



Writing Intensive Program

New Course Proposal Form

The Writing Intensive Committee recognizes that one of the strengths of the WI Program is that the requirement can be satisfied with courses in various disciplines, offering students a variety of written communication opportunities and challenges. WI-related assignments include essays, laboratory reports, translations, creative writing, letters, as well as other assignments that support the nature of the course material. A course designated as Writing Intensive should include at least twelve pages of clear prose in formats appropriate to the discipline involved. This requirement must be broken into a minimum of three assignments, reasonably spaced throughout the course, each of which should be marked and returned promptly with constructive comments. Though one essay test may be counted as one of these assignments, the final examination may not be since it cannot be returned during the semester.

Using this form, list at least three of the WI-related assignments you will use in the class. Please give the name of the assignment and the required page length. Indicate the type of assignment, how it will be evaluated, and what types of opportunities students will have to show improvement. If you have multiple assignments that are the same type and have the same feedback, you may list them under a single heading with the total page length for all of the assignments of that type. (For instance, if you have six critical analysis papers that are two pages each, you are welcome to put "Critical Analysis Papers x 6" under the assignment name and list the page length as 12.) You may also use the area on the back of the form to list additional assignments or provide additional details.

Besides this minimum requirement for graded writing, a WI course may and perhaps should require opportunities for informal, ungraded writing designed to further enhance students' understanding of and appreciation for course material and to prepare them for the course's formal writing. Please list those assignments as well.

Attach a syllabus and any other supplementary materials that illustrate the ways your course meets WI Program expectations (instructional handouts, grading rubrics, assignments, etc.).

If your course will be WI regardless of the instructor, please also complete the "WI All Instructors" section of this form and provide a signature from the Department Chair. While additional instructors may make changes to the structure of the course, and use different assignments, it is the department's responsibility in preparing future instructors to teach the course as Writing Intensive.

**For submission deadlines please go to the Writing Intensive Program website:
<http://academics.umw.edu/writing-intensive/>**

This form, along with any related materials you would like to include, should be sent via e-mail to the chair of the Writing Intensive Committee.

Proposer's Name:

Department:

Course number and title:

Semester the WI designation should take effect:

Frequency: Fall Spring semester check one: yearly alternate years

WI designation requested for...

the course and the faculty member teaching this course (other faculty who teach the course will not have their courses designated WI automatically; other faculty will need to apply for WI designation independently.)

the course regardless of instructor; the department chair accepts responsibility for ensuring that multiple sections maintain the core WI elements described in this proposal and approved.

Assignment name:

Page length:

Type of assignment:

- Academic Summary
- Position Paper
- Critical Analysis
- Argument
- Research Report
- Research Synthesis
- Exploratory Essay
- Creative Writing

- Blog Posts (Graded)
 - Other:
- Students will receive feedback using:
- Rubric
 - Written comments
 - Small group or individual conferences
 - Other:

Opportunities to show improvement will include:

- Required revision
- Sequenced repetition of similar assignment
- Other:

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 - Other:

Opportunities to show improvement will include:

- Required revision
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- Other:

Additional formal writing assignments or details:

Additional informal writing assignments (ungraded)

Estimate the number of words/pages/posts of required informal writing:

Type of assignment:

- In-class exploratory writing
- Blog posts (ungraded)
- Journal (ungraded)
- Homework exploratory writing
- Drafts
- Personal reflections
- Other:

WI For All Instructors

If approval is sought for all instructors, rather than for a specific instructor, please complete the following section.

To be completed by the Department Chair:

How will the department help prepare new instructors to teach this course as WI?

Department Chair Signature:

Date:

University of Mary Washington

Department of Chemistry

CHEM 319: Biochemistry I Lab

Fall 2018

Section 1

Instructor: Dr. Randall D. Reif
Jepson 300; reif@umw.edu ; x5983

Office Hours: Monday 1:00-3:00 PM
Tuesday 1:00-3:00 PM
Friday 1:00-2:00 PM
Other times by appointment.
I also have an open door policy-drop by anytime my door is open!

