

# Syllabus for BIOL 398/598: Introduction to Scientific Research Design, Fall 2021

**Important Note:** This syllabus, along with course assignments and due dates, are subject to change. It is the student's responsibility to check Canvas for corrections or updates to the syllabus. Any changes will be clearly noted in a course announcement or through email.

## Using this document

This document was developed using Styles for both navigation and Accessibility reasons. An easy way to navigate this document is to turn on the Navigation Pane. To turn on the Navigation Pane in Word, click View and check the box next to Navigation Pane, then click the heading of the section you wish to view to navigate directly to that section.

\*You may have to download the document to the desktop Word App for this to function properly.

## Course Information

### Instructor Information

**Instructor:** Sarah Jane Alger (pronounced "Al-ger"), she/her/hers

**Office:** 439 TNR or [Zoom](#)

**Virtual Office Hours:** You can schedule a one-on-one Zoom or in-person appointment with me through [Microsoft Bookings](#). If those options don't work for you, email me and we'll come up with another.

**E-mail:** salger@uwsp.edu

### Course Information

**Course Description:** Learn how to design a meaningful experiment through the iterative process of design, evaluation and refining. Design an experiment in such a way to maximize the probability that the data collected can be effectively analyzed and interpreted. Particularly valuable if you are pursuing an independent science research project and to science teachers mentoring their students' projects.

**Credits:** 2

**Prerequisite:** Instructor Consent

## Expected Instructor Response Times

- I will try to respond to student emails within 24 hours. If you have not received a reply from me within 24 hours please resend your email.
- I will try to reply to and assess student discussion posts within 48 hours of discussions closing.
- I will try to grade written work within 72 hours, however longer written assignments may take me longer to read and assess.

## Communicate with your Instructor

If you find that you have any trouble keeping up with assignments or other aspects of the course, make sure you let me know as early as possible. As you will find, building rapport and effective relationships are key to becoming an effective professional. Make sure that you are proactive in informing your instructors when difficulties arise during the semester so that we can help you find a solution.

## Textbook & Course Materials

### Required Texts:

- Hofmann, Angelika. (2019). Scientific Writing and Communication: Papers, Proposals, and Presentations (fourth edition). New York: Oxford University Press. ISBN: 9780190063283. (Available for rent through UWSP text rental)
- Valiela, I. (2009). Doing Science (second edition), New York: Oxford University Press. ISBN: 9780195385731. (Available for rent through UWSP text rental)

**All Other Course Materials:** available for free on Canvas

## Course Learning Outcomes

By the end of this course, students will be able to:

1. Explain the importance of designing an experiment.
2. Recognize critical thinking as a process of identifying, analyzing, evaluating, and constructing reasoning in deciding what conclusions to draw (argumentation) or actions to take (decision-making and problem-solving).
3. Identify, analyze and evaluate scientific questions, scientific rationales, hypotheses and predictions.
4. Apply critical thinking techniques to construct a hypothesis that is novel, relevant, based on a logical scientific rationale, and testable with available resources.
5. Apply critical thinking techniques to construct a meaningful experiment through the iterative process of design, evaluation and refining.
6. Effectively communicate your constructed experimental design visually and in writing.

You will meet the outcomes listed above through a combination of the following activities in this course:

- Reading assigned readings and watching recorded lectures
- Participating in practice assignments and discussions
- Developing your own experiment and writing a research proposal
- Evaluating and critiquing the experiments and research proposals developed by you and your peers

## General Education Program Learning Outcomes

This course is not yet officially part of the General Education Program, but it will be considered for the Critical Thinking category of the Foundational Skills and Dispositions requirements of the General Education Program this year. As such, students will be able to:

1. Recognize critical thinking as a process of identifying, analyzing, evaluating, and constructing reasoning in deciding what conclusions to draw (argumentation) or actions to take (decision-making and problem-solving).
2. Identify, analyze, evaluate, and construct reasoning as it is applied to general or discipline-specific questions or issues.
3. Communicate the analysis, evaluation, or construction of reasoning orally, visually, or in writing.

