S-STEM: Intro to Undergraduate Research– Fall 2025

BIOL 2900R Section 201 – 3 Credits
Utah Valley University

Instructor Information

Dr. Carl E Hjelmen (he/him)
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Office hours:

Tuesday 11:30am-12:30pm, Wednesday 1:30-2:30pm or by appointment

Course Prerequisites:

Acceptance of the S-STEM Scholarship
Course Approval from Instructor

Resources:

Text:

No required text. Various texts/readings will be provided to you throughout the semester via Canvas.

Course website:

Canvas. Additional helpful resources are also available on https://cehjelmen.github.io
You can access these sites from any computer linked to the internet.

Access to Canvas will be critical as assignments, grades, updates, and other announcements will be posted there.

Computation:

While this class may have some more "lecture" style things, much of it will be relying on participation in discussion and activities, some work requires use of a computer with internet access. I highly suggest that you bring your own laptop to class. **Please let me know if this is not possible.**

Course Information:

Description

This course serves as an introduction to undergraduate research. The bulk of the course consists of laboratory rotations through several potential mentors. We will meet to discuss progress and other topics of concern for students just getting involved with research. The weekly topics are outlined below. By the end of the course, you should have selected a research mentor and developed a first project that you will work on together. The course final will be a poster presentation outlining your proposed research project, methods, and hypotheses.

Course Objectives:

1. Be able to discuss the benefits of engaging in undergraduate research
2. Be aware of strategies for STEM career planning
3. Be preparing a project with a biology research mentor
4. Understand the basics of research funding applications
5. Understand the basics of what a graduate degree program entails
6. Have an understanding of how to prepare scientific manuscripts and presentations
7. Be able to identify their learning strategies and goals

Course Expectations:

Student Responsibilities

Everyone (students and instructor) should treat others with mutual respect and patience. I encourage students to work together, unless otherwise explicitly stated. I recognize students come from their own unique background and have had their own unique experiences. If you need any special accommodations or assistance, please do not hesitate to contact me with questions. One of the benefits of this program is having a cohort of students who are going through similar academic experiences. You **need** to come to class meetings and participate in discussions

How to do well in this course:

How well you do will be directly related to the effort you put into it. Below are suggestions:

1. Regular attendance - You will benefit from class discussion and activities. Furthermore, the class needs your participation to establish a group dynamic that provides encouragement and support.
2. Be prepared - Please do assigned readings and assignments on time. If you are interested, I can always provide additional reading materials.
3. Listening and Speaking - We will practice being generous and respectful listeners. Know that the class will benefit from what you have to contribute. Please, no side conversations.
4. Additional Information - Keep up with the work--it's not intended to be difficult, but you can't stir up your thinking without a commitment to taking the class seriously. You will be required to do additional informal assessments and exercises. Many of these exercises will be in-class work; if you have sustained absences, you will have difficulty passing the course.
5. Making your needs known - Please let me know what your needs are throughout the term. I am happy to work with you to improve your experience in this course when possible.
6. Writing – Assignments must be typed unless otherwise specified. Well-written English and good spelling are expected; I will deduct points for excessive spelling and/or grammar errors on any assignment.
7. Distractions – Unless told otherwise, put away all electronic devices during class.
8. Success may take time outside of class - Mastery isn't immediate. Part of success is spending as much time studying that is necessary for you. This amount will vary from student to student. If you need tips or help, please contact me.

Course Procedures:
I have provided a preliminary schedule that we will follow, it includes the sequence of topics, reading materials, assignments, etc., however, keep in mind that this schedule is subject to change. You are responsible for all announcements made in class or online, and adjustments to schedule (even if you are not there). If you miss a class or come late after announcements have been made, you are responsible to find out from another student what announcements were made and what material was covered.

Many Fridays are to have provided lunches with guests. It is imperative that you attend these for networking, and also… free food?

Professor Responsibilities

It will be my goal in this course to be prepared, organized, and provide a safe, productive environment to learn. Students can be expected to be treated fairly, and with respect. Additionally, all assignments will be graded and returned in a timely manner.

I will be available outside of class time to help any students who ask for it during student hours. If for any reason you cannot meet with me during the pre-determined times, you are welcome to contact me to discuss arranging an additional meeting time. You are always welcome to come by my office, but unless it is arranged in advance, I cannot guarantee I will be available.

The best method to reach me is through e-mail, however, please be patient and recognize that you may not always receive an immediate response. I will do my best to respond in a timely manner within reasonable hours, but e-mails sent late at night will not be responded to until the next day.

Disclaimer - Communication and Syllabus Changes

All items in this syllabus are subject to change or modification to correct errors or accommodate extenuating circumstances. You are responsible for messages sent by me and other UVU officials to your UVU email address. If you do not regularly use this address, please forward your UVU email to the address you regularly use. Please check the email for important class announcements and updates.

Disclaimer – Artificial Intelligence and use of tools like ChatGPT

Artificial intelligence (AI) is becoming an ever-prevalent tool in society and it is important to understand how this tool works. It is important to recognize this as a "tool" and not a "crutch". AI is prone to "hallucinating" and giving incorrect or false results; it also does not allow me to gauge **your understanding** of material. I encourage use of all resources for your work but ask that you make it your own and that you do not ask AI to complete your assignments for you. If you utilize AI, be sure to indicate it in your response that you used AI and indicate how you corrected the response and made it your own. If I feel you are not adequately responding or that you are relying on AI too much, I reserve the right to remove points on responses, up to zero credit.

Assessment:
The main points in this course come from steady participation; therefore, you will lose points if you don't show up. One of the benefits of being in this program is that you have a solid cohort of students and can lean on each other for help. Additional points will come from short homework tasks that you will need to prepare before we meet. For example, if we are going to workshop our CVs, and you don't bring one to class, then you can't participate and everyone loses out. Don't be like that. Do your work…I promise it isn't busywork in this class. It's designed to help you be ready for professional programs

Your chosen research mentor will also grade you on maintaining sufficient progress as you develop a research plan. That grade will be incorporated into your class participation grade. There are no exams.

Remember that if your GPA drops below 3.0, you're put on probation from this scholarship and can't receive funds unless you get it back up after one probationary semester.

Your final grade will be based on the accumulations of points throughout the semester. There may be adjustments of assignments pending discussions, etc.

Assignment	% of grade
Reading Quiz	10
Ranking of Mentors	10
Time Budget	20
Reflection on issues in STEM	20
Funding Timeline	20
Research Paper Summary	20
Bibliography Submission	20
Experimental Design Presentation	20
Journal differences	20
Mentor Contract	50
Conference Timeline	20
CV Comparisons	10
CV Draft	10
Proposal Presentations	100
Total	350

- The class will not be graded on a curve
- Your final grade will be calculated on a percentage basis

Cutoff	Grade	Cutoff	Grade
93%	A	73%	C
90%	A-	70%	C-
87%	B+	67%	D+
83%	B	63%	D
80%	B-	60%	D-
77%	C+	<59.5%	E

Assignments and Project Descriptions

Late work:

I will keep the window for submitting assignments open, but they may receive a late penalty, up to zero credit. Many of these assignments will lead into discussions with your classmates, so late submissions will be a disservice to you and your colleagues.

I understand that life can be chaotic and there are many things outside of your control. **If you are unable to complete an assignment for any reason by the due date, please let me know and we can work something out**! Remember to always let Dr. Hjelmen know if you're going to be late!

Cheating and plagiarism:

I encourage students to work together to solve problems, unless otherwise explicitly stated. This does not mean copying answers. I do not tolerate cheating of any kind, including copying from another student on exams or assignments. I will impose one of several penalties for cheating that range from a warning up to assigning a failing grade for the course. Please ask me if you are not sure about what constitutes plagiarism.

UVU Policies and Resources

Policies and Success Strategies (Links to an external site.)

Accessibility Services (Links to an external site.)

- Students who need accommodations because of a disability may contact the UVU Office of Accessibility Services (OAS), located on the Orem Campus in LC 312. To schedule an appointment or to speak with a counselor, call the OAS office at 801-863-8747. Deaf/Hard of Hearing individuals, email nicole.hemmingsen@uvu.edu or text 385-208-2677.

Campus Resources (Links to an external site.)

Technology Support Services

For 24/7 technical support contact Instructure's Canvas Support Live Chat (Links to an external site.)
(385) 204-4930 (Available 24/7)

Student Care Statement

Any student who has difficulty affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believes this may affect their performance in the course, is urged to visit https://www.uvu.edu/studentcare/ for access to a variety of resources. You may also email care@uvu.edu for assistance.

All of us have a need to maintain mental health and benefit from the assistance of professionals to do so. UVU offers mental health services at very low cost (some are free). While there may be a wait list for individual counseling, group counseling may be available in some circumstances. Student Health Services is located in SC 221, telephone 801-863-8876 https://www.uvu.edu/studenthealth/psych/ . The following community resources are available 24/7- the National Suicide Prevention Lifeline 1-800-273-8255 and the Safe UT Crisis Chat & Tip Line https://safeut.med.utah.edu/. You may also access the Crisis Text Line 741-741 or call 9-1-1. If an emergency is happening on campus, call campus police 801-863-5555.

Tentative Course Schedule

Here is a tentative schedule for topics. It is your responsibility to make up any work that you might miss if absent. All readings and assignments can be found on Canvas.

Wk.	Dates	Topics	Readings	Due
1	Aug. 20 Aug. 22	Introduction, syllabus, and other business Going over research mentors		
2	Aug 25 Aug. 27 Aug. 29	Discussion on Paper What makes a good mentor	Yu and Kuo 2017	*Rank your top research mentors* *Paper discussion points*
3	Sep. 1 Sep. 3 Sept. 5	***LABOR DAY—NO CLASS*** Effective time management		*Make a time budget*
4	Sep. 8 Sep. 10 Sep. 12	Issues facing scholars Campus resources available		*Reflection writing on these issues*
5	Sep. 15 Sep. 17 Sep. 19	Applying for funding Working on budgets		*Identify a funding source you'd like to apply for and make a timeline*

6	Sep. 22 Sep. 24 Sept. 26	How to read scientific papers		*Summarize a research paper you have found*
7	Sept. 29 Oct. 1 Oct. 3	Finding scientific papers Making bibliographies		*Download Zotero* *Making a bibliography*
8	Oct. 6 Oct. 8 Oct. 10	Experimental design		
9	Oct. 13 Oct. 15 Oct. 17	Experimental design ***FALL BREAK—NO CLASS***		*Present on your experimental design*
10	Oct. 20 Oct. 22 Oct. 24	Realities of research		
11	Oct. 27 Oct. 29 Oct. 31	The publication process		*Identify differences in journal processes*
12	Nov. 3 Nov. 5 Nov. 7	Giving Effective presentations		
13	Nov. 10 Nov. 12 Nov. 14	Getting the most out of a conference		*Identify a conference and timelines* *Signed Mentor Contract due*
14	Nov. 17 Nov. 19 Nov. 21	Building and preparing an effective CV		*Find CV's of other scientists* *Work on CV's together*

	-	***THANKSGIVING BREAK—NO CLASS***		
15	Dec. 1 Dec. 3 Dec. 5	Presentations of Proposed Research Presentations of Proposed Research Next steps moving forward		*Presentation of Research Proposal*