Class Times: 9:30 AM – 12:15 PM T, Jepson 210

Required Course Materials

- 1.) Slunt, K. Biochemistry Laboratory Manual, Kendall Hunt Publishing: Dubuque, IA, 2009
- 2.) Approved Safety Goggles and Laboratory coat
- 3.) Laboratory notebook with carbonless duplication
- 4.) Calculator with scientific notation
- 5.) Access to Canvas

Course Prerequisites

This course requires a grade of C or better in CHEM 212.

Course Description

This laboratory course (in addition to CHEM 320) is designed to demonstrate and teach the techniques utilized in the biochemical sciences. This semester will focus on experiments utilized to characterize the four major classes of macromolecules. CHEM 320 will focus on chromatography, purification of biological materials and DNA manipulation.

After completing the course, a student should be able to

- Conduct experiments studying the characteristics of each of the macromolecular classes
- Understand the principles of spectroscopy, kinetics, electrophoresis and chromatography as applied to biochemical analysis
- Work with peers to conduct biochemical investigations
- Read the biochemical literature

Writing Intensive Learning Outcomes

1. **(Ideas):** Students will demonstrate satisfactory knowledge of the varying strategies to convey arguments, main ideas, and support/evidence.
2. **(Organization):** Students will demonstrate satisfactory knowledge of the varying patterns of composition organization and development
3. **(Rhetorical Situation):** Students will demonstrate satisfactory knowledge of the audience, the role of the writer, and rhetorical strategies.
4. **(Editing):** Students will demonstrate satisfactory knowledge of writing conventions and correctness.

Expectations of Students

- 1) Students may not work on experiments outside of laboratory time (9:30 am until 12:15 pm on Tuesdays) *without the explicit permission of the instructor* and may not work in the laboratory alone.
- 2) Each student is required to complete a pre-laboratory exercise for each experiment. Details of these assignments follow in this syllabus.
- 3) Besides unknown samples and any solutions already prepared and available, the students will prepare all solutions themselves. You will need to include descriptions of how the solutions will be prepared, amounts needed, etc. in your pre-laboratory plan.
- 4) All experimentation, laboratory planning, data discussion must be completed *individually*. You may consult the literature or Dr. Reif, but you may not seek assistance from any other faculty member (including other disciplines) or student.

Attendance

Attendance in the laboratory is mandatory. **Unexcused absences from laboratory cannot be made up. MORE THAN ONE UNEXCUSED LABORATORY ABSENCE WILL RESULT IN FAILURE OF THE COURSE.** Excused absences may be made-up, if possible, at the discretion of the instructor. If you have to miss a laboratory due to an **emergency** or if you expect to be absent due to an interview, intercollegiate athletic event, etc., you should inform the instructor as soon as possible to schedule a make-up.

It is also imperative that you be on time for the laboratory. The pre-lab lectures cover important safety and procedural information. If an individual is repeatedly tardy, a **five-point deduction** will occur for each instance or the student will not be permitted to perform the experiment.

It is absolutely critical that you respect the dangers inherent in laboratory space. **If I feel your behavior is seriously unsafe to either you or your classmates, you will be asked to leave immediately and will receive a zero for that day's effort.**

Be sure to bring the laboratory manual, scientific duplication notebook, a blue or black pen, and calculator to each experiment. You are required to have goggles and laboratory coats for each experiment. Failure to bring the appropriate materials to the laboratory may result in a penalty to your grade.

You will be working in pairs to complete the experiments. Your group assignments will rotate for each experiment and will be announced at the start of the laboratory period. This work is solely to carry out the procedures and collect the data. Students must write the pre-laboratory assignment, analyze the data individually, and write an independent lab notebook..

Grading

The grade in the course will be based on the following scale:

Pre-laboratory notebook pages	20%
Notebook grade	30%
Report Sections	25%
Final Laboratory Report	25%

A mid-semester report of unsatisfactory (U) will be reported if you have a C- or below in the course at the midpoint of the semester.

