

Course Syllabus  
**CHEM 102**  
Chemistry Related to Life Sciences  
Spring Semester 2018

**LECTURES:** M, W, & F — 110 – 200 PM Fulmer 226

**INSTRUCTOR:** Prof. Amy Nielsen Fulmer 468 amy.nielsen@wsu.edu  
*In email communications, be sure to include "Chem 102" in the subject line; emails without will not be answered.*

**OFFICE HOURS:** M, W, & F –2-3PM, sign up for time slot outside of Fulmer 468

**GENERAL CHEMISTRY OFFICE:** Nikki Clark Fulmer 319A 335-1516 nikki\_clark@wsu.edu  
**LABORATORY SUPERVISOR:** Ryan Rice Fulmer 309 335-6358 rwrice@wsu.edu

**COURSE WEBSITE:** Blackboard Learn (Bb) <https://learn.wsu.edu>

<b>GRADING:</b>	3 "Midterm" Exams	35% or 50% <sup>1</sup>	<b>GRADE RANGES:</b>			
	Final Exam	15% or 0% <sup>1</sup>	93-100	A	74-76	C+
	Homework Sets (12/14)	20%	90-92	A-	65-74	C
	Learning Catalytics	5%	87-89	B+	60-64	C-
	10* of 13 Laboratory Experiments	25%	80-86	B	not awarded	D+
			77-79	B-	55-59	D
				Below 55	F	

*\*see full syllabus for details.*

- 1** The final exam is optional and comprehensive. If you do not take the final, your grade will be determined with this formula.

<b>EXAMS:</b>	<b>1</b>	<b>Feb. 8th</b>	<b>6:00–7:00pm</b>
	<b>2</b>	<b>March 8th</b>	<b>6:00–7:00pm</b>
	<b>3</b>	<b>April 12th</b>	<b>6:00–7:00pm</b>
	<b>Final</b>	<b>Week of April 30<sup>th</sup> – TBD!</b>	

*\*The Final Exam will be the week of April 30<sup>th</sup>. DO NOT SCHEDULE ANY TRAVEL THAT MAY CONFLICT!*

**REQUIRED MATERIALS:**

- Textbook (**etext**): *General, Organic and Biological Chemistry, Volume 2. McMurry, Ballantine, Hoeger & Peterson. 8<sup>th</sup> edition, (2016/2017), Pearson/Prentice Hall.* (Includes: Modified Mastering Chemistry and Learning Catalytics access)
- Lab notebook: (Duplicating with page numbers), Lab goggles: fully sealing (no holes or open vents-cannot be lab glasses), Lab coat
- Calculator: Must be scientific, but cannot have full keyboard or network capabilities.

## New Course Materials Policy

In an ongoing effort to reduce course materials costs, WSU has partnered with the Bookie and Pearson Education in a new pilot program called First Day. First Day adds course materials charges to your student account when registering for Chem 101, 102, 103, 105, 106, 116, 345, or 348. The cost of course materials for these classes is \$66.71 per semester and includes an eBook, the Mastering Chemistry homework system, and where used, the classrooms responses system called Learning Catalytics. This cost is almost 50% less than in prior semesters. While you may opt out of this purchase, the homework system is a required course material and represents a significant portion of your grade. If you have already purchased Mastering Chemistry in fall of 2017, your student fee account will be refunded.

Some key points about the First Day pilot:

- This partnership results in a large savings over prior semesters for the same materials.
- You will have access to all course materials on the first day of class, regardless of any delays in financial aid.
- If you drop the course by the 30th day of instruction, you will receive a full refund.
- If you withdraw after the 30th day and you take the course in a future semester, you will not be charged again for course materials.
- The First Day program is managed through your course Blackboard space. Simply click the Mastering Chemistry link within the Blackboard course space to have immediate access.
- The Bookie will stock physical copies of the text, but these are not required for the course.

We will conduct a survey at the end of the term to solicit feedback on First Day.

## LECTURE SCHEDULE

WEEK OF	CHAPTER *	TOPIC
January 8	12, 13	Organic Chemistry: It's all about stuff
January 15	14, 15, 16	The Behavior of Stuff – Functional Groups
January 22	17	Carboxylic Acids – your new favorite functional group
January 29	18	Polymers in nature – amino acids and proteins
February 5	19	Polymers in action – enzymes (and vitamins too!)
February 12	21	Fuel up! The generation of biochemical energy
February 19	20	Carbohydrates – Compounds with Personality
February 26	22	The sweet life – carbohydrate metabolism
March 5	23	Lipids –
March 12		SPRING BREAK! Wooo!
March 19	24	Lipid Metabolism – time to chew the fat
March 26	25	Protein and Amino Acid Metabolism
April 2	26	Nucleic Acids, DNA
April 9	27	Putting all together - Jurassic Park style
April 16	28	Hormones, Neurotransmitters, and Drugs
April 23	29	Defense! Intro to immunology and body fluids
April 30		Final Exam Week

Tuesday, February 6th is the last day to withdraw from class without academic penalty!