## Course Structure

This course will be delivered entirely online through the course management system Canvas. You will use your UWSP account to login to the course from the [Canvas Login Page](#). If you have not activated your UWSP account, please visit the [Manage Your Account](#) page to do so.

## Attendance

This course is completely online and asynchronous. However, you will be asked to attend a few live Zoom discussions with some of your peers. You will be asked to agree on a time for those assignments with your group ahead of time. Once those discussions are scheduled, you are expected to attend them. If something comes up and you cannot attend a scheduled meeting with your group, please inform your group and myself as soon as possible. You are not expected to reschedule a meeting in which you have been given less than 24 hours notice about a schedule problem.

## Topic Outline/Schedule

**Important Note:** Refer to the Canvas course home page for pertinent information. Activity and assignment details will be explained in detail within each week's corresponding Module. As tasks come due, they will appear in your "to do" list. If you have any questions, please contact me.

**Topics:**

- **Week 1:**
  - Orientation to the course
  - The Scientific Method
- **Week 2:**
  - Critical Thinking in Science
  - Ethics in Science and Scientific Dispositions
- **Week 3:**
  - Identifying Scientific Questions, Hypotheses and Predictions
  - Scientific Rationale Maps
- **Week 4:**
  - Analyzing and Evaluating Scientific Questions, Hypotheses and Predictions
  - Developing Scientific Questions, Hypotheses and Predictions
- **Week 5:**
  - Developing Scientific Questions, Hypotheses and Predictions (continued)
- **Week 6:**
  - Developing Scientific Questions, Hypotheses and Predictions (continued)
- **Week 7:**
  - Introduction, Background and Objectives
- **Week 8:**
  - Identify Experimental Design
  - Determine Variables, Methods, Statistical Approach and Predicted Results
- **Week 9:**
  - Identify Experimental Design (continued)
  - Design Revision and Timeline, Budget, and Budget Justification
  - Determine Variables, Methods, Statistical Approach and Predicted Results (continued)
- **Week 10:**
  - Determine Variables, Methods, Statistical Approach and Predicted Results (continued)
  - Methods and Predicted Results

- **Week 11:**
  - Methods and Predicted Results (continued)
  - Paper Revision and Abstract
- **Week 12:**
  - Design Revision and Timeline, Budget, and Budget Justification (continued)
  - Paper Revision and Abstract (continued)
- **Week 13:**
  - Paper Revision and Abstract (continued)
- **Week 14:**
  - Paper Revision and Abstract (continued)
- **Week 15:**
  - Synthesis

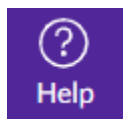
## Student Expectations

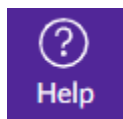
In this course you will be expected to complete the following types of tasks.

- communicate via email
- complete basic internet searches
- complete searches through the UWSP library system and download articles and other resources
- read documents online
- download and upload documents to Canvas
- view online videos
- make online videos
- participate in online discussions
- complete quizzes online
- upload documents to Canvas to submit assignments
- participate in synchronous online discussions (that you schedule with your group)

## Technology

### Canvas Support



Click on the  button in the global (left) navigation menu and note the options that appear:

Support Options	Explanations
<p><a href="#">Ask Your Instructor a Question</a> Submit a question to your instructor</p>	Use <b>Ask Your Instructor a Question</b> sparingly; technical questions are best reserved for Canvas personnel and help as detailed below.
<p><a href="#">Chat with Canvas Support (Student)</a> Live Chat with Canvas Support 24x7!</p>	<b>Chatting with Canvas Support (Student)</b> will initiate a <i>text chat</i> with Canvas support. Response can be qualified with severity level.
<p><a href="#">Contact Canvas Support via email</a> Canvas support will email a response</p>	<b>Contacting Canvas Support via email</b> will allow you to explain in detail or even upload a screenshot to show your particular difficulty.
<p><a href="#">Contact Canvas Support via phone</a> Find the phone number for your institution</p>	Calling the Canvas number will let Canvas know that you're from UWSP; phone option is available 24/7.
<p><a href="#">Search the Canvas Guides</a> Find answers to common questions</p>	<b>Searching the <a href="#">Canvas guides</a></b> connects you to documents that are searchable by issue. You may also opt for <b><a href="#">Canvas video guides</a></b> .
<p><a href="#">Submit a Feature Idea</a> Have an idea to improve Canvas?</p>	If you have an idea for Canvas that might make instructions or navigation easier, feel free to offer your thoughts through this <b>Submit a Feature Idea</b> avenue.

*All options are available 24/7; however, if you opt to email me, I may not be available immediately.*

- Self-train on Canvas through the [Self-enrolling/paced Canvas training course](#)

## Course Technology Requirements

- View this website to see [minimum recommended computer and internet configurations for Canvas](#).
- You will also need access to the following tools to participate in this course.
  - o webcam
  - o microphone
  - o a stable internet connection (don't rely on cellular)

## Protecting your Data and Privacy

UW-System approved tools meet security, privacy, and data protection standards. For a list of approved tools, visit this website:

<https://www.wisconsin.edu/dle/external-application-integration-requests/>

Tools not listed on the website linked above may not meet security, privacy, and data protection standards. If you have questions about tools, contact the UWSP IT Service Desk at 715-346-4357.

Here are steps you can take to protect your data and privacy.

- Use different usernames and passwords for each service you use
- Do not use your UWSP username and password for any other services
- Use secure versions of websites whenever possible (HTTPS instead of HTTP)
- Have updated antivirus software installed on your devices

This course requires posting of work in Canvas that is viewable only by myself and your classmates. None of the work submitted online will be shared publicly. Confidentiality of student work is imperative, so you should not share the work of your peers publicly without their permission. By participating in these assignments, you are giving consent to sharing of your work with others in this class and you recognize there is a small risk of your work being shared online beyond the purposes of this course.

## Technology Support

- Visit with a [Student Technology Tutor](#)
- Seek assistance from the [IT Service Desk](#) (Formerly HELP Desk)
  - o IT Service Desk Phone: 715-346-4357 (HELP)
  - o IT Service Desk Email: [techhelp@uwsp.edu](mailto:techhelp@uwsp.edu)

## Grading Policies

### Completing Assignments and Late Work Policy

**All assignments for this course will be submitted electronically through Canvas unless otherwise instructed.**

To keep everyone on track and to promote peer evaluation processes, **assignments must be submitted by the given deadline or special permission must be requested from instructor *before the due date***. All discussion assignments must also be completed by the assignment due date and time. Late or missing discussion assignments will affect the student's grade. However, since experimental design and writing are iterative processes, **all assignments submitted on time will be eligible to be resubmitted and regraded**. If you resubmit an assignment to be regraded and I do not regrade it within one week, please email me to let me know it has been resubmitted.

### Graded Course Activities

Click the **Assignments** link in Canvas to access assignment listing, categories and weights as applicable. Click the **Syllabus** link to see a

chronological listing of assignments. Click the **Grades** link to see current grades. Overall assignments and accompanying points are listed below:

<b>Description</b>	<b>Points</b>
Practice Learning Activities	75
Scientific Rationale Map Assignments	60
Experimental Design Assignments	60
Proposal Writing Assignments	205
<b>Total Points Possible</b>	<b>400</b>

If you are registered for graduate course credit (BIOL 598), you will have an additional 40-point project that will be included for a total of 440 points possible. I will work with each graduate student individually to determine what type of project or assignment would help you best meet your goals for the course.

### **Letter Grade Assignment**

Final grades assigned for this course will be based on the percentage of total points earned and are assigned as follows:

<b>Letter Grade</b>	<b>Percentage</b>
A	93-100%
A-	90-92%
B+	87-89%
B	83-86%
B-	80-82%
C+	77-79%
C	73-76%
C-	70-72%
D+	67-69%
D	60-66%
F	0-59%

### **Viewing Grades in Canvas**

Points you receive for graded activities will be posted to Grades in the course Canvas page. Click on the Grades link to view your points. I will try to grade all assignments within one week of submission (or resubmission). If I do not grade a resubmitted assignment within one week, please email me to make sure I have seen that it was resubmitted.



## Other Policies

### Absences due to Military Service

As stated in the UWSP Catalog, you will not be penalized for class absence due to unavoidable or legitimate required military obligations, or medical appointments at a VA facility, [not to exceed two \(2\) weeks](#) unless special permission is granted by the instructor. You are responsible for notifying faculty members of such circumstances as far in advance as possible and for providing documentation to the Office of the Dean of Students to verify the reason for the absence. The faculty member is responsible to provide reasonable accommodations or opportunities to make up exams or other course assignments that have an impact on the course grade. For absences due to being deployed for active duty, please refer to the [Military Call-Up Instructions for Students](#).

### Academic Honesty Policy & Procedures

#### Student Academic Disciplinary Procedures

UWSP 14.01 Statement of principles

The board of regents, administrators, faculty, academic staff and students of the university of Wisconsin system believe that academic honesty and integrity are fundamental to the mission of higher education and of the university of Wisconsin system. The university has a responsibility to promote academic honesty and integrity and to develop procedures to deal effectively with instances of academic dishonesty. Students are responsible for the honest completion and representation of their work, for the appropriate citation of sources, and for respect of others' academic endeavors. Students who violate these standards must be confronted and must accept the consequences of their actions.

UWSP 14.03 Academic misconduct subject to disciplinary action.

- (1) Academic misconduct is an act in which a student:
  - (a) Seeks to claim credit for the work or efforts of another without authorization or citation;
  - (b) Uses unauthorized materials or fabricated data in any academic exercise;
  - (c) Forges or falsifies academic documents or records;
  - (d) Intentionally impedes or damages the academic work of others;
  - (e) Engages in conduct aimed at making false representation of a student's academic performance; or
  - (f) Assists other students in any of these acts.
  
- (2) Examples of academic misconduct include, but are not limited to: cheating on an examination; collaborating with others in work to be presented, contrary to the stated rules of the course; submitting a paper or assignment as one's own work when a part or all of the paper or assignment is the work of another; submitting a paper or assignment that contains ideas or research of others without appropriately identifying the sources of those ideas; stealing examinations or course materials; submitting, if contrary to

the rules of a course, work previously presented in another course; tampering with the laboratory experiment or computer program of another student; knowingly and intentionally assisting another student in any of the above, including assistance in an arrangement whereby any work, classroom performance, examination or other activity is submitted or performed by a person other than the student under whose name the work is submitted or performed.

## **Clery Act**

The US Department of Education requires universities to disclose and publish campus crime statistics, security information, and fire safety information annually. Statistics for the three previous calendar years and policy statements are released on or before October 1<sup>st</sup> in our [Annual Security Report](#). Another requirement of the Clery Act, is that the campus community must be given timely warnings of ongoing safety threats and immediate/emergency notifications. For more information about when and how these notices will be sent out, please see our [Jeanne Clery Act](#) page.

## **Commit to Integrity**

As a student in this course (and at this university) you are expected to maintain high degrees of professionalism, commitment to active learning and participation in this class and also integrity in your behavior in and out of the classroom.

## **Confidentiality**

Learning requires risk-taking and sharing ideas. Please keep your classmates' ideas and experiences confidential outside the classroom unless permission has been granted to share them.

## **Copyright infringement**

This is the act of exercising, without permission or legal authority, one or more of the exclusive rights granted to the copyright owner under section 106 of the Copyright Act. Each year students violate these laws and campus policies, putting themselves at risk of federal prosecution. For more information about what to expect if you are caught, or to take preventive measures to keep your computing device clean, visit our [copyright page](#).

## **Dropping UWSP Courses**

It is the student's responsibility to understand when they need to consider unenrolling from a course. Refer to the UWSP [Academic Calendar](#) for dates and deadlines for registration. After this period, a serious and compelling reason is required to drop from the course. Serious and compelling reasons includes: (1) documented and significant change in work hours, leaving student unable to attend class, or (2) documented and severe physical/mental illness/injury to the student or student's family.

## Drug Free Schools and Communities Act

The Drug Free Schools and Communities Act (DFSCA) requires institutions of higher education to establish policies that address unlawful possession, use, or distribution of alcohol and illicit drugs. The DFSCA also requires the establishment of a drug and alcohol prevention program. The Center for Prevention lists information about alcohol and drugs, their effects, and the legal consequences if found in possession of these substances. [Center for Prevention – DFSCA](#)

## Emergency Procedures

- In the event of a **medical emergency call 9-1-1**. Offer assistance if trained and willing to do so. Guide emergency responders to victim.
- In the event of a **tornado warning, proceed to the lowest level interior room** without window exposure. See [www.uwsp.edu/rmgt/Pages/em/procedures/other/floor-plans.aspx](http://www.uwsp.edu/rmgt/Pages/em/procedures/other/floor-plans.aspx) for floor plans showing severe weather shelters on campus. Avoid wide-span structures (gyms, pools or large classrooms).
- In the event of a **fire alarm, evacuate the building** in a calm manner.
- **Active Shooter – RUN. HIDE. FIGHT.** If trapped, hide, lock doors, turn off lights, spread out and remain quiet. Call 9-1-1 when it is safe to do so. Follow instructions of emergency responders.
- See UW-Stevens Point Emergency Procedures at [www.uwsp.edu/rmgt/Pages/em/procedures](http://www.uwsp.edu/rmgt/Pages/em/procedures) for details on all emergency response at UW-Stevens Point.”

## Equal Access for Students with Disabilities

UW-Stevens Point will modify academic program requirements as necessary to ensure that they do not discriminate against qualified applicants or students with disabilities. The modifications should not affect the substance of educational programs or compromise academic standards; nor should they intrude upon academic freedom. Examinations or other procedures used for evaluating students' academic achievements may be adapted. The results of such evaluation must demonstrate the student's achievement in the academic activity, rather than describe his/her disability.

*If modifications are required due to a disability, please inform the instructor and contact the [Disability and Assistive Technology Center](#) to complete an Accommodations Request form. Phone: 346-3365 or Room 609 Albertson Hall.*

## FERPA

The [Family Educational Rights and Privacy Act](#) (FERPA) provides students with a right to protect, review, and correct their student records. Staff of the university with a clear *educational need to know* may also have to access to certain student records. Exceptions to the law include parental notification in cases of alcohol or drug use, and in case of a health or safety concern. FERPA also permits a school to disclose personally identifiable information from a student's education records, without consent, to another school in which the student seeks or intends to enroll.

Lecture materials and recordings for BIOL 398: Introduction to Scientific Research Design are protected intellectual property at UW-Stevens Point. Students in this course may use the materials and recordings for their personal use related to participation in this class. Students may also take notes solely for their personal use. If a lecture is not already recorded, you are not authorized to record my lectures without my permission unless you are considered by the university to be a qualified student with a disability requiring accommodation. [Regent Policy Document 4-1] Students may not copy or share lecture materials and recordings outside of class, including posting on internet sites or selling to commercial entities. Students are also prohibited from providing or selling their personal notes to anyone else or being paid for taking notes by any person or commercial firm without the instructor's express written permission. Unauthorized use of these copyrighted lecture materials and recordings constitutes copyright infringement and may be addressed under the university's policies, UWS Chapters 14 and 17, governing student academic and non-academic misconduct.

## Help Resources

Tutoring	Advising	Safety and General Support	Health
Tutoring and Learning Center helps with Study Skills, Writing, Technology, Math, & Science. 018 Albertson Hall, ext 3568	Academic and Career Advising Center, 320 Albertson Hall, ext 3226	Dean of Students Office, 212 Old Main, ext. 2611	Counseling Center, Delzell Hall, ext. 3553. Health Care, Delzell Hall, ext. 4646

## Inclusivity Statement

It is my intent that students from all diverse backgrounds and perspectives be well-served by this course, that students' learning needs be addressed both in and out of class, and that the diversity that the students bring to this class be viewed as a resource, strength and benefit. It is my intent to present materials and activities that are respectful of diversity: gender identity, sexuality, disability, age, socioeconomic status, ethnicity, race, nationality, religion, and culture. Your suggestions are encouraged and appreciated. Please let me know ways to improve the effectiveness of the course for you personally, or for other students or student groups.

If you have experienced a bias incident (an act of conduct, speech, or expression to which a bias motive is evident as a contributing factor regardless of whether the act is criminal) at UWSP, you have the right to report it using this [link](#). You may also contact the Dean of Students office directly at [dos@uwsp.edu](mailto:dos@uwsp.edu).

## Incomplete Policy

Under emergency/special circumstances, students may petition for an incomplete grade. An incomplete will only be assigned if you and I make a formal written agreement of the terms prior to grades being submitted. All incomplete course assignments must be completed within one semester.

## Netiquette Guidelines

Netiquette is a set of rules for behaving properly online. Your instructor and fellow students wish to foster a safe online learning environment. All opinions and experiences, no matter how different or controversial they may be perceived, must be respected in the tolerant spirit of academic discourse. You are encouraged to comment, question, or critique an idea but you are not to attack an individual. Working as a community of learners, we can build a polite and respectful course community.

The following netiquette tips will enhance the learning experience for everyone in the course:

- Do not dominate any discussion.
- Give other students the opportunity to join in the discussion.
- Do not use offensive language. Present ideas appropriately.
- Be cautious in using Internet language. For example, do not capitalize all letters since this suggests shouting.
- Popular emoticons such as 😊 or / can be helpful to convey your tone but do not overdo or overuse them.
- Avoid using vernacular and/or slang language. This could possibly lead to misinterpretation.
- Never make fun of someone's ability to read or write.
- Share tips with other students.

- Keep an “open-mind” and be willing to express even your minority opinion. Minority opinions have to be respected.
- Think and edit before you push the “Send” button.
- Do not hesitate to ask for feedback.
- Using humor is acceptable

Adapted from:

Mintu-Wimsatt, A., Kernek, C., & Lozada, H. R. (2010). *Netiquette: Make it part of your syllabus*. *Journal of Online Learning and Teaching*, 6(1). Retrieved from [http://jolt.merlot.org/vol6no1/mintu-wimsatt\\_0310.htm](http://jolt.merlot.org/vol6no1/mintu-wimsatt_0310.htm)

Shea, V. (1994). *Netiquette*. Albion.com. Retrieved from: <http://www.albion.com/netiquette/book/>

## Religious Beliefs Accommodation

It is UW System policy ([UWS 22](#)) to reasonably accommodate your sincerely held religious beliefs with respect to all examinations and other academic requirements. You will be permitted to make up an exam or other academic requirement at another time or by an alternative method, without any prejudicial effect, if:

- There is a scheduling conflict between your sincerely held religious beliefs and taking the exam or meeting the academic requirements; and
- You have notified your instructor within the first three weeks of the beginning of classes (first week of summer or interim courses) of the specific days or dates that you will request relief from an examination or academic requirement.

Your instructor will accept the sincerity of your religious beliefs at face value and keep your request confidential. Your instructor will schedule a make-up exam or requirement before or after the regularly scheduled exam or requirement. You may file any complaints regarding compliance with this policy in the Equity and Affirmative Action Office.

## Title IX

UW-Stevens Point is committed to fostering a safe, productive learning environment. Title IX and institutional policy prohibit discrimination on the basis of sex, which includes harassment, domestic and dating violence, sexual assault, and stalking. In the event that you choose to disclose information about having survived sexual violence, including harassment, rape, sexual assault, dating violence, domestic violence, or stalking, and specify that this violence occurred while a student at UWSP, federal and state laws mandate that I, as your instructor, notify the Title IX Coordinator/Office of the Dean of Students.

Please see the information on the [Dean of Students webpage](#) for information on making confidential reports of misconduct or interpersonal violence, as well as campus and community resources available to students. For more information see the [Title IX page](#).