

Syllabus – MORE-BIO student orientation

Course meets MWF 12-12:50

All S-STEM recipients take this course their 1st semester in the program

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Upon successful completion, students should:

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

Overview:

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.

Communication:

We will mainly use the group Slack channel to communicate. This has several benefits. Firstly, everything is in one place and is searchable. You can send private messages to each other in there if you like, but the main benefit is that it's a nice forum that lets all of us stay on the same page. Secondly, if I am forced to search through super long email chains for a piece of information, I get grumpy. We all do. It's horrible. Let's not do that.

Grading:

The main points in this course come from steady participation. 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. That doesn't work if you are a slacker. I don't expect anyone to be a slacker, but I have to mention it as this is a syllabus. Additional points will come from short homework tasks that you will need to prepare before we meet. 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.

Points possible:

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|----------------------|---------|
| Weekly participation | 160 pts |
| Homework tasks | 40 pts |
| Mentor grade | 100 pts |
| Poster presentation | 100 pts |

Grading scale:

| | |
|---|-----------|
| A | 360 pts |
| B | 320 pts |
| C | 280 pts |
| D | 240 pts |
| E | < 240 pts |

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

Weekly topics and activities on next page:

Weekly topics/activities for S-STEM orientation course

| | |
|----------------|---|
| WEEK 1 | biology research mentors' presentations <i><u>*select mentors for rotations*</u></i> getting to know your cohort logistics and expectations of S-STEM program |
| WEEK 2 | expectations for advisors and advisees <i><u>*begin lab rotations (2 weeks per lab, 5 labs)*</u></i> what to look for in an advisor |
| WEEK 3 | effective time management fitting research into academics work-life balance mental health |
| WEEK 4 | issues facing underrepresented scholars racial, gender, and sexual-orientation biases finding and fixing our own biases how to be part of the solution |
| WEEK 5 | applying for funding internal funding opportunities at UVU application process |
| WEEK 6 | how to read a scientific paper research reports / reviews / editorials following the citation trail critical evaluation |
| WEEK 7 | how to find gaps in knowledge using the library literature reviews managing references with Zotero |
| WEEK 8 | experimental design - principles and types qualitative, quantitative, how we "know" observational vs manipulated inductive and deductive reasoning |
| WEEK 9 | realities of research keeping a lab notebook reproducibility adapting to inevitable failure |
| WEEK 10 | the publication process selecting an appropriate journal peer review process (fall break starts Thursday) |
| WEEK 11 | giving effective presentations poster design telling a story |

- WEEK 12** **getting the most out of a conference**
 finish lab rotations / select research mentor
- WEEK 13** **how to build and prepare an effective CV**
 effective use of social media
 web presence
 work with mentor to select research topic
- WEEK 14** **(Thanksgiving Break)**
- WEEK 15** **next steps - getting the most from the S-STEM program**
 setting goals
 building a support network of collaborators and allies
 literature review of research topic
 develop research plans
- WEEK 16** **research plan presentations**
 poster session in SB atrium (Cancelled due to COVID-19)