Assignments

There are several different assignments throughout the semester:

Notebook Assignments

- 1) Pre-laboratory notebook page(s) – the following assignment should be completed in the carbonless notebook pages and a copy of these pages are due at the start of the laboratory – NOTE – if you do not turn in the notebook pre-laboratory assignment at the start of the laboratory period you will not complete the lab and it will count as an unexcused absence.

The pre-laboratory pages should include and **should not exceed two to three pages** of the notebook

- a title of the experiment – in your own words
- a purpose for the experiment – briefly summarize in your own words the procedure/goal – should not exceed two or three sentences
- a complete reference for the experiment using ACS style

- procedural flowchart or outline – the flowchart should be **no more than one page**. The flowchart should provide a summary of the experiment to be performed. DO NOT rewrite the procedure from the experimental handout. This is your opportunity to think about what you will be doing and rewrite it in a way that covers the steps in a simplified manner.
 - answers to pre-laboratory questions in the laboratory manual
- 2) Notebook pages for the experiment should follow the guidelines in the laboratory manual (chapter 1). You will turn in the duplicate pages of your notebook at the start of the next laboratory experiment. At the conclusion of each laboratory day, the instructor will initial each page. Your notebook pages should include the following:
- date
 - notes about any changes in the procedure completed
 - data and observations
 - complete data analysis – calculations when appropriate – if chart, graphs, excel are used, a reference to these program or figures should be indicated in the notebook and a hardcopy of the appropriate documents are attached to the copy of the notebook pages
 - answer to questions in the laboratory manual
 - summary of experiment– this should be a four or five sentence summary of what you actually did in the experiment, what you learned, what were the major experimental findings – this is similar to a paper abstract.
- 3) Overall notebook grade – on the last day of laboratory, a review of the overall notebook will occur. Proper notebooks should contain a table of contents in the front, should not have any missing pages, is written in blue or black ink, and is signed by a witness (instructor) on every page. You will be graded on how well you maintained a proper notebook.

Writing Assignments

- 1) Dissection of a Biochemistry Paper- Due on the 2nd lab period, students will choose a Biochemistry Primary Literature article (recommended Journal: *Biochemistry* published by the American Chemical Society and available at: <http://pubs.acs.org/journal/bichaw>) to “dissect”.
- a. The article should contain separate sections for Results and Discussion
 - b. Understanding of the Article topic/subject is not required
 - c. Students will read each section of the article and write a 1-2 page paper about what information is presented in each section and HOW that information is formatted. It is important to note trends such as how figures and tables are numbered, whether subheadings are used in the section, what topics are presented in what order, etc.) the more detailed the analysis of the article, the better.
- 2) Lab Report Sections- Each experiment will have a section of a lab report (abstract, introduction, etc) that will be turned in the following week along with the lab notebook pages. The section that will be written with each experiment is listed on the tentative schedule but IS SUBJECT TO CHANGE. The report sections will be graded, and returned

to the student. On October 24th, students will be expected to bring revised versions of those sections to class so that a peer review activity can take place. Students will read and offer feedback to each other's sections after which up to TWO of those sections can be revised and turned in to be regraded. The new grade on those sections will replace the original grade.

- 3) Final Laboratory Report – for the final 5-week lab at the end of the semester, students will write a full lab report using what was learned from writing the lab report sections throughout the semester. A 1st draft of this report will be due on the second-to-last week of lab for comments from the instructor. During the final class meeting, a 2nd draft of the reports will be peer reviewed by students in the class. This will allow for the revision of the Final Lab Reports. More details for this assignment will follow later in the semester.

Due Dates and Extensions

All notebook pages and lab report sections are due **one week (by 9:30 am) after the completion of an experiment**. Late notebook pages will receive a grade of zero. Pre-laboratory assignments will not be accepted and will result in an unexcused absence from the laboratory. Each student is allowed a one week extension on **one** experiment's notebook pages provided that the student has submitted a written request for the extension. The written request is due one week (by 9:30 am) after the completion of the experiment.

