702

**Office Hours:** 5-5:30 pm, Th only

**Phone:** 916- 484-8107

(Chemistry office, messages only)

**Description:** This course is a survey of the basic principles of chemistry as they relate to Funeral Services. Especially stressed are the chemical principles involved in sanitation, disinfection, public health and embalming practices. The development and use of personal, professional and community sanitation practices are covered as well as use and precautions related to potentially harmful chemicals that are currently used in the field of funeral services.

*Upon completion of this course, the student will be able to:*

- describe selected facts of general chemistry as a basis for studying organic and biochemistry
- relate the essential characteristics of autolysis, hydrolysis, fermentation, and putrefication in the area of chemistry of decomposition
- relate the characteristic features of solutions, suspensions, emulsions and the processes of diffusion as they relate to the embalming process
- define organic chemistry and describe the characteristic features of organic compounds
- describe the essential characteristics of carbohydrates, lipids, and proteins in the area of basic biochemistry
- describe representative chemicals in embalming fluids (arterial, cavity, and accessory) and give their respective functions
- list the potentially harmful chemicals used in the preparation room, and the precautions to be taken with each

**Text, Web & Supplies:**

- 1) Thanatochemistry, 3rd edition, Dorn & Hopkins (2<sup>nd</sup> Edition similar, 1<sup>st</sup> Edition not ok)
- 2) Calculator of some kind, #2 pencil or equivalent, eraser
- 3) Web browser used to access course website, a pdf reader for opening problem sets
- 4) Use of iMail (<https://imail.losrios.edu/>)

**How to reach me:** Use email. The phone number above is only for leaving emergency messages. I will check email at least twice a day during the week—morning and evening—and a few times on the weekend. There is a link for emailing me on the course website or you can type [lawlerk@arc.losrios.edu](mailto:lawlerk@arc.losrios.edu) into your regular email program. Please feel free to send comments and ask questions. I really do respond to emails fairly quickly.

### Course Requirements:

Requirement	Points Each	Total Points
4 Exams	100	400
5 Proficiency Quizzes*	20	100
Bulletin Board Project	50	50
Summary Paper	100	100
Summary Presentation	50	50
Attendance	50	50

### Grading:

Percent of 750 points total. Guaranteed not to be raised higher than:

90-100% = A || 80-89% = B || 70-79% = C || 60-69% = D || Below 60% = F

\*The first proficiency quizzes must be passed with at least 80% (16/20) to pass the course—and some questions must be answered correctly to pass. Each one of the rest of the quizzes must be passed with 70% or better (14/20) to pass the course. See "Course Structure" section for further details. I retain the right to include problem set scores in the course total if necessary. See "Course Structure" section for further details.

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### Course Policies:

Attendance is expected, will be taken and will be part of your grade. Make-up exams will not be given, except for exceptional, documented situations. Please see me if you must miss more than two lectures during the semester. Excessive tardiness may result in the lowering of your grade.

It is my hope that everyone who starts the course will complete it. However, if you decide it's necessary for you to drop the course, it is your responsibility to complete all the paperwork to do so. I will not drop students who attend class and then decide not to continue. If you do not drop the course and simply stop attending, your final grade will be based on the total points you had earned at that time. This usually results in a failing grade. Please see me if you have questions about how to drop a course.

Handouts will only be available on the day they are first distributed in class. Most handouts will be available for download on the course content website and or the course e-learning site. Problem sets are available for download on the website and or e-learning site. Quiz and exam scores will be posted on the ARC e-learning site but not all course grades will be posted there so any totals on that site do not represent your full point total or percent.

Please see me if you need any kind of special accommodation.

Appropriate conduct is expected. Disruptive behavior will result in your being asked to leave the lecture. Copying, plagiarizing or other violations of the Student Standards of Conduct will not be tolerated. Such instances will result in a failing grade on that assignment for all of the people involved.

### How to do well in this course:

**Attend class. Read the book.** Take notes in class. Ask questions. Ask questions. Ask more questions. **Spend time and effort on the problem sets.** Check the website and use the tools listed there. Ask questions. Read the book. Take notes in class. Work problem sets and questions in the book. Remember, you already know a LOT about chemistry. You've been dealing with chemicals all your life. Everything around you is made up of chemicals.

You are also strongly encouraged to enroll in the Science Skills Center (BIO 490). The classes fill quickly.

**Course Structure:** (A tentative schedule can be found on the next page and may be revised as needed.)

<b>Unit One</b>	Chemical Fundamentals, Chapters 1 – 6, Exam 1, Problem Sets 1 – 3
<b>Unit Two</b>	Inorganic Chemistry, Chapters 7 – 12, Exam 2, Problem Sets 4 – 6
<b>Unit Three</b>	Organic Chemistry, Chapters 13 – 18, Exam 3, Problem Sets 7 – 9
<b>Unit Four</b>	Biochemistry, Chapters 19 – 23, Exam 4, Problem Sets 10 – 12
<b>Final Project</b>	Summary of Action, Chapter 24, Summary Paper and Presentation

- Exams are closed book. For each exam, though, you may bring in a note page that is one side of one 8 ½ by 11 page. You will also be given a periodic table to use. You may use the note page from prior exams with any exam. The note pages must be written and in your own handwriting (you may not photocopy someone else's to use). The note pages must be turned in with the exam but will be returned. The exams may contain true/false, multiple-choice, matching, fill-in-the-blank questions and/or problems to work. They will always contain short-answer essay questions. Exams are written to be completed in the regular course time (5:30 – 7:35) but will be available starting at 5 pm on the day of the exam, except Tuesday exams. I will also stay until 7:55 pm on the evening of the exam. This will give you more time to complete the exam if that's something that you want. I reserve the right to set a time after which exams will not be distributed. The extra time is a courtesy—not an invitation for you to show up late on the evening of an exam. *(Exams and note pages will be returned.)*
- There will be five proficiency quizzes in the course. The first one must be passed with a score of 16/20 or better in order to pass the class (80%). Each one of the other four must be passed with a score of 14/20 or better in order to pass the class (70%). You will have several opportunities to take and pass each quiz (listed on the course calendar). Quizzes will be given during the last 15 minutes of class on the days that quizzes are available. The quizzes **MUST** be completed in this 15-minute time period. The first quiz consists of tasks related to the course requirements, email and website as well as an overview of embalming preparation terms. It will be completed outside of class. The rest of the quizzes will consist of ten multiple-choice questions on specific topics. There will be a separate handout describing the quizzes in more detail. For each quiz except the first one, you will also be given a handout about the specific topics that will be covered on the quiz.

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Note: You do not have to remain in class during the quiz time if you have already passed the quiz being given. You must remain in class to take the quiz if you have not yet passed it. (*Quizzes may be reviewed in class but will not be returned.*)

- There will be two separate “bulletin board” projects. Half the class will complete the first one. The other half will work on the second one. These will be on assigned topics related to decay processes, solution processes and embalming preparations. You will be required to prepare an approximately 3-foot x 3-foot space on the class bulletin boards or walls. You will have two weeks to research, develop and post your bulletin board topic. It will be graded on how clearly you present the topic, how correctly you present the topic and creativity. Clarity will be judged from the perspective of the non-chemist and non-embalmer (develop your bulletin board to present the topic to someone who doesn't know about it at all). **Questions about material presented from these bulletin board assignments will be included in exams.** Note: You may put up your bulletin board early if you finish it early. It must be posted by the beginning of class the day it is due.
- The final project will be an individual project focused on the embalming preparations described in Chapter 24 and the chemistry of the chemicals in those preparations. It will also involve investigating current embalming preparations. Each person will write a paper about their particular embalming preparation and the chemicals included in it. The template for the paper will be distributed in class. It will be a few pages in length and will require you to answer a series of questions related to one of the embalming preparations and the chemicals in that preparation. You will also present your findings during the final exam. There will be some intermediate due dates during the semester. More information about the final project and presentation will be provided later in the semester. (*Papers will be returned only if you provide a self-addressed, stamped envelope when the paper is turned in so it can be mailed back.*)
- There are problem sets available on the course website to help you learn the material in the course. Completing these problem sets is part of the homework for this class. There are problems at the back of each chapter that can also be helpful. I will include at least one question directly from the book in each exam. The answers for both are available—problem set answers on the website (unless graded) and chapter problem answers at the back of the book. Chemistry is a subject best learned by working problems. I reserve the right to collect and grade problem sets and include the scores in your final course totals if I decide that doing so is the best way to help the class master the course material. Please do bring up questions about the problem sets in class. You can also ask me about them during my office hours.

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### Tentative Schedule\* (subject to change)

Lecture	Topic	Reading Assignment (Complete Prior to Class) and Bulletin Board Information	Quiz Given During Class
Week 1: T, 1/19	Class Beginnings & Introduction	Chapter 1, skim Chapter 24	
Week 1: Th, 1/21	Physical & Chemical Changes State of Matter	Chapters 2 & 3	Q1 (outside)
Week 2: T, 1/26	Atomic Structure and Bonding	Chapter 4	Q1 (outside)
Week 2: Th, 1/28	Chemical Shorthand 1	Chapter 5	Q1 (outside)
Week 3: T, 2/2	Chemical Shorthand 2	Chapter 5	Q1 (outside)
Week 3: Th, 2/4	Radiation Chemistry	Chapter 6	Q1 (outside)
Week 4: T, 2/9	Oxygen, Hydrogen & Water 1	Chapter 7 & 8	Q2
<b>Week 4: Th, 2/11</b>	<b>Exam 1</b>	<b>Unit 1 Exam: Chemical Fundamentals</b>	
Week 5: T, 2/16	Oxygen, Hydrogen & Water 2	Chapter 9 & 10 Bulletin Board 1 Assigned	Q2
Week 5: Th, 2/18	Solutions	Chapter 10	Q2
Week 6: T, 2/23	Acids, Bases, Salts 1	Chapter 11	Q2
Week 6: Th, 2/25	Acids, Bases, Salts 2	Chapter 11	Q2
Week 7: T, 3/2	Hydrates & Hydrolysis	Chapter 12 Bulletin Board 1 Due	Q3
Week 7: Th, 3/4	Organic Chemistry	Chapter 13 & 14	Q3
<b>Week 8: T, 3/9</b>	<b>Exam 2</b>	<b>Unit 2 Exam: Inorganic Chemistry</b>	
Week 8: Th, 3/11	Hydrocarbons	Chapter 14	Q3
Week 9: T, 3/16	Alcohols & Ethers	Chapter 15	Q3
Week 9: Th, 3/18	Aldehydes & Ketones	Chapter 16	Q3
Week 10: T, 3/23	Carboxylic Acids & Esters	Chapter 17	Q4
Week 10: Th, 3/25	Amines & Amides	Chapter 18	Q4
Week 11	Spring Recess		
Week 12: T, 4/6	Biochemistry	Chapter 19 & 20	Q4
<b>Week 12: Th, 4/8</b>	<b>Exam 3</b>	<b>Unit 3 Exam: Organic Chemistry</b>	
Week 13: T, 4/13	Proteins 1	Chapter 20 Bulletin Board 2 Assigned	Q4
Week 13: Th, 4/15	Proteins 2	Chapter 20	Q4
Week 14: T, 4/20	Enzymes	Chapter 21	Q5
Week 14: Th, 4/22	Carbohydrates 1	Chapter 22	Q5
Week 15: T, 4/27	Carbohydrates 2	Chapter 22 Bulletin Board 2 Due	Q5
Week 15: Th, 4/29	Lipids	Chapter 23	Q5
Week 16: T, 5/4	Summary of Action 1	Chapter 24	
<b>Week 16: Th, 5/6</b>	<b>Exam 4</b>	<b>Unit 4 Exam: Biochemistry</b>	
Week 17: Th, 5/11	Summary of Action 2	Chapter 24	
Week 17: Th, 5/13	<b>NO CHEM130 CLASS</b>	Finals	
Week 18: T, 5/18	Summary of Action Presentations	This is the class final	