*PLEASE NOTE:* This is a tentative syllabus and schedule and is subject to modification at the instructor's discretion.

### LABORATORY SCHEDULE

WEEK OF	TITLE
January 8	Chem 101 Review
January 15	Models of Organic Molecules
January 22	Organic Redox Reactions
January 29	pH Titration of an Amino Acid
February 5	Synthesis of Aspirin and Nylon
February 12	Enzyme Kinetics
February 19	Production of Ethanol 1
February 26	Production of Ethanol 2
March 5	Analysis of Vitamin C in Fruit Juice
March 12	Spring Break!
March 19	Isolation of DNA
March 26	Riboflavin Pill Extraction
April 2	Ester Formation Reactions
April 9	Drug Receptors Activity
April 16	pH Buffers
April 23	In-lab Final Exam Review

#### Required Laboratory Course Materials

- A. *eTextbook, Mastering Chemistry, and Learning Catalytics package*
- B. *Chemistry 102 Laboratory Manual (online thru blackboard – free!)*
- C. Safety Goggles and labcoat

#### Course Objectives

Have you ever enrolled in a course wondering what the subject was all about and what you were going to learn and left the course wondering the same things?!?! You did not know the objectives going in, so you did not know what you should expect to learn. In turn, since you did

not have a framework upon which to build your learning, you had no basis for understanding what you **did** learn. Frustrating!

In an effort to try to avoid this frustration, to clearly spell out the expectations of this course, and to enhance your learning, I've developed a By-Chapter Study Guide for each of the units that we will cover over the course of the semester. You will find these on the course website in blackboard (under the course materials and syllabus tab). How should you use the By-Chapter Study Guide? 1) Print it out now and use it daily to guide your pre-lecture reading and your post-lecture studying, 2) As you are working problems, use it to help you **focus on main concepts**, and 3) When studying for tests, use it to make sure you are studying what you need to know. This is intended to help you, but you **MUST USE IT** to realize its benefits!

### Homework

Working homework problems is **critical** to your success in chemistry. On the course website in blackboard in the Mastering Chemistry tab on the left, you will find your weekly homework problems. Why do you have to do homework? The more problems you work, the better your chances for success. (Note: "Problem" is not defined only as, "A question with a numerical solution"!) Homework problems are graded electronically and scores synced automatically. If you want to do well in this class, **WORK PROBLEMS!** End of chapter problems, practice exam problems, etc. When working problems, the idea is to *learn the material while* discovering the correct answer. **Simply getting the correct answer is NOT your goal.** There will be a total of 14 weekly homework assignments administered through the Mastering Chemistry, of which **12 will be counted towards your grade. (20% of your grade)**. The due date/time for each assignment will be listed with the assignment on the Mastering Chemistry site. It is recommended that you examine the homework on the Monday it is posted and print it out so that you may consult TAs in lab and office hours during the week. The option to request answers to the homework problems will not be available until the day after the assignment is due. If you wish to see the answer to a problem, go back to the assignment after the due date and request the answers. If you have questions about how to answer a question, it is highly recommended you go to TA office hours. TAs for Chem 102 are **specifically selected** to help students with this course – they are *experts!* Remember that the course Facebook account is also a great way to get help with homework and other issues by uploading screenshots. Homework assignments may only be submitted via the Mastering Chemistry system. Late homework assignments will not be accepted for any reason.

### Office Hours and Class Communication

My office hours are listed on the first page of this syllabus. If the designated hours conflict with your class schedule, and you would like to set up a specific time to come see me, **please send me an email.** I am here to help you learn, but you have to make use of my help. I don't always know when you are lost or struggling, so please come see me!!! You will find that when we work one-on-one, you will benefit from my being able to help you specifically. **PLEASE COME SEE ME.**

I will regularly communicate with you through blackboard e-mail and the course facebook page. You must use your WSU e-mail address, and be sure to check that address at least daily. I will use blackboard and facebook to update you on course info such as test dates, cancelled classes, lab schedule changes, etc. So you **MUST** routinely check your campus e-mail. "I didn't get the e-mail" does not constitute a legitimate excuse in Chem 102.

**TA Office Hours:** All chemistry TAs hold their office hours in the TA room in Fulmer 318 from 10:00am –4:00pm Monday –Thursday. You may ask **any** Chem TA for help in this course; however, TA's are NOT allowed or obligated to do your homework, pre-labs or lab reports for you, they can only guide you. When you go to office hours for help, be prepared with questions ahead of time! TAs will also monitor the course Facebook page and offer help there. The chemistry department has a computer laboratory in Fulmer 401. You have already paid a fee to support this facility. You may use the computers in this lab for no additional charge, although there may be restrictions on printing.

### Exams

There will be three midterm exams and a comprehensive final that will cover lecture, lab, and homework material. All exams will be short answer or equivalent and must be filled in with blue or black ink. (You can see old exams in course materials folder) Unless otherwise announced, no calculators may be used during the exams. Exams may be given in rooms other than the regular classroom. These rooms will be announced. **No make-up exams will be given.** If you are unable to take a scheduled exam *for academic reasons beyond your control*, you may be allowed to schedule the exam at an earlier time. Tests missed due to documented illness will be excused, with the other exams and the final exam pro-rated to count for more. **Evening tests take precedence over all other university activities.**

### Academic Dishonesty

The policies of Washington State University concerning academic dishonesty are thoroughly outlined at <https://academicintegrity.wsu.edu/> that is produced by the Provost's Office. These policies will be strictly adhered to in this course. The instructor adamantly disapproves of academic dishonesty and will prosecute all cases to the fullest extent allowable—a grade of "F" for the course, no exceptions!

### Attendance and Make-ups

You should attend all class meetings, labs, and exams. The course lecture material, while based roughly on your text, does not follow the order as presented in your text; additionally, supplementary information will be a routine part of lecture. Therefore, failure to attend a regularly scheduled class session will result in a substantial deficiency in your available information at quiz/exam time. **DO NOT COUNT ON CLASSMATES NOTES TO CATCH YOU UP!!!** This seemingly innocent practice has led to the destruction of many friendships, relationships, lives, etc.

Make-up exams and quizzes will not be given! If you must miss an exam or quiz, you should notify the instructor in advance. At that point, you will choose an appropriate course of action from the options outlined by the professor. Missed exams and quizzes are handled on a case-by-case basis, so don't expect to get the same options as a classmate who missed an exam or quiz. And, as stated above, it is **IMPOSSIBLE** to make up a laboratory experiment. In short, the only thing that should prevent you from taking a quiz or exam or attending a scheduled lab is your own expiration!

### Timeliness and Classroom Etiquette

All assignments must be turned in at the specified time. Late assignments will receive a zero, unless extreme extenuating circumstances are documented. **NO EXCEPTIONS!!!!**

Please turn off all cellular phones, beepers, pagers, beeping watches, etc. before class begins. Neither your classmates nor I will appreciate class being interrupted by one of these devices. The owner of any such device which rings, buzzes, beeps, etc. during a class, lab, or exam will be assessed a 5% penalty on his/her next exam. The instructor reserves the right to pursue solutions to classroom disruptions as outlined at <https://aware.wsu.edu/faculty-guide-for-responding-to-disruptive-students/>.

### Laboratory

In Chem 102, we have no recitation before lab. The lab in Chem 102 is designed to correlate with and support your learning of the lecture materials. Instead of recitation, at the end of each Monday lecture, we will have a short 15-20 minute discussion about what you will be doing in lab and how that ties in with what we're learning in class. You **must** be on time for your lab session, and you should **come prepared**. You should read the lab thoroughly in advance and bring any questions you may have to me or the TAs in office hours.

Failure to attend a scheduled laboratory session will result in a grade of zero for that experiment. It is IMPOSSIBLE to make up a missed lab!!! Each lab exercise is worth 15 pts., and your three lowest lab grades will be dropped at the end of the semester. A student who misses **FOUR** labs (for any reason) will receive a zero for the lab portion of the course.

Chemistry laboratory requires special precautions due to the hazardous nature of many chemical compounds. You need not be afraid of these compounds, but you must respect them and handle them with extreme caution. Due to the potential severity of injuries caused by chemicals being splashed in your face or on your skin, you will be **REQUIRED** to wear closed toe shoes, long pants/dresses or a lab jacket or apron and **SAFETY GLASSES** or **GOGGLES** while in lab. If you come to lab improperly attired, you will not be allowed to work until you "acquire" appropriate dress. Failure to wear safety glasses **at all times** will result in a deduction of points (at the instructor's discretion) from the day's work. Further safety procedures will be discussed during the first lab session.

### Pre-Laboratory Assignments

**Pre-laboratory assignments are found online on the course Blackboard page and are due Tuesdays at 7:00am the week you are performing that experiment.** Students who fail to submit a complete pre-lab assignment at this time will receive a zero on the pre-lab **AND** be required to complete the pre-lab assignment before they are admitted to lab. **A pre-lab verification slip must be obtained from the general chemistry office prior to being admitted to lab.** The student will not be given extra time in the laboratory to make up for laboratory time spent completing the pre-lab.

### Laboratory Procedure

Students are to perform the experiments individually unless otherwise instructed by the TA. Each student is required to record all data and observations for each experiment **directly into their own laboratory notebook**. Data may not be recorded on loose, 'scratch' paper then transferred to the notebook. Submission of identical data by two or more students who are not assigned to be laboratory partners will be considered cheating. Appropriate penalties will be applied to all parties. You are required to get your TA's signature on your data

and calculations before you leave lab. Failure to do so will result in zero credit for that experiment.

**Laboratory dress code:** For your safety, a strict dress code will be enforced in the laboratory. Failure to comply with the dress code will result in expulsion from the laboratory and a consequent score of zero for that experiment. The dress code requires that you be fully clothed from shoulder to toe. It is recommended that you purchase and use a full-length lab coat. This will adequately cover the upper body, but your legs, ankles and feet must be completely covered by your 'street clothing'.

**Laboratory Reports:** **Laboratory reports will be due online by midnight on Thursday the week after the experiment associated with that report was performed.** All laboratory reports must be typed out in a word document and submitted as a pdf through blackboard for grading. Students are responsible for writing their own laboratory report discussion. Although the concepts covered in lab may be discussed with other members of your group, the report must be in your own words.

**Adjustments to laboratory scores:** The instructor will make every effort ensure that the grading of laboratory reports is consistent and fair. To this end, the instructor reserves the right to normalize the laboratory scores from the different laboratory instructors to the same average. Any such adjustment will be made at the end of the semester after all scores have been submitted. TA performance will be assessed throughout the semester with the goal of eliminating any necessity for these adjustments. Students are encouraged to bring any concerns about the equity of the grading process to the attention of the course instructor.

#### Accommodations

Reasonable accommodations are available for students who have a documented disability. Please notify the instructor during the *first week of class* of any accommodations needed for the course. Late notification may cause the requested accommodations to be unavailable. All accommodations must be approved through the Access Center in Washington Bldg, Room 217. Stop by or call 509-335-3417 to make an appointment with a disability specialist. Students requiring extra time on midterm exams due to a documented disability should plan to take the midterm exams early (4:00 pm) on the test days under the supervision of the course instructor. Accommodations are available for students for whom examinations fall on days objectionable due to religious beliefs or for those who must be absent from campus an exam days due to an official university activity. Requests for such accommodation must be presented, in writing, to the course instructor *at least one week prior to the examination*.

#### Class Policy on Late or Early Assignments

There is none. **Assignments submitted late (without documentation of extreme extenuating circumstances) are awarded a zero.** Early assignments are possible, but no extra credit is awarded for such efforts.

#### Safety

The campus safety plan is at <http://safetyplan.wsu.edu/>. Go to <http://oem.wsu.edu/Planning.html> to prepare for emergencies. The campus-wide alert system is at <http://alert.wsu.edu/>.

### Student Learning Outcomes

At the end of the course the student should:

1. Have an understanding of the concepts, models, and theories that form the foundation of the fields of organic chemistry and biochemistry
2. Apply the standard algorithmic calculation procedures, individually and in combination, associated with these concepts, models, and theories.
3. Be able to describe, explain, and predict the behavior and interactions of substances on the atomic, molecular and macroscopic levels.
4. Be able to communicate in the basic vocabulary of organic chemistry and biochemistry, including the ability to transition between chemical names and chemical formula in a facile manner and the ability to describe organic reactions and their role in metabolic cycles.
5. Understand the relationship between molecular structure the physical and chemical properties of a substance.
6. Create procedures to solve problems by applying single and multiple concepts to new situations.
7. Apply chemical procedures and evaluate experimental results to develop an appreciation for the experimental basis of chemical knowledge and experimental methods through laboratory work, with special emphasis on qualitative analysis.
8. Write effectively about scientific experiments by describing laboratory procedures and results from both the student's laboratory experience and articles from the scientific literature. Be able to evaluate and present a discussion of these results in the manner of a scientific report.

Assessment: SLO #s 1-7 will be assessed using examinations, quizzes, laboratory experiments and reports, homework, and in-lecture assignments. SLO #8 will be assessed using the quizzes and lab reports.