Honor System

Although you will be working as groups to complete the experiments, all assignments must be completed individually. You may not collaborate on the data analysis, pre-laboratory assignments, or notebook write-ups. Any assignment for which you will receive a grade must be completed individually and pledged as your own work. This includes notebook pages, literature assignments, etc. The honor pledge must be written in full: *I hereby declare upon my word of honor that I have neither given nor received unauthorized help on this work. (Signature)*

Alteration of data or copying data from another individual is an honor offense. You may discuss how to do the calculations with other students or get help from the instructor, but your final report must be your own work.

Office of Disability Services

The Office of Disability Services has been designated by the University as the primary office to guide, counsel, and assist students with disabilities. If you receive services through that office and require accommodations for this class, please make an appointment with me as soon as possible to discuss your approved accommodation needs. Bring your accommodation letter with you to the appointment. I will hold any information you share with me in the strictest confidence unless you give me permission to do otherwise. If you need accommodations, (note taking assistance, extended time for tests, etc.), I would be happy to refer you to the Office of Disability Services. They will require appropriate documentation of a disability. Their phone number is 540-654-1266.

Safety Information:

Safe lab practices are expected of you. There are potential risks, such as exposure to hazardous chemicals and minor injuries (e.g., cuts and burns). During the first week of the semester, the safety rules will be presented and reviewed. To participate in this course, each student must sign a statement (last page of the syllabus) in which they acknowledge the risks associated with the course and agree to follow all safety rules and to assume responsibility for their actions in the laboratory.

Contacts in the Event of an Emergency:

Emergency Number: 4444 (from any UMW phone)
Campus Police (From a cell phone): (540) 654-4444/1025

In the event of fire, fire alarm activation or release of hazardous materials:

- Immediately leave the building and assemble in designated assembly point.
- **Do not re-enter the building or leave the assembly site until advised for any reason.**

In the event of Severe Weather or Natural Disaster's:

- Remain inside the building. Do not enter a building during an earthquake.
- Practice **Drop** to ground, **Cover** head and neck, and **Hold on** to shelter for earthquakes.

In the event of Critical Stress Situations (Violence, Active Shooter):

- Practice **Run, Hide, Fight.**
- **Run** or escape from building
- **Hide** if not possible to escape.
- **Fight** as a last resort.

Tentative Laboratory Schedule (All dates are subject to change)

Date	Laboratory Topic
8/29	Course introduction, Liquid measurements exercise Lab Section: Dissection of a Biochemistry Paper
9/5	Experiment 3 – Preparation of a Multiple Component Solution Lab Section: Experimental (Materials and Methods)
9/12	Experiment 4 – Ionic Properties of Amino Acids and Peptides Lab Section: Results
9/19	Experiment 5 – Spectrophotometric Studies of Proteins – Week 1
9/26	Experiment 5 – Spectrophotometric Studies of Proteins – Week 2 Lab Section: Introduction and References
10/3	Experiment 6 – Spectrophotometric Studies of Nucleic Acids in Solution Lab Section: Abstract
10/10	Experiments 13 and 14 – Electrophoresis of Proteins Lab Section: Discussion
10/17	FALL BREAK!!!! (no lab)
10/24	Lab Report Writing Peer-Commentary Activity (Bring Updated Lab Report Sections to Lab)
10/31	Tyrosinase Enzyme Kinetics – Week 1
11/7	Tyrosinase Enzyme Kinetics - Week 2
11/14	Tyrosinase Enzyme Kinetics - Week 3
11/21	Tyrosinase Enzyme Kinetics - Week 4
11/28	Tyrosinase Enzyme Kinetics – Week 5 Draft 1 of Final Lab Report Due
12/5	Laboratory wrap-up/clean-up/grading of overall notebook/Peer Review Activity Draft 2 of Final Lab Report Due
	Full Lab Report Due: December 14, 2017 by 8:30 am

Explanation of the WI nature of the Proposed WI CHEM 319 Course

The Biochemistry I laboratory course is a 1-credit course taken by a mixture of Chemistry, Biochemistry, and Biology majors. The course is taught at a junior level and thus it is the perfect chance for students to transition from their introductory course level writing to upper-level scientific writing. Therefore the goal of my WI course is to help ease them into the transition. I have attempted to structure the writing assignments such that they build throughout the semester. On the second week of class (the class only meets once per week), the students are asked to turn in their "Dissection of a Biochemistry Paper" assignment. This 1-page writing assignment focuses on having the students analyze a primary literature article, not for scientific content, but for formatting, structure, and the location of various pieces of information. We take at least 1 hour of the second lab period to go over the assignment as a class and discuss how I would do the assignment using an article that I select. The purpose of this activity is for the class to essentially create the "Lab Report Section General Evaluation Guidelines" (see document attached). This will help them as they work on the remaining writing assignments throughout the semester.

Over the next 6 weeks, the students will perform a number of experiments. For each experiment, a carefully selected section of a lab report is written. These sections are evaluated and commented on by me using a rubric that is created for each section based on the General Evaluation Guidelines that we previously discussed. An example rubric for an Abstract section of a scientific article is attached to this document. It should be noted that the evaluation is based on the writing quality as the quality of the science is graded elsewhere (ie Notebook pages). On the 9th week of the course, the students are asked to bring revised versions of all of the lab report sections to class for a peer review activity. The sections are all reviewed by other students in the class and each student is given the chance to choose 2 of their 5 report sections to revise (based on both my comments and the peer comments) and turn in for a regrade. This allows the students to practice editing and making revisions in preparation to write a full lab report in the style of a published research article based on their multi-week final experiment.

The Final lab report serves as their final exam for the class and is the major project for the course. On average these reports are 20 pages long plus data, results, etc. This requires the students to use what they have learned throughout the semester to write all of the sections of a scientific article for a single experiment as if they were publishing a research article. Although not noted in the syllabus, I would most likely allow the students to work in pairs to prepare this document. The reason is that this project involves planning, performing, and analyzing data from several weeks of experiments in addition to writing the final report. In my opinion, this is simply an unreasonable amount of work for an individual student to be expected to do in a 1-credit course. Given that the final lab reports average 20 pages in length, each student should be responsible for 10 pages of it. I believe that between this and the report sections, the students will have done enough writing to merit the course's WI status.

The students will be required to turn in a draft of the report on the second-to-last week of lab for comments from the instructor. The students will then bring another draft to the last day of lab for peer review since there are no planned experiments at that time. These drafts will not be graded and thus is listed in the informal writing section of the WI proposal. This will provide the students with the opportunity to revise their final report multiple times before turning it in.

Lab Report Section General Evaluation Guidelines

Chem 319

**For a description of the sections see the Biochemistry Laboratory Manual, p6-7.

Abstract

- It should be concise (no more than 150 words) and usually 1 paragraph
- It should contain a summary of the following information (probably 1 or 2 sentences on each):
 - 1.) Purpose of the experiment (What were you doing and why were you doing it?)
 - 2.) General methods used (How the experiment was done but without too many unimportant details)
 - 3.) The Major Results. (They should also include numerical results when appropriate. These should relate directly back to the purpose)
 - 4.) The major conclusions that can be drawn from the results. (What do the results mean in terms of the big picture?)
- It should be possible to read and understand the abstract and the paper independently from one another

Introduction

- This section should contain the background information necessary to understand the experiment (may take introducing many topics to do this. Those topics should be carefully selected)
- It should be written for someone with basic working knowledge of the field but not knowledge about the experiment (give information that will help the experiment make sense)
- It should be organized in a coherent manner that flows from topic to topic (usually multiple paragraphs) presented in a logical order with smooth transitions.
- The background information should come from **primary literature** which should be appropriately referenced in the text. (very few websites/textbooks/etc should be cited)
- The reference format (Author, year or superscript # should be consistent throughout the entire paper)
- The end of the introduction should have a section that presents what is going to be tested in the current experiment and should include a hypothesis and rationale for the experiment

Experimental (or Materials and Methods)

- The procedures should be organized into appropriate sections
- The materials, instrumentation and solutions used should be noted along with where they were acquired from (manufacturer, supply company name, brand, etc)

- The procedures should be detailed enough to be repeated by a fellow scientist who does not have intimate knowledge/experience with the experiment
- Statistical methods used to analyze the data should be reported
- If the procedures are adequately described in a publication, it is often sufficient to provide a brief description of the procedures and reference the publication.
 - o Any changes to the procedures should be CLEARLY noted
- Specific quantities of materials and units should be noted in the sections
- Subheadings are typically used in this section to organize the different aspects of an experiment
- ***The experiment should be repeatable exactly from the procedures in this section.***

Results

- The section should begin with prose (written text in paragraph form) that presents the findings of the experiment
- The written prose should be supplemented with figures and tables when appropriate
- The figures and tables should be numbered in the order in which they appear in the text
- The figures and tables should all contain captions that help to explain the figure/table and make it understandable
- Any graphs should have appropriate axis labels and figure legends if appropriate for understanding
- The figures and tables must be referred to in the text of the section.
- The results section MUST HAVE TEXT. Figures and captions are NEVER enough.
- The results text should contain an explanation of the results and a description of the important findings.
- Subheadings are often used in this section to organize the presented results and help make them understandable to the reader
- When appropriate, calculations and equations can be shown in this section
- *Note: This section should not interpret the results in terms of your hypothesis, experimental objectives, or the literature.*

Discussion

- This section contains a detailed analysis and interpretation of the findings reported in the results section. (What do your results MEAN??)
- *This is where it is appropriate to interpret the results in terms of your hypothesis, experimental objectives, or the literature.*
- The results should be compared to results reported elsewhere in the chemical literature. (with appropriate references)
- Sources of error should be noted and discussed
- Future possible studies or modifications to the current study should also be discussed

- Often contains a description of the relevance of the results to larger questions in the field or to related fields
- The results should not be restated in this section but key results can be noted if it helps the discussion make sense to the reader

References

- The chosen reference format should be used consistently. (there are many ways to cite primary literature and this often changes based on the journal)
- If a number-based system is used, the references are numbered in the order in which they are referred to in the text and presented in numerical order in the references section.
- If the (Author, year) notation is used, the references should be listed in alphabetical order
- The VAST majority of references should be PRIMARY literature articles. (avoid citing lab manuals, textbooks, or websites whenever possible)
- The average scientific research publication cites ~25 primary literature articles. Do you believe that you cited enough?

General Issues and Considerations

- All text should use proper grammar, spelling, and punctuation and be free of typos
- Sentences should NEVER start with a number or symbol... EVER
- All text should be written in the Past Tense, Passive voice whenever possible.
 - o Ex. The ***solution was prepared*** by adding 15 mL of acid to the water.
 - o Generally Introductions tend to be the section that breaks this rule
 - o The words “we”, “I”, etc should not be used if possible
 - o The word “you” should never be used.
- Commands should NEVER be used even in an experimental section. It is a report of WHAT WAS DONE not telling someone what to do.
- Numbers that are less than 1 should always have a zero in front of the decimal (ex. 0.15 mL not .15 mL)

Section	Guidelines	Comments
Organization and Format (2 pts)	Correct spacing & margins Reasonable font size Section clearly labeled Excellent layout Is reasonably brief (~200words) and one paragraph	Score: _____
Quality of Writing (2 pts)	Written in elegant prose Written in the Past Tense, Passive voice Uses appropriate terminology and jargon for Biochemistry Few errors in grammar and syntax. Sentences never start with symbols or numbers The information is presented in a logical manner for easy understanding	Score: _____
Informational Content (6 pts)	It contains a thorough and concise summary of the following information: <ul style="list-style-type: none"> - Purpose of the experiment (What & Why?) - General methods used - The Major Results (include numerical results to be specific). - The major conclusions that can be drawn from the results. (What do the results mean?) 	Score: _____

Additional Comments: