EVERYDAY CHEMISTRY

**Spring 2020**

(Keep this packet and refer to it!)

Instructor: Tom Di Gaetano: **digaetanot@wcsu.edu** Office Hours: Mondays @ 5:00 pm – 6:00 pm

# ATTENDANCE

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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’s all about good faith efforts. The student is responsible

for the work missed work due to his/her absence(s). Any and all work that is done / assigned, or due, must be completed by the due date for any score greater than zero. Poor attendance in lecture may result in failure, but poor attendance in lab will ABSOLUTELY be a cause for failure.

**Lecture:** You are urged to take excellent notes. 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. 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, during office hours. The tests 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. Most assignments bear points towards your grade. Do not expect any extension of time/due date.

When you to 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. This alternate evaluation will be given during my office hours.

**Laboratory:** Students need to be aware that there are no make-up laboratories. To avoid penalties, you should consider slipping into another section’s laboratory period, assuming you have the permission of that session’s instructor, *in advance* of your attendance. You need to arrange such attendance with that session’s instructor. Other sessions are listed outside the laboratory, **(SB 336)** and on page 9 of this packet.

In order 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** **three laboratory exercises, is cause for course failure. Make sure you understand that last point.**

The student presentations at the end of the semester are **scheduled as laboratory exercises. They carry a grade and attendance requirement as any other laboratory exercise. Non-attendance of the presentations earns a grade of zero and counts towards the attendance policy. Participation points are assigned during these presentations as well, for a separate grade.**

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

**GRADES**

rading is an expected, and appropriate activity. Do not hesitate to ask questions about how your grade. Course

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 grades work on a total-points basis.

**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". **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 turned in past the due date/time, (regardless of reason), will have a reduction of more than 50% of available points, unless you have made appropriate arrangements, in advance.

**The course requires a written literature review paper** and this paper is worth 100 points. Your presentation of the literature review *and* participation in the ancillary presentations are worth a total of 100 points as well.

**General Summary of Points**

3 to 4 "Quests” at 40 to 80 points each

10 lab reports at 25 points each

1 six-page literature review at 100 points maximum

1 personal presentation at 50 points maximum

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 begin during my office hours and of course, alternate setting is fairly easy to accommodate, during my office hours. Be sure to see me well in advance to schedule any such accommodation.

## WRITTEN SUBMISSIONS

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 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.** 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, in all likelihood, with a 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.** Lab reports and papers without appropriate citations will earn a score of zero points. Plagiarism will be reported. **Paraphrased internet sources must be cited.** When you use whole pieces of a site 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 looked it up … cite the source.** Copying someone else’s work will earn a score of zero. You are a university student. It is expected you know and follow the rules.

When using internet sources, it is acceptable to cite a passage, using a shortened url address so that the reader 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 url references I have included, should appear in the works cited section of your paper, or lab report**.

Notice that each of the 3 references has been used. Notice as well, that in one short passage regarding the plant, Kanna, I recorded 6 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.

Example 1:

Additionally, kanna may be a monoamine releasing agent1,2. This means that it may actually encourage the release of serotonin. 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 though, that nursing mothers and pregnant women avoid its use.1

These 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>

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 actually encourage the release of 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 though that nursing mothers and pregnant women avoid its use. ([https://examine.com/supplements](https://examine.com/supplements/))

These 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>

**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 just 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) tend to cite their work, and I value that, and use that fact to help me determine if the site is appropriate. I also consider howstuffworks.com & britannica.com as appropriate sites.

Note that I used Wikipedia as a source (primarily for a definition). 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 - but be judicious. For instance, were you researching the drug Crestor®, I believe it would be appropriate to use 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 site selection is an integral part of your work. I have included a number of solid web sites for you, on page 8 of this introductory packet.

### Lab & Laboratory Report: While you write the lab report by yourself, you (generally) get to perform the experiments in pairs. Phew! 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.

 **⮊** Each student will take a brief lab-quiz, prior to 7 or so of the labs. Successful completion is required for Lab

 participation. Failing the pre-quiz will require the student to re-read the lab, be re-quizzed and then begin the lab,

 often, outside of a team (that is, on their own). Completion of all work must still be within the allotted lab period.

* A complete report will be word processed and have: your name, the lab title, the objective (found in the lab manual) all necessary data, appropriate responses to all assigned questions, citations, and a reflection of at least 4 to 6 sentences (explained on page 6 of this packet). 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)
* The questions at the end of each lab report are to be included in the write-up and followed by the answer. **Please type out the question and then include the answer to the question**.

⮊ The laboratory report will be word-processed. It 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 12/25 points, unless other arrangements have been made. After midnight, or the agreed to arrangements, the lab report is rated at zero pts.
* 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 12/25 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.

 **Your laboratory report should be patterned along the lines of the following:**

 **Lab Report Format Summary**

Your Name

Title of Lab

Objective of the Lab

Table(s) of Results (if necessary)

Question 1: type it out / double space

 Answer, Proof, Settings (**embed citations when necessary**)

Question 2 type it out / double space

 Answer, Proof, Settings (**embed citations when necessary**)

 and so on ....

Reflection\* (see the next page for help)

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...

|  |  |
| --- | --- |
| * I was surprised that…
* I think I am strong at ... because...
* I learned…
 | * What was really valuable to me…
* It was really interesting when ...
* What amazes me...
 |
| * I now understand…
* I never knew that…
 | * I am beginning to connect ideas like…
* I don’t 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 don’t get…
* The skill I value most...
* (An) Idea(s) / Concept(s) that helped me from the lab / lecture were...
 | * This issue dovetails with 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 & PRESENTATION**

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

 **9 April 2020.** See me well in advance to discuss your topic ideas. Presentations will occur during the last 3 scheduled

 lab periods. (20 April – 7 May). All the rules regarding writing papers, citation, plagiarism, accuracy ...etc, apply.

 **The Literature Review:** Note that depending upon time, your paper may not be returned to you, after your

 presentation. To have full consideration, your paper will:

⮊ be on a topic pre-approved by the instructor. Speak to me ASAP 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.

⮊ 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 your presentation are, essentially, your final exam.**

**The Presentation:** 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 full credit, your own presentation must include and be graded at 10 points apiece, upon 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?

 You may prepare these remarks in advance, and write them down.

# Syllabus

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 he syllabic topics are selected; to enhance the laboratory work, provide a functional, but 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.

Thus, I happily will attempt to address topics students ask of me - or I will shift focus so as 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 interests.

A good understanding of basic chemistry can; help a marketer design a better campaign, enable an art 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, diplomate, or health major, illustrate the role of the scientist in the culture, make you a savvier consumer / investor, and help to prepare a parent 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 limited to;

 1) the Law of the Conservation of Mass, Energy and Charge

 2) potential energy

 3) the concept of charge

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

 5) the general properties of organic and inorganic compounds

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

 of attractions and reactivity.

 6) the activity of acids and bases

**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 very 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> | Very informative re: vitamins, illicit drugs, pharmaceuticals, etc… |
| National Inst of Health | <http://www.nih.gov/> | Name it... They cover so many areas. |
| National Inst ofMental 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. |



**We are scheduled for** labs on Monday and Thursday. The other lab periods are provided for you in the event you need to “slip into” another instructor’s lab. See me about this, and I may be able to help smooth the way – but you need to do this in advance.

**Prior to the measurement lab you must review how to read a Vernier caliper. You can use:**

<http://www.phy.ntnu.edu.tw/ntnujava/index.php?topic=52> It is not perfect by any stretch, but it will get you up to speed … or at least well enough so that I can help you during my pre-lab. Were you to dislike the above site, you may use any reference that helps you learn how to use a Vernier caliper.

 Note as well, that for the **water analysis lab**, it would be instructive to bring in a sourced water sample.