EVERYDAY CHEMISTRY

Autumn 2021

Instructor: Tom Di Gaetano: **digaetanot@wcsu.edu** Office Hours: Online or in person in the

Science building lobby with appointment

Website: [www.scientiaestubique.com](http://www.scientiaestubique.com) Class Lecture: SB 219 Lab: SB336

# ATTENDANCE

R

egular attendance for both the lectures and laboratory exercises is an expectation. Everyone knows as well that life happens, and unavoidable absences may occur. It is all about good faith efforts. You are responsible

for the work missed work due to your absence(s). All work that is done / assigned / due, must be completed by the due date for a score greater than zero, regardless of your physical attendance, unless other arrangements have been made in advance. Poor attendance in lecture is never good but, poor attendance in lab will ABSOLUTELY be a cause for failure.

**Lecture:** You are urged to take excellent notes. Guided note packets are provided. You are welcome to use them, and to take ancillary notes as the lecture evolves. It is your responsibility to obtain any notes, by interacting with other students, and by going to my website: [**www.scientiaestubique.com**](http://www.scientiaestubique.com) to download and complete the formal lecture notes. I do not use Blackboard. **My website works best off a computer**, as all notes are in Word format. Formatting gets a bit weird on phones or iPads. Once you have a copy of the notes from class, I can then go over those notes with you, via an online meeting. The evaluations and in-class work are based upon the lecture notes and the assignments. I urge you, as well, to turn in any assigned work from a missed class, on time. It will all be on my website. Most assignments bear points towards your grade. Do not expect any extension of time/due date for any assignment, test/evaluation, or lab report. During lecture masks must be always worn, and students, must be a minimum of 6 feet from each other.

When you miss any class in which an evaluation is given, there will be an opportunity for an **essay-based make-up** evaluation. You must initiate contact with me to schedule the evaluation, within 48 hours of the missed evaluation, or 0 points will be assigned automatically. However, this may prove to be moot, as I am considering “take home” evaluations/worksheets due to the issues of the pandemic. **You let me know what you think….**

**Laboratory:** Students need to be aware that there are no make-up laboratories. Given the issues surrounding the pandemic, I urge you to make every attempt to attend and to complete each lab. **The Everyday Chemistry laboratory is SB 336.** Masks and goggles must be always worn, whether waiting in the hallway for lab to begin, or in the lab itself. Students must purchase their own goggles. If you do not have goggles, you cannot participate in the lab, and the lab would count as a missed laboratory.

To earn any credit in lab, you must participate in the experiment and turn in a completed laboratory report, on time. Missed labs earn a score of 0 points. **Missing** **any two laboratory exercises, is cause for course failure. Make sure you understand that last point.**

**The bottom line:** Your attendance is expected, but more than that, **your attendance is valued**. The course is designed to help arm you with certain artifacts and habits of mind, necessary to engage in the intelligent and informed dialogue of an educated citizen, regarding biochemical / environmental / chemical issues.

**GRADES**

G

rading is an expected, appropriate, yet sometimes imperfect activity. Do not hesitate to ask questions about how your grade is calculated. Course grades work on a total-points basis.

**Your Grade = earned points x 100**

**total possible points**

Your grade is a combination of points earned via; evaluations, lab reports, various credit-bearing exercises used during or between the lecture periods, papers, and participation. You should expect graded evaluations and you are expected to write about chemical issues, using a short answer, and/or formal literature review format. Quizzes will be announced in advance. There are no "pop quizzes" (phew!). **See the attendance policy (page 1) of this packet for the remediation policies and procedures regarding missed evaluations.**

Laboratory work is graded, and testable material. Please note that cleaning up of your lab space (lab hygiene) is part of your lab report grade. Five points will be deducted from each lab report grade, for a lab station left in unacceptable condition. You are responsible for following the rules of chemical disposal, lab hygiene and lab comportment.

There are weekly laboratory reports and they are worth 25 points apiece. **Any** assignments, including the lab reports turned in past the due date / time, will be worth a maximum of 12.5 points, unless you have made appropriate arrangements with me, in advance.

**The course requires a written literature review paper,** and this paper is worth 150 points. It acts as a final exam.

**General Summary of Points**

2 to 3 "Quests” at approx. 40 to 80 points each

10 lab reports (maximum) at 25 points each

1 six-page literature review at 150 points

1 presentation with questions at 50 points

Participation in 3 presentations at 50 points maximum

TBA: Homework, readings, lab quizzes, and participation will account for any

remaining points. **No grades will be dropped, curved, or scaled**.

**Midterm and**

**Final Grades**

Letter grades will be assigned on the following percentage basis:

A > 93 B+ 86-89 C+ 73-77 D+ 60-64 F < 50

A- 90-92 B 82-85 C **69-72** D 55-59

B- 78-81 C- 65-68 D- 50-58

For students requiring learning accommodations, AccessAbility Services, has asked us to urge you to visit the office to request those accommodations. They will give share with me how I may best serve your learning requirements. You

should do this as soon as possible if you have not yet done so. For this course, **please note that extended time** for all

writing assignments has been built into the course, with all students benefiting from extended time on writing assignments. Thus, there will be no further time extensions. Exams requiring extended time will probably be taken in the Testing Center – but I think we can discuss options and work to overcome the challenges together. We can make this a very successful learning experience by working as a team.

## WRITTEN SUBMISSIONS

W

ritten submissions are expected to be accurate, concise, cited, logical, *and* handed in on time. Timeliness is

professional and expected. **This is a writing intensive course. I am willing to help you!** Even with an offer of help**,** troubles arise though. For instance, when you fear work will be late, you need to make prior arrangements with me. There will be a grade penalty with few exceptions.

Except for exam essays, written submissions (like papers and lab reports) **must include** appropriate citations and reasonably correct grammar. You may use any citation format of your choosing.  **A lack of citations implies plagiarism and will be treated as plagiarism.** Lab reports and papers without appropriate citations will earn a score of zero points. Plagiarism will be reported. ***Paraphrased* sources must be cited.** When you use whole pieces of a website or text, you should indent the passage and cite the work. **It is not unusual for a lab report or paper to have a dozen *or more* citations.** **Do not worry about this**. *Your* original work is how you construct a response and in the selection of sources. **No one expects you to know** the GRAS system, or the work of Charles Goodyear, off the top of your head. You need to look these things up … and thus, you need to cite your sources. **It is that easy.**

**If you look it up … you should cite the source! It is simple, *and it is expected*!**

Copying someone else’s work will earn a score of zero. You are a university student. It is expected you know as well as follow the rules. You will be held accountable.

I am a terrible academic with respect to the format of citation. My goal is to simply be able to review the original website you cite. Thus, when using internet sources, it is acceptable to cite a passage, using a shortened url address so that I can look up the complete reference in the works cited section. Following are two illustrations of reasonable citation, I feel to be wholly acceptable, for our work. **The full and complete url (universal resource locator) references I have included, should appear in the works cited section of your paper, or lab report**.

Notice that each of the 4 references has been used. Notice as well, that in one short passage regarding the plant, Kanna, I recorded 7 citations. This is appropriate, expected and valued! Finally, there is no direct quotation in the following passage, but the passage is a re-wording of my readings, thus, each idea/fact is cited. Why? None of the ideas/facts are original, nor considered to be common knowledge. Thus, each requires a citation. Examples are on the following page.

Example 1:

Additionally, Kanna may be a monoamine releasing agent1,2. This means that it may encourage the release of serotonin (C₁₀H₁₂N₂O)4. So, Kanna may not only inhibit the re-uptake of serotonin, but it may encourage the release of the neurotransmitter.2,3. It may also release other monoamines, some which are classified as amphetamines, thus affecting mood further.3 However, serious negative effects have not been studied. It is recommended that nursing mothers and pregnant women avoid its use.1

These complete url addresses should be found on a separate works cited page:

1. <https://examine.com/supplements/sceletium-tortuosum/>

2. <https://www.drugs.com/npp/sceletium-tortuosum.html>

3. <https://en.wikipedia.org/wiki/Monoamine_releasing_agent>

4. <https://en.wikipedia.org/wiki/Serotonin>

OR, you may use a citation system using a shortened, but embedded url/name of text etc…. The full url should appear in a works cited section, to facilitate review.

Notice the use of embedded, and shortened urls

Example 2:

Additionally, Kanna may be a monoamine releasing agent. ([https://examine.com/supplements](https://examine.com/supplements/) , <https://www.drugs.com/npp/>) This means that it may encourage the release of serotonin (C₁₀H₁₂N₂O) (<https://en.wikipedia.org/wiki/Serotonin>). So, Kanna may not only inhibit the re-uptake of serotonin, but it may encourage the release of the neurotransmitter. (https://en.wikipedia.org/, <https://www.drugs.com/npp/>) It may also release other monoamines, some which are classified as amphetamines thus affecting mood further. (https://en.wikipedia.org/). However, serious negative effects have not been studied.It is recommended that nursing mothers and pregnant women avoid its use. ([https://examine.com/supplements](https://examine.com/supplements/))

These url addresses should be included on a works cited page are the full urls … so that they may be matched and researched.

1. <https://examine.com/supplements/sceletium-tortuosum/>

2. <https://www.drugs.com/npp/sceletium-tortuosum.html>

3. <https://en.wikipedia.org/wiki/Monoamine_releasing_agent>

4. <https://en.wikipedia.org/wiki/Serotonin>

**Noto Bene:** Internet sites are a bit tricky and I urge you to use only authoritative sites. Acceptable sites include but are not limited to the .gov or .edu sites. When using a .edu site, be sure you are not quoting a student’s paper! With respect, a student paper is not considered to be authoritative. Check the references in the works cited section of the student paper, were it just too tempting for you to pass up – or bring me a copy of what you wish to use, and ask me for help.

**Avoid** most “.com” sites, and avoid using About.com., especially. (There have been so many errors associated with About.com, it is better to look elsewhere)

As you can see in the above example, I used drugs.com and examine.com as exceptions to the rule, regarding .com sites. These two sites (among others) provide citations for their work. I value such citation and use that fact to help me determine if the website is appropriate to use. I also consider howstuffworks.com & britannica.com as appropriate sites.

Note that I used Wikipedia as a source (primarily for a definition and formula.). However, the use of Wikipedia.com. should be accompanied with least 1 other confirming citation. Wikipedia is good … but it still has some issues and thus it should not be your sole reference.

Clearly, there are a host of exceptions - be judicious. For instance, were you researching the drug Crestor®, I believe it would be appropriate to use the manufacturer AstraZeneca’s website. However, it should never be used as a source for definitive statistics. Such statistics should be verified by an unbiased source from outside of AstraZeneca.

The **big idea here** is to use internet sites judiciously, and in the **manner of scholarship.** When you have a question regarding the appropriateness of an internet site, **please contact me**. We can talk about it. Your website selection is an integral part of your work. I have included several solid web sites for you, on page 9 of this introductory packet.

### Lab & Laboratory Report: While you write the lab report by yourself, you (generally) get to perform the experiments in pairs. Each member of the team is responsible for preparing for the lab experiments and turning in their own lab report, 1 week after the lab. When a laboratory or a laboratory report is not completed in the assigned time, a score of zero will recorded, unless prior arrangements have been made, with me.

* Masks and goggles must be always worn.
* A complete report will be word processed (typed) and have: your name, the lab title, the objective (found in the lab manual) all necessary data tables, appropriate responses to all assigned questions, citations, and a **lab reflection of at least 4 to 6 sentences**. Use the example at the bottom of this page, for your lab report format.
* When required, the lab report will state any tabulated or collected results in word-processed tables (e.g. Excel, or MS Word). **Hand drawn graphs/charts are not acceptable**.
* The assigned questions at the end of each lab report are to be included in the write-up and followed by your response. Thus: **please type out the question and then include your response to the question**. This is part of your grade.

⮊ As a word-processed (typed) piece, each lab report will be **double-spaced, cited appropriately** in the body of **the**

**text and have a works cited page, if necessary**. Failure to cite sources is plagiarism.

* The report will be turned in the next week, at the start of the lab period. A report not handed in at that time, can be emailed to me within **1 hour** of a lab period ending, for **full credit**. I do not return printed copies of emailed assignments. Any report electronically **received** after the 1-hour period, but by midnight of the due date, begins at 12.5/25 points, unless other arrangements have been made. After midnight, or the agreed to arrangements, the lab report is rated at zero points.
* The first time it appears that a lab report has been copied or is not of your authorship, at any point, the score will

begin at 12.5/25 points for all involved parties. Any reports which continue to demonstrate a lack of personal authorship, after the initial warning will bear a 0/25 points for each party. Plagiarized work may earn an automatic score of 0/25 points.

I believe firmly that classmates should ***discuss*** the work. The report is not written in tandem, however. At any point, I too will discuss the laboratory with you and help you as best as I may. Use me as a resource! I can help.

**Your laboratory report needs to be patterned along the lines of the following template:**

**Lab Report Format Summary**

Your Name

Title of Lab

Objective of the Lab (found in the lab manual)

Table(s) of Results (only when necessary)

Question 1: type it out / double space

Once the question is typed out, give your answer, proof, settings (**embed citations when necessary**)

Question 2 type it out / double space

Once the question is typed out, give your answer, proof, settings (**embed citations when necessary**)

and so on ....

Reflection(see below for help/ideas)

Include a works cited page when using abbreviated urls in your answer(s) section. When using full urls or footnotes in the Question/Answer section, then you may ignore having a works cited page.

**Reflection Stems:** You may use the following stem sentences to help you evolve an organized, focused, thoughtful reflection. Use three to four for each of your reflections. By no means do you need to, nor should you use them all at any one time. But each reflection should be at least 4 to 6 sentences, discussing your learning/questions/insights... A reflection is to be written for each lab report, in lieu of a conclusion.

|  |  |
| --- | --- |
| * I was surprised that… * I think I am strong at ... because... * I learned… | * What was really valuable to me… * I thought it was so interesting when ... * What amazes me... |
| * I now understand… * I never knew that… | * I am beginning to connect ideas like… * I do not agree with… |
| * The question I still have is… * If I could repeat this, I would like to… | * I wish I knew more about… * There is a weakness… |
| * I still do not get/understand… * The skill I value most... * (An) Idea(s) / Concept(s) that helped me from the lab / lecture were... | * This issue dovetails with class / my major because... * I can see why someone would study this because... * I would re-fine and/or re-design the experiment by… / My work could be improved by … |

**LITERATURE REVIEW**

T

his course requires a literature review paper and a presentation on that work. **The literature review is due on**

**11 November 2021**. You must get approval for your topic from me, by the end of October 2021. Getting your idea

approved is part of your grade. All the rules apply regarding appropriate comportment of a university student, writing

papers, citation, plagiarism, accuracy ...etc. It is worth 150 points.

**The Literature Review:** Note that your paper will not be returned to you, but I will work to apprise you of problems,

work to give you feedback as to your work, via email. To have full consideration, your paper will:

⮊ be on a topic pre-approved by the instructor. **This is graded!!!!** Speak to me / email me about a topic.

**For ideas/topics/possibilities,** check out <http://www.chemistryexplained.com/index.html>

### ⮊ be written with the instructor in mind as the reader.

⮊ have a minimum of 6 pages (exclusive of a title page, space for citations, diagrams, tables, and/or formal works cited)

⮊ be word-processed, double-spaced, with a font equivalent to Times New Roman 12-point font, with

1” maximum margins on all sides for every page.

⮊ include appropriate equations, formulae of chemicals, tables/graphs/charts of data (be aware that a page of

such diagrams or data does not count towards your 6-page minimum, unless the diagrams are fully explained.

⮊ be original and written, for this course, use correct jargon, from the class and your research, and be accurate

according to current mainstream scientific tenets.

⮊ have all embedded, & appropriate citations with a fully researchable bibliography or works cited page

⮊ be written as a treatise on***chemistry, using the ideas learned in this class.*** (This not a health or psychology paper (etc),

nor is it to be a persuasive piece). **This paper and the following presentation are essentially, your final exam.**

⮊ be turned in as a hard copy, on time.

**The Presentation and Participation:** The presentation of your work will be explained in depth, later in the semester. But, in short, the presentation of your literature review is worth 50 points and your participation in the presentation process of other students is worth another 50 points (for a total of 100 points).

These presentations occur on the dates found on the included laboratory calendar (page 10 of this packet). **For full credit**, your own presentation **must include** and will be graded at 10 points apiece, **the answers to the following 5 questions**:

* How does your literature review dovetail specifically with work done in our class over the last semester?

(e.g. What are; the jargon, ideas, formula, chemical processes, lab work, readings, experiences, discussions associated with your work?)

⮊ What surprises, attitudes, revelations, did you take away with you / learn, from your literature review?

⮊ Were you able to attack this issue again, how would the work change?

(e.g. What would you wish to learn still / What different direction would you take?)

⮊ What connection(s) / impacts did the topic make with; ➊your major/➋day-to-day life /➌education?

(You need to identify/discuss the connections to only *one area ...not all three*)

⮊ What would be one idea you wish the class members to learn from your work, and why is it an important idea?

# Syllabus

T

he syllabic topics are selected; to enhance the laboratory work, provide a functional, and basic, chemical vocabulary, engender the habits which lead to successful researching, reading, interpretation, writing about chemical topics, and of course, student interest. The studied curricular material can be changed to meet the needs and/or interests of class participants.

I happily will attempt to address topics students ask of me - or I will shift focus to pursue student interest, as long as the basic tenets of; biochemistry, biophysical chemistry, environmental chemistry, industrial, and/or consumer chemistry are followed. I hope to integrate an understanding of basic chemistry into your "everyday life experience" and/or your major area of study. The syllabus will be affected greatly by your expressed interests.

A good understanding of basic chemistry can; help a marketer design a better campaign, enable an art or fashion student in the selection of materials, help a history major grasp the role of industrialization/discovery/the scientific process as a cause for changes in society, develop a deeper meaning for proper policy development for a lawyer, diplomat, or help a health major illustrate the role of the scientist in the culture, make you a savvier consumer / investor, and help to prepare a parent or care giver to ask a medical professional appropriate questions for the benefit of their loved ones.

For me, a basic understanding of chemistry should include, but is not always limited to:

1) the Law of the Conservation of Mass, Energy and Charge (Big Idea #1)

2) Potential Energy (Big Idea #2)

3) the Concept of Charge (Big Idea #3)

4) the activity of (valance) electrons, of metals and nonmetals in terms of redox reactions

5) the general properties of organic and inorganic compounds

6) the nature of a chemical bond, and the resulting behavior of matter in terms of intermolecular forces

of attractions, reactivity, enthalpy, and entropy. (Big Idea #4)

7) the activity of acids and bases

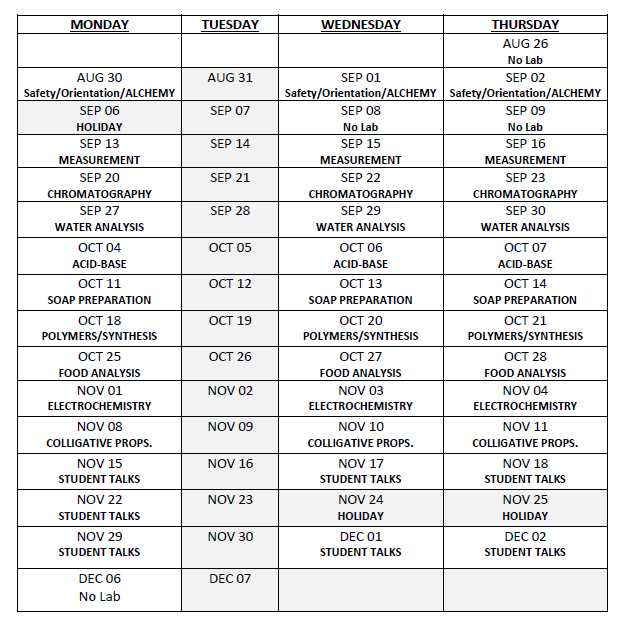
8) the fundamentals of what is meant by nuclear chemistry (with Mass Defect acting as Big Idea #5)

**A Few Internet Research Sites Appropriate for Everyday Chemistry**

|  |  |  |
| --- | --- | --- |
| **Institute** | **Links** | **Comments** |
| American Chemical Society  (ACS) | <http://portal.acs.org/portal/acs/corg/content> | You can get a good deal of info from the public pages. I like many of the other links found below more, but the ACS's "molecule of the week" is good. You could try DISCOVER CHEMISTRY link at the top of the ACS page. |
| Centers for Disease Control & Prevention | <http://www.cdc.gov/> | A particularly good site overall for medical issues. |
| Howstuffworks | <http://www.howstuffworks.com/> | Terrific for any technological/industrial process |
| Hyperphysics | <http://hyperphysics.phy-astr.gsu.edu/hbase/hph.html> | Good for tutorial and background information, only. It is **not great** for individual processes or chemicals. |
| Linus Pauling Institute | <http://lpi.oregonstate.edu/infocenter/> | A good place to start on biomedical &/or nutritional issues. A host of articles. Check the validity of the work drawn from this site, with other sites/sources. |
| National Cancer Institute | <http://www.cancer.gov/> |  |
| National Institute  of Drug Abuse | <http://www.nida.nih.gov/nidahome.html> | Highly informative re: vitamins, illicit drugs, pharmaceuticals, etc… |
| National Inst of Health | <http://www.nih.gov/> | Name it... They cover so many areas. |
| National Inst of  Mental Health | <http://www.nimh.nih.gov/index.shtml> | This provides a nice blend of medicine, chemistry, neurology, sociology ... |
| US Nat’l Library of Medicine | <http://www.nlm.nih.gov/> | This can get overwhelming ... but a nice source |
| United States Geological Service | <http://www.usgs.gov/> | I love these folks ... everything from biophysical & physical chemistry to ecosystem biology. COOL |
| Chemistry Explained | <http://www.chemistryexplained.com/index.html> | Another solid source. The bibliographies at the end of each article are excellent. |
| The Brain at McGill | <http://thebrain.mcgill.ca> | Just... WOW ... multiple levels of expertise depending upon your interest, all about the brain. I can help you navigate this. |
| Drugs.com | <https://www.drugs.com/> | The information here is well cited. It is informative and confusing terminology may be readily researched. |

**Lab Schedule for Autumn 2021**

**102-71 102-72**



Note: The Measurement Lab requires the use of a Vernier caliper. I will teach you how to use one. Okay?

Note: For the **water analysis lab**, it would be instructive to bring in a sourced water sample of your own.

Note: Your participation in each of the 3 presentation periods is part of your grade. Your presence is an

expectation